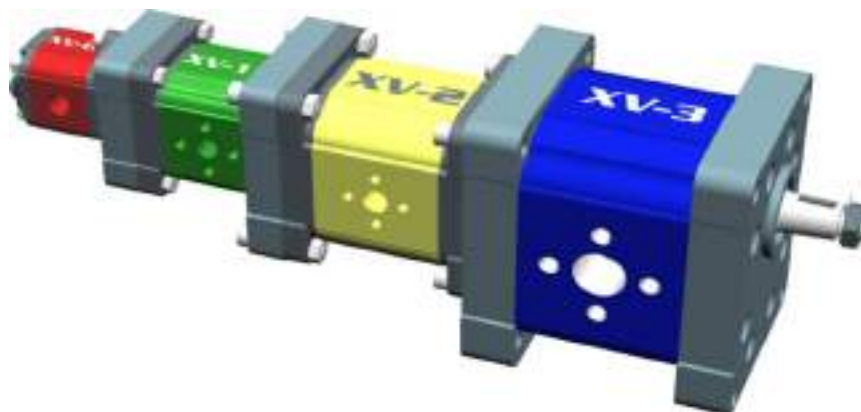


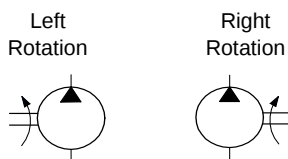
# **ViVoil**



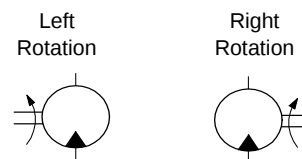
## **Reversible Pumps**



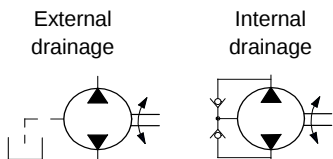
|              |                            |
|--------------|----------------------------|
| <b>XV-0P</b> | <b>Unidirectional Pump</b> |
| <b>XV-1P</b> | Left Rotation              |
| <b>XV-2P</b> | Right Rotation             |
| <b>XV-3P</b> |                            |



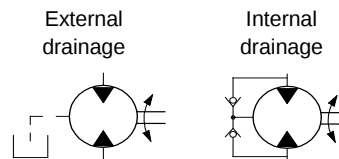
|              |                             |
|--------------|-----------------------------|
| <b>XV-0U</b> | <b>Unidirectional Motor</b> |
| <b>XV-1U</b> | Left Rotation               |
| <b>XV-2U</b> | Right Rotation              |
| <b>XV-3U</b> |                             |



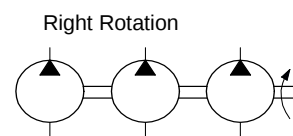
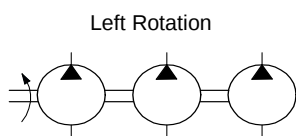
|              |                        |
|--------------|------------------------|
| <b>XV-0R</b> | <b>Reversible Pump</b> |
| <b>XV-1R</b> | External drainage      |
| <b>XV-2R</b> | Internal drainage      |
| <b>XV-3R</b> |                        |



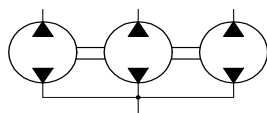
|              |                         |
|--------------|-------------------------|
| <b>XV-0M</b> | <b>Reversible Motor</b> |
| <b>XV-1M</b> | External drainage       |
| <b>XV-2M</b> | Internal drainage       |
| <b>XV-3M</b> |                         |



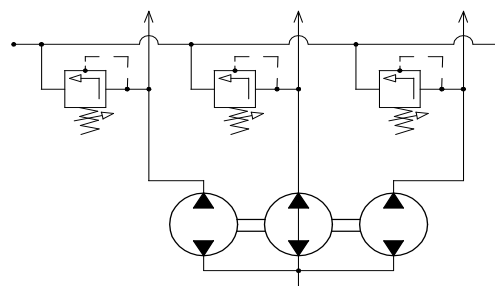
|              |              |              |              |                                       |
|--------------|--------------|--------------|--------------|---------------------------------------|
| <b>XV-0T</b> | <b>XV-1T</b> | <b>XV-2T</b> | <b>XV-3T</b> | Primary element of multiple pump      |
| <b>XV-0I</b> | <b>XV-1I</b> | <b>XV-2I</b> | <b>XV-3I</b> | Intermediate element of multiple pump |
| <b>XV-0F</b> | <b>XV-1F</b> | <b>XV-2F</b> | <b>XV-3F</b> | Final element of multiple pump        |



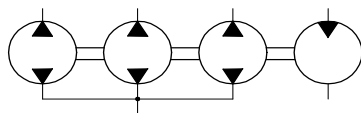
|              |                     |
|--------------|---------------------|
| <b>KV-DF</b> | <b>Flow divider</b> |
|--------------|---------------------|



|               |                                 |
|---------------|---------------------------------|
| <b>KV-DFV</b> | <b>Flow divided with valves</b> |
|---------------|---------------------------------|



|                |                                |
|----------------|--------------------------------|
| <b>KV-DF+M</b> | <b>Flow divider with motor</b> |
|----------------|--------------------------------|



|                                             |    |
|---------------------------------------------|----|
| Introduction                                | 7  |
| Summary: Displacements - Pressures - Speeds | 9  |
| General technical data                      | 10 |
| Torques allowed on shaft                    | 12 |
| Useful calculation formulas                 | 13 |
| Characteristic Curves                       | 14 |

### XV-0R



XR001

STANDARD PUMP

ø22 FLANGE - PARALLEL SHAFT

18



XR012

BH TYPE PUMP

ø22 BODY-SHAPED FLANGE - MILLED SHANK

20



XR017

HY TYPE PUMP

ø22 BODY-SHAPED FLANGE - MILLED SHANK

22

### XV-1R



XR101

STANDARD EUROPEAN PUMP

ø25.4 FLANGE - TAPER SHAFT

24



XR105

STANDARD EUROPEAN PUMP

ø25.4 FLANGE - TAPER SHAFT

26



XR113

STANDARD PUMP

ø30 FLANGE - TAPER SHAFT

28



XR119

BH TYPE PUMP

ø32 BODY-SHAPED FLANGE - MILLED SHANK

30



XR140

HY TYPE PUMP

ø32 BODY-SHAPED FLANGE - MILLED SHANK

32



XR161

STANDARD GERMAN "BH" TYPE PUMP

ø32 BODY-SHAPED FLANGE - MILLED SHANK

34



XR168

SAE AA TYPE PUMP

ø50.8 FLANGE - PARALLEL SHAFT

36

## XV-2R



XR201

STANDARD EUROPEAN PUMP

ø36.5 FLANGE - TAPER SHAFT

38

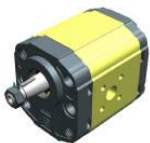


XR207

STANDARD EUROPEAN PUMP

ø36.5 FLANGE - TAPER SHAFT

40



XR210

BH TYPE PUMP

ø50 BODY-SHAPED FLANGE - TAPER SHAFT

42

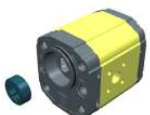


XR213

HY TYPE PUMP

ø50 BODY-SHAPED FLANGE - TAPER SHAFT

44



XR216

STANDARD GERMAN "BH" TYPE PUMP

ø52 BODY-SHAPED FLANGE - MILLED SHANK

46



XR217

STANDARD GERMAN PUMP  
ø80 FLANGE - TAPER SHAFT

48



XR219

SAE A TYPE PUMP  
ø82.5 FLANGE - SPLINED SHAFT

50

## XV-3R



XR301

STANDARD EUROPEAN PUMP  
ø50.8 FLANGE - TAPER SHAFT

52



XR302

STANDARD EUROPEAN PUMP  
ø50.8 FLANGE - TAPER SHAFT

54



XR331

SAE B TYPE PUMP  
ø101.6 FLANGE - SPLINED SHAFT

56



XR332

SAE B TYPE PUMP  
ø101.6 FLANGE - SPLINED SHAFT

58

APPENDIX - Special Versions

61

Max. Pressure Valves

62

Unions

63

Table of seals OR

65

Table of oil speeds

66

Table of Areas and Perimeters

67

Pressure conversion table

68

Conversion table

69

Table of oil viscosity according to temperature

70



## REVERSIBLE PUMPS

### Index

|                                            |    |
|--------------------------------------------|----|
| Table of pressure drops                    | 71 |
| Table of Elements                          | 72 |
| Table of chemical resistance of elastomers | 73 |
| Table of mechanical features of elastomers | 74 |
| Table of tapping holes                     | 75 |
| Map                                        | 78 |

## XV-0R



References: XR-001

**Standard Ø22 FLANGE**


References: XR-012

**Ø22 BH FLANGE**


References: XR-017

**Ø22 HY FLANGE**

## XV-1R



References: XR-101

**Ø25.4 FLANGE**


References: XR-113

**Ø30 FLANGE**


References: XR-119

**Ø32 BH FLANGE**


References : XR-140

**Ø32 HY FLANGE**


References: XR-161

**Standard German Ø32 BH**


References: XR-168

**Ø50.8 SAE AA FLANGE**

## XV-2R



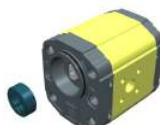
References : XR-201

**Ø36.5 FLANGE**


References : XR-210

**Ø50 BH FLANGE**


References: XR-213

**Ø50 HY FLANGE**


References: XR-216

**Standard German Ø52 BH  
FLANGE**


References : XR-217

**Standard German Ø80 FLANGE**


References : XR-219

**Ø82.5 SAE A  
FLANGE**

## XV-3R



References : XR-301

**FLANGE Ø50,8 - Standard**


References : XR-331

**FLANGE Ø101,6 SAE B**

### Vivoil Oleodinamica

**Vivolo s.r.l.** presents a new series of gear pumps called **XV-R**.

The quality of the product has been improved on by exploiting new and innovative solutions, both technical and constructive, for which the company has been **awarded 3 patents**.

The pumps are divided into four groups:

XV-0R

XV-1R

XV-2R

XV-3R

**The main features of the XV-0R are the following:**

Displacements from  $0.16 \text{ cm}^3$  / revolution to  $2.28 \text{ cm}^3$ /revolution.

Maximum pressures up to **280 bar**.

Versions w/ flanges: Ø22 – Standard;  
Ø22 BH – Sagomata;  
Ø22 HY – Sagomata.

Rotation speeds up to **9000 rpm**.

Configurations with inlet and outlet in the body, flange and cover.

Available shafts: Cylindrical with Woodruff key;  
Milled shank;  
Tapered 1:8 Woodruff key.

A version with internal drainage is also available.

**The main features of the XV-1R are the following:**

Displacements from  $0.91 \text{ cm}^3$  / revolution to  $9.88 \text{ cm}^3$ /revolution.

Maximum pressures up to **300 bar**.

Versions w/ flanges: Ø25.4 – Standard European;  
Ø30 – Standard;  
Ø32 BH – Body-Shaped;  
Ø32 HY – Body-Shaped;  
Ø32 BH – Standard German – Body-Shaped;  
Ø50.8 – SAE AA

Rotation speeds up to **6000 rpm**

Configurations with inlet and outlet in the body, flange and cover.

Available shafts: Tapered 1:8 Woodruff key;  
Parallel with key;  
Milled shank;  
Splined.

A version with internal drainage is also available.

**The main features of the XV-2R are the following:**

Displacements from  $4.2 \text{ cm}^3$  / revolution a  $39.6 \text{ cm}^3$  / revolution.

Maximum pressures up to **300 bar**.

Versions w/ flanges: Ø36,5 – Standard Europea;  
Ø50 BH – Body-Shaped;  
Ø50 HY – Body-Shaped;  
Ø52 BH - Standard German – Body-Shaped;  
Ø80 – Standard German;  
Ø82,5 – SAE A.

Rotation speeds up to **3500 rpm**

Configurations with inlet and outlet in the body, flange and cover.

Available shafts: Tapered 1:8 Woodruff key;  
Parallel with key;  
Milled shank;  
Splined.

A version with internal drainage is also available.

**The main features of the XV-3R are the following:**

Displacements from  $14.89 \text{ cm}^3$  / revolution to  $86.87 \text{ cm}^3$ / revolution.

Maximum pressures up to **320 bar**.

Versions w/ flanges: Ø50,8 – Standard European;

Rotation speeds up to **3000 rpm**.

Available shafts: Tapered 1:8 Woodruff key;  
Parallel with key;  
Splined.

A version with internal drainage is also available.

# Summary: Displacements - Pressures - Speeds

|       | Type       | Displacement               | Max. Pressure | Min speed | Max speed |
|-------|------------|----------------------------|---------------|-----------|-----------|
| XV-0R | XV-0R/0.17 | 0.16 cm <sup>3</sup> /rev  | 260 bar       | 700 rpm   | 9000 rpm  |
|       | XV-0R/0.25 | 0.24 cm <sup>3</sup> /rev  | 260 bar       | 700 rpm   | 9000 rpm  |
|       | XV-0R/0.45 | 0.45 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 9000 rpm  |
|       | XV-0R/0.57 | 0.56 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 9000 rpm  |
|       | XV-0R/0.76 | 0.75 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 9000 rpm  |
|       | XV-0R/0.98 | 0.92 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 6000 rpm  |
|       | XV-0R/1.27 | 1.26 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 6000 rpm  |
|       | XV-0R/1.52 | 1.48 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 6000 rpm  |
|       | XV-0R/2.30 | 2.28 cm <sup>3</sup> /rev  | 210 bar       | 700 rpm   | 5000 rpm  |
| XV-1R | XV-1R/0.9  | 0.91 cm <sup>3</sup> /rev  | 280 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/1.2  | 1.17 cm <sup>3</sup> /rev  | 290 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/1.7  | 1.56 cm <sup>3</sup> /rev  | 290 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/2.2  | 2.08 cm <sup>3</sup> /rev  | 290 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/2.6  | 2.60 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/3.2  | 3.12 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/3.8  | 3.64 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/4.3  | 4.16 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/4.9  | 4.94 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 6000 rpm  |
|       | XV-1R/5.9  | 5.85 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 5000 rpm  |
|       | XV-1R/6.5  | 6.50 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 5000 rpm  |
|       | XV-1R/7.8  | 7.54 cm <sup>3</sup> /rev  | 260 bar       | 700 rpm   | 5000 rpm  |
| XV-2R | XV-2R/4    | 4.2 cm <sup>3</sup> /rev   | 300 bar       | 700 rpm   | 3500 rpm  |
|       | XV-2R/6    | 6.0 cm <sup>3</sup> /rev   | 300 bar       | 700 rpm   | 3500 rpm  |
|       | XV-2R/9    | 8.4 cm <sup>3</sup> /rev   | 300 bar       | 700 rpm   | 3500 rpm  |
|       | XV-2R/11   | 10.8 cm <sup>3</sup> /rev  | 300 bar       | 700 rpm   | 3500 rpm  |
|       | XV-2R/14   | 14.4 cm <sup>3</sup> /rev  | 290 bar       | 700 rpm   | 3500 rpm  |
|       | XV-2R/17   | 16.8 cm <sup>3</sup> /rev  | 270 bar       | 700 rpm   | 3500 rpm  |
|       | XV-2R/19   | 19.2 cm <sup>3</sup> /rev  | 250 bar       | 700 rpm   | 3000 rpm  |
|       | XV-2R/22   | 22.8 cm <sup>3</sup> /rev  | 240 bar       | 700 rpm   | 3000 rpm  |
|       | XV-2R/26   | 26.2 cm <sup>3</sup> /rev  | 210 bar       | 700 rpm   | 3000 rpm  |
|       | XV-2R/30   | 30.0 cm <sup>3</sup> /rev  | 200 bar       | 700 rpm   | 2500 rpm  |
|       | XV-2R/34   | 34.2 cm <sup>3</sup> /rev  | 190 bar       | 700 rpm   | 2500 rpm  |
|       | XV-2R/40   | 39.6 cm <sup>3</sup> /rev  | 180 bar       | 700 rpm   | 2000 rpm  |
| XV-3R | XV-3R/15   | 14.89 cm <sup>3</sup> /rev | 320 bar       | 700 rpm   | 3000 rpm  |
|       | XV-3R/18   | 17.37 cm <sup>3</sup> /rev | 320 bar       | 700 rpm   | 3000 rpm  |
|       | XV-3R/21   | 21.10 cm <sup>3</sup> /rev | 300 bar       | 700 rpm   | 3000 rpm  |
|       | XV-3R/27   | 26.97 cm <sup>3</sup> /rev | 270 bar       | 700 rpm   | 3000 rpm  |
|       | XV-3R/32   | 32.27 cm <sup>3</sup> /rev | 270 bar       | 700 rpm   | 3000 rpm  |
|       | XV-3R/38   | 38.47 cm <sup>3</sup> /rev | 270 bar       | 700 rpm   | 2800 rpm  |
|       | XV-3R/43   | 43.44 cm <sup>3</sup> /rev | 250 bar       | 700 rpm   | 2800 rpm  |
|       | XV-3R/47   | 47.16 cm <sup>3</sup> /rev | 250 bar       | 700 rpm   | 2800 rpm  |
|       | XV-3R/51   | 50.88 cm <sup>3</sup> /rev | 250 bar       | 700 rpm   | 2800 rpm  |
|       | XV-3R/54   | 54.60 cm <sup>3</sup> /rev | 250 bar       | 700 rpm   | 2300 rpm  |
|       | XV-3R/61   | 60.81 cm <sup>3</sup> /rev | 220 bar       | 700 rpm   | 2300 rpm  |
|       | XV-3R/64   | 64.53 cm <sup>3</sup> /rev | 220 bar       | 700 rpm   | 2300 rpm  |
|       | XV-3R/70   | 70.74 cm <sup>3</sup> /rev | 210 bar       | 700 rpm   | 2300 rpm  |
|       | XV-3R/74   | 74.46 cm <sup>3</sup> /rev | 190 bar       | 700 rpm   | 2300 rpm  |
|       | XV-3R/90   | 86.87 cm <sup>3</sup> /rev | 160 bar       | 700 rpm   | 2300 rpm  |

## General technical data

|                                          |                                                       |
|------------------------------------------|-------------------------------------------------------|
| Type of fluid to be used                 | Mineral-based hydraulic oil HLP HV (D IN 51524)       |
| Minimum operating viscosity              | 10 mm <sup>2</sup> /s                                 |
| Maximum operating viscosity              | 100 mm <sup>2</sup> /s                                |
| Maximum admissible viscosity at start-up | 1500 mm <sup>2</sup> /s                               |
| Recommended viscosity                    | 20 mm <sup>2</sup> /s - 100 mm <sup>2</sup> /s        |
| Ambient temperature                      | -20 °C - 60°C                                         |
| Fluid operating temperature              | -15°C - 80°C                                          |
| Recommended fluid operating temperature  | 30°C – 50° C                                          |
| For temperatures above 120°C             | Request FKM seals ( V iton)                           |
| Max. inlet fluid suction pressure (IN)   | 0.02-0.08 bars                                        |
| Max. inlet fluid pressure (IN)           | 0.3 - 0.5 bars (with internal drainage)               |
| Max. drain fluid pressure (DREN)         | 0.3 - 0.5 bars (with external drainage)               |
| Inlet fluid filtering (IN)               | 30 - 60 Microns                                       |
| Outlet fluid filtering (OUT)             | 10 - 25 Microns                                       |
| Max. inlet fluid speed (IN)              | 0.5 - 1.5 m/s                                         |
| Max. outlet fluid speed (OUT)            | 3.0 - 5.5m/s                                          |
| Use of water-glycol (HF-C)               | max n. of revolutions 1100 rpm; max pressure 170 bars |

## Flow rate tables

| TYPE       | cm3/<br>rev |                 | rpm   |       |       |       |       |       |       |       |       |        |       |       |       |       |       |
|------------|-------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|
|            |             |                 | 700   | 1000  | 1500  | 2000  | 2500  | 3000  | 3500  | 4000  | 4500  | 5000   | 5500  | 6000  | 7000  | 8000  | 9000  |
| XV 0R/0.17 | 0,16        | Flow rate l/min | 0,106 | 0,152 | 0,228 | 0,304 | 0,380 | 0,456 | 0,532 | 0,608 | 0,684 | 0,760  | 0,836 | 0,912 | 1,064 | 1,216 | 1,368 |
| XV 0R/0.25 | 0,24        |                 | 0,160 | 0,228 | 0,342 | 0,456 | 0,570 | 0,684 | 0,798 | 0,912 | 1,026 | 1,140  | 1,254 | 1,368 | 1,596 | 1,824 | 2,052 |
| XV 0R/0.45 | 0,45        |                 | 0,299 | 0,428 | 0,641 | 0,855 | 1,069 | 1,283 | 1,496 | 1,710 | 1,924 | 2,138  | 2,351 | 2,565 | 2,993 | 3,420 | 3,848 |
| XV 0R/0.57 | 0,56        |                 | 0,372 | 0,532 | 0,798 | 1,064 | 1,330 | 1,596 | 1,862 | 2,128 | 2,394 | 2,660  | 2,926 | 3,192 | 3,724 | 4,256 | 4,788 |
| XV 0R/0.76 | 0,75        |                 | 0,499 | 0,713 | 1,069 | 1,425 | 1,781 | 2,138 | 2,494 | 2,850 | 3,206 | 3,563  | 3,919 | 4,275 | 4,988 | 5,700 | 6,413 |
| XV 0R/0.98 | 0,92        |                 | 0,612 | 0,874 | 1,311 | 1,748 | 2,185 | 2,622 | 3,059 | 3,496 | 3,933 | 4,370  | 4,807 | 5,244 |       |       |       |
| XV 0R/1.27 | 1,26        |                 | 0,838 | 1,197 | 1,796 | 2,394 | 2,993 | 3,591 | 4,190 | 4,788 | 5,387 | 5,985  | 6,584 | 7,182 |       |       |       |
| XV 0R/1.52 | 1,48        |                 | 0,984 | 1,406 | 2,109 | 2,812 | 3,515 | 4,218 | 4,921 | 5,624 | 6,327 | 7,030  | 7,733 | 8,436 |       |       |       |
| XV 0R/2.30 | 2,28        |                 | 1,516 | 2,166 | 3,249 | 4,332 | 5,415 | 6,498 | 7,581 | 8,664 | 9,747 | 10,830 |       |       |       |       |       |

| TYPE      | cm3/<br>rev |                 | rpm   |       |        |        |        |        |        |        |        |        |        |        |
|-----------|-------------|-----------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|           |             |                 | 700   | 1000  | 1500   | 2000   | 2500   | 3000   | 3500   | 4000   | 4500   | 5000   | 5500   | 6000   |
| XV 1R/0.9 | 0,91        | Flow rate l/min | 0,630 | 0,900 | 1,350  | 1,800  | 2,250  | 2,700  | 3,150  | 3,600  | 4,050  | 4,500  | 4,950  | 5,400  |
| XV 1R/1.2 | 1,17        |                 | 0,840 | 1,200 | 1,800  | 2,400  | 3,000  | 3,600  | 4,200  | 4,800  | 5,400  | 6,000  | 6,600  | 7,200  |
| XV 1R/1.7 | 1,56        |                 | 1,190 | 1,700 | 2,550  | 3,400  | 4,250  | 5,100  | 5,950  | 6,800  | 7,650  | 8,500  | 9,350  | 10,200 |
| XV 1R/2.2 | 2,08        |                 | 1,540 | 2,200 | 3,300  | 4,400  | 5,500  | 6,600  | 7,700  | 8,800  | 9,900  | 11,000 | 12,100 | 13,200 |
| XV 1R/2.6 | 2,6         |                 | 1,820 | 2,600 | 3,900  | 5,200  | 6,500  | 7,800  | 9,100  | 10,400 | 11,700 | 13,000 | 14,300 | 15,600 |
| XV 1R/3.2 | 3,12        |                 | 2,240 | 3,200 | 4,800  | 6,400  | 8,000  | 9,600  | 11,200 | 12,800 | 14,400 | 16,000 | 17,600 | 19,200 |
| XV 1R/3.8 | 3,64        |                 | 2,660 | 3,800 | 5,700  | 7,600  | 9,500  | 11,400 | 13,300 | 15,200 | 17,100 | 19,000 | 20,900 | 22,800 |
| XV 1R/4.3 | 4,16        |                 | 3,010 | 4,300 | 6,450  | 8,600  | 10,750 | 12,900 | 15,050 | 17,200 | 19,350 | 21,500 | 23,650 | 25,800 |
| XV 1R/4.9 | 4,94        |                 | 3,430 | 4,900 | 7,350  | 9,800  | 12,250 | 14,700 | 17,150 | 19,600 | 22,050 | 24,500 | 26,950 | 29,400 |
| XV 1R/5.9 | 5,85        |                 | 4,130 | 5,900 | 8,850  | 11,800 | 14,750 | 17,700 | 20,650 | 23,600 | 26,550 | 29,500 |        |        |
| XV 1R/6.5 | 6,5         |                 | 4,550 | 6,500 | 9,750  | 13,000 | 16,250 | 19,500 | 22,750 | 26,000 | 29,250 | 32,500 |        |        |
| XV 1R/7.8 | 7,54        |                 | 5,460 | 7,800 | 11,700 | 15,600 | 19,500 | 23,400 | 27,300 | 31,200 | 35,100 | 39,000 |        |        |
| XV 1P/9.8 | 9,88        |                 | 6,860 | 9,800 | 14,700 | 19,600 | 24,500 | 29,400 | 34,300 | 39,200 |        |        |        |        |

| TYPE     | cm3/rev |                 | rpm    |        |        |        |        |        |        |                 |
|----------|---------|-----------------|--------|--------|--------|--------|--------|--------|--------|-----------------|
|          |         |                 | 700    | 1000   | 1500   | 2000   | 2500   | 3000   | 3500   |                 |
| XV 2R/4  | 4,2     | Flow rate l/min | 2,800  | 4,000  | 6,000  | 8,000  | 10,000 | 12,000 | 14,000 | Flow rate l/min |
| XV 2R/6  | 6       |                 | 4,200  | 6,000  | 9,000  | 12,000 | 15,000 | 18,000 | 21,000 |                 |
| XV 2R/9  | 8,4     |                 | 6,300  | 9,000  | 13,500 | 18,000 | 22,500 | 27,000 | 31,500 |                 |
| XV 2R/11 | 10,8    |                 | 7,700  | 11,000 | 16,500 | 22,000 | 27,500 | 33,000 | 38,500 |                 |
| XV 2R/14 | 14,4    |                 | 9,800  | 14,000 | 21,000 | 28,000 | 35,000 | 42,000 | 29,000 |                 |
| XV 2R/17 | 16,8    |                 | 11,900 | 17,000 | 25,500 | 34,000 | 42,500 | 51,000 | 59,500 |                 |
| XV 2R/19 | 19,2    |                 | 13,300 | 19,000 | 28,500 | 38,000 | 47,500 | 57,000 |        |                 |
| XV 2R/22 | 22,8    |                 | 15,400 | 22,000 | 33,000 | 44,000 | 55,000 | 66,000 |        |                 |
| XV 2R/26 | 26,2    |                 | 18,200 | 26,000 | 39,000 | 52,000 | 65,000 | 78,000 |        |                 |
| XV 2R/30 | 30      |                 | 21,000 | 30,000 | 45,000 | 60,000 | 75,000 |        |        |                 |
| XV 2R/34 | 34,2    |                 | 23,800 | 34,000 | 51,000 | 68,000 | 85,000 |        |        |                 |
| XV 2R/40 | 39,6    |                 | 28,000 | 40,000 | 60,000 | 80,000 |        |        |        |                 |

| TYPE     | cm3/rev |                 | rpm   |       |        |        |        |        |       |                 |
|----------|---------|-----------------|-------|-------|--------|--------|--------|--------|-------|-----------------|
|          |         |                 | 700   | 1000  | 1500   | 2000   | 2300   | 2500   | 3000  |                 |
| XV 3R/15 | 14,89   | Flow rate l/min | 9,90  | 14,15 | 21,22  | 28,29  | 32,54  | 35,37  | 42,44 | Flow rate l/min |
| XV 3R/18 | 17,37   |                 | 11,55 | 16,51 | 24,76  | 33,01  | 37,96  | 41,26  | 49,52 |                 |
| XV 3R/21 | 21,10   |                 | 14,03 | 20,04 | 30,06  | 40,08  | 46,10  | 50,11  | 60,13 |                 |
| XV 3R/27 | 26,97   |                 | 17,94 | 25,62 | 38,43  | 51,24  | 58,93  | 64,05  | 76,86 |                 |
| XV 3R/32 | 32,27   |                 | 21,46 | 30,65 | 45,98  | 61,31  | 70,50  | 76,63  | 91,96 |                 |
| XV 3R/38 | 38,47   |                 | 25,58 | 36,55 | 54,82  | 73,09  | 84,06  | 91,37  |       |                 |
| XV 3R/43 | 43,44   |                 | 28,88 | 41,26 | 61,89  | 82,53  | 94,91  | 103,16 |       |                 |
| XV 3R/47 | 47,16   |                 | 31,36 | 44,80 | 67,20  | 89,60  | 103,04 | 112,00 |       |                 |
| XV 3R/51 | 50,88   |                 | 33,84 | 48,34 | 72,51  | 96,67  | 111,17 |        |       |                 |
| XV 3R/54 | 54,60   |                 | 36,31 | 51,87 | 77,81  | 103,75 | 119,31 |        |       |                 |
| XV 3R/61 | 60,81   |                 | 40,44 | 57,77 | 86,65  | 115,54 | 132,87 |        |       |                 |
| XV 3R/64 | 64,53   |                 | 42,91 | 61,31 | 91,96  | 122,61 | 141,00 |        |       |                 |
| XV 3R/70 | 70,74   |                 | 47,04 | 67,20 | 100,80 | 134,40 | 154,56 |        |       |                 |
| XV 3R/74 | 74,46   |                 | 49,52 | 70,74 | 106,11 | 141,47 | 162,70 |        |       |                 |
| XV 3R/90 | 86,87   |                 | 57,77 | 82,53 | 123,79 | 165,05 | 189,81 |        |       |                 |

# TORQUES ALLOWED ON SHAFT:

| FORMULA FOR EVALUATING SHAFT                                                                                       |       | SHAFT [IDENTIFIER] - CODE - DESCRIPTION                                 | T.2 [Nm] |
|--------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------|----------|
| $T.2 \leq \frac{v_i \times \Delta p}{20 \times \pi \times \eta m}$ <p>T.2 = max. torque allowed by shaft [ Nm]</p> | XV-0R | [A] - CI001 - Cilindrico ø 7 - M 7x1 - linguetta sp.2                   | 2        |
|                                                                                                                    |       | [B] - CF001 - Codolo fresato ø 7 - sp. 5                                | 9,2      |
|                                                                                                                    |       | [F] - CF005 - Codolo fresato ø 7 - sp.4,5 L = 9                         | 8        |
|                                                                                                                    | XV-1R | [A] - CI001 - Parallel ø12 - M10x1 - key thk. 3                         | 25,8     |
|                                                                                                                    |       | [B] - CI002 - Parallel ø12.7 - key thk. 3.2 (SAE)                       | 32,8     |
|                                                                                                                    |       | [C] - CF001 - Milled shank ø10 - thk.5 ("BH" Standard German)           | 13,8     |
|                                                                                                                    |       | [D] - CF002 - Milled shank ø10 - thk.5                                  | 13,8     |
|                                                                                                                    |       | [E] - CF003 - Milled shank ø11 - thk.6.63 (SAE)                         | 25,8     |
|                                                                                                                    |       | [F] - CO001 - Tapered 1:8 - ø10 - M7x1 - key thk.2.4                    | 43       |
|                                                                                                                    |       | [G] - CO002 - Tapered 1:8 - ø14 - M10x1 - key thk.3                     | 119,8    |
|                                                                                                                    |       | [I] - CO004 - Tapered 1:8 - ø12.7 - 5/16" 24UNF-2A - key thk.3.2 (SAE)  | 90,4     |
|                                                                                                                    |       | [J] - SCF04 - Splined ø11.7 - z=6, H=17.5, m=1.6, DIN 5482 12x9         | 22,6     |
|                                                                                                                    |       | [K] - SCF05 - Splined ø12.344, z=9, H=19, SAE J498 9T 20/40DB           | 32,2     |
|                                                                                                                    |       | [L] - SCF02 - Splined ø11.9, z=15, H=17.5, m=0.75                       | 42,8     |
|                                                                                                                    |       | [O] - CO002+HK - Tapered 1:8 - ø14 - M10x1, HK 14-12, key thk.3         | 119,8    |
|                                                                                                                    |       | [P] - CI001+HK - Parallel ø12 - M10x1 with bearing HK 14-12 - key thk.3 | 25,8     |
|                                                                                                                    |       | [Q] - SCF01 - Splined ø11.9, z=15, H=9, m=0.75                          | 42,8     |
|                                                                                                                    |       | [R] - SCF03 - Splined ø11.9, z=15, H=9, m=0.75                          | 42,8     |
|                                                                                                                    | XV-2R | [A] - CI001 - Parallel ø15 - M6x1 - key thk.4                           | 44.1     |
|                                                                                                                    |       | [B] - CI002 - Parallel ø15.875 - 1/4"28-UNF key thk.4 (SAE A)           | 67.5     |
|                                                                                                                    |       | [C] - CF001 - Miled shank ø15 - thk.8 ("BH" Standard German)            | 60.5     |
|                                                                                                                    |       | [E] - CO001 - Tapered 1:8 - ø17,4 - M12x1,5 - key thk.4                 | 233.2    |
|                                                                                                                    |       | [F] - CO002 - Tapered 1:5 - ø17,4 - M12x1,5 - key thk.3                 | 233.2    |
|                                                                                                                    |       | [G] - SCF02 - Splined ø16,5 - z=9, H=13, m=1.6 DIN 5482 17x14           | 86.1     |
|                                                                                                                    |       | [H] - SCF03 - Splined ø16.5 - z=9, H=18,8, m=1,6 DIN 5482 17x14         | 86.1     |
|                                                                                                                    |       | [I] - SCF04 - Splined ø15.456 z=9, H=22.5, SAE J498 9T 16/32DP          | 67.1     |
|                                                                                                                    |       | [K] - SCF05 - Splined ø16.5 z=9 H=8,1 m=1.6 DIN 5482 17x14              | 86.2     |
|                                                                                                                    |       | [L] - SCF01- Splined ø16.5 z=9 H=9,2 m=1.6 DIN 5482 17x14               | 86.2     |
|                                                                                                                    | XV-3R | [M] - CO001 - Tapered 1:8 - ø17,4 - M12x1,5 - key thk.3,2               | 233.2    |
|                                                                                                                    |       | [A] - CO001 - Tapered 1:8 - ø22 - M14x1.5 - key thk.4                   | 482      |
|                                                                                                                    |       | [B] - CI001 - Parallel ø20 - M8 - key thk.5                             | 181      |
|                                                                                                                    |       | [C] - SCF03 - Splined ø21.5, z=13, H=25, m=1,6                          | 223      |
|                                                                                                                    |       | [H] - CI004 - Parallel ø22.225- 1/4"28-UNF key thk..6.35 (SAE B)        | 180      |
|                                                                                                                    |       | [I] - SCF04 - Splined ø21.8059, z=13, H=25, SAE J498 9T 16/32DP         | 264      |

## NOTES:

For assemblies with a coupling, you should choose one as balanced as possible in order to reduce the vibrations and dynamic stresses to which the pump shaft may be subject.

**Always make sure that the torque applied is less than or equal to the admissible torque of the shaft.**

Do not apply a direct axial or radial load on the pump shaft; if necessary, use suitable supports.

Always use well-filtered oils containing no water or other emulsifying substance.

Never run the pump with oil and air solutions.

For pumps with outlets on the flange, it is recommended not to exceed a flow rate of

|           |       |
|-----------|-------|
| 4 l/min   | XV-0R |
| 20 l/min. | XV-1R |
| 35 l/min  | XV-2R |

## Useful calculation formulas

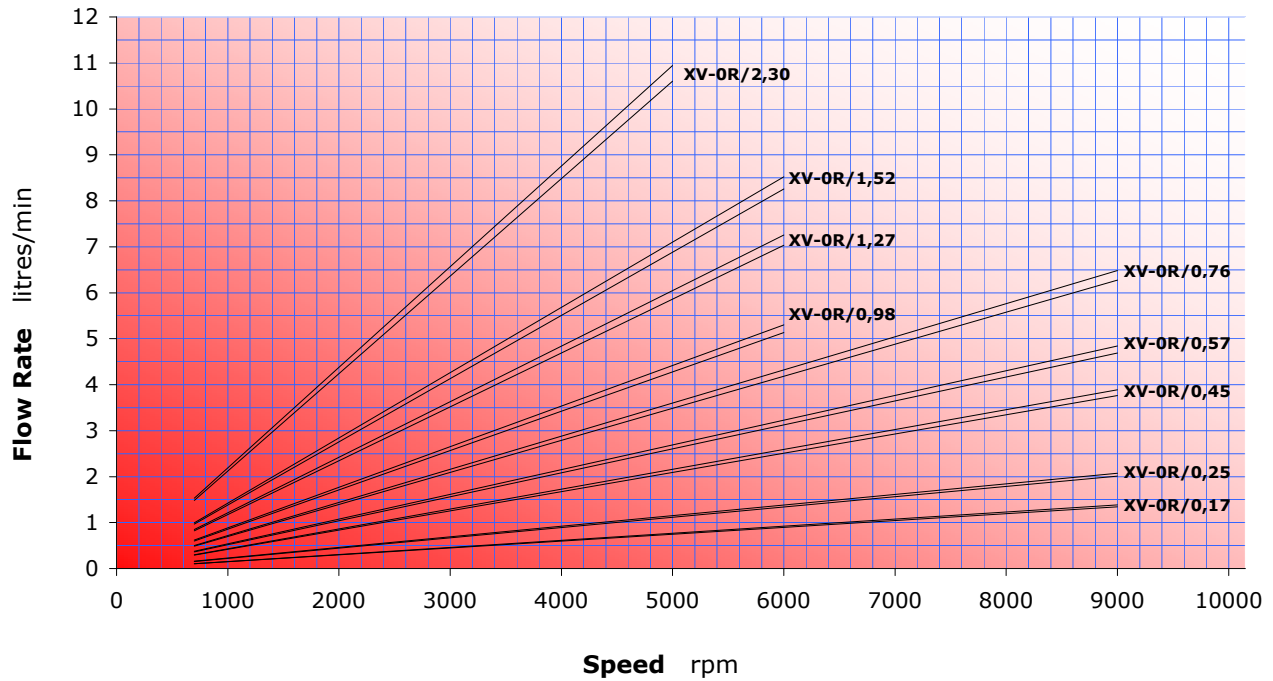
| SYMBOL, UNIT OF MEASUREMENT, DESCRIPTION |                       |                                                                                                             |
|------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------|
| qv                                       | l/min                 | Flow rate                                                                                                   |
| vi                                       | cm <sup>3</sup> /rev. | Displacement (volume of oil displaced per complete revolution of the shaft)                                 |
| n                                        | rpm                   | Shaft rotation speed                                                                                        |
| p1                                       | bar                   | inlet pressure                                                                                              |
| p2                                       | bar                   | outlet pressure                                                                                             |
| Δp                                       | bar                   | Δp=p2 - p1 difference between outlet (OUT) and inlet (IN) pressure                                          |
| Ph                                       | kW                    | Hydraulic power delivered                                                                                   |
| Pm                                       | kW                    | Mechanical power absorbed                                                                                   |
| T                                        | Nm                    | Torque absorbed by shaft                                                                                    |
| ηv                                       | -                     | 0.91 – 0.96 volumetric efficiency<br>(volumetric ratio between operation under load and loadless operation) |
| ηm                                       | -                     | 0.85 – 0.90 mechanical efficiency                                                                           |
| ηt                                       | -                     | ηt = ηv x ηm total efficiency                                                                               |

| Basic Formulas                                                  | Derived Formulas                                                |                                                              |
|-----------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------|
| $qv = \frac{vi \times n}{1000} \times \eta v$                   | $vi = \frac{qv \times 1000}{n \times \eta v}$                   | $n = \frac{qv \times 1000}{vi \times \eta v}$                |
| $T = \frac{vi \times \Delta p}{20 \times \pi \times \eta m}$    | $vi = \frac{T \times 20 \times \pi \times \eta m}{\Delta p}$    | $\Delta p = \frac{T \times 20 \times \pi \times \eta m}{vi}$ |
| $Ph = \frac{qv \times \Delta p}{600}$                           | $qv = \frac{Ph \times 600}{\Delta p}$                           | $\Delta p = \frac{Ph \times 600}{qv}$                        |
| $Pm = \frac{vi \times \Delta p \times n}{600000 \times \eta m}$ | $vi = \frac{Pm \times 600000 \times \eta m}{\Delta p \times n}$ | $\Delta p = \frac{600000 \times \eta m}{vi \times n}$        |

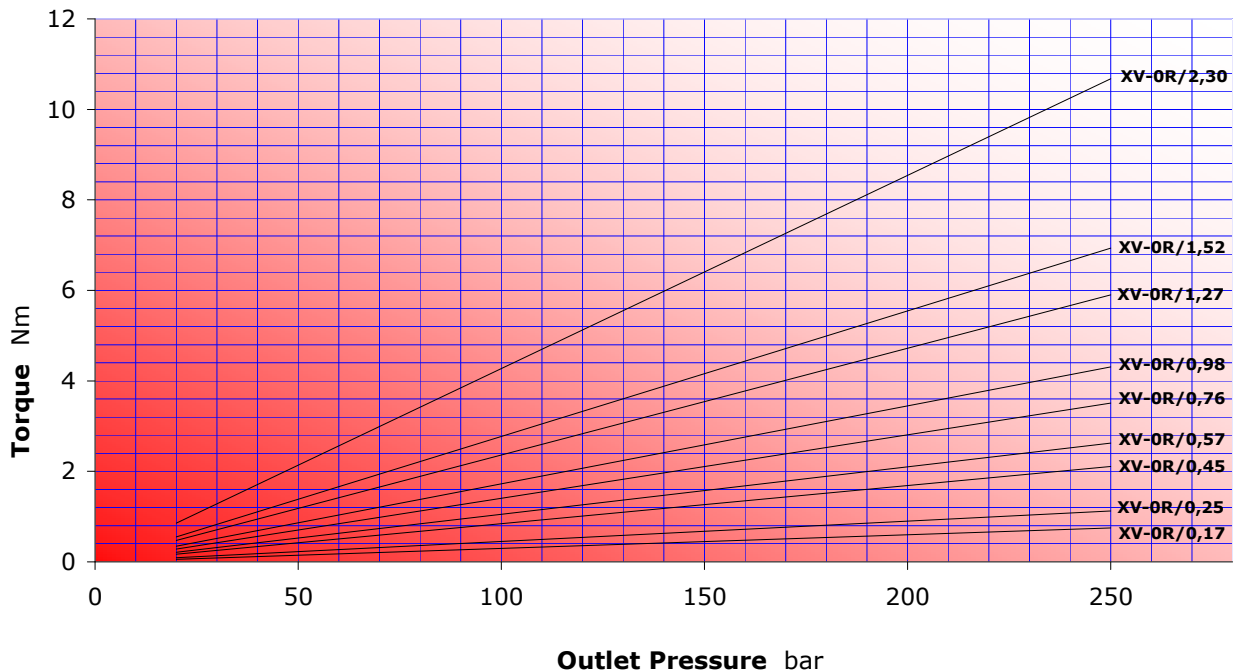
## Constructive features

| PART                      | MATERIAL                                                                                                                         | MECHANICAL FEATURES                                                                                   |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>PUMP BODY</b>          | Extruded alloy Series 7000, heat treated and anodised                                                                            | Rp = 345 N/mm <sup>2</sup> (Yield strength)<br>Rm = 382 N/mm <sup>2</sup> (Breaking strength)         |
| <b>FLANGE AND COVER</b>   | Die-cast aluminium alloy with excellent mechanical features, heat treated and anodised                                           | Rp = 310÷350 N/mm <sup>2</sup> (Yield strength)<br>Rm = 350÷400 N/mm <sup>2</sup> (Breaking strength) |
| <b>GEAR BUSH BEARINGS</b> | Special heat-treated tin alloy with excellent mechanical features and high anti-friction capacity.<br>Self-lubricating bushes DU | Rp = 350 N/mm <sup>2</sup> (Yield strength)<br>Rm = 390 N/mm <sup>2</sup> (Breaking strength)         |
| <b>GEARS</b>              | Steel UNI 7846                                                                                                                   | Rs = 980 N/mm <sup>2</sup> (Yield strength)<br>Rm = 1270÷1570 N/mm <sup>2</sup> (Breaking strength)   |
| <b>SEALS</b>              | A 727 Standard Acrylonitrile<br>F 975 Viton FKM                                                                                  | 70 Shore, thermal resistance 120°C<br>80 Shore, thermal resistance 200°C                              |
| <b>BACK-UP RINGS</b>      | Virgin PTFE<br>Tecnil Q3                                                                                                         |                                                                                                       |

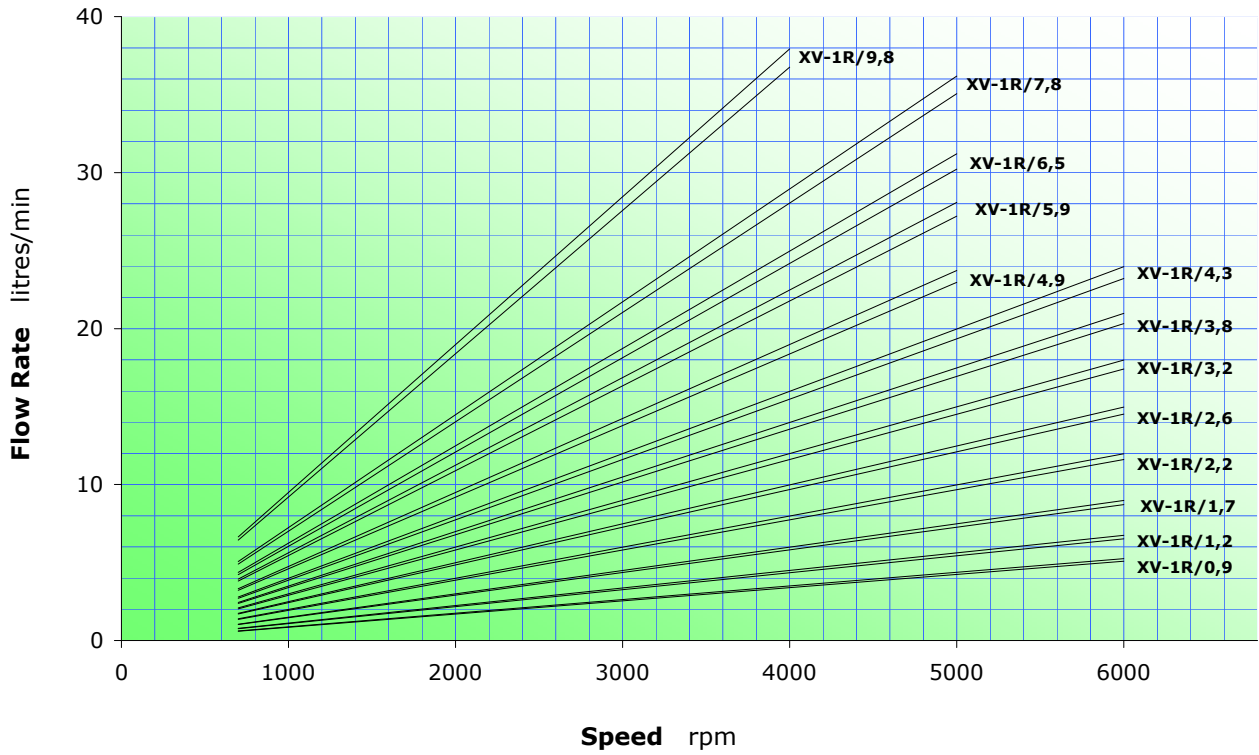
**XV-0R CHARACTERISTIC FLOW RATE CURVES**



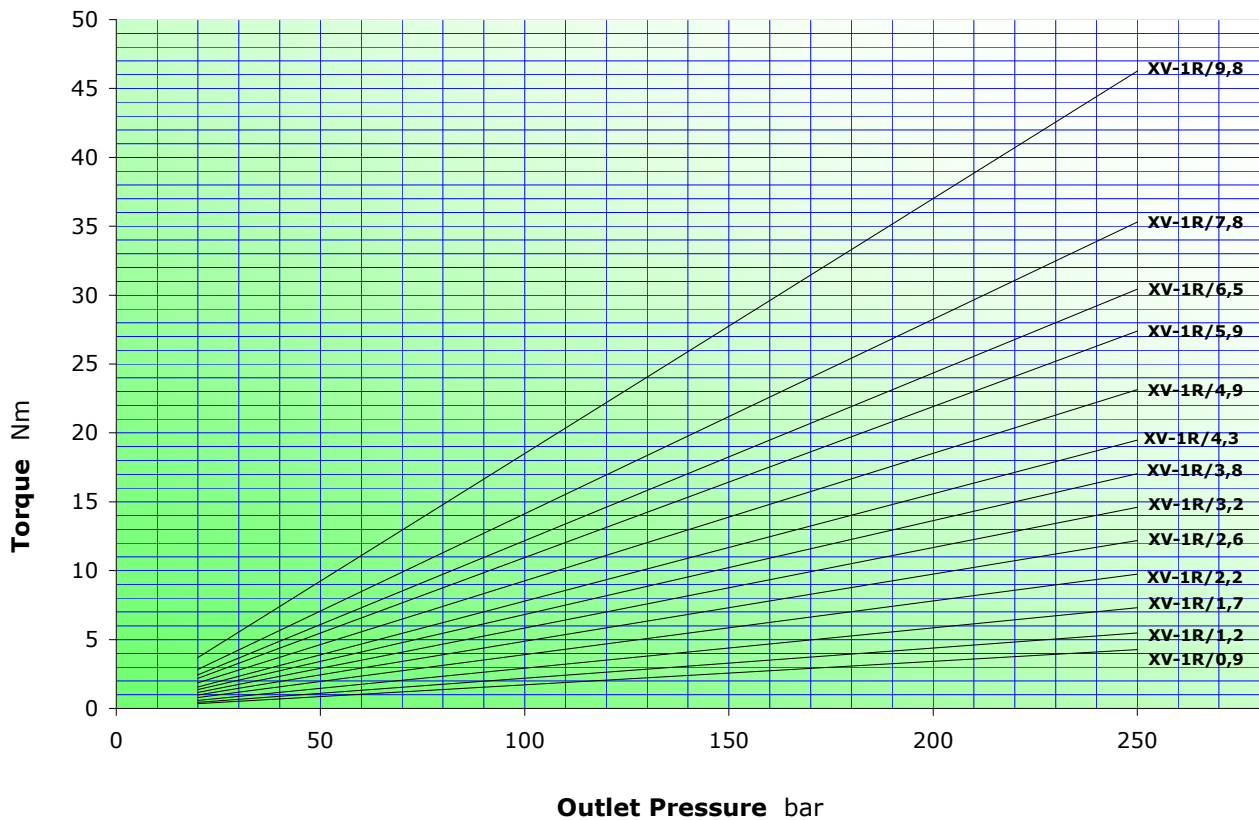
**XV-0R MOTOR TORQUE**



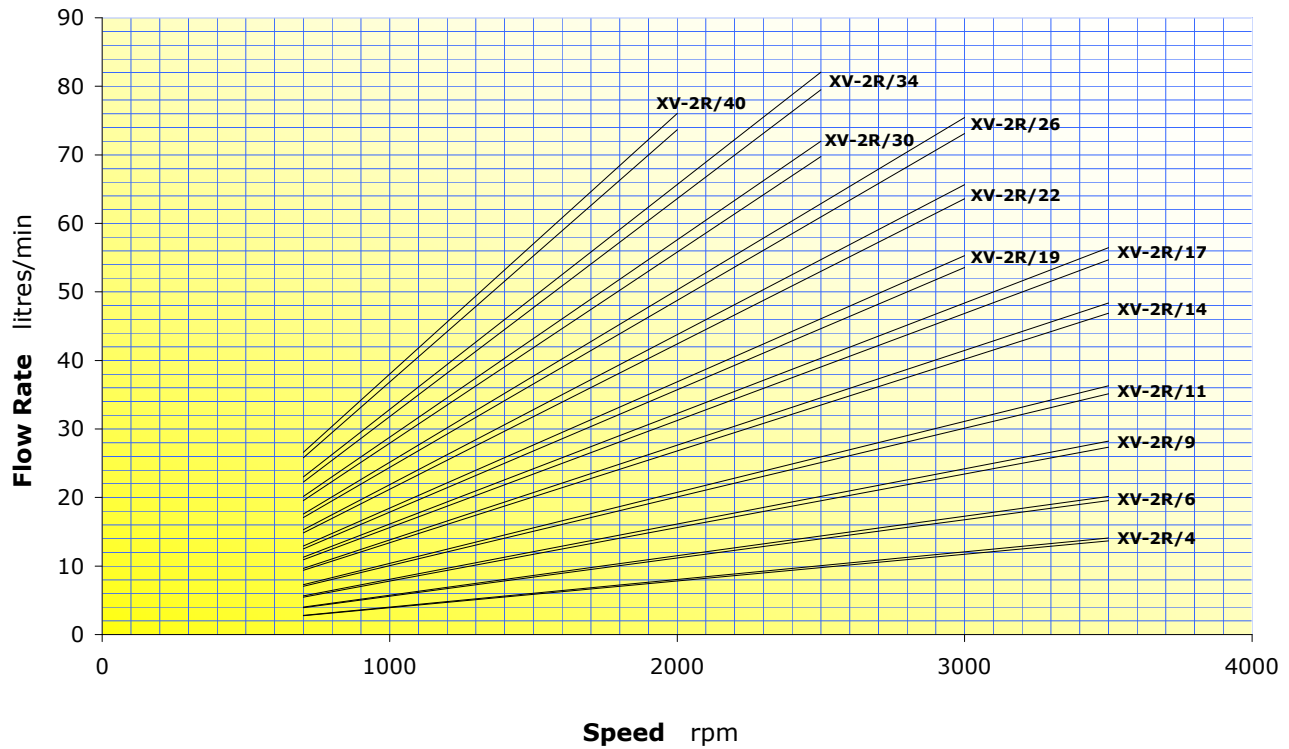
**XV-1R CHARACTERISTIC FLOW RATE CURVES**



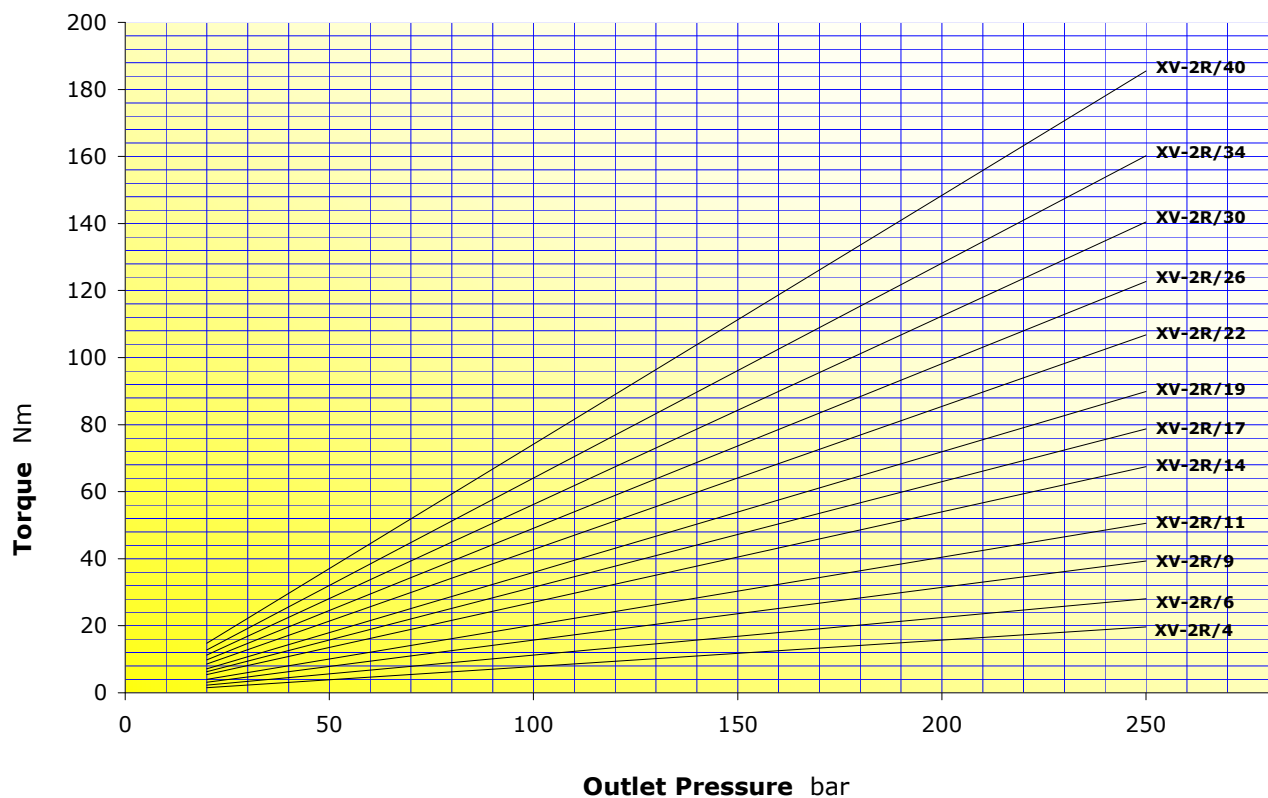
**XV-1R MOTOR TORQUE**



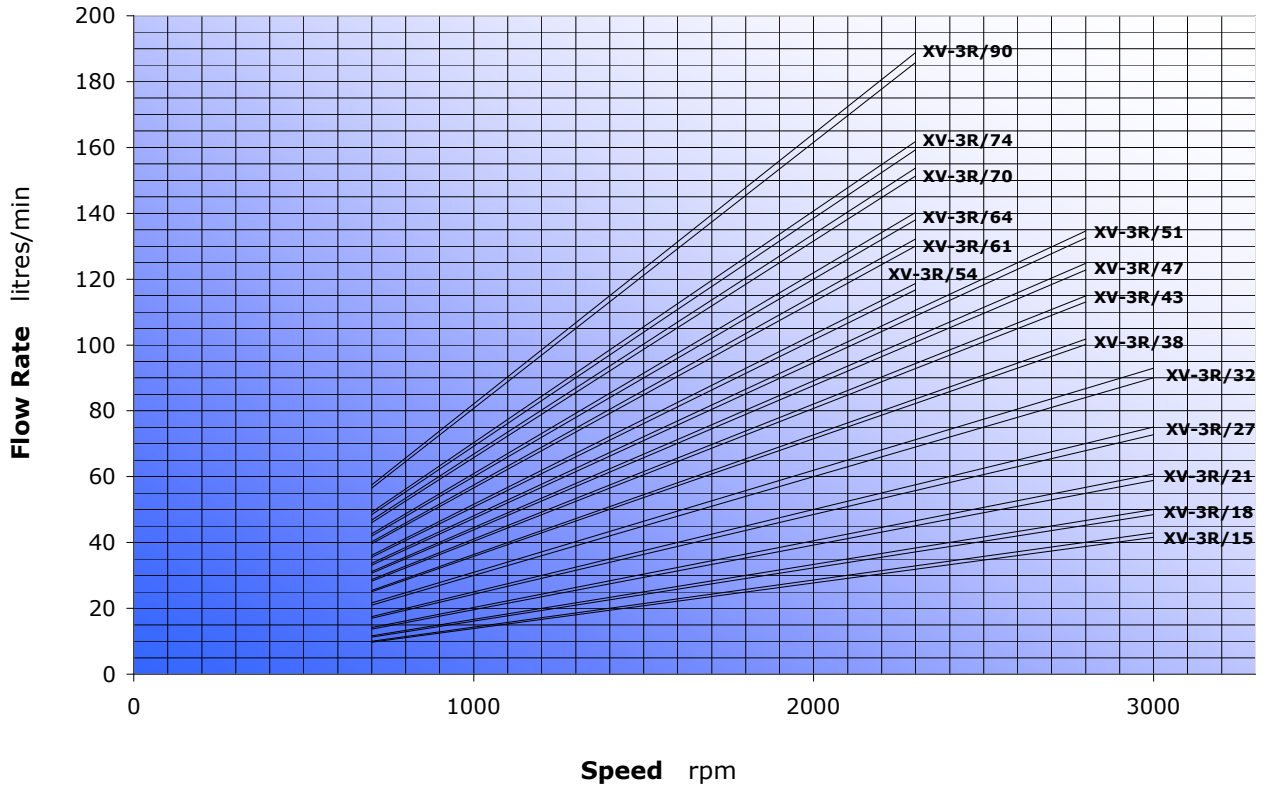
**XV-2R CHARACTERISTIC FLOW RATE CURVES**



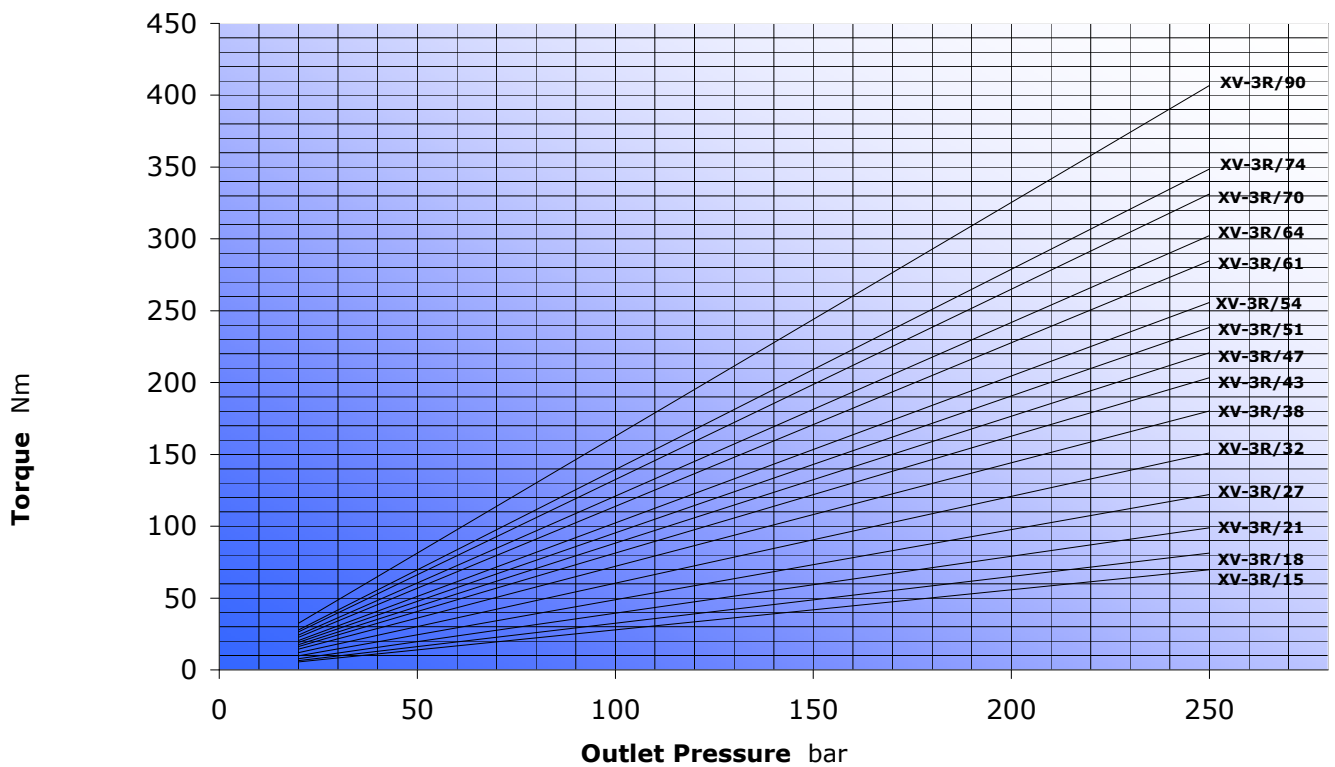
**XV-2R MOTOR TORQUE**



**XV-3R CHARACTERISTIC FLOW RATE CURVES**



**XV-3R MOTOR TORQUE**



# reversible pump - series XV

STANDARD PUMP  
ø22 FLANGE - PARALLEL SHAFT

**XV-OR**

**X 0 R 06 01 A B B E**

|              |     |                                         |
|--------------|-----|-----------------------------------------|
| Series       | X   | series XV                               |
| Group        | 0   | group 0                                 |
| Category     | R   | reversible pump                         |
| Displacement | 06  | 0.76                                    |
| Flange       | 01  | Ø22 reversible rotation                 |
| Shaft        | A   | CI001 - Parallel ø7 - M7x1 - key thk. 2 |
| Body         | IN  | B inlet - 1/4" GAS                      |
|              | OUT | B outlet - 1/4" GAS                     |
| Cover        | E   | reversible w/external drainage          |



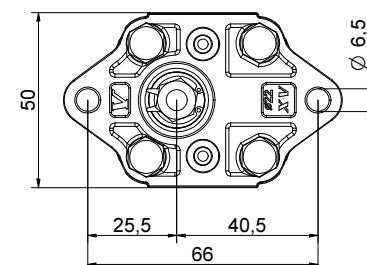
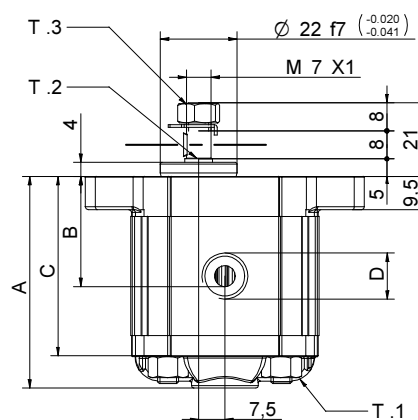
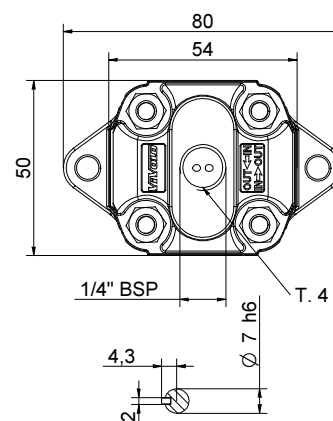
**XR001**

**Technical data table**

| TYPE       | Displacement | Max. Pressure |        | CODE                |                     |
|------------|--------------|---------------|--------|---------------------|---------------------|
|            | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-OR/0.17 | 0,16         | 220           | 260    | X 0 R 01 01 A B B E | X 0 R 01 01 A B B F |
| XV-OR/0.25 | 0,24         | 220           | 260    | X 0 R 02 01 A B B E | X 0 R 02 01 A B B F |
| XV-OR/0.45 | 0,45         | 220           | 280    | X 0 R 04 01 A B B E | X 0 R 04 01 A B B F |
| XV-OR/0.57 | 0,56         | 220           | 280    | X 0 R 05 01 A B B E | X 0 R 05 01 A B B F |
| XV-OR/0.76 | 0,75         | 220           | 280    | X 0 R 06 01 A B B E | X 0 R 06 01 A B B F |
| XV-OR/0.98 | 0,92         | 220           | 280    | X 0 R 07 01 A B B E | X 0 R 07 01 A B B F |
| XV-OR/1.27 | 1,26         | 220           | 280    | X 0 R 09 01 A B B E | X 0 R 09 01 A B B F |
| XV-OR/1.52 | 1,48         | 220           | 280    | X 0 R 11 01 A B B E | X 0 R 11 01 A B B F |
| XV-OR/2.30 | 2,28         | 190           | 210    | X 0 R 13 01 A B B E | X 0 R 13 01 A B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft



25/08/04 XR0601ABBE.dff

T.1 = 11.7÷13.7 [Nm] - screw tightening torque M6

T.3 = 11.5 [Nm] - torque wrench setting 11

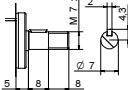
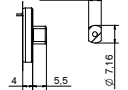
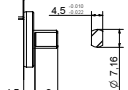
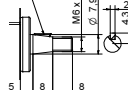
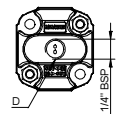
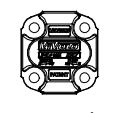
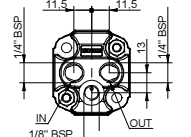
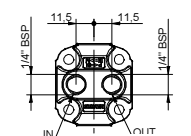
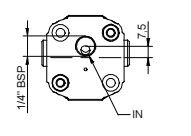
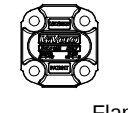
T.2 = 2.1 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-OR**

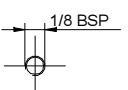
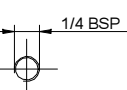
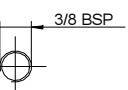
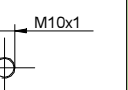
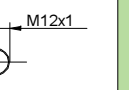
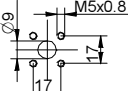
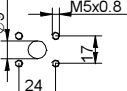
## Standard ø22 FLANGE

| Standard ø22 FLANGE                                                               |    | Shaft                                                                                                                    |   | Cover                                                                                                                    |   |
|-----------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------|---|
|  | 01 | CI001 - Parallel<br>T.2 = 2.1 [Nm]      | A | CF001 - Milled shank<br>T.2 = 9.2 [Nm]  | B |
|                                                                                   | 04 | CF005 - Milled shank<br>T.2 = 8.4 [Nm]  | F | CO001 - Tapered<br>T.2 = 21.9 [Nm]      | E |
|                                                                                   | 05 |                                                                                                                          |   |                                                                                                                          |   |
| Cover                                                                             |    |                                                                                                                          |   |                                                                                                                          |   |
|                                                                                   |    |                                                                                                                          |   |                                       | E |
|                                                                                   |    |                                                                                                                          |   | External drainage                                                                                                        |   |
|                                                                                   |    |                                                                                                                          |   |                                       | F |
|                                                                                   |    |                                                                                                                          |   | Internal drainage                                                                                                        |   |
|                                                                                   |    |                                                                                                                          |   |                                       | K |
|                                                                                   |    |                                                                                                                          |   | IN + OUT + external                                                                                                      |   |
|                                                                                   |    |                                                                                                                          |   |                                      | L |
|                                                                                   |    |                                                                                                                          |   | IN + OUT + internal                                                                                                      |   |
|                                                                                   |    |                                                                                                                          |   |                                     | M |
|                                                                                   |    |                                                                                                                          |   | Single inlet                                                                                                             |   |
|                                                                                   |    |                                                                                                                          |   |                                     | P |
|                                                                                   |    |                                                                                                                          |   | Flange drainage                                                                                                          |   |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-OR/0.17   | 01   |
| XV-OR/0.25   | 02   |
| XV-OR/0.45   | 04   |
| XV-OR/0.57   | 05   |
| XV-OR/0.76   | 06   |
| XV-OR/0.98   | 07   |
| XV-OR/1.27   | 09   |
| XV-OR/1.52   | 11   |
| XV-OR/2.30   | 13   |

| Standard bodies      |                  |       |
|----------------------|------------------|-------|
| Displacement cm3/rev | Standard threads |       |
| 0.17                 | B - B            | Z - Z |
| 0.25                 | B - B            | Z - Z |
| 0.45                 | B - B            | Z - Z |
| 0.57                 | B - B            | Z - Z |
| 0.76                 | B - B            | Z - Z |
| 0.98                 | B - B            | Z - Z |
| 1.27                 | B - B            | Z - Z |
| 1.52                 | B - B            | Z - Z |
| 2.30                 | B - B            | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |
|  | H |  | I | Closed Body                                                                         |   | Z                                                                                   |   |                                                                                      |   |
|                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |

# reversible pump - series XV

**XV-OR**

## BH TYPE PUMP

ø22 BODY-SHAPED FLANGE - MILLED SHANK

**X 0 R 06 07 B B B E**

|              |     |                                 |
|--------------|-----|---------------------------------|
| Series       | X   | series XV                       |
| Group        | 0   | group 0                         |
| Category     | R   | reversible pump                 |
| Displacement | 06  | 0.76                            |
| Flange       | 07  | Ø22 BH reversible rotation      |
| Shaft        | B   | CF001 - Milled shank ø7 - thk.5 |
| Body         | IN  | B inlet - 1/4" GAS              |
|              | OUT | B outlet - 1/4" GAS             |
| Cover        | E   | reversible w/external drainage  |



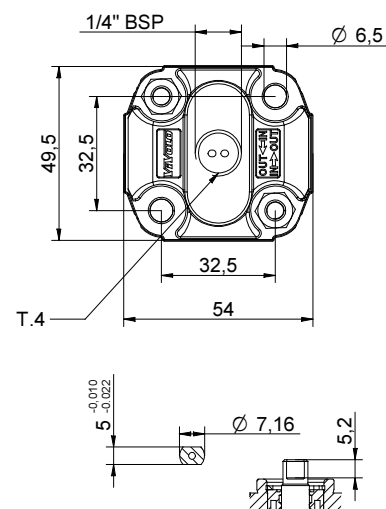
**XR012**

**Technical data table**

| TYPE       | Displacement | Max. Pressure |        | CODE                |                     |
|------------|--------------|---------------|--------|---------------------|---------------------|
|            | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-OR/0.17 | 0,16         | 220           | 260    | X 0 R 01 07 B B B E | X 0 R 01 07 B B B F |
| XV-OR/0.25 | 0,24         | 220           | 260    | X 0 R 02 07 B B B E | X 0 R 02 07 B B B F |
| XV-OR/0.45 | 0,45         | 220           | 280    | X 0 R 04 07 B B B E | X 0 R 04 07 B B B F |
| XV-OR/0.57 | 0,56         | 220           | 280    | X 0 R 05 07 B B B E | X 0 R 05 07 B B B F |
| XV-OR/0.76 | 0,75         | 220           | 280    | X 0 R 06 07 B B B E | X 0 R 06 07 B B B F |
| XV-OR/0.98 | 0,92         | 220           | 280    | X 0 R 07 07 B B B E | X 0 R 07 07 B B B F |
| XV-OR/1.27 | 1,26         | 220           | 280    | X 0 R 09 07 B B B E | X 0 R 09 07 B B B F |
| XV-OR/1.52 | 1,48         | 220           | 280    | X 0 R 11 07 B B B E | X 0 R 11 07 B B B F |
| XV-OR/2.30 | 2,28         | 190           | 210    | X 0 R 13 07 B B B E | X 0 R 13 07 B B B F |

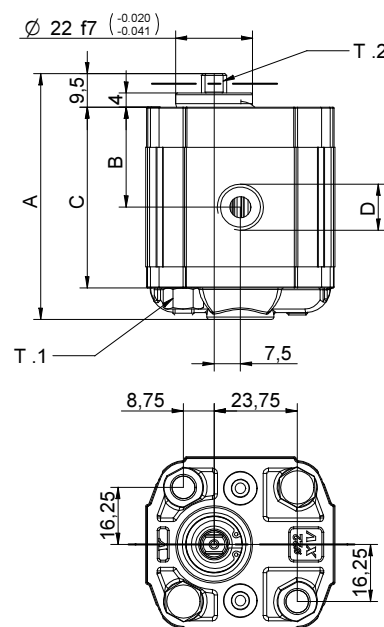
P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft



**Dimensions table**

| TYPE       | Weight | A    | B    | C    | D         | D         |
|------------|--------|------|------|------|-----------|-----------|
|            | kg     | mm   | mm   | mm   | IN        | OUT       |
| XV-OR/0.17 | 0,400  | 55,8 | 26,2 | 46,8 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.25 | 0,410  | 56,4 | 26,5 | 47,4 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.45 | 0,420  | 58,0 | 27,3 | 49,0 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.57 | 0,430  | 59,0 | 27,8 | 50,0 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.76 | 0,440  | 60,5 | 28,5 | 51,5 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.98 | 0,460  | 62,0 | 29,3 | 53,0 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/1.27 | 0,480  | 64,5 | 30,5 | 55,5 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/1.52 | 0,500  | 66,5 | 31,5 | 57,5 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/2.30 | 0,560  | 72,5 | 34,5 | 63,5 | 1/4" BSPP | 1/4" BSPP |



26/08/04 XR0607888E.dft

T.1 = 11.7÷13.7 [Nm] - screw tightening torque M6

T.2 = 9.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# XV-OR

Table showing standard flange and thread combinations available in stock

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# reversible pump - series XV

**XV-OR**

## HY TYPE PUMP

Ø22 BODY-SHAPED FLANGE - MILLED SHANK

**X 0 R 06 21 B B B E**

|              |     |                                 |
|--------------|-----|---------------------------------|
| Series       | X   | series XV                       |
| Group        | 0   | group 0                         |
| Category     | R   | reversible pump                 |
| Displacement | 06  | 0.76                            |
| Flange       | 21  | Ø22 HY reversible rotation      |
| Shaft        | B   | CF001 - Milled shank Ø7 - thk.5 |
| Body         | IN  | B inlet - 1/4" GAS              |
|              | OUT | B outlet - 1/4" GAS             |
| Cover        | E   | reversible w/external drainage  |



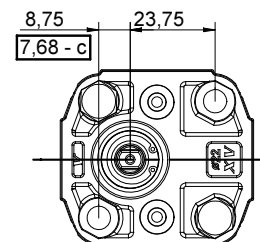
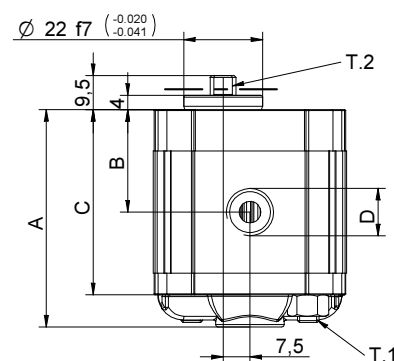
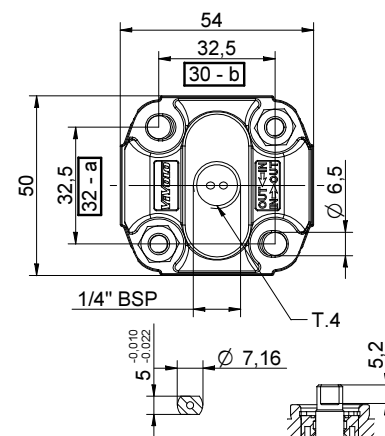
**XR017**

**Technical data table**

| TYPE       | Displacement | Max. Pressure |        | CODE                |                     |
|------------|--------------|---------------|--------|---------------------|---------------------|
|            | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-OR/0.17 | 0,16         | 220           | 260    | X 0 R 01 21 B B B E | X 0 R 01 21 B B B F |
| XV-OR/0.25 | 0,24         | 220           | 260    | X 0 R 02 21 B B B E | X 0 R 02 21 B B B F |
| XV-OR/0.45 | 0,45         | 220           | 280    | X 0 R 04 21 B B B E | X 0 R 04 21 B B B F |
| XV-OR/0.57 | 0,56         | 220           | 280    | X 0 R 05 21 B B B E | X 0 R 05 21 B B B F |
| XV-OR/0.76 | 0,75         | 220           | 280    | X 0 R 06 21 B B B E | X 0 R 06 21 B B B F |
| XV-OR/0.98 | 0,92         | 220           | 280    | X 0 R 07 21 B B B E | X 0 R 07 21 B B B F |
| XV-OR/1.27 | 1,26         | 220           | 280    | X 0 R 09 21 B B B E | X 0 R 09 21 B B B F |
| XV-OR/1.52 | 1,48         | 220           | 280    | X 0 R 11 21 B B B E | X 0 R 11 21 B B B F |
| XV-OR/2.30 | 2,28         | 190           | 210    | X 0 R 13 21 B B B E | X 0 R 13 21 B B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft



**Dimensions table**

| TYPE       | Weight | A    | B    | C    | D         | D         |
|------------|--------|------|------|------|-----------|-----------|
|            | kg     | mm   | mm   | mm   | IN        | OUT       |
| XV-OR/0.17 | 0,400  | 55,8 | 26,2 | 46,8 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.25 | 0,410  | 56,4 | 26,5 | 47,4 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.45 | 0,420  | 58,0 | 27,3 | 49,0 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.57 | 0,430  | 59,0 | 27,8 | 50,0 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.76 | 0,440  | 60,5 | 28,5 | 51,5 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/0.98 | 0,460  | 62,0 | 29,3 | 53,0 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/1.27 | 0,480  | 64,5 | 30,5 | 55,5 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/1.52 | 0,500  | 66,5 | 31,5 | 57,5 | 1/4" BSPP | 1/4" BSPP |
| XV-OR/2.30 | 0,560  | 72,5 | 34,5 | 63,5 | 1/4" BSPP | 1/4" BSPP |

T.1 = 11.7÷13.7 [Nm] - screw tightening torque M6

T.2 = 9.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

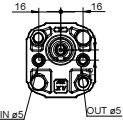
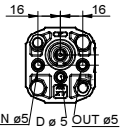
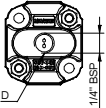
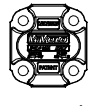
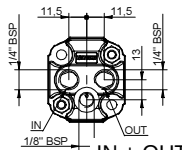
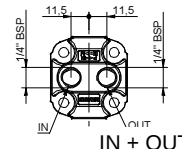
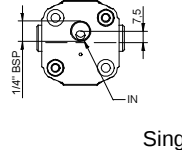
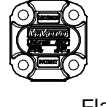
T.4 = 0.3÷0.5 bar - max. drainage pressure

25/08/04 XR0621888E.dft

# Table of variations

**XV-OR**

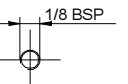
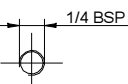
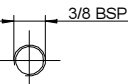
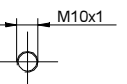
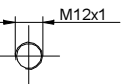
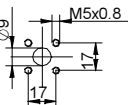
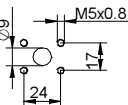
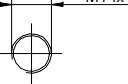
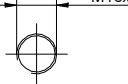
## ø22 "HY" Body-Shaped FLANGE

| ø22 "HY" Body-Shaped FLANGE                                                       |    | Shaft                                  |   | Cover                                                                                                                        |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------|---|
|  | 21 | CI001 - Parallel<br>T.2 = 2.1 [Nm]     | A | CF001 - Milled shank<br>T.2 = 9.2 [Nm]                                                                                       | B |
|                                                                                   |    | CF005 - Milled shank<br>T.2 = 8.4 [Nm] | F | CO001 - Tapered<br>T.2 = 21.9 [Nm]                                                                                           | E |
|                                                                                   |    |                                        |   |                                                                                                                              |   |
|  | 24 |                                        |   |                                                                                                                              |   |
|  | 25 |                                        |   |                                                                                                                              |   |
|                                                                                   |    |                                        |   | <br>External drainage    | E |
|                                                                                   |    |                                        |   | <br>Internal drainage    | F |
|                                                                                   |    |                                        |   | <br>IN + OUT + external  | K |
|                                                                                   |    |                                        |   | <br>IN + OUT + internal | L |
|                                                                                   |    |                                        |   | <br>Single inlet       | M |
|                                                                                   |    |                                        |   | <br>Flange drainage    | P |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-OR/0.17   | 01   |
| XV-OR/0.25   | 02   |
| XV-OR/0.45   | 04   |
| XV-OR/0.57   | 05   |
| XV-OR/0.76   | 06   |
| XV-OR/0.98   | 07   |
| XV-OR/1.27   | 09   |
| XV-OR/1.52   | 11   |
| XV-OR/2.30   | 13   |

| Standard bodies      |                  |       |
|----------------------|------------------|-------|
| Displacement cm3/rev | Standard threads |       |
| 0.17                 | B - B            | Z - Z |
| 0.25                 | B - B            | Z - Z |
| 0.45                 | B - B            | Z - Z |
| 0.57                 | B - B            | Z - Z |
| 0.76                 | B - B            | Z - Z |
| 0.98                 | B - B            | Z - Z |
| 1.27                 | B - B            | Z - Z |
| 1.52                 | B - B            | Z - Z |
| 2.30                 | B - B            | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |   | E |
|  | H |  | I | Closed Body                                                                         |   | Z                                                                                   |   |                                                                                       |   |
|                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |  | F |
|                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |  | G |

# reversible pump - series XV

STANDARD EUROPEAN PUMP  
ø25.4 FLANGE - TAPER SHAFT

**XV-1R**

**X 1 R 25 01 F I I E**

|              |     |                                                |
|--------------|-----|------------------------------------------------|
| Series       | X   | series XV                                      |
| Group        | 1   | group 1                                        |
| Category     | R   | reversible pump                                |
| Displacement | 25  | 3.8                                            |
| Flange       | 01  | Ø25.4 STANDARD EUROPEAN reversible rotation    |
| Shaft        | F   | CO001 - Tapered 1:8 - ø10 - M7x1 - key thk.2.4 |
| Body         | IN  | I inlet - Ø30 Ø12 M6                           |
|              | OUT | I outlet - Ø30 Ø12 M6                          |
| Cover        | E   | with drainage 1/4" BSP                         |



**XR101**

**Technical data table**

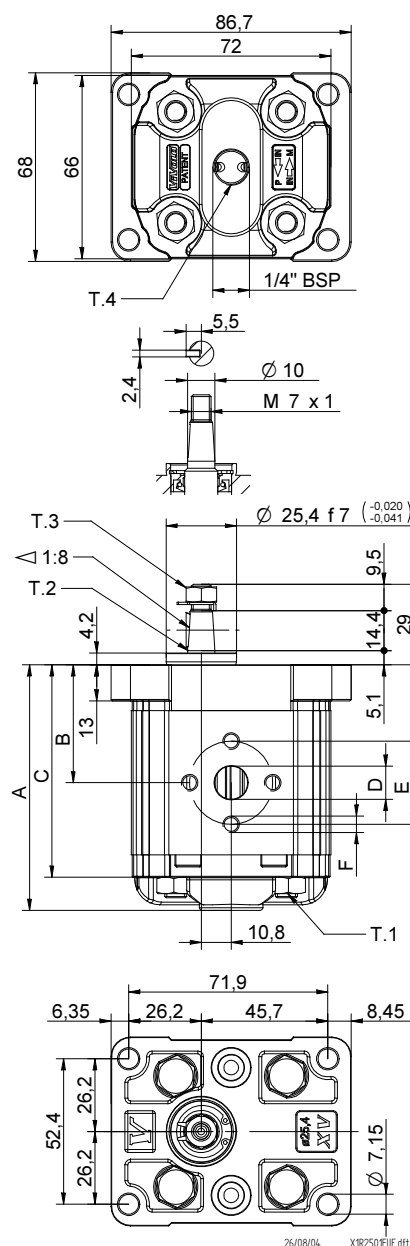
| TYPE      | Displacement<br>cm <sup>3</sup> /rev | Max. Pressure |        | CODE                |                     |
|-----------|--------------------------------------|---------------|--------|---------------------|---------------------|
|           |                                      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91                                 | 240           | 280    | X 1 R 16 01 F I I E | X 1 R 16 01 F I I F |
| XV-1R/1.2 | 1,17                                 | 250           | 290    | X 1 R 17 01 F I I E | X 1 R 17 01 F I I F |
| XV-1R/1.7 | 1,56                                 | 250           | 290    | X 1 R 18 01 F I I E | X 1 R 18 01 F I I F |
| XV-1R/2.2 | 2,08                                 | 250           | 290    | X 1 R 20 01 F I I E | X 1 R 20 01 F I I F |
| XV-1R/2.6 | 2,60                                 | 250           | 300    | X 1 R 21 01 F I I E | X 1 R 21 01 F I I F |
| XV-1R/3.2 | 3,12                                 | 250           | 300    | X 1 R 23 01 F I I E | X 1 R 23 01 F I I F |
| XV-1R/3.8 | 3,64                                 | 250           | 300    | X 1 R 25 01 F I I E | X 1 R 25 01 F I I F |
| XV-1R/4.3 | 4,16                                 | 250           | 300    | X 1 R 27 01 F I I E | X 1 R 27 01 F I I F |
| XV-1R/4.9 | 4,94                                 | 250           | 300    | X 1 R 29 01 F I I E | X 1 R 29 01 F I I F |
| XV-1R/5.9 | 5,85                                 | 250           | 300    | X 1 R 31 01 F I I E | X 1 R 31 01 F I I F |
| XV-1R/6.5 | 6,50                                 | 250           | 300    | X 1 R 32 01 F I I E | X 1 R 32 01 F I I F |
| XV-1R/7.8 | 7,54                                 | 220           | 260    | X 1 R 34 01 F I I E | X 1 R 34 01 F I I F |
| XV-1R/9.8 | 9,88                                 | 190           | 230    | X 1 R 36 01 F I I E | X 1 R 36 01 F I I F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

**Dimensions table**

| TYPE      | Weight<br>kg | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|-----------|--------------|-------|------|-------|-----|----|------|-----|----|------|
|           |              | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-1R/0.9 | 0,950        | 78,1  | 37,3 | 66,1  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/1.2 | 0,970        | 79,0  | 37,8 | 67,0  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/1.7 | 1,010        | 80,5  | 38,5 | 68,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/2.2 | 1,030        | 82,5  | 39,5 | 70,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/2.6 | 1,060        | 84,5  | 40,5 | 72,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/3.2 | 1,090        | 86,5  | 41,5 | 74,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/3.8 | 1,120        | 88,5  | 42,5 | 76,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/4.3 | 1,170        | 90,5  | 43,5 | 78,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/4.9 | 1,200        | 93,5  | 45,0 | 81,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/5.9 | 1,260        | 97,0  | 46,8 | 85,0  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/6.5 | 1,300        | 98,5  | 48,0 | 86,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/7.8 | 1,360        | 103,5 | 50,0 | 91,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/9.8 | 1,500        | 112,5 | 54,5 | 100,5 | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |



T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

T.3 = 11.5 [Nm] - torque wrench setting 11

T.2 = 43 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure



XV-1R

Ø25.4 FLANGE

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-1R/0.9    | 16   |
| XV-1R/1.2    | 17   |
| XV-1R/1.7    | 18   |
| XV-1R/2.2    | 20   |
| XV-1R/2.6    | 21   |
| XV-1R/3.2    | 23   |
| XV-1R/3.8    | 25   |
| XV-1R/4.3    | 27   |
| XV-1R/4.9    | 29   |
| XV-1R/5.9    | 31   |
| XV-1R/6.5    | 32   |
| XV-1R/7.8    | 34   |
| XV-1R/9.8    | 36   |

| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
| 0.9                  | I - I            | B - B | J - J | Z - Z |
| 1.2                  | I - I            | B - B | J - J | Z - Z |
| 1.7                  | I - I            | B - B | J - J | Z - Z |
| 2.2                  | I - I            | B - B | J - J | Z - Z |
| 2.6                  | I - I            | B - B | J - J | Z - Z |
| 3.2                  | I - I            | B - B | J - J | Z - Z |
| 3.8                  | I - I            | B - B | J - J | Z - Z |
| 4.3                  | I - I            | B - B | J - J | Z - Z |
| 4.9                  | I - I            | B - B | J - J | Z - Z |
| 5.9                  | I - I            | B - B | J - J | Z - Z |
| 6.5                  | I - I            | B - B | J - J | Z - Z |
| 7.8                  | I - I            | B - B | J - J | Z - Z |
| 9.8                  | I - I            | B - B | J - J | Z - Z |

Table showing standard flange and thread combinations available in stock

|                                                                                                                                                       |                          |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------|
| Vivoil Oleodinamica Vivolo s.r.l. - Sole Shareholder Company - via Leone Ginzburg 2-4 40054 Budrio (BO) Italy tel: +39 051 803689 fax: +39 051 800061 |                          |            |
| XR101                                                                                                                                                 | www.vivoil.com - english | 02/07/2009 |

# reversible pump - series XV

STANDARD EUROPEAN PUMP  
ø25.4 FLANGE - TAPER SHAFT

**XV-1R**

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>1</b> | <b>R</b> | <b>25</b> | <b>01</b> | <b>F</b> | <b>B</b> | <b>B</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                                |
|--------------|-----|------------------------------------------------|
| Series       | X   | series XV                                      |
| Group        | 1   | group 1                                        |
| Category     | R   | reversible pump                                |
| Displacement | 25  | 3.8                                            |
| Flange       | 01  | Ø25.4 STANDARD EUROPEAN reversible rotation    |
| Shaft        | F   | CO001 - Tapered 1:8 - ø10 - M7x1 - key thk.2.4 |
| Body         | IN  | B inlet - 3/8" GAS                             |
|              | OUT | B outlet - 3/8" GAS                            |
| Cover        | E   | with drainage 1/4" BSP                         |



XR105

Technical data table

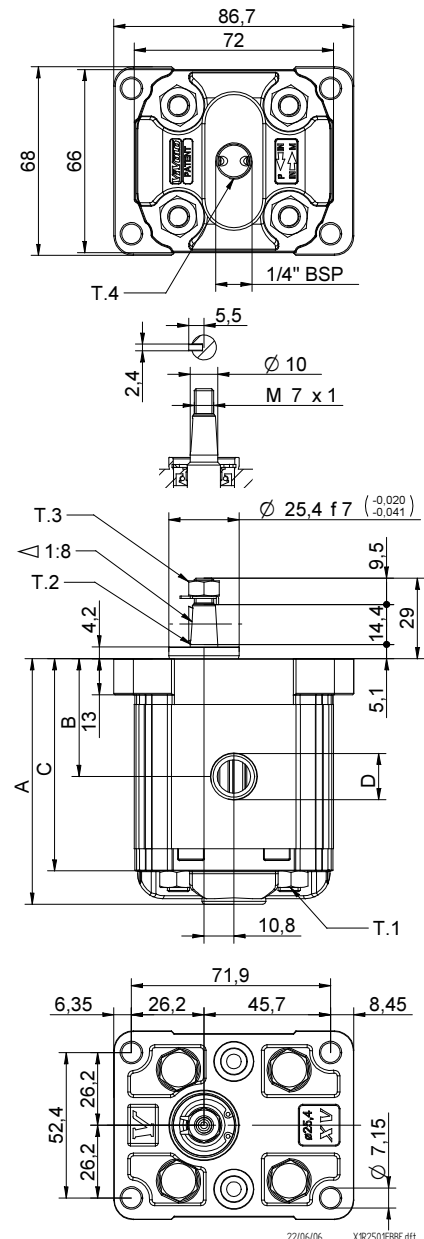
| TYPE      | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|-----------|-------------------------|---------------|--------|---------------------|---------------------|
|           |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91                    | 240           | 280    | X 1 R 16 01 F B B E | X 1 R 16 01 F B B F |
| XV-1R/1.2 | 1,17                    | 250           | 290    | X 1 R 17 01 F B B E | X 1 R 17 01 F B B F |
| XV-1R/1.7 | 1,56                    | 250           | 290    | X 1 R 18 01 F B B E | X 1 R 18 01 F B B F |
| XV-1R/2.2 | 2,08                    | 250           | 290    | X 1 R 20 01 F B B E | X 1 R 20 01 F B B F |
| XV-1R/2.6 | 2,60                    | 250           | 300    | X 1 R 21 01 F B B E | X 1 R 21 01 F B B F |
| XV-1R/3.2 | 3,12                    | 250           | 300    | X 1 R 23 01 F B B E | X 1 R 23 01 F B B F |
| XV-1R/3.8 | 3,64                    | 250           | 300    | X 1 R 25 01 F B B E | X 1 R 25 01 F B B F |
| XV-1R/4.3 | 4,16                    | 250           | 300    | X 1 R 27 01 F B B E | X 1 R 27 01 F B B F |
| XV-1R/4.9 | 4,94                    | 250           | 300    | X 1 R 29 01 F B B E | X 1 R 29 01 F B B F |
| XV-1R/5.9 | 5,85                    | 250           | 300    | X 1 R 31 01 F B B E | X 1 R 31 01 F B B F |
| XV-1R/6.5 | 6,50                    | 250           | 300    | X 1 R 32 01 F B B E | X 1 R 32 01 F B B F |
| XV-1R/7.8 | 7,54                    | 220           | 260    | X 1 R 34 01 F B B E | X 1 R 34 01 F B B F |
| XV-1R/9.8 | 9,88                    | 190           | 230    | X 1 R 36 01 F B B E | X 1 R 36 01 F B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE      | Weight | A     | B    | C     | D         | D         |
|-----------|--------|-------|------|-------|-----------|-----------|
|           | kg     | mm    | mm   | mm    | IN        | OUT       |
| XV-1R/0.9 | 0,950  | 78,1  | 37,3 | 66,1  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.2 | 0,970  | 79,0  | 37,8 | 67,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.7 | 1,010  | 80,5  | 38,5 | 68,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.2 | 1,030  | 82,5  | 39,5 | 70,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.6 | 1,060  | 84,5  | 40,5 | 72,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.2 | 1,090  | 86,5  | 41,5 | 74,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.8 | 1,120  | 88,5  | 42,5 | 76,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.3 | 1,170  | 90,5  | 43,5 | 78,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.9 | 1,200  | 93,5  | 45,0 | 81,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/5.9 | 1,260  | 97,0  | 46,8 | 85,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/6.5 | 1,300  | 98,5  | 48,0 | 86,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/7.8 | 1,360  | 103,5 | 50,0 | 91,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/9.8 | 1,500  | 112,5 | 54,5 | 100,5 | 3/8" BSPP | 3/8" BSPP |



22/06/06 XR250FBBE.dft

T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

T.3 = 11.5 [Nm] - torque wrench setting 11

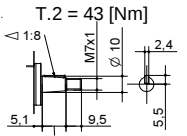
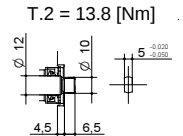
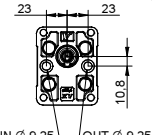
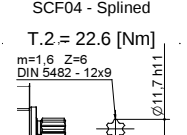
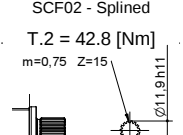
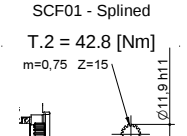
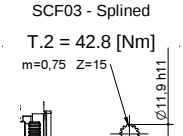
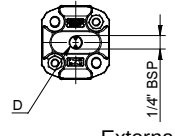
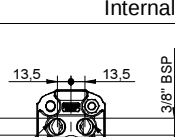
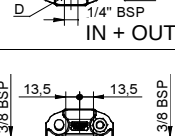
T.2 = 43 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-1R**

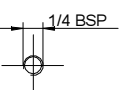
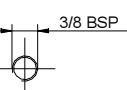
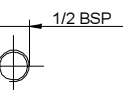
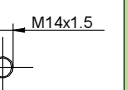
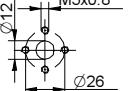
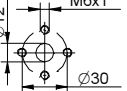
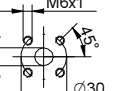
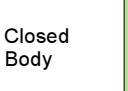
## ø25.4 FLANGE

| ø25.4 FLANGE                                                                      |    | Shaft                                                                                                                                                   |   | Cover                                                                                                                                  |   |
|-----------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------|---|
|  | 01 | CO001 - Tapered<br>T.2 = 43 [Nm]<br>                                   | F | CF002 - Milled shank<br>T.2 = 13.8 [Nm]<br>           | D |
|                                                                                   |    |                                                                                                                                                         |   |                                                                                                                                        |   |
|  | 04 | SCF04 - Splined<br>T.2 = 22.6 [Nm]<br>m=1.6 Z=6<br>DIN 5482 - 12x9<br> | J | SCF02 - Splined<br>T.2 = 42.8 [Nm]<br>m=0.75 Z=15<br> | L |
|                                                                                   |    |                                                                                                                                                         |   |                                                                                                                                        |   |
|                                                                                   |    | SCF01 - Splined<br>T.2 = 42.8 [Nm]<br>m=0.75 Z=15<br>                  | Q | SCF03 - Splined<br>T.2 = 42.8 [Nm]<br>m=0.75 Z=15<br> | R |
|                                                                                   |    |                                                                                                                                                         |   | External drainage<br>                               | E |
|                                                                                   |    |                                                                                                                                                         |   | Internal drainage<br>                               | F |
|                                                                                   |    |                                                                                                                                                         |   | IN + OUT + external<br>                             | K |
|                                                                                   |    |                                                                                                                                                         |   | IN + OUT + internal<br>                             | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-1R/0.9    | 16   |
| XV-1R/1.2    | 17   |
| XV-1R/1.7    | 18   |
| XV-1R/2.2    | 20   |
| XV-1R/2.6    | 21   |
| XV-1R/3.2    | 23   |
| XV-1R/3.8    | 25   |
| XV-1R/4.3    | 27   |
| XV-1R/4.9    | 29   |
| XV-1R/5.9    | 31   |
| XV-1R/6.5    | 32   |
| XV-1R/7.8    | 34   |
| XV-1R/9.8    | 36   |

| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
| 0.9                  | I - I            | B - B | J - J | Z - Z |
| 1.2                  | I - I            | B - B | J - J | Z - Z |
| 1.7                  | I - I            | B - B | J - J | Z - Z |
| 2.2                  | I - I            | B - B | J - J | Z - Z |
| 2.6                  | I - I            | B - B | J - J | Z - Z |
| 3.2                  | I - I            | B - B | J - J | Z - Z |
| 3.8                  | I - I            | B - B | J - J | Z - Z |
| 4.3                  | I - I            | B - B | J - J | Z - Z |
| 4.9                  | I - I            | B - B | J - J | Z - Z |
| 5.9                  | I - I            | B - B | J - J | Z - Z |
| 6.5                  | I - I            | B - B | J - J | Z - Z |
| 7.8                  | I - I            | B - B | J - J | Z - Z |
| 9.8                  | I - I            | B - B | J - J | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|
|  | A |  | B |  | C |  |
|  | H |  | I |  | J |  |
|                                                                                     |   |                                                                                     |   | Closed Body                                                                         | Z |                                                                                     |
|                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |

# reversible pump - series XV

**STANDARD PUMP**  
**ø30 FLANGE - TAPER SHAFT**

**XV-1R**

**X 1 R 25 07 G I I E**

|              |     |                                               |
|--------------|-----|-----------------------------------------------|
| Series       | X   | series XV                                     |
| Group        | 1   | group 1                                       |
| Category     | R   | reversible pump                               |
| Displacement | 25  | 3.8                                           |
| Flange       | 07  | Ø30 STANDARD reversible rotation              |
| Shaft        | G   | CO002 - Tapered 1:8 - ø14 - M10x1 - key thk.3 |
| Body         | IN  | I inlet - Ø30 Ø12 M6                          |
|              | OUT | I outlet - Ø30 Ø12 M6                         |
| Cover        | E   | with drainage 1/4" BSP                        |



**XR113**

**Technical data table**

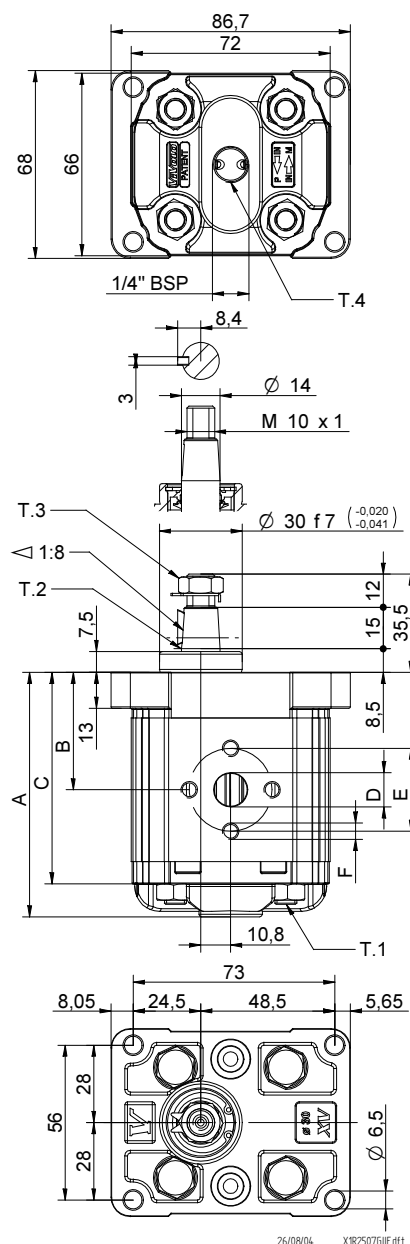
| TYPE      | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|-----------|-------------------------|---------------|--------|---------------------|---------------------|
|           |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91                    | 240           | 280    | X 1 R 16 07 G I I E | X 1 R 16 07 G I I F |
| XV-1R/1.2 | 1,17                    | 250           | 290    | X 1 R 17 07 G I I E | X 1 R 17 07 G I I F |
| XV-1R/1.7 | 1,56                    | 250           | 290    | X 1 R 18 07 G I I E | X 1 R 18 07 G I I F |
| XV-1R/2.2 | 2,08                    | 250           | 290    | X 1 R 20 07 G I I E | X 1 R 20 07 G I I F |
| XV-1R/2.6 | 2,60                    | 250           | 300    | X 1 R 21 07 G I I E | X 1 R 21 07 G I I F |
| XV-1R/3.2 | 3,12                    | 250           | 300    | X 1 R 23 07 G I I E | X 1 R 23 07 G I I F |
| XV-1R/3.8 | 3,64                    | 250           | 300    | X 1 R 25 07 G I I E | X 1 R 25 07 G I I F |
| XV-1R/4.3 | 4,16                    | 250           | 300    | X 1 R 27 07 G I I E | X 1 R 27 07 G I I F |
| XV-1R/4.9 | 4,94                    | 250           | 300    | X 1 R 29 07 G I I E | X 1 R 29 07 G I I F |
| XV-1R/5.9 | 5,85                    | 250           | 300    | X 1 R 31 07 G I I E | X 1 R 31 07 G I I F |
| XV-1R/6.5 | 6,50                    | 250           | 300    | X 1 R 32 07 G I I E | X 1 R 32 07 G I I F |
| XV-1R/7.8 | 7,54                    | 220           | 260    | X 1 R 34 07 G I I E | X 1 R 34 07 G I I F |
| XV-1R/9.8 | 9,88                    | 190           | 230    | X 1 R 36 07 G I I E | X 1 R 36 07 G I I F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

**Dimensions table**

| TYPE      | Weight<br>kg | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|-----------|--------------|-------|------|-------|-----|----|------|-----|----|------|
|           |              | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-1R/0.9 | 0,950        | 78,1  | 37,3 | 66,1  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/1.2 | 0,970        | 79,0  | 37,8 | 67,0  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/1.7 | 1,010        | 80,5  | 38,5 | 68,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/2.2 | 1,030        | 82,5  | 39,5 | 70,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/2.6 | 1,060        | 84,5  | 40,5 | 72,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/3.2 | 1,090        | 86,5  | 41,5 | 74,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/3.8 | 1,120        | 88,5  | 42,5 | 76,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/4.3 | 1,170        | 90,5  | 43,5 | 78,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/4.9 | 1,200        | 93,5  | 45,0 | 81,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/5.9 | 1,260        | 97,0  | 46,8 | 85,0  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/6.5 | 1,300        | 98,5  | 48,0 | 86,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/7.8 | 1,360        | 103,5 | 50,0 | 91,5  | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |
| XV-1R/9.8 | 1,500        | 112,5 | 54,5 | 100,5 | ø12 | 30 | M6x1 | ø12 | 30 | M6x1 |



T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

T.3 = 13 [Nm] - torque wrench setting 17

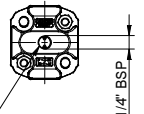
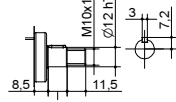
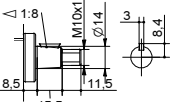
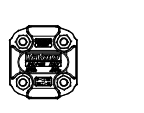
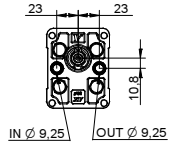
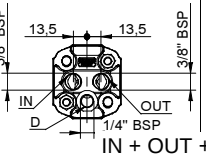
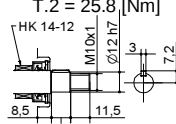
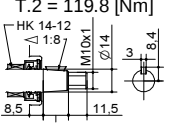
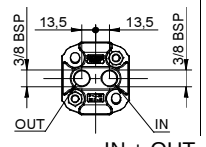
T.2 = 119.8 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-1R**

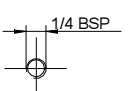
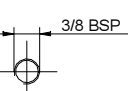
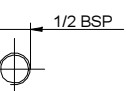
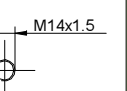
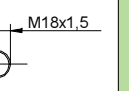
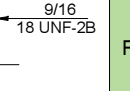
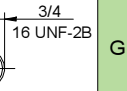
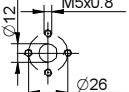
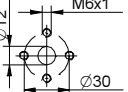
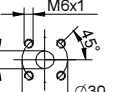
## ø30 FLANGE

| ø30 FLANGE                                                                        |    | Shaft                                                                             |                                                                                   | Cover                                                                                |   |
|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---|
|  | 07 | CI001 - Parallel<br>T.2 = 25.8 [Nm]                                               | CO002 - Tapered<br>T.2 = 119.8 [Nm]                                               |   | E |
|                                                                                   |    |  |  |   | F |
|  | 10 | CI001+HK - Parallel<br>T.2 = 25.8 [Nm]                                            | CO002+HK - Tapered<br>T.2 = 119.8 [Nm]                                            |   | K |
|                                                                                   |    |  |  |  | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-1R/0.9    | 16   |
| XV-1R/1.2    | 17   |
| XV-1R/1.7    | 18   |
| XV-1R/2.2    | 20   |
| XV-1R/2.6    | 21   |
| XV-1R/3.2    | 23   |
| XV-1R/3.8    | 25   |
| XV-1R/4.3    | 27   |
| XV-1R/4.9    | 29   |
| XV-1R/5.9    | 31   |
| XV-1R/6.5    | 32   |
| XV-1R/7.8    | 34   |
| XV-1R/9.8    | 36   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 0.9                  | I - I            | B - B | J - J | Z - Z |  |
| 1.2                  | I - I            | B - B | J - J | Z - Z |  |
| 1.7                  | I - I            | B - B | J - J | Z - Z |  |
| 2.2                  | I - I            | B - B | J - J | Z - Z |  |
| 2.6                  | I - I            | B - B | J - J | Z - Z |  |
| 3.2                  | I - I            | B - B | J - J | Z - Z |  |
| 3.8                  | I - I            | B - B | J - J | Z - Z |  |
| 4.3                  | I - I            | B - B | J - J | Z - Z |  |
| 4.9                  | I - I            | B - B | J - J | Z - Z |  |
| 5.9                  | I - I            | B - B | J - J | Z - Z |  |
| 6.5                  | I - I            | B - B | J - J | Z - Z |  |
| 7.8                  | I - I            | B - B | J - J | Z - Z |  |
| 9.8                  | I - I            | B - B | J - J | Z - Z |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |  | F |  | G |
|  | H |  | I |  | J | Closed Body                                                                         |   | Z                                                                                    |   |                                                                                       |   |                                                                                       |   |

# reversible pump - series XV

## BH TYPE PUMP

ø32 BODY-SHAPED FLANGE - MILLED SHANK

**XV-1R**

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>1</b> | <b>R</b> | <b>25</b> | <b>25</b> | <b>D</b> | <b>B</b> | <b>B</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                  |
|--------------|-----|----------------------------------|
| Series       | X   | series XV                        |
| Group        | 1   | group 1                          |
| Category     | R   | reversible pump                  |
| Displacement | 25  | 3.8                              |
| Flange       | 25  | Ø32 BH reversible rotation       |
| Shaft        | D   | CF002 - Milled shank ø10 - thk.5 |
| Body         | IN  | B inlet - 3/8" GAS               |
|              | OUT | B outlet - 3/8" GAS              |
| Cover        | E   | with drainage 1/4" BSP           |



XR119

Technical data table

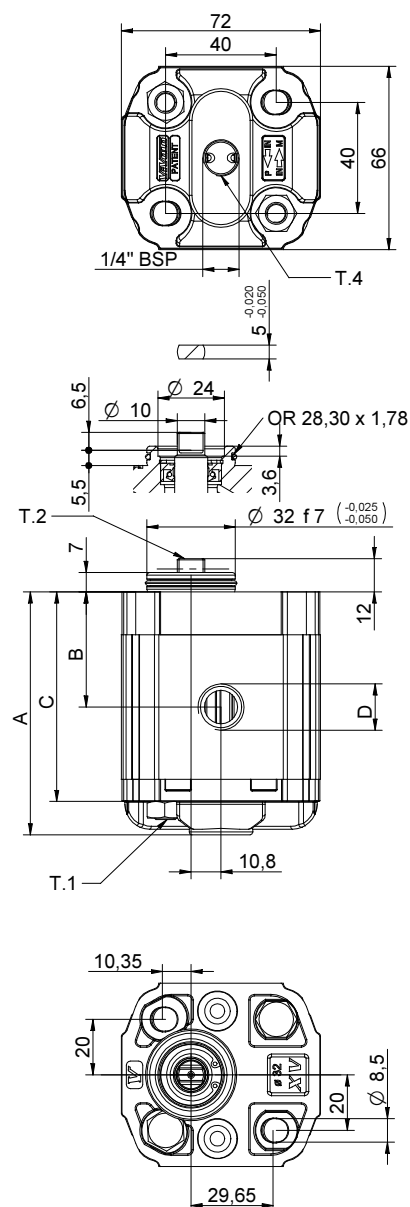
| TYPE      | Displacement | Max. Pressure |        | CODE                |                     |
|-----------|--------------|---------------|--------|---------------------|---------------------|
|           | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91         | 240           | 280    | X 1 R 16 25 D B B E | X 1 R 16 25 D B B F |
| XV-1R/1.2 | 1,17         | 250           | 290    | X 1 R 17 25 D B B E | X 1 R 17 25 D B B F |
| XV-1R/1.7 | 1,56         | 250           | 290    | X 1 R 18 25 D B B E | X 1 R 18 25 D B B F |
| XV-1R/2.2 | 2,08         | 250           | 290    | X 1 R 20 25 D B B E | X 1 R 20 25 D B B F |
| XV-1R/2.6 | 2,60         | 250           | 300    | X 1 R 21 25 D B B E | X 1 R 21 25 D B B F |
| XV-1R/3.2 | 3,12         | 250           | 300    | X 1 R 23 25 D B B E | X 1 R 23 25 D B B F |
| XV-1R/3.8 | 3,64         | 250           | 300    | X 1 R 25 25 D B B E | X 1 R 25 25 D B B F |
| XV-1R/4.3 | 4,16         | 250           | 300    | X 1 R 27 25 D B B E | X 1 R 27 25 D B B F |
| XV-1R/4.9 | 4,94         | 250           | 300    | X 1 R 29 25 D B B E | X 1 R 29 25 D B B F |
| XV-1R/5.9 | 5,85         | 250           | 300    | X 1 R 31 25 D B B E | X 1 R 31 25 D B B F |
| XV-1R/6.5 | 6,50         | 250           | 300    | X 1 R 32 25 D B B E | X 1 R 32 25 D B B F |
| XV-1R/7.8 | 7,54         | 220           | 260    | X 1 R 34 25 D B B E | X 1 R 34 25 D B B F |
| XV-1R/9.8 | 9,88         | 190           | 230    | X 1 R 36 25 D B B E | X 1 R 36 25 D B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE      | Weight | A     | B    | C    | D         | D         |
|-----------|--------|-------|------|------|-----------|-----------|
|           | kg     | mm    | mm   | mm   | IN        | OUT       |
| XV-1R/0.9 | 0,950  | 77,1  | 36,3 | 65,1 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.2 | 0,970  | 78,0  | 36,8 | 66,0 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.7 | 1,010  | 79,5  | 37,5 | 67,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.2 | 1,030  | 81,5  | 38,5 | 69,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.6 | 1,060  | 83,5  | 39,5 | 71,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.2 | 1,090  | 85,5  | 40,5 | 73,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.8 | 1,120  | 87,5  | 41,5 | 75,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.3 | 1,170  | 89,5  | 42,5 | 77,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.9 | 1,200  | 92,5  | 44,0 | 80,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/5.9 | 1,260  | 96,0  | 45,8 | 84,0 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/6.5 | 1,300  | 97,5  | 47,0 | 85,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/7.8 | 1,360  | 102,5 | 49,0 | 90,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/9.8 | 1,500  | 111,5 | 53,5 | 99,5 | 3/8" BSPP | 3/8" BSPP |



26/08/04 XR25Z5088E.dft

T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

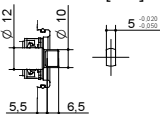
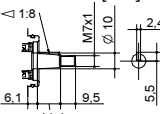
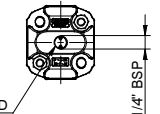
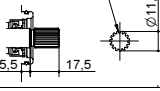
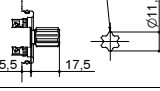
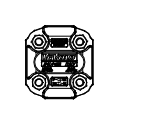
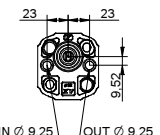
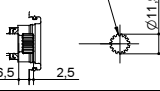
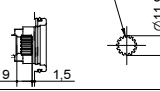
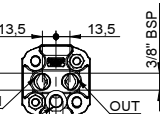
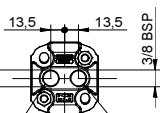
T.2 = 13.8 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

## Table of variations

**XV-1R**

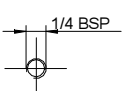
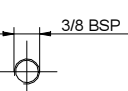
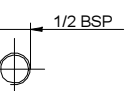
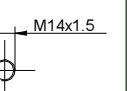
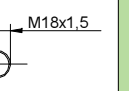
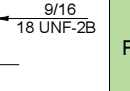
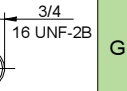
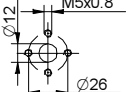
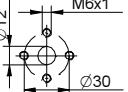
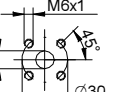
### ø32 "BH" Body-Shaped FLANGE

| ø32 "BH" Body-Shaped FLANGE                                                       |    | Shaft                                                                                                                                                           |                                                                                                                                                                                  | Cover                                                                               |          |
|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
|  | 25 | <b>CF002 - Milled shank</b><br>$T.2 = 13.8 \text{ [Nm]}$<br>                   | <b>CO001 - Tapered</b><br>$T.2 = 43 \text{ [Nm]}$<br>                                           |  | <b>E</b> |
|                                                                                   | 28 | <b>SCF02 - Splined</b><br>$T.2 = 42.8 \text{ [Nm]}$<br>$m=0.75 \quad Z=15$<br> | <b>SCF04 - Splined</b><br>$T.2 = 22.6 \text{ [Nm]}$<br>$m=1.6 \quad Z=6$<br>DIN 5482 - 12x9<br> |  | <b>F</b> |
|  |    | <b>SCF01 - Splined</b><br>$T.2 = 42.8 \text{ [Nm]}$<br>$m=0.75 \quad Z=15$<br> | <b>SCF03 - Splined</b><br>$T.2 = 42.8 \text{ [Nm]}$<br>$m=0.75 \quad Z=15$<br>                  |  | <b>K</b> |
|                                                                                   |    |                                                                                                                                                                 |                                                                                                                                                                                  |  | <b>L</b> |

| Displacement |           |
|--------------|-----------|
| TYPE         | CODE      |
| XV-1R/0.9    | <b>16</b> |
| XV-1R/1.2    | <b>17</b> |
| XV-1R/1.7    | <b>18</b> |
| XV-1R/2.2    | <b>20</b> |
| XV-1R/2.6    | <b>21</b> |
| XV-1R/3.2    | <b>23</b> |
| XV-1R/3.8    | <b>25</b> |
| XV-1R/4.3    | <b>27</b> |
| XV-1R/4.9    | <b>29</b> |
| XV-1R/5.9    | <b>31</b> |
| XV-1R/6.5    | <b>32</b> |
| XV-1R/7.8    | <b>34</b> |
| XV-1R/9.8    | <b>36</b> |

| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
| 0.9                  | I - I            | B - B | J - J | Z - Z |
| 1.2                  | I - I            | B - B | J - J | Z - Z |
| 1.7                  | I - I            | B - B | J - J | Z - Z |
| 2.2                  | I - I            | B - B | J - J | Z - Z |
| 2.6                  | I - I            | B - B | J - J | Z - Z |
| 3.2                  | I - I            | B - B | J - J | Z - Z |
| 3.8                  | I - I            | B - B | J - J | Z - Z |
| 4.3                  | I - I            | B - B | J - J | Z - Z |
| 4.9                  | I - I            | B - B | J - J | Z - Z |
| 5.9                  | I - I            | B - B | J - J | Z - Z |
| 6.5                  | I - I            | B - B | J - J | Z - Z |
| 7.8                  | I - I            | B - B | J - J | Z - Z |
| 9.8                  | I - I            | B - B | J - J | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |  | F |  | G |
|  | H |  | I |  | J | Closed Body                                                                         | Z |                                                                                      |   |                                                                                       |   |                                                                                       |   |

# reversible pump - series XV

## HY TYPE PUMP

ø32 BODY-SHAPED FLANGE - MILLED SHANK

**XV-1R**

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>1</b> | <b>R</b> | <b>25</b> | <b>31</b> | <b>D</b> | <b>B</b> | <b>B</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                  |
|--------------|-----|----------------------------------|
| Series       | X   | series XV                        |
| Group        | 1   | group 1                          |
| Category     | R   | reversible pump                  |
| Displacement | 25  | 3.8                              |
| Flange       | 31  | Ø32 HY reversible rotation       |
| Shaft        | D   | CF002 - Milled shank ø10 - thk.5 |
| Body         | IN  | B inlet - 3/8" GAS               |
|              | OUT | B outlet - 3/8" GAS              |
| Cover        | E   | with drainage 1/4" BSP           |



XR140

Technical data table

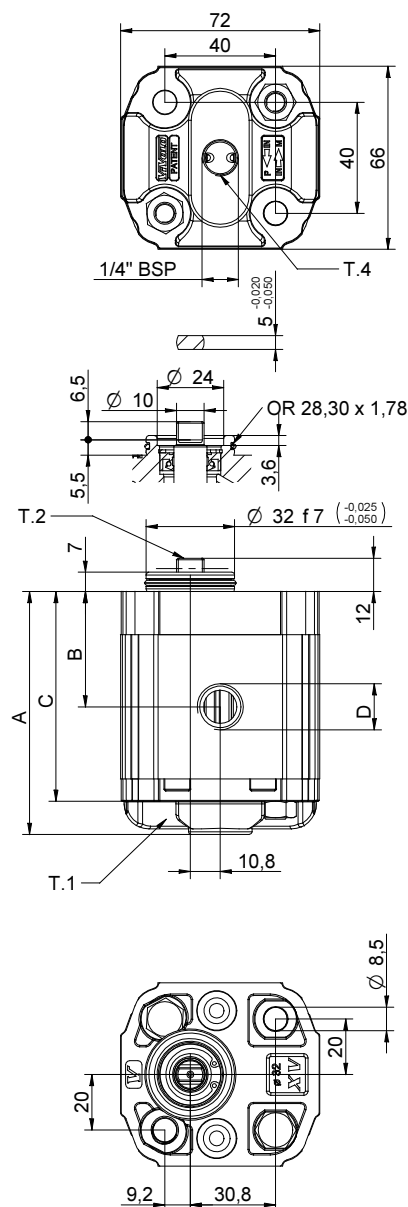
| TYPE      | Displacement | Max. Pressure |        | CODE                |                     |
|-----------|--------------|---------------|--------|---------------------|---------------------|
|           | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91         | 240           | 280    | X 1 R 16 31 D B B E | X 1 R 16 31 D B B F |
| XV-1R/1.2 | 1,17         | 250           | 290    | X 1 R 17 31 D B B E | X 1 R 17 31 D B B F |
| XV-1R/1.7 | 1,56         | 250           | 290    | X 1 R 18 31 D B B E | X 1 R 18 31 D B B F |
| XV-1R/2.2 | 2,08         | 250           | 290    | X 1 R 20 31 D B B E | X 1 R 20 31 D B B F |
| XV-1R/2.6 | 2,60         | 250           | 300    | X 1 R 21 31 D B B E | X 1 R 21 31 D B B F |
| XV-1R/3.2 | 3,12         | 250           | 300    | X 1 R 23 31 D B B E | X 1 R 23 31 D B B F |
| XV-1R/3.8 | 3,64         | 250           | 300    | X 1 R 25 31 D B B E | X 1 R 25 31 D B B F |
| XV-1R/4.3 | 4,16         | 250           | 300    | X 1 R 27 31 D B B E | X 1 R 27 31 D B B F |
| XV-1R/4.9 | 4,94         | 250           | 300    | X 1 R 29 31 D B B E | X 1 R 29 31 D B B F |
| XV-1R/5.9 | 5,85         | 250           | 300    | X 1 R 31 31 D B B E | X 1 R 31 31 D B B F |
| XV-1R/6.5 | 6,50         | 250           | 300    | X 1 R 32 31 D B B E | X 1 R 32 31 D B B F |
| XV-1R/7.8 | 7,54         | 220           | 260    | X 1 R 34 31 D B B E | X 1 R 34 31 D B B F |
| XV-1R/9.8 | 9,88         | 190           | 230    | X 1 R 36 31 D B B E | X 1 R 36 31 D B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE      | Weight | A     | B    | C    | D         | D         |
|-----------|--------|-------|------|------|-----------|-----------|
|           | kg     | mm    | mm   | mm   | IN        | OUT       |
| XV-1R/0.9 | 0,950  | 77,1  | 36,3 | 65,1 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.2 | 0,970  | 78,0  | 36,8 | 66,0 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.7 | 1,010  | 79,5  | 37,5 | 67,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.2 | 1,030  | 81,5  | 38,5 | 69,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.6 | 1,060  | 83,5  | 39,5 | 71,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.2 | 1,090  | 85,5  | 40,5 | 73,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.8 | 1,120  | 87,5  | 41,5 | 75,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.3 | 1,170  | 89,5  | 42,5 | 77,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.9 | 1,200  | 92,5  | 44,0 | 80,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/5.9 | 1,260  | 96,0  | 45,8 | 84,0 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/6.5 | 1,300  | 97,5  | 47,0 | 85,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/7.8 | 1,360  | 102,5 | 49,0 | 90,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/9.8 | 1,500  | 111,5 | 53,5 | 99,5 | 3/8" BSPP | 3/8" BSPP |



26/08/04 XR253 1088E.dft

T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

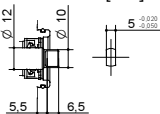
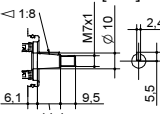
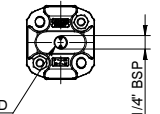
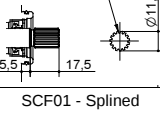
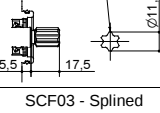
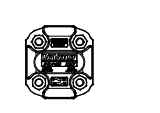
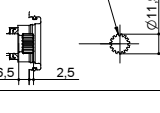
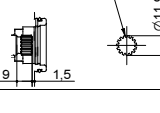
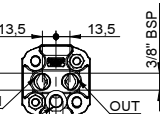
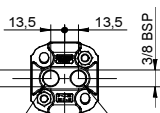
T.2 = 13.8 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-1R**

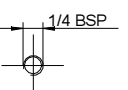
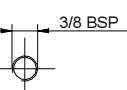
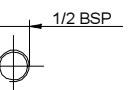
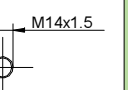
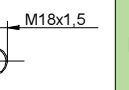
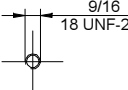
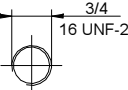
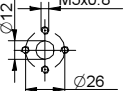
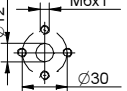
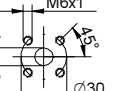
## ø32 "HY" Body-Shaped FLANGE

| ø32 "HY" Body-Shaped FLANGE                                                       |    | Shaft                                                                                                                                         |                                                                                                                                                                | Cover                                                                               |   |
|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---|
|  | 31 | <b>CF002 - Milled shank</b><br>T.2 = 13.8 [Nm]<br>           | <b>CO001 - Tapered</b><br>T.2 = 43 [Nm]<br>                                   |  | E |
|                                                                                   | 34 | <b>SCF02 - Splined</b><br>T.2 = 42.8 [Nm]<br>m=0,75 Z=15<br> | <b>SCF04 - Splined</b><br>T.2 = 22.6 [Nm]<br>m=1,6 Z=6<br>DIN 5482 - 12x9<br> |  | F |
|                                                                                   |    | <b>SCF01 - Splined</b><br>T.2 = 42.8 [Nm]<br>m=0,75 Z=15<br> | <b>SCF03 - Splined</b><br>T.2 = 42.8 [Nm]<br>m=0,75 Z=15<br>                  |  | K |
|                                                                                   |    |                                                                                                                                               |                                                                                                                                                                |  | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-1R/0.9    | 16   |
| XV-1R/1.2    | 17   |
| XV-1R/1.7    | 18   |
| XV-1R/2.2    | 20   |
| XV-1R/2.6    | 21   |
| XV-1R/3.2    | 23   |
| XV-1R/3.8    | 25   |
| XV-1R/4.3    | 27   |
| XV-1R/4.9    | 29   |
| XV-1R/5.9    | 31   |
| XV-1R/6.5    | 32   |
| XV-1R/7.8    | 34   |
| XV-1R/9.8    | 36   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 0.9                  | I - I            | B - B | J - J | Z - Z |  |
| 1.2                  | I - I            | B - B | J - J | Z - Z |  |
| 1.7                  | I - I            | B - B | J - J | Z - Z |  |
| 2.2                  | I - I            | B - B | J - J | Z - Z |  |
| 2.6                  | I - I            | B - B | J - J | Z - Z |  |
| 3.2                  | I - I            | B - B | J - J | Z - Z |  |
| 3.8                  | I - I            | B - B | J - J | Z - Z |  |
| 4.3                  | I - I            | B - B | J - J | Z - Z |  |
| 4.9                  | I - I            | B - B | J - J | Z - Z |  |
| 5.9                  | I - I            | B - B | J - J | Z - Z |  |
| 6.5                  | I - I            | B - B | J - J | Z - Z |  |
| 7.8                  | I - I            | B - B | J - J | Z - Z |  |
| 9.8                  | I - I            | B - B | J - J | Z - Z |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                                |   |                                                                                       |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|    | A |    | B |  | C |  | D |  | E |
|  | F |  | G |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|    | H |    | I |  | J | Closed Body                                                                         | Z |                                                                                      |   |

# reversible pump - series XV

STANDARD GERMAN "BH" TYPE PUMP  
 ø32 BODY-SHAPED FLANGE - MILLED SHANK

**XV-1R**

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>1</b> | <b>R</b> | <b>25</b> | <b>19</b> | <b>C</b> | <b>B</b> | <b>B</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                                         |
|--------------|-----|---------------------------------------------------------|
| Series       | X   | series XV                                               |
| Group        | 1   | group 1                                                 |
| Category     | R   | reversible pump                                         |
| Displacement | 25  | 3.8                                                     |
| Flange       | 19  | Ø32 BH reversible rotation                              |
| Shaft        | C   | CF001 - Milled shank ø10 - thk.5 ("BH" Standard German) |
| Body         | IN  | B inlet - 3/8" GAS                                      |
|              | OUT | B outlet - 3/8" GAS                                     |
| Cover        | E   | with drainage 1/4" BSP                                  |



XR161

Technical data table

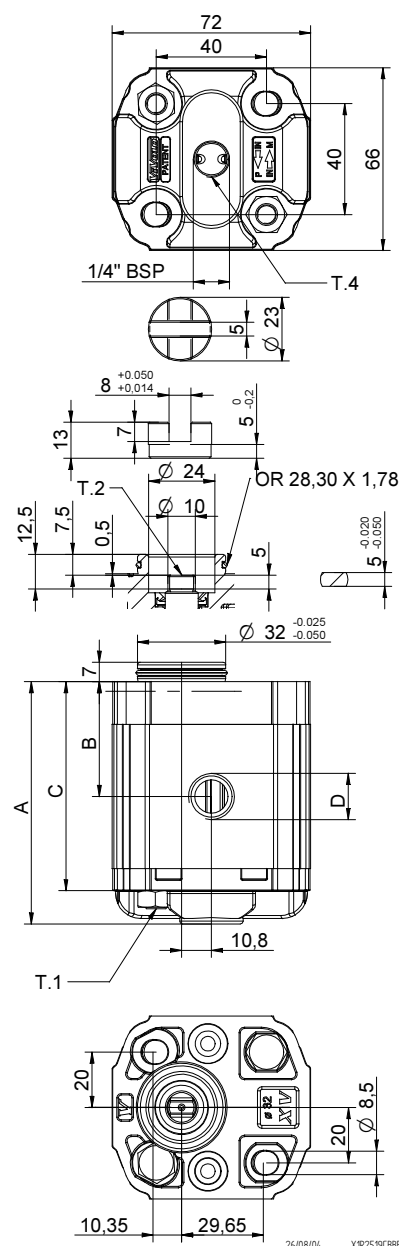
| TYPE      | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|-----------|-------------------------|---------------|--------|---------------------|---------------------|
|           |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91                    | 240           | 280    | X 1 R 16 19 C B B E | X 1 R 16 19 C B B F |
| XV-1R/1.2 | 1,17                    | 250           | 290    | X 1 R 17 19 C B B E | X 1 R 17 19 C B B F |
| XV-1R/1.7 | 1,56                    | 250           | 290    | X 1 R 18 19 C B B E | X 1 R 18 19 C B B F |
| XV-1R/2.2 | 2,08                    | 250           | 290    | X 1 R 20 19 C B B E | X 1 R 20 19 C B B F |
| XV-1R/2.6 | 2,60                    | 250           | 300    | X 1 R 21 19 C B B E | X 1 R 21 19 C B B F |
| XV-1R/3.2 | 3,12                    | 250           | 300    | X 1 R 23 19 C B B E | X 1 R 23 19 C B B F |
| XV-1R/3.8 | 3,64                    | 250           | 300    | X 1 R 25 19 C B B E | X 1 R 25 19 C B B F |
| XV-1R/4.3 | 4,16                    | 250           | 300    | X 1 R 27 19 C B B E | X 1 R 27 19 C B B F |
| XV-1R/4.9 | 4,94                    | 250           | 300    | X 1 R 29 19 C B B E | X 1 R 29 19 C B B F |
| XV-1R/5.9 | 5,85                    | 250           | 300    | X 1 R 31 19 C B B E | X 1 R 31 19 C B B F |
| XV-1R/6.5 | 6,50                    | 250           | 300    | X 1 R 32 19 C B B E | X 1 R 32 19 C B B F |
| XV-1R/7.8 | 7,54                    | 220           | 260    | X 1 R 34 19 C B B E | X 1 R 34 19 C B B F |
| XV-1R/9.8 | 9,88                    | 190           | 230    | X 1 R 36 19 C B B E | X 1 R 36 19 C B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE      | Weight | A     | B    | C    | D         | D         |
|-----------|--------|-------|------|------|-----------|-----------|
|           | kg     | mm    | mm   | mm   | IN        | OUT       |
| XV-1R/0.9 | 0,950  | 77,1  | 36,3 | 65,1 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.2 | 0,970  | 78,0  | 36,8 | 66,0 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.7 | 1,010  | 79,5  | 37,5 | 67,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.2 | 1,030  | 81,5  | 38,5 | 69,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.6 | 1,060  | 83,5  | 39,5 | 71,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.2 | 1,090  | 85,5  | 40,5 | 73,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.8 | 1,120  | 87,5  | 41,5 | 75,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.3 | 1,170  | 89,5  | 42,5 | 77,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.9 | 1,200  | 92,5  | 44,0 | 80,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/5.9 | 1,260  | 96,0  | 45,8 | 84,0 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/6.5 | 1,300  | 97,5  | 47,0 | 85,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/7.8 | 1,360  | 102,5 | 49,0 | 90,5 | 3/8" BSPP | 3/8" BSPP |
| XV-1R/9.8 | 1,500  | 111,5 | 53,5 | 99,5 | 3/8" BSPP | 3/8" BSPP |



T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

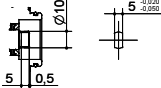
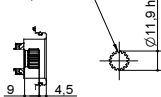
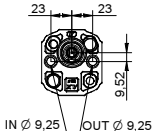
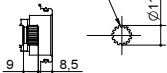
T.2 = 13.8 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

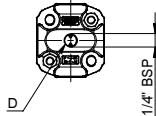
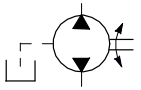
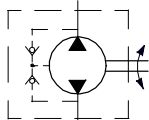
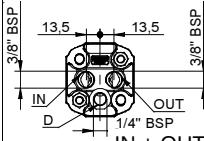
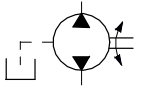
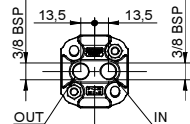
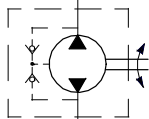
T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-1R**

## Standard German ø32 "BH" FLANGE

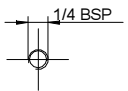
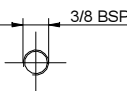
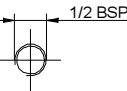
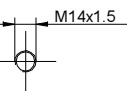
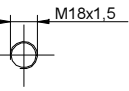
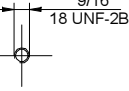
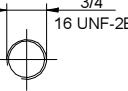
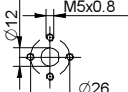
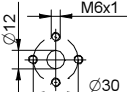
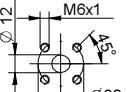
| Standard German ø32 "BH" FLANGE                                                   |    | Shaft                                                                                                                                              |   | Cover                                                                                                                                              |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                                                                                   |    |                                                                                                                                                    |   |                                                                                                                                                    |   |
|  | 19 | <p>CF001 - Milled shank</p> <p>T.2 = 13.8 [Nm]</p>                | C | <p>SCF01 - Splined</p> <p>T.2 = 42.8 [Nm]</p> <p>m=0,75 Z=15</p>  | Q |
|  | 22 | <p>SCF03 - Splined</p> <p>T.2 = 42.8 [Nm]</p> <p>m=0,75 Z=15</p>  | R |                                                                                                                                                    |   |

|                                                                                                                             |                                                                                      |   |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---|--|--|--|
|                                                                                                                             |                                                                                      |   |  |  |  |
|                                          |   | E |  |  |  |
| External drainage                                                                                                           |                                                                                      |   |  |  |  |
|                                          |   | F |  |  |  |
| Internal drainage                                                                                                           |                                                                                      |   |  |  |  |
|  |   | K |  |  |  |
| IN + OUT + external                                                                                                         |                                                                                      |   |  |  |  |
|       |  | L |  |  |  |
| IN + OUT + internal                                                                                                         |                                                                                      |   |  |  |  |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-1R/0.9    | 16   |
| XV-1R/1.2    | 17   |
| XV-1R/1.7    | 18   |
| XV-1R/2.2    | 20   |
| XV-1R/2.6    | 21   |
| XV-1R/3.2    | 23   |
| XV-1R/3.8    | 25   |
| XV-1R/4.3    | 27   |
| XV-1R/4.9    | 29   |
| XV-1R/5.9    | 31   |
| XV-1R/6.5    | 32   |
| XV-1R/7.8    | 34   |
| XV-1R/9.8    | 36   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 0.9                  | I - I            | B - B | J - J | Z - Z |  |
| 1.2                  | I - I            | B - B | J - J | Z - Z |  |
| 1.7                  | I - I            | B - B | J - J | Z - Z |  |
| 2.2                  | I - I            | B - B | J - J | Z - Z |  |
| 2.6                  | I - I            | B - B | J - J | Z - Z |  |
| 3.2                  | I - I            | B - B | J - J | Z - Z |  |
| 3.8                  | I - I            | B - B | J - J | Z - Z |  |
| 4.3                  | I - I            | B - B | J - J | Z - Z |  |
| 4.9                  | I - I            | B - B | J - J | Z - Z |  |
| 5.9                  | I - I            | B - B | J - J | Z - Z |  |
| 6.5                  | I - I            | B - B | J - J | Z - Z |  |
| 7.8                  | I - I            | B - B | J - J | Z - Z |  |
| 9.8                  | I - I            | B - B | J - J | Z - Z |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                                |   |                                                                                       |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|     | A |    | B |  | C |  | D |  | E |
|  | F |  | G |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|     | H |    | I |  | J | Closed Body                                                                         |   | Z                                                                                    |   |

# reversible pump - series XV

SAE AA TYPE PUMP

Ø50.8 FLANGE - PARALLEL SHAFT

**XV-1R**

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>1</b> | <b>R</b> | <b>25</b> | <b>61</b> | <b>B</b> | <b>B</b> | <b>B</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                                |
|--------------|-----|------------------------------------------------|
| Series       | X   | series XV                                      |
| Group        | 1   | group 1                                        |
| Category     | R   | reversible pump                                |
| Displacement | 25  | 3.8                                            |
| Flange       | 61  | Ø50.8 SAE AA reversible rotation               |
| Shaft        | B   | CI002 - Parallel Ø12.7 - key thk. 3.2 (SAE AA) |
| Body         | IN  | B inlet - 3/8" GAS                             |
|              | OUT | B outlet - 3/8" GAS                            |
| Cover        | E   | with drainage 1/4" BSP                         |



XR168

Technical data table

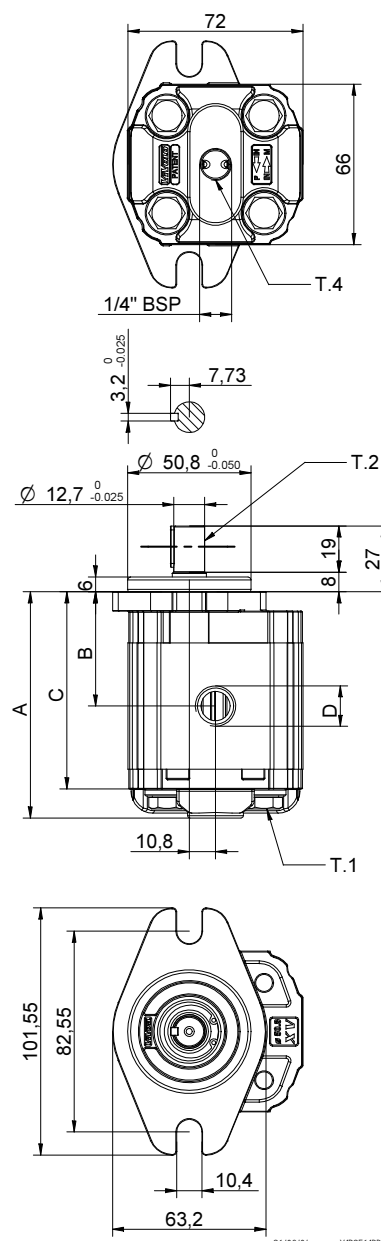
| TYPE      | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|-----------|-------------------------|---------------|--------|---------------------|---------------------|
|           |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-1R/0.9 | 0,91                    | 240           | 280    | X 1 R 16 61 B B B E | X 1 R 16 61 B B B F |
| XV-1R/1.2 | 1,17                    | 250           | 290    | X 1 R 17 61 B B B E | X 1 R 17 61 B B B F |
| XV-1R/1.7 | 1,56                    | 250           | 290    | X 1 R 18 61 B B B E | X 1 R 18 61 B B B F |
| XV-1R/2.2 | 2,08                    | 250           | 290    | X 1 R 20 61 B B B E | X 1 R 20 61 B B B F |
| XV-1R/2.6 | 2,60                    | 250           | 300    | X 1 R 21 61 B B B E | X 1 R 21 61 B B B F |
| XV-1R/3.2 | 3,12                    | 250           | 300    | X 1 R 23 61 B B B E | X 1 R 23 61 B B B F |
| XV-1R/3.8 | 3,64                    | 250           | 300    | X 1 R 25 61 B B B E | X 1 R 25 61 B B B F |
| XV-1R/4.3 | 4,16                    | 250           | 300    | X 1 R 27 61 B B B E | X 1 R 27 61 B B B F |
| XV-1R/4.9 | 4,94                    | 250           | 300    | X 1 R 29 61 B B B E | X 1 R 29 61 B B B F |
| XV-1R/5.9 | 5,85                    | 250           | 300    | X 1 R 31 61 B B B E | X 1 R 31 61 B B B F |
| XV-1R/6.5 | 6,50                    | 250           | 300    | X 1 R 32 61 B B B E | X 1 R 32 61 B B B F |
| XV-1R/7.8 | 7,54                    | 220           | 260    | X 1 R 34 61 B B B E | X 1 R 34 61 B B B F |
| XV-1R/9.8 | 9,88                    | 190           | 230    | X 1 R 36 61 B B B E | X 1 R 36 61 B B B F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE      | Weight | A     | B    | C     | D         | D         |
|-----------|--------|-------|------|-------|-----------|-----------|
|           | kg     | mm    | mm   | mm    | IN        | OUT       |
| XV-1R/0.9 | 1,000  | 82,6  | 41,8 | 70,6  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.2 | 1,020  | 83,5  | 42,3 | 71,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/1.7 | 1,060  | 85,0  | 43,0 | 73,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.2 | 1,080  | 87,0  | 44,0 | 75,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/2.6 | 1,110  | 89,0  | 45,0 | 77,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.2 | 1,140  | 91,0  | 46,0 | 79,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/3.8 | 1,170  | 93,0  | 47,0 | 81,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.3 | 1,220  | 95,0  | 48,0 | 83,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/4.9 | 1,250  | 98,0  | 49,5 | 86,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/5.9 | 1,310  | 101,5 | 51,3 | 89,5  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/6.5 | 1,350  | 105,0 | 52,5 | 93,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/7.8 | 1,410  | 108,0 | 54,5 | 96,0  | 3/8" BSPP | 3/8" BSPP |
| XV-1R/9.8 | 1,550  | 117,0 | 59,0 | 105,0 | 3/8" BSPP | 3/8" BSPP |



T.1 = 24.5÷29.4 [Nm] - screw tightening torque M8

T.2 = 32.8 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# XV-1R



| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
| 0.9                  | I - I            | B - B | J - J | Z - Z |
| 1.2                  | I - I            | B - B | J - J | Z - Z |
| 1.7                  | I - I            | B - B | J - J | Z - Z |
| 2.2                  | I - I            | B - B | J - J | Z - Z |
| 2.6                  | I - I            | B - B | J - J | Z - Z |
| 3.2                  | I - I            | B - B | J - J | Z - Z |
| 3.8                  | I - I            | B - B | J - J | Z - Z |
| 4.3                  | I - I            | B - B | J - J | Z - Z |
| 4.9                  | I - I            | B - B | J - J | Z - Z |
| 5.9                  | I - I            | B - B | J - J | Z - Z |
| 6.5                  | I - I            | B - B | J - J | Z - Z |
| 7.8                  | I - I            | B - B | J - J | Z - Z |
| 9.8                  | I - I            | B - B | J - J | Z - Z |

Table showing standard flange and thread combinations available in stock

# reversible pump - series XV

STANDARD EUROPEAN PUMP  
ø36.5 FLANGE - TAPER SHAFT

**XV-2R**

**X 2 R 51 01 E P P E**

|              |     |                                                   |
|--------------|-----|---------------------------------------------------|
| Series       | X   | series XV                                         |
| Group        | 2   | group 2                                           |
| Category     | R   | reversible pump                                   |
| Displacement | 51  | 17                                                |
| Flange       | 01  | Ø36.5 STANDARD EUROPEAN reversible rotation       |
| Shaft        | E   | CO001 - Tapered 1:8 - ø17.4 - M12x1.5 - key thk.4 |
| Body         | IN  | P inlet - Ø40 Ø20 M8                              |
|              | OUT | P outlet - Ø40 Ø20 M8                             |
| Cover        | E   | with external drainage                            |



XR201

Technical data table

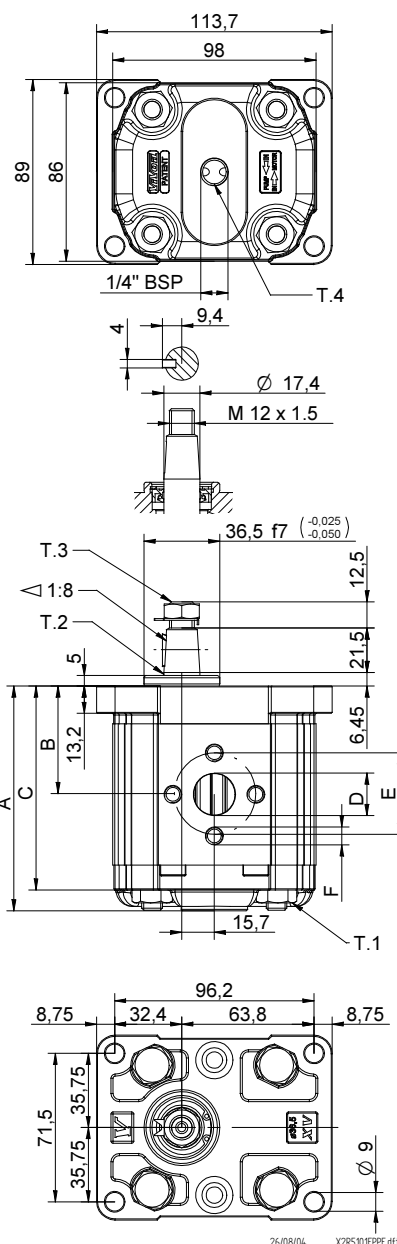
| TYPE     | Displacement<br>cm <sup>3</sup> /rev | Max. Pressure |        | CODE                |                     |
|----------|--------------------------------------|---------------|--------|---------------------|---------------------|
|          |                                      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-2R/04 | 4,20                                 | 260           | 300    | X 2 R 41 01 E O O E | X 2 R 41 01 E O O F |
| XV-2R/06 | 6,00                                 | 260           | 300    | X 2 R 43 01 E O O E | X 2 R 43 01 E O O F |
| XV-2R/09 | 8,40                                 | 260           | 300    | X 2 R 45 01 E O O E | X 2 R 45 01 E O O F |
| XV-2R/11 | 10,80                                | 260           | 300    | X 2 R 47 01 E O O E | X 2 R 47 01 E O O F |
| XV-2R/14 | 14,40                                | 250           | 290    | X 2 R 49 01 E P P E | X 2 R 49 01 E P P F |
| XV-2R/17 | 16,80                                | 230           | 270    | X 2 R 51 01 E P P E | X 2 R 51 01 E P P F |
| XV-2R/19 | 19,20                                | 210           | 250    | X 2 R 53 01 E P P E | X 2 R 53 01 E P P F |
| XV-2R/22 | 22,80                                | 200           | 240    | X 2 R 55 01 E P P E | X 2 R 55 01 E P P F |
| XV-2R/26 | 26,20                                | 170           | 210    | X 2 R 57 01 E Q P E | X 2 R 57 01 E Q P F |
| XV-2R/30 | 30,00                                | 160           | 200    | X 2 R 59 01 E Q P E | X 2 R 59 01 E Q P F |
| XV-2R/34 | 34,20                                | 150           | 190    | X 2 R 61 01 E Q P E | X 2 R 61 01 E Q P F |
| XV-2R/40 | 39,60                                | 140           | 180    | X 2 R 63 01 E Q P E | X 2 R 63 01 E Q P F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight<br>kg | A     | B    | C     | D     | E  | F       | D     | E  | F       |
|----------|--------------|-------|------|-------|-------|----|---------|-------|----|---------|
|          |              | mm    | mm   | mm    | IN    |    |         | OUT   |    |         |
| XV-2R/04 | 2,200        | 87,2  | 41,7 | 77,2  | ø13,5 | 30 | M6x1    | ø13,5 | 30 | M6x1    |
| XV-2R/06 | 2,300        | 90,2  | 43,2 | 80,2  | ø13,5 | 30 | M6x1    | ø13,5 | 30 | M6x1    |
| XV-2R/09 | 2,400        | 94,2  | 45,2 | 84,2  | ø13,5 | 30 | M6x1    | ø13,5 | 30 | M6x1    |
| XV-2R/11 | 2,500        | 98,2  | 47,2 | 88,2  | ø13,5 | 30 | M6x1    | ø13,5 | 30 | M6x1    |
| XV-2R/14 | 2,700        | 104,2 | 50,2 | 94,2  | ø20   | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/17 | 2,800        | 108,2 | 52,2 | 98,2  | ø20   | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/19 | 2,900        | 112,2 | 54,2 | 102,2 | ø20   | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/22 | 3,050        | 118,2 | 57,2 | 108,2 | ø20   | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/26 | 3,150        | 122,2 | 59,2 | 112,2 | ø23,5 | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/30 | 3,400        | 130,2 | 63,2 | 120,2 | ø23,5 | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/34 | 3,600        | 137,2 | 66,7 | 127,2 | ø23,5 | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |
| XV-2R/40 | 3,800        | 146,2 | 71,2 | 136,2 | ø23,5 | 40 | M8X1,25 | ø20   | 40 | M8X1,25 |



T.1 = 54÷58.9 [Nm] - screw tightening torque M10

T.3 = 40 [Nm] - torque wrench setting 19

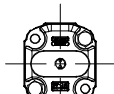
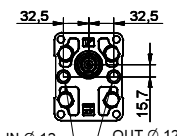
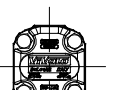
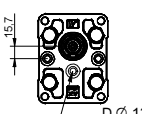
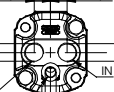
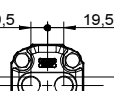
T.2 = 233.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-2R**

## ø36.5 FLANGE

| ø36.5 FLANGE                                                                      |    |                                     |   | Shaft                               |   | Cover                                                                                 |   |
|-----------------------------------------------------------------------------------|----|-------------------------------------|---|-------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | 01 | CI001 - Parallel<br>T.2 = 44.1 [Nm] | A | CI002 - Parallel<br>T.2 = 67.5 [Nm] | B |    | E |
|  | 04 | CO001 - Tapered<br>T.2 = 233.2 [Nm] | E | CO002 - Tapered<br>T.2 = 233.2 [Nm] | F |    | F |
|  | 05 | SCF02 - Splined<br>T.2 = 86.1 [Nm]  | G | SCF03 - Splined<br>T.2 = 86.1 [Nm]  | H |    | K |
|                                                                                   |    | SCF04 - Splined<br>T.2 = 67.1 [Nm]  | I | SCF01 - Splined<br>T.2 = 86.2 [Nm]  | L |    | L |
|                                                                                   |    |                                     |   |                                     |   |  | P |

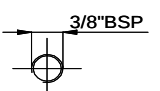
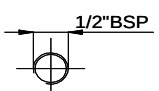
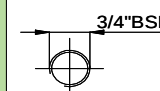
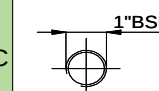
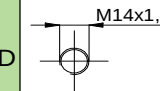
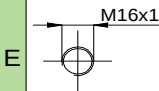
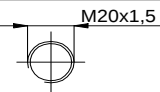
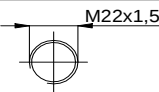
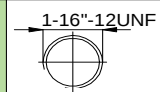
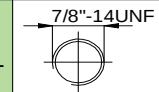
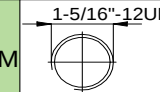
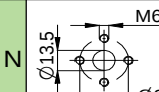
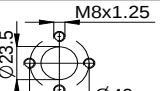
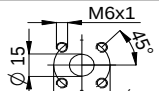
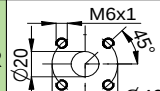
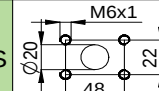
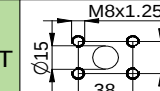
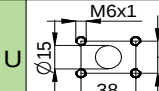
| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 4                    | O - O            | R - R | B - B | Z - Z |  |
| 6                    | O - O            | R - R | B - B | Z - Z |  |
| 9                    | O - O            | R - R | B - B | Z - Z |  |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
|                      | O - O            | R - R | B - B | Z - Z |
| 4                    | O - O            | R - R | B - B | Z - Z |
| 6                    | O - O            | R - R | B - B | Z - Z |
| 9                    | O - O            | R - R | B - B | Z - Z |
| 11                   | O - O            | R - R | B - B | Z - Z |
| 14                   | P - P            | R - R | C - C | Z - Z |
| 17                   | P - P            | R - R | C - C | Z - Z |
| 19                   | P - P            | R - R | C - C | Z - Z |
| 22                   | P - P            | R - R | C - C | Z - Z |
| 26                   | Q - P            | S - S | D - D | Z - Z |
| 30                   | Q - P            | S - S | D - D | Z - Z |
| 34                   | Q - P            | S - S | D - D | Z - Z |
| 40                   | Q - P            | S - S | D - D | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |  | F |
|  | H |  | I |  | L |  | M |  | N |  | O |
|  | Q |  | R |  | S |  | T |  | U |  | V |
| Closed Body                                                                         |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       | Z |

# reversible pump - series XV

STANDARD EUROPEAN PUMP  
ø36.5 FLANGE - TAPER SHAFT

**XV-2R**

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>2</b> | <b>R</b> | <b>51</b> | <b>01</b> | <b>E</b> | <b>C</b> | <b>C</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                                   |
|--------------|-----|---------------------------------------------------|
| Series       | X   | series XV                                         |
| Group        | 2   | group 2                                           |
| Category     | R   | reversible pump                                   |
| Displacement | 51  | 17                                                |
| Flange       | 01  | Ø36.5 STANDARD EUROPEAN reversible rotation       |
| Shaft        | E   | CO001 - Tapered 1:8 - ø17.4 - M12x1.5 - key thk.4 |
| Body         | IN  | C inlet - 3/4" GAS                                |
|              | OUT | C outlet - 3/4" GAS                               |
| Cover        | E   | with external drainage                            |



XR207

Technical data table

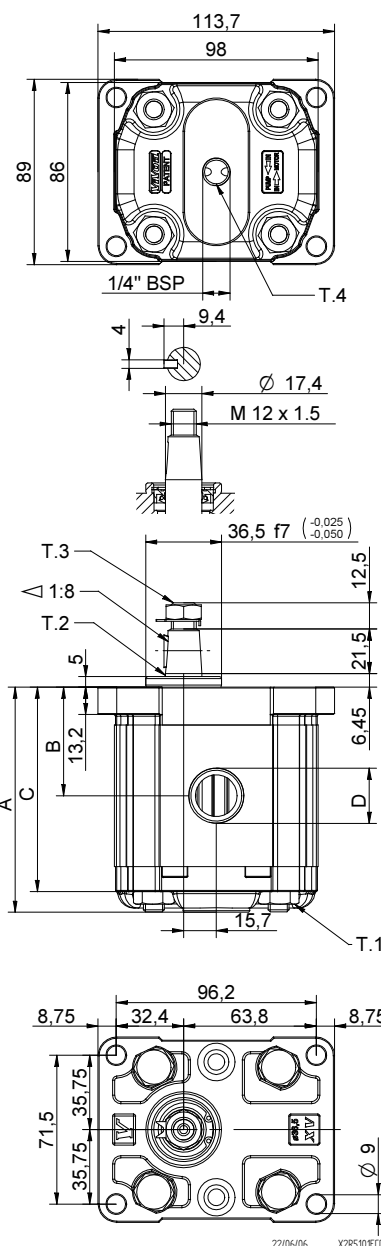
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|----------|-------------------------|---------------|--------|---------------------|---------------------|
|          |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-2R/04 | 4,20                    | 260           | 300    | X 2 R 41 01 E B B E | X 2 R 41 01 E B B F |
| XV-2R/06 | 6,00                    | 260           | 300    | X 2 R 43 01 E B B E | X 2 R 43 01 E B B F |
| XV-2R/09 | 8,40                    | 260           | 300    | X 2 R 45 01 E B B E | X 2 R 45 01 E B B F |
| XV-2R/11 | 10,80                   | 260           | 300    | X 2 R 47 01 E B B E | X 2 R 47 01 E B B F |
| XV-2R/14 | 14,40                   | 250           | 290    | X 2 R 49 01 E C C E | X 2 R 49 01 E C C F |
| XV-2R/17 | 16,80                   | 230           | 270    | X 2 R 51 01 E C C E | X 2 R 51 01 E C C F |
| XV-2R/19 | 19,20                   | 210           | 250    | X 2 R 53 01 E C C E | X 2 R 53 01 E C C F |
| XV-2R/22 | 22,80                   | 200           | 240    | X 2 R 55 01 E C C E | X 2 R 55 01 E C C F |
| XV-2R/26 | 26,20                   | 170           | 210    | X 2 R 57 01 E D D E | X 2 R 57 01 E D D F |
| XV-2R/30 | 30,00                   | 160           | 200    | X 2 R 59 01 E D D E | X 2 R 59 01 E D D F |
| XV-2R/34 | 34,20                   | 150           | 190    | X 2 R 61 01 E D D E | X 2 R 61 01 E D D F |
| XV-2R/40 | 39,60                   | 140           | 180    | X 2 R 63 01 E D D E | X 2 R 63 01 E D D F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight | A     | B    | C     | D         | D         |
|----------|--------|-------|------|-------|-----------|-----------|
|          | kg     | mm    | mm   | mm    | IN        | OUT       |
| XV-2R/04 | 2,200  | 87,2  | 41,7 | 77,2  | 1/2" BSPP | 1/2" BSPP |
| XV-2R/06 | 2,300  | 90,2  | 43,2 | 80,2  | 1/2" BSPP | 1/2" BSPP |
| XV-2R/09 | 2,400  | 94,2  | 45,2 | 84,2  | 1/2" BSPP | 1/2" BSPP |
| XV-2R/11 | 2,500  | 98,2  | 47,2 | 88,2  | 1/2" BSPP | 1/2" BSPP |
| XV-2R/14 | 2,700  | 104,2 | 50,2 | 94,2  | 3/4" BSPP | 3/4" BSPP |
| XV-2R/17 | 2,800  | 108,2 | 52,2 | 98,2  | 3/4" BSPP | 3/4" BSPP |
| XV-2R/19 | 2,900  | 112,2 | 54,2 | 102,2 | 3/4" BSPP | 3/4" BSPP |
| XV-2R/22 | 3,050  | 118,2 | 57,2 | 108,2 | 3/4" BSPP | 3/4" BSPP |
| XV-2R/26 | 3,150  | 122,2 | 59,2 | 112,2 | 1" BSPP   | 1" BSPP   |
| XV-2R/30 | 3,400  | 130,2 | 63,2 | 120,2 | 1" BSPP   | 1" BSPP   |
| XV-2R/34 | 3,600  | 137,2 | 66,7 | 127,2 | 1" BSPP   | 1" BSPP   |
| XV-2R/40 | 3,800  | 146,2 | 71,2 | 136,2 | 1" BSPP   | 1" BSPP   |



T.1 = 54÷58.9 [Nm] - screw tightening torque M10

T.3 = 40 [Nm] - torque wrench setting 19

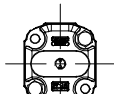
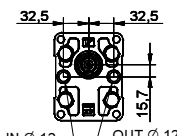
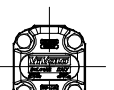
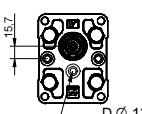
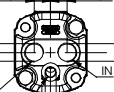
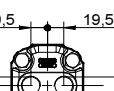
T.2 = 233.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-2R**

## ø36.5 FLANGE

| ø36.5 FLANGE                                                                      |    |                                     |   | Shaft                               |   | Cover                                                                                 |   |
|-----------------------------------------------------------------------------------|----|-------------------------------------|---|-------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | 01 | CI001 - Parallel<br>T.2 = 44.1 [Nm] | A | CI002 - Parallel<br>T.2 = 67.5 [Nm] | B |    | E |
|  | 04 | CO001 - Tapered<br>T.2 = 233.2 [Nm] | E | CO002 - Tapered<br>T.2 = 233.2 [Nm] | F |    | F |
|  | 05 | SCF02 - Splined<br>T.2 = 86.1 [Nm]  | G | SCF03 - Splined<br>T.2 = 86.1 [Nm]  | H |    | K |
|                                                                                   |    | SCF04 - Splined<br>T.2 = 67.1 [Nm]  | I | SCF01 - Splined<br>T.2 = 86.2 [Nm]  | L |    | L |
|                                                                                   |    |                                     |   |                                     |   |  | P |

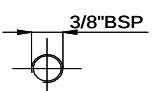
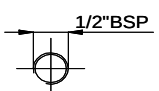
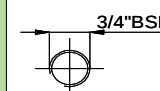
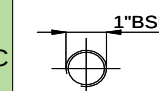
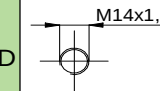
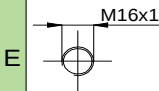
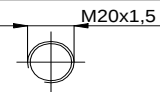
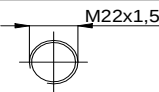
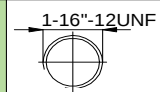
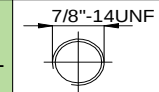
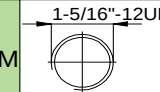
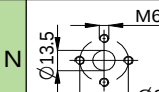
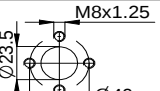
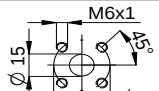
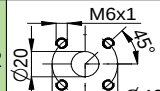
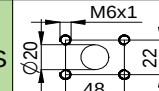
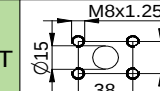
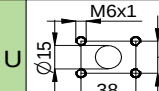
| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 4                    | O - O            | R - R | B - B | Z - Z |  |
| 6                    | O - O            | R - R | B - B | Z - Z |  |
| 9                    | O - O            | R - R | B - B | Z - Z |  |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
|                      | O - O            | R - R | B - B | Z - Z |
| 4                    | O - O            | R - R | B - B | Z - Z |
| 6                    | O - O            | R - R | B - B | Z - Z |
| 9                    | O - O            | R - R | B - B | Z - Z |
| 11                   | O - O            | R - R | B - B | Z - Z |
| 14                   | P - P            | R - R | C - C | Z - Z |
| 17                   | P - P            | R - R | C - C | Z - Z |
| 19                   | P - P            | R - R | C - C | Z - Z |
| 22                   | P - P            | R - R | C - C | Z - Z |
| 26                   | Q - P            | S - S | D - D | Z - Z |
| 30                   | Q - P            | S - S | D - D | Z - Z |
| 34                   | Q - P            | S - S | D - D | Z - Z |
| 40                   | Q - P            | S - S | D - D | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |  | F |
|  | H |  | I |  | L |  | M |  | N |  | O |
|  | Q |  | R |  | S |  | T |  | U |  | V |
| Closed Body                                                                         |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       | Z |

# reversible pump - series XV

**XV-2R**

## BH TYPE PUMP

ø50 BODY-SHAPED FLANGE - TAPER SHAFT

**X 2 R 51 07 F R R E**

|              |     |                                                   |
|--------------|-----|---------------------------------------------------|
| Series       | X   | series XV                                         |
| Group        | 2   | group 2                                           |
| Category     | R   | reversible pump                                   |
| Displacement | 51  | 17                                                |
| Flange       | 07  | Ø50 BH GERMAN STANDARDIZED reversible rotation    |
| Shaft        | F   | CO002 - Tapered 1:5 - ø17.4 - M12x1.5 - key thk.3 |
| Body         | IN  | inlet - Ø35 a 45° Ø15 M6                          |
|              | OUT | outlet - Ø35 a 45° Ø15 M6                         |
| Cover        | E   | with external drainage                            |



XR210

Technical data table

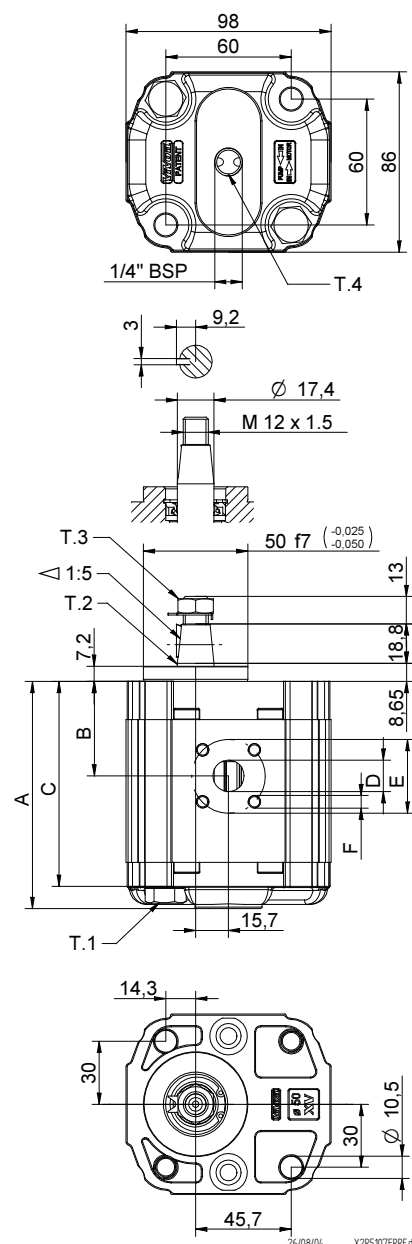
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|----------|-------------------------|---------------|--------|---------------------|---------------------|
|          |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-2R/04 | 4,20                    | 260           | 300    | X 2 R 41 07 F R R E | X 2 R 41 07 F R R F |
| XV-2R/06 | 6,00                    | 260           | 300    | X 2 R 43 07 F R R E | X 2 R 43 07 F R R F |
| XV-2R/09 | 8,40                    | 260           | 300    | X 2 R 45 07 F R R E | X 2 R 45 07 F R R F |
| XV-2R/11 | 10,80                   | 260           | 300    | X 2 R 47 07 F R R E | X 2 R 47 07 F R R F |
| XV-2R/14 | 14,40                   | 250           | 290    | X 2 R 49 07 F R R E | X 2 R 49 07 F R R F |
| XV-2R/17 | 16,80                   | 230           | 270    | X 2 R 51 07 F R R E | X 2 R 51 07 F R R F |
| XV-2R/19 | 19,20                   | 210           | 250    | X 2 R 53 07 F R R E | X 2 R 53 07 F R R F |
| XV-2R/22 | 22,80                   | 200           | 240    | X 2 R 55 07 F R R E | X 2 R 55 07 F R R F |
| XV-2R/26 | 26,20                   | 170           | 210    | X 2 R 57 07 F S S E | X 2 R 57 07 F S S F |
| XV-2R/30 | 30,00                   | 160           | 200    | X 2 R 59 07 F S S E | X 2 R 59 07 F S S F |
| XV-2R/34 | 34,20                   | 150           | 190    | X 2 R 61 07 F S S E | X 2 R 61 07 F S S F |
| XV-2R/40 | 39,60                   | 140           | 180    | X 2 R 63 07 F S S E | X 2 R 63 07 F S S F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight<br>kg | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|----------|--------------|-------|------|-------|-----|----|------|-----|----|------|
|          |              | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-2R/04 | 2,100        | 87,2  | 38,6 | 77,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/06 | 2,200        | 90,2  | 38,6 | 80,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/09 | 2,300        | 94,2  | 40,6 | 84,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/11 | 2,400        | 98,2  | 45,0 | 88,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/14 | 2,600        | 104,2 | 45,0 | 94,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/17 | 2,700        | 108,2 | 45,0 | 98,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/19 | 2,800        | 112,2 | 45,0 | 102,2 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/22 | 2,950        | 118,2 | 52,5 | 108,2 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/26 | 3,050        | 122,2 | 52,5 | 112,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/30 | 3,300        | 130,2 | 60,7 | 120,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/34 | 3,500        | 137,2 | 60,7 | 127,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/40 | 3,700        | 146,2 | 60,7 | 136,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |



T.1 = 54÷58.9 [Nm] - screw tightening torque M10

T.3 = 40 [Nm] - torque wrench setting 19

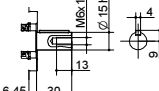
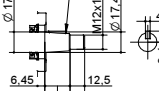
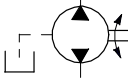
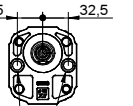
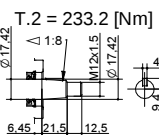
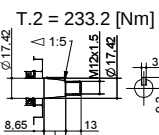
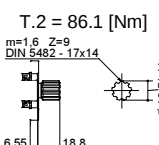
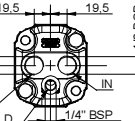
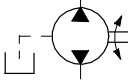
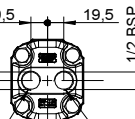
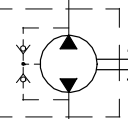
T.2 = 233.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-2R**

## ø50 "BH" Body-Shaped FLANGE

| ø50 "BH" Body-Shaped FLANGE                                                       |                                                                                   | Shaft                                                                                                                    |                                                                                                                          |                                                                                                                          |                                                                                                                          | Cover                                                                                                                                                                      |                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 07                                                                                | CI001 - Parallel<br>T.2 = 44.1 [Nm]<br> | A                                                                                                                        | CI002 - Parallel<br>T.2 = 67.5 [Nm]<br> | B                                                                                                                        | <br> | E                                                                                                                                                                            |
|                                                                                   |  | 10                                                                                                                       | CO001 - Tapered<br>T.2 = 233.2 [Nm]<br> | E                                                                                                                        | CO002 - Tapered<br>T.2 = 233.2 [Nm]<br> |                                                                                                                                                                            | F                                                                                                                                                                            |
|                                                                                   |                                                                                   | SCF03 - Splined<br>T.2 = 86.1 [Nm]<br>  | H                                                                                                                        |                                                                                                                          |                                                                                                                          | <br> | K                                                                                                                                                                            |
|                                                                                   |                                                                                   |                                                                                                                          |                                                                                                                          |                                                                                                                          |                                                                                                                          |                                                                                                                                                                            | <br> |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 4                    | O - O            | R - R | B - B | Z - Z |  |
| 6                    | O - O            | R - R | B - B | Z - Z |  |
| 9                    | O - O            | R - R | B - B | Z - Z |  |
| 11                   | O - O            | R - R | B - B | Z - Z |  |
| 14                   | P - P            | R - R | C - C | Z - Z |  |
| 17                   | P - P            | R - R | C - C | Z - Z |  |
| 19                   | P - P            | R - R | C - C | Z - Z |  |
| 22                   | P - P            | R - R | C - C | Z - Z |  |
| 26                   | Q - P            | S - S | D - D | Z - Z |  |
| 30                   | Q - P            | S - S | D - D | Z - Z |  |
| 34                   | Q - P            | S - S | D - D | Z - Z |  |
| 40                   | Q - P            | S - S | D - D | Z - Z |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                                      |   |                                                                                             |   |                                                                                                |   |                                                                                                |   |                                                                                                 |   |                                                                                       |   |
|---------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |     | C |     | D |             | E |  | F |
|          | H |          | I |  | L |  | M |  | N |  | O |
|          | Q |          | R |             | S |             | T |             | U |  | V |
| Closed Body                                                                                 |   |                                                                                             |   |                                                                                                |   |                                                                                                |   |                                                                                                 |   |                                                                                       | Z |

# reversible pump - series XV

**XV-2R**

## HY TYPE PUMP

Ø50 BODY-SHAPED FLANGE - TAPER SHAFT

**X 2 R 51 13 F R R E**

|              |     |                                                   |
|--------------|-----|---------------------------------------------------|
| Series       | X   | series XV                                         |
| Group        | 2   | group 2                                           |
| Category     | R   | reversible pump                                   |
| Displacement | 51  | 17                                                |
| Flange       | 13  | Ø50 HY GERMAN STARDARDIZED reversible rotation    |
| Shaft        | F   | CO002 - Tapered 1:5 - Ø17.4 - M12x1.5 - key thk.3 |
| Body         | IN  | R inlet - Ø35 a 45° Ø15 M6                        |
|              | OUT | R outlet - Ø35 a 45° Ø15 M6                       |
| Cover        | E   | with external drainage                            |



**XR213**

**Technical data table**

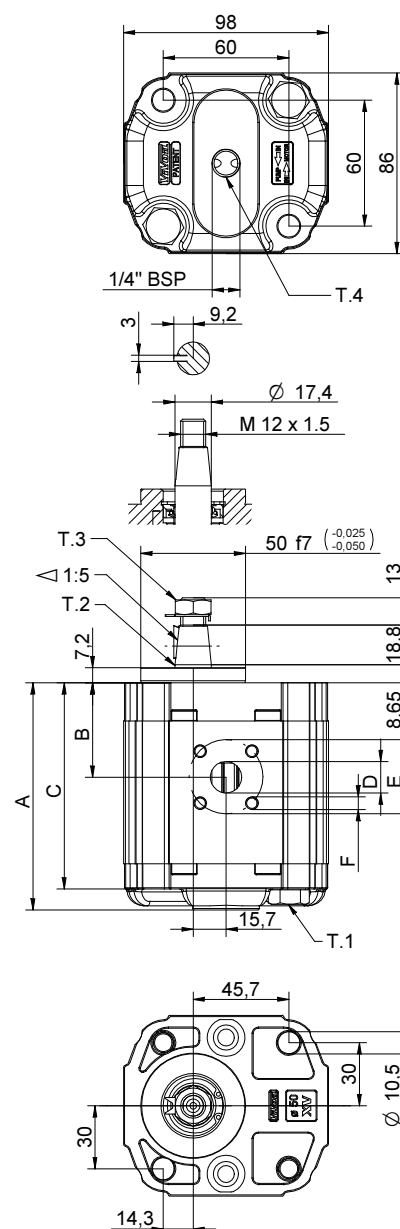
| TYPE     | Displacement | Max. Pressure |        | CODE                |                     |
|----------|--------------|---------------|--------|---------------------|---------------------|
|          | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-2R/04 | 4,20         | 260           | 300    | X 2 R 41 13 F R R E | X 2 R 41 13 F R R F |
| XV-2R/06 | 6,00         | 260           | 300    | X 2 R 43 13 F R R E | X 2 R 43 13 F R R F |
| XV-2R/09 | 8,40         | 260           | 300    | X 2 R 45 13 F R R E | X 2 R 45 13 F R R F |
| XV-2R/11 | 10,80        | 260           | 300    | X 2 R 47 13 F R R E | X 2 R 47 13 F R R F |
| XV-2R/14 | 14,40        | 250           | 290    | X 2 R 49 13 F R R E | X 2 R 49 13 F R R F |
| XV-2R/17 | 16,80        | 230           | 270    | X 2 R 51 13 F R R E | X 2 R 51 13 F R R F |
| XV-2R/19 | 19,20        | 210           | 250    | X 2 R 53 13 F R R E | X 2 R 53 13 F R R F |
| XV-2R/22 | 22,80        | 200           | 240    | X 2 R 55 13 F R R E | X 2 R 55 13 F R R F |
| XV-2R/26 | 26,20        | 170           | 210    | X 2 R 57 13 F S S E | X 2 R 57 13 F S S F |
| XV-2R/30 | 30,00        | 160           | 200    | X 2 R 59 13 F S S E | X 2 R 59 13 F S S F |
| XV-2R/34 | 34,20        | 150           | 190    | X 2 R 61 13 F S S E | X 2 R 61 13 F S S F |
| XV-2R/40 | 39,60        | 140           | 180    | X 2 R 63 13 F S S E | X 2 R 63 13 F S S F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

**Dimensions table**

| TYPE     | Weight | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|----------|--------|-------|------|-------|-----|----|------|-----|----|------|
|          | kg     | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-2R/04 | 2,100  | 87,2  | 38,6 | 77,2  | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/06 | 2,200  | 90,2  | 38,6 | 80,2  | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/09 | 2,300  | 94,2  | 40,6 | 84,2  | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/11 | 2,400  | 98,2  | 45,0 | 88,2  | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/14 | 2,600  | 104,2 | 45,0 | 94,2  | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/17 | 2,700  | 108,2 | 45,0 | 98,2  | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/19 | 2,800  | 112,2 | 45,0 | 102,2 | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/22 | 2,950  | 118,2 | 52,5 | 108,2 | Ø15 | 35 | M6x1 | Ø15 | 35 | M6x1 |
| XV-2R/26 | 3,050  | 122,2 | 52,5 | 112,2 | Ø20 | 40 | M6x1 | Ø20 | 40 | M6x1 |
| XV-2R/30 | 3,300  | 130,2 | 60,7 | 120,2 | Ø20 | 40 | M6x1 | Ø20 | 40 | M6x1 |
| XV-2R/34 | 3,500  | 137,2 | 60,7 | 127,2 | Ø20 | 40 | M6x1 | Ø20 | 40 | M6x1 |
| XV-2R/40 | 3,700  | 146,2 | 60,7 | 136,2 | Ø20 | 40 | M6x1 | Ø20 | 40 | M6x1 |



T.1 = 54÷58.9 [Nm] - screw tightening torque M10

T.3 = 40 [Nm] - torque wrench setting 19

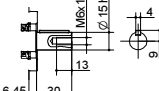
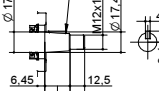
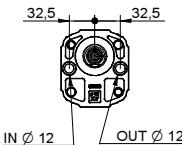
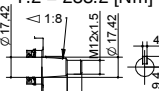
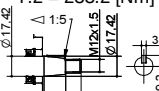
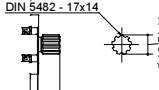
T.2 = 233.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

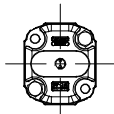
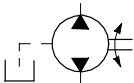
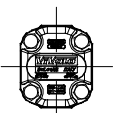
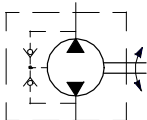
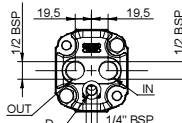
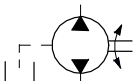
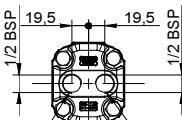
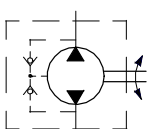
**T.4 = 0.3÷0.5 bar - max. drainage pressure**

# Table of variations

**XV-2R**

## ø50 "HY" Body-Shaped FLANGE

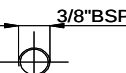
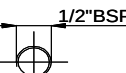
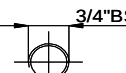
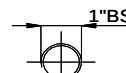
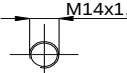
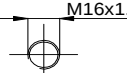
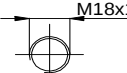
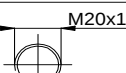
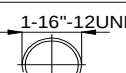
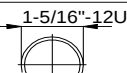
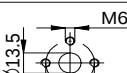
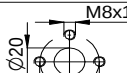
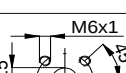
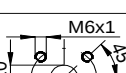
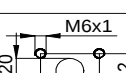
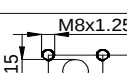
| ø50 "HY" Body-Shaped FLANGE                                                       |    | Shaft                                                                             |   | Cover                                                                             |   |
|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|
|  | 13 | CI001 - Parallel<br>T.2 = 44.1 [Nm]                                               | A | CI002 - Parallel<br>T.2 = 67.5 [Nm]                                               | B |
|                                                                                   |    |  |   |  |   |
|  | 16 | CO001 - Tapered<br>T.2 = 233.2 [Nm]                                               | E | CO002 - Tapered<br>T.2 = 233.2 [Nm]                                               | F |
|                                                                                   |    |  |   |  |   |
|                                                                                   |    | SCF03 - Splined<br>T.2 = 86.1 [Nm]                                                | H |                                                                                   |   |
|                                                                                   |    |  |   |                                                                                   |   |

|                                                                                      |                                                                                      |   |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---|
|   |   | E |
| External drainage                                                                    |                                                                                      |   |
|   |   | F |
| Internal drainage                                                                    |                                                                                      |   |
|   |   | K |
| IN + OUT + external                                                                  |                                                                                      |   |
|  |  | L |
| IN + OUT + internal                                                                  |                                                                                      |   |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 4                    | O - O            | R - R | B - B | Z - Z |  |
| 6                    | O - O            | R - R | B - B | Z - Z |  |
| 9                    | O - O            | R - R | B - B | Z - Z |  |
| 11                   | O - O            | R - R | B - B | Z - Z |  |
| 14                   | P - P            | R - R | C - C | Z - Z |  |
| 17                   | P - P            | R - R | C - C | Z - Z |  |
| 19                   | P - P            | R - R | C - C | Z - Z |  |
| 22                   | P - P            | R - R | C - C | Z - Z |  |
| 26                   | Q - P            | S - S | D - D | Z - Z |  |
| 30                   | Q - P            | S - S | D - D | Z - Z |  |
| 34                   | Q - P            | S - S | D - D | Z - Z |  |
| 40                   | Q - P            | S - S | D - D | Z - Z |  |

Table showing standard flange and thread combinations available in stock

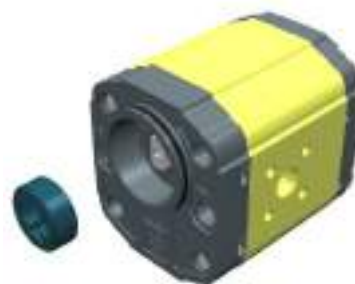
| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |                                                                                       |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |  | F |  | G |
|  | H |  | I |  | L |  | M |  | N |  | O |  | P |
|  | Q |  | R |  | S |  | T |  | U |  | V | Closed Body                                                                           | Z |

XV-2R

**STANDARD GERMAN "BH" TYPE PUMP  
ø52 BODY-SHAPED FLANGE - MILLED SHANK**

|   |   |   |    |    |   |   |   |   |
|---|---|---|----|----|---|---|---|---|
| X | 2 | R | 51 | 19 | C | R | R | E |
|---|---|---|----|----|---|---|---|---|

|              |     |                                                         |
|--------------|-----|---------------------------------------------------------|
| Series       | X   | series XV                                               |
| Group        | 2   | group 2                                                 |
| Category     | R   | reversible pump                                         |
| Displacement | 51  | 17                                                      |
| Flange       | 19  | Ø52 GERMAN STARDARDIZED reversible rotation (with OR)   |
| Shaft        | C   | CF001 - Milled shank ø15 - thk.8 ("BH" Standard German) |
| Body         | IN  | R inlet - Ø35 a 45° Ø15 M6                              |
|              | OUT | R outlet - Ø35 a 45° Ø15 M6                             |
| Cover        | E   | with external drainage                                  |



XR216

Technical data table

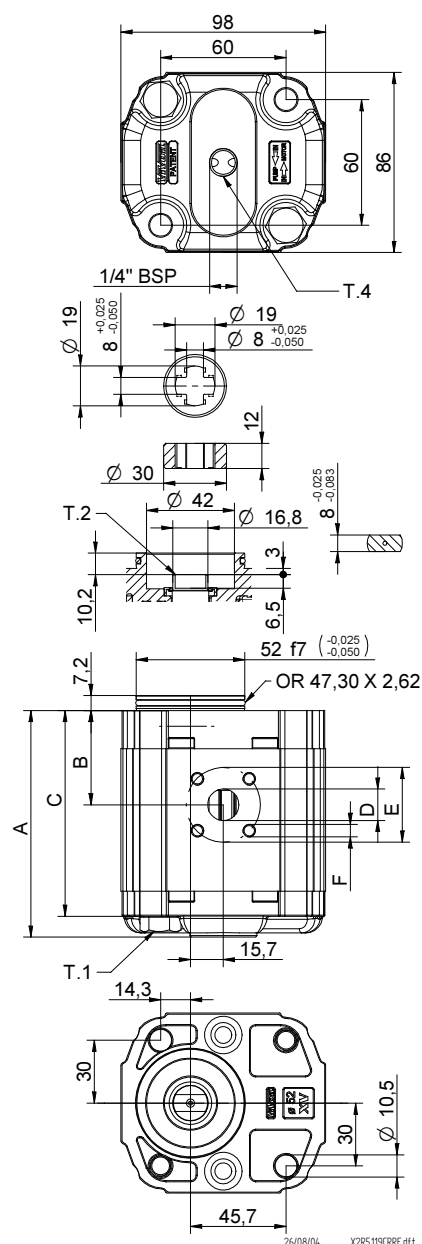
| TYPE     | Displacement | Max. Pressure |        | CODE                                                                              |   |   |    |    |   |   |   |                   |                                                                                   |   |   |    |    |   |   |   |   |
|----------|--------------|---------------|--------|-----------------------------------------------------------------------------------|---|---|----|----|---|---|---|-------------------|-----------------------------------------------------------------------------------|---|---|----|----|---|---|---|---|
|          |              |               |        |  |   |   |    |    |   |   |   |                   |  |   |   |    |    |   |   |   |   |
|          | cm3/rev      | P1 bar        | P3 bar | External drainage                                                                 |   |   |    |    |   |   |   | Internal drainage |                                                                                   |   |   |    |    |   |   |   |   |
| XV-2R/04 | 4,20         | 260           | 300    | X                                                                                 | 2 | R | 41 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 41 | 19 | C | R | R | F |
| XV-2R/06 | 6,00         | 260           | 300    | X                                                                                 | 2 | R | 43 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 43 | 19 | C | R | R | F |
| XV-2R/09 | 8,40         | 260           | 300    | X                                                                                 | 2 | R | 45 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 45 | 19 | C | R | R | F |
| XV-2R/11 | 10,80        | 260           | 300    | X                                                                                 | 2 | R | 47 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 47 | 19 | C | R | R | F |
| XV-2R/14 | 14,40        | 250           | 290    | X                                                                                 | 2 | R | 49 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 49 | 19 | C | R | R | F |
| XV-2R/17 | 16,80        | 230           | 270    | X                                                                                 | 2 | R | 51 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 51 | 19 | C | R | R | F |
| XV-2R/19 | 19,20        | 210           | 250    | X                                                                                 | 2 | R | 53 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 53 | 19 | C | R | R | F |
| XV-2R/22 | 22,80        | 200           | 240    | X                                                                                 | 2 | R | 55 | 19 | C | R | R | E                 | X                                                                                 | 2 | R | 55 | 19 | C | R | R | F |
| XV-2R/26 | 26,20        | 170           | 210    | X                                                                                 | 2 | R | 57 | 19 | C | S | S | E                 | X                                                                                 | 2 | R | 57 | 19 | C | S | S | F |
| XV-2R/30 | 30,00        | 160           | 200    | X                                                                                 | 2 | R | 59 | 19 | C | S | S | E                 | X                                                                                 | 2 | R | 59 | 19 | C | S | S | F |
| XV-2R/34 | 34,20        | 150           | 190    | X                                                                                 | 2 | R | 61 | 19 | C | S | S | E                 | X                                                                                 | 2 | R | 61 | 19 | C | S | S | F |
| XV-2R/40 | 39,60        | 140           | 180    | X                                                                                 | 2 | R | 63 | 19 | C | S | S | E                 | X                                                                                 | 2 | R | 63 | 19 | C | S | S | F |

*P1) Max. working pressure - P3) Max. peak pressure*

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

## Dimensions table

| TYPE     | Weight | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|----------|--------|-------|------|-------|-----|----|------|-----|----|------|
|          | kg     | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-2R/04 | 2,100  | 87,2  | 38,6 | 77,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/06 | 2,200  | 90,2  | 38,6 | 80,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/09 | 2,300  | 94,2  | 40,6 | 84,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/11 | 2,400  | 98,2  | 45,0 | 88,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/14 | 2,600  | 104,2 | 45,0 | 94,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/17 | 2,700  | 108,2 | 45,0 | 98,2  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/19 | 2,800  | 112,2 | 45,0 | 102,2 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/22 | 2,950  | 118,2 | 52,5 | 108,2 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/26 | 3,050  | 122,2 | 52,5 | 112,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/30 | 3,300  | 130,2 | 60,7 | 120,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/34 | 3,500  | 137,2 | 60,7 | 127,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/40 | 3,700  | 146,2 | 60,7 | 136,2 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |



T.1 = 54÷58.9 [Nm] - screw tightening torque M10

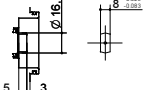
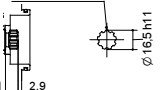
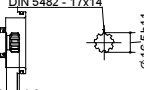
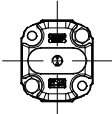
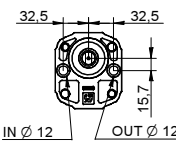
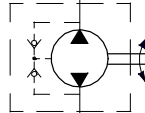
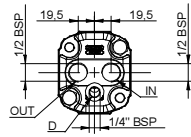
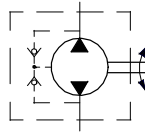
$T.2 = 60.5 \text{ [Nm]}$  - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

**T.4 = 0.3÷0,5 bar - max. drainage pressure**

# Table of variations

**XV-2R**

## Standard German ø52 "BH" FLANGE

| Standard German ø52 "BH" FLANGE                                                   |    | Shaft                                                                                                                                                    |   | Cover                                                                                                                                                    |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|  | 19 | CF001 - Milled shank<br>T.2 = 60.5 [Nm]<br>                             | C | SCF05 - Splined<br>T.2 = 86.2 [Nm]<br>m=1.6 Z=9<br>DIN 5482 - 17x14<br> | K |
|                                                                                   | 22 | SCF01 - Splined<br>T.2 = 86.2 [Nm]<br>m=1.6 Z=9<br>DIN 5482 - 17x14<br> | L | External drainage<br>                                                 | E |
|  |    |                                                                                                                                                          |   | Internal drainage<br>                                                 | F |
|                                                                                   |    |                                                                                                                                                          |   | IN + OUT + external<br>                                               | K |
|                                                                                   |    |                                                                                                                                                          |   | IN + OUT + internal<br>                                              | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |
|----------------------|------------------|-------|-------|-------|
| Displacement cm3/rev | Standard threads |       |       |       |
| 4                    | O - O            | R - R | B - B | Z - Z |
| 6                    | O - O            | R - R | B - B | Z - Z |
| 9                    | O - O            | R - R | B - B | Z - Z |
| 11                   | O - O            | R - R | B - B | Z - Z |
| 14                   | P - P            | R - R | C - C | Z - Z |
| 17                   | P - P            | R - R | C - C | Z - Z |
| 19                   | P - P            | R - R | C - C | Z - Z |
| 22                   | P - P            | R - R | C - C | Z - Z |
| 26                   | Q - P            | S - S | D - D | Z - Z |
| 30                   | Q - P            | S - S | D - D | Z - Z |
| 34                   | Q - P            | S - S | D - D | Z - Z |
| 40                   | Q - P            | S - S | D - D | Z - Z |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                                      |   |                                                                                             |   |                                                                                                |   |                                                                                                |   |                                                                                                 |   |                                                                                       |             |
|---------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|-------------|
|  | A |  | B |     | C |     | D |             | E |  | F           |
|          | H |          | I |  | L |  | M |  | N |  | O           |
|          | Q |          | R |             | S |             | T |             | U |  | V           |
|                                                                                             |   |                                                                                             |   |                                                                                                |   |                                                                                                |   |                                                                                                 |   |                                                                                       | Closed Body |
|                                                                                             |   |                                                                                             |   |                                                                                                |   |                                                                                                |   |                                                                                                 |   |                                                                                       | Z           |

# reversible pump - series XV

STANDARD GERMAN PUMP  
ø80 FLANGE - TAPER SHAFT

**XV-2R**

**X 2 R 51 25 F R R E**

|              |     |                                                       |
|--------------|-----|-------------------------------------------------------|
| Series       | X   | series XV                                             |
| Group        | 2   | group 2                                               |
| Category     | R   | reversible pump                                       |
| Displacement | 51  | 17                                                    |
| Flange       | 25  | Ø80 GERMAN STANDARDIZED reversible rotation (with OR) |
| Shaft        | F   | CO002 - Tapered 1:5 - ø17.4 - M12x1.5 - key thk.3     |
| Body         | IN  | R inlet - Ø35 a 45° Ø15 M6                            |
|              | OUT | R outlet - Ø35 a 45° Ø15 M6                           |
| Cover        | E   | with external drainage                                |



XR217

Technical data table

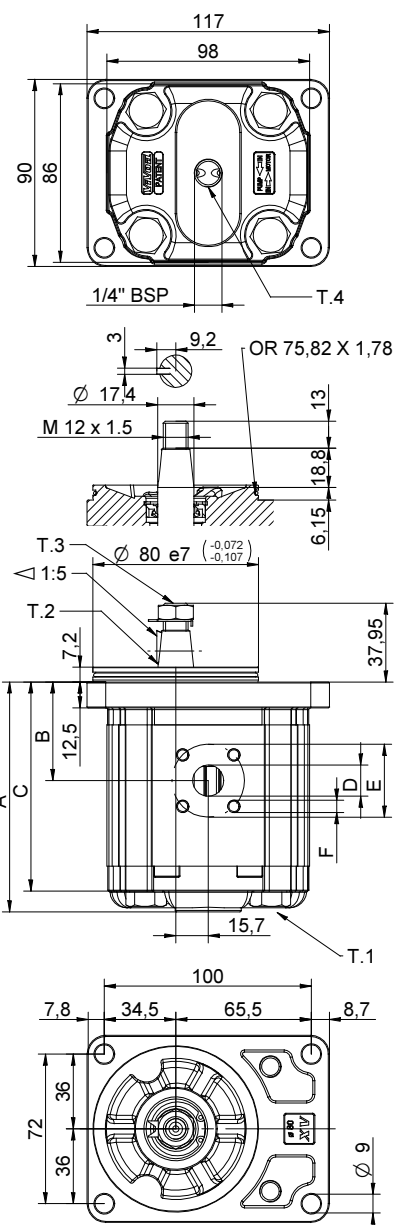
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|----------|-------------------------|---------------|--------|---------------------|---------------------|
|          |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-2R/04 | 4,20                    | 260           | 300    | X 2 R 41 25 F R R E | X 2 R 41 25 F R R F |
| XV-2R/06 | 6,00                    | 260           | 300    | X 2 R 43 25 F R R E | X 2 R 43 25 F R R F |
| XV-2R/09 | 8,40                    | 260           | 300    | X 2 R 45 25 F R R E | X 2 R 45 25 F R R F |
| XV-2R/11 | 10,80                   | 260           | 300    | X 2 R 47 25 F R R E | X 2 R 47 25 F R R F |
| XV-2R/14 | 14,40                   | 250           | 290    | X 2 R 49 25 F R R E | X 2 R 49 25 F R R F |
| XV-2R/17 | 16,80                   | 230           | 270    | X 2 R 51 25 F R R E | X 2 R 51 25 F R R F |
| XV-2R/19 | 19,20                   | 210           | 250    | X 2 R 53 25 F R R E | X 2 R 53 25 F R R F |
| XV-2R/22 | 22,80                   | 200           | 240    | X 2 R 55 25 F R R E | X 2 R 55 25 F R R F |
| XV-2R/26 | 26,20                   | 170           | 210    | X 2 R 57 25 F S S E | X 2 R 57 25 F S S F |
| XV-2R/30 | 30,00                   | 160           | 200    | X 2 R 59 25 F S S E | X 2 R 59 25 F S S F |
| XV-2R/34 | 34,20                   | 150           | 190    | X 2 R 61 25 F S S E | X 2 R 61 25 F S S F |
| XV-2R/40 | 39,60                   | 140           | 180    | X 2 R 63 25 F S S E | X 2 R 63 25 F S S F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|----------|--------|-------|------|-------|-----|----|------|-----|----|------|
|          | kg     | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-2R/04 | 2,330  | 89,7  | 41,1 | 79,7  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/06 | 2,430  | 92,7  | 41,1 | 82,7  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/09 | 2,530  | 96,7  | 43,1 | 86,7  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/11 | 2,630  | 100,7 | 47,5 | 90,7  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/14 | 2,730  | 106,7 | 47,5 | 96,7  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/17 | 2,830  | 110,7 | 47,5 | 100,7 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/19 | 2,930  | 114,7 | 47,5 | 104,7 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/22 | 3,180  | 120,7 | 55,0 | 110,7 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/26 | 3,280  | 124,7 | 55,0 | 114,7 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/30 | 3,530  | 132,7 | 63,2 | 122,7 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/34 | 3,730  | 139,7 | 63,2 | 129,7 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/40 | 3,930  | 148,7 | 63,2 | 138,7 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |



T.1 = 54÷58.9 [Nm] - screw tightening torque M10

T.3 = 40 [Nm] - torque wrench setting 19

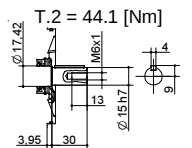
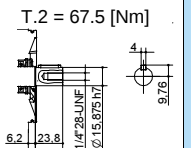
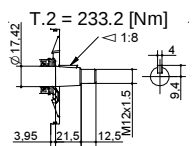
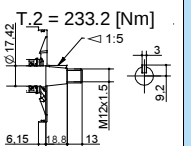
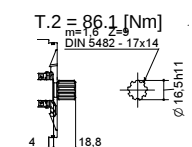
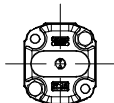
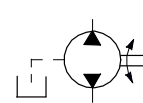
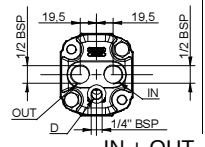
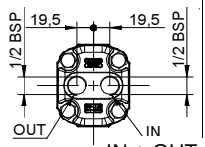
T.2 = 233.2 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-2R**

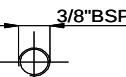
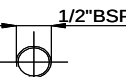
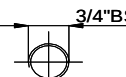
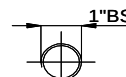
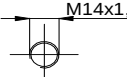
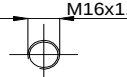
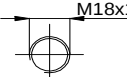
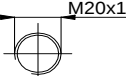
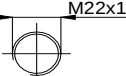
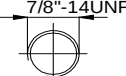
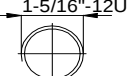
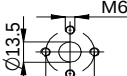
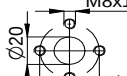
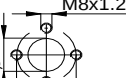
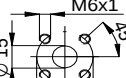
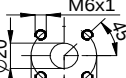
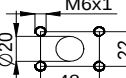
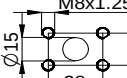
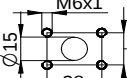
## ø80 FLANGE

| ø80 FLANGE                                                                        |    | Shaft                                                                                                                                                    |   | Cover                                                                                                                    |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------|---|
|  | 25 | CI001 - Parallel<br>T.2 = 44.1 [Nm]<br>                                 | A | CI002 - Parallel<br>T.2 = 67.5 [Nm]<br> | B |
|                                                                                   |    | CO001 - Tapered<br>T.2 = 233.2 [Nm]<br>                                 | E | CO002 - Tapered<br>T.2 = 233.2 [Nm]<br> | F |
|                                                                                   |    | SCF03 - Splined<br>T.2 = 86.1 [Nm]<br>m=1,9 Z=9<br>DIN 5482 - 17x14<br> | H |                                                                                                                          |   |
|                                                                                   |    |                                                                                                                                                          |   |                                       | E |
|                                                                                   |    |                                                                                                                                                          |   |                                       | F |
|                                                                                   |    |                                                                                                                                                          |   |                                       | K |
|                                                                                   |    |                                                                                                                                                          |   |                                      | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 4                    | O - O            | R - R | B - B | Z - Z |  |
| 6                    | O - O            | R - R | B - B | Z - Z |  |
| 9                    | O - O            | R - R | B - B | Z - Z |  |
| 11                   | O - O            | R - R | B - B | Z - Z |  |
| 14                   | P - P            | R - R | C - C | Z - Z |  |
| 17                   | P - P            | R - R | C - C | Z - Z |  |
| 19                   | P - P            | R - R | C - C | Z - Z |  |
| 22                   | P - P            | R - R | C - C | Z - Z |  |
| 26                   | Q - P            | S - S | D - D | Z - Z |  |
| 30                   | Q - P            | S - S | D - D | Z - Z |  |
| 34                   | Q - P            | S - S | D - D | Z - Z |  |
| 40                   | Q - P            | S - S | D - D | Z - Z |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                                      |   |                                                                                             |   |                                                                                               |   |                                                                                               |   |                                                                                                |   |                                                                                       |   |                                                                                       |   |
|---------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |    | C |    | D |            | E |  | F |  | G |
|          | H |          | I |  | L |  | M |  | N |  | O |  | P |
|          | Q |          | R |            | S |            | T |            | U |  | V | Closed Body                                                                           | Z |
|                                                                                             |   |                                                                                             |   |                                                                                               |   |                                                                                               |   |                                                                                                |   |                                                                                       |   |                                                                                       |   |

# reversible pump - series XV

**XV-2R**

## SAE A TYPE PUMP

ø82.5 FLANGE - SPLINED SHAFT

**X 2 R 51 31 I R R E**

|              |     |                                                           |
|--------------|-----|-----------------------------------------------------------|
| Series       | X   | series XV                                                 |
| Group        | 2   | group 2                                                   |
| Category     | R   | reversible pump                                           |
| Displacement | 51  | 17                                                        |
| Flange       | 31  | Ø82.5 SAE A reversible rotation (with OR)                 |
| Shaft        | I   | SCF04 - Splined ø15.456 z=9, H=22.5 - SAE J498 9T 16/32DP |
| Body         | IN  | R inlet - Ø35 a 45° Ø15 M6                                |
|              | OUT | R outlet - Ø35 a 45° Ø15 M6                               |
| Cover        | E   | with external drainage                                    |



XR219

Technical data table

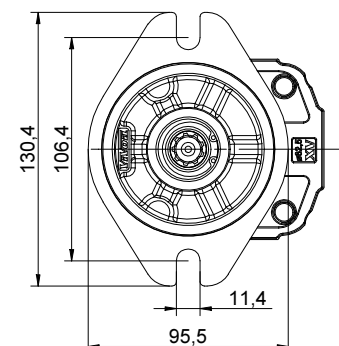
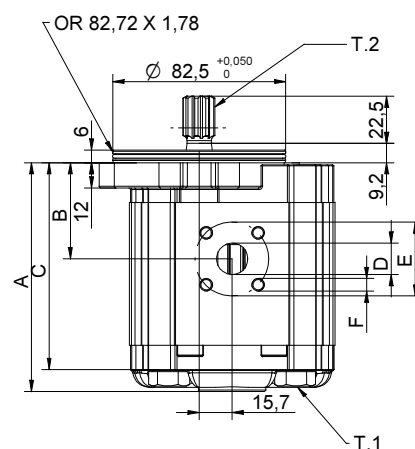
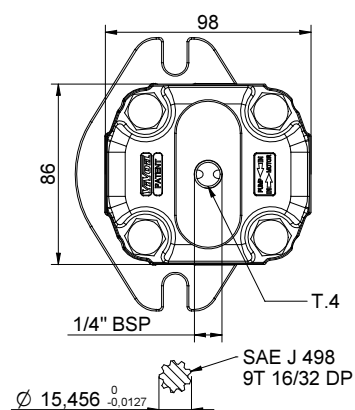
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE              |   |   |       |                   |   |   |   |
|----------|-------------------------|---------------|--------|-------------------|---|---|-------|-------------------|---|---|---|
|          |                         | P1 bar        | P3 bar | External drainage |   |   |       | Internal drainage |   |   |   |
| XV-2R/04 | 4,20                    | 260           | 300    | X                 | 2 | R | 41 31 | I                 | R | R | E |
| XV-2R/06 | 6,00                    | 260           | 300    | X                 | 2 | R | 43 31 | I                 | R | R | E |
| XV-2R/09 | 8,40                    | 260           | 300    | X                 | 2 | R | 45 31 | I                 | R | R | E |
| XV-2R/11 | 10,80                   | 260           | 300    | X                 | 2 | R | 47 31 | I                 | R | R | E |
| XV-2R/14 | 14,40                   | 250           | 290    | X                 | 2 | R | 49 31 | I                 | R | R | E |
| XV-2R/17 | 16,80                   | 230           | 270    | X                 | 2 | R | 51 31 | I                 | R | R | E |
| XV-2R/19 | 19,20                   | 210           | 250    | X                 | 2 | R | 53 31 | I                 | R | R | E |
| XV-2R/22 | 22,80                   | 200           | 240    | X                 | 2 | R | 55 31 | I                 | R | R | E |
| XV-2R/26 | 26,20                   | 170           | 210    | X                 | 2 | R | 57 31 | I                 | S | S | E |
| XV-2R/30 | 30,00                   | 160           | 200    | X                 | 2 | R | 59 31 | I                 | S | S | E |
| XV-2R/34 | 34,20                   | 150           | 190    | X                 | 2 | R | 61 31 | I                 | S | S | E |
| XV-2R/40 | 39,60                   | 140           | 180    | X                 | 2 | R | 63 31 | I                 | S | S | E |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight<br>kg | A     | B    | C     | D   | E  | F    | D   | E  | F    |
|----------|--------------|-------|------|-------|-----|----|------|-----|----|------|
|          |              | mm    | mm   | mm    | IN  |    |      | OUT |    |      |
| XV-2R/04 | 2,280        | 88,0  | 39,4 | 78,0  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/06 | 2,380        | 91,0  | 39,4 | 81,0  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/09 | 2,480        | 95,0  | 41,4 | 85,0  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/11 | 2,580        | 99,0  | 45,8 | 89,0  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/14 | 2,780        | 105,0 | 45,8 | 95,0  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/17 | 2,880        | 109,0 | 45,8 | 99,0  | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/19 | 2,980        | 113,0 | 45,8 | 103,0 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/22 | 3,130        | 119,0 | 53,3 | 109,0 | ø15 | 35 | M6x1 | ø15 | 35 | M6x1 |
| XV-2R/26 | 3,230        | 123,0 | 53,3 | 113,0 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/30 | 3,480        | 131,0 | 61,5 | 121,0 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/34 | 3,680        | 138,0 | 61,5 | 128,0 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |
| XV-2R/40 | 3,880        | 147,0 | 61,5 | 137,0 | ø20 | 40 | M6x1 | ø20 | 40 | M6x1 |



26/08/04 XV2R51IRRE.dff

T.1 = 54÷58.9 [Nm] - screw tightening torque M10

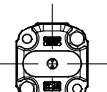
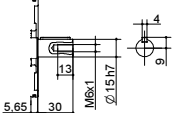
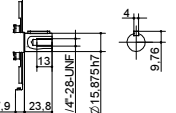
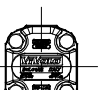
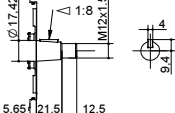
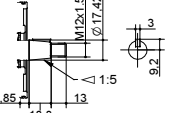
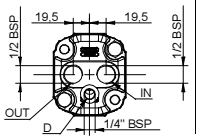
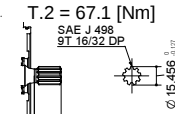
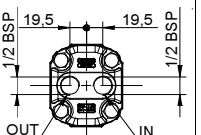
T.2 = 67.1 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-2R**

## ø82.5 FLANGE "SAE A"

| ø82.5 FLANGE "SAE A"                                                                            |    | Shaft                                                                             |   |                                                                                   |   | Cover                                                                                |   |
|-------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|                | 31 | CI001 - Parallel<br>T.2 = 44.1 [Nm]                                               | A | CI002 - Parallel<br>T.2 = 67.5 [Nm]                                               | B |   | E |
|                                                                                                 |    |  |   |  |   |                                                                                      |   |
| <br>Without OR | 32 | CO001 - Tapered<br>T.2 = 233.2 [Nm]                                               | E | CO002 - Tapered<br>T.2 = 233.2 [Nm]                                               | F |   | F |
|                                                                                                 |    |  |   |  |   |                                                                                      |   |
|                                                                                                 |    | SCF04 - Splined<br>T.2 = 67.1 [Nm]                                                | I |                                                                                   |   |   | K |
|                                                                                                 |    |  |   |                                                                                   |   |                                                                                      |   |
|                                                                                                 |    |                                                                                   |   |                                                                                   |   |  | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-2R/04     | 41   |
| XV-2R/06     | 43   |
| XV-2R/09     | 45   |
| XV-2R/11     | 47   |
| XV-2R/14     | 49   |
| XV-2R/17     | 51   |
| XV-2R/19     | 53   |
| XV-2R/22     | 55   |
| XV-2R/26     | 57   |
| XV-2R/30     | 59   |
| XV-2R/34     | 61   |
| XV-2R/40     | 63   |

| Standard bodies      |                  |       |       |       |  |
|----------------------|------------------|-------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |       |  |
| 4                    | O - O            | R - R | B - B | Z - Z |  |
| 6                    | O - O            | R - R | B - B | Z - Z |  |
| 9                    | O - O            | R - R | B - B | Z - Z |  |
| 11                   | O - O            | R - R | B - B | Z - Z |  |
| 14                   | P - P            | R - R | C - C | Z - Z |  |
| 17                   | P - P            | R - R | C - C | Z - Z |  |
| 19                   | P - P            | R - R | C - C | Z - Z |  |
| 22                   | P - P            | R - R | C - C | Z - Z |  |
| 26                   | Q - P            | S - S | D - D | Z - Z |  |
| 30                   | Q - P            | S - S | D - D | Z - Z |  |
| 34                   | Q - P            | S - S | D - D | Z - Z |  |
| 40                   | Q - P            | S - S | D - D | Z - Z |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                       |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |  | F |
|  | H |  | I |  | L |  | M |  | N |  | O |
|  | Q |  | R |  | S |  | T |  | U |  | V |
|                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |  | Z |

# reversible pump - series XV

STANDARD EUROPEAN PUMP  
ø50.8 FLANGE - TAPER SHAFT

XV-3R

|   |   |   |    |    |   |   |   |   |
|---|---|---|----|----|---|---|---|---|
| X | 3 | R | 78 | 01 | A | B | B | E |
|---|---|---|----|----|---|---|---|---|

|              |     |                                       |
|--------------|-----|---------------------------------------|
| Series       | X   | series XV                             |
| Group        | 3   | group 3                               |
| Category     | R   | reversible pump                       |
| Displacement | 78  | 38                                    |
| Flange       | 01  | Ø50.8 reversible rotation             |
| Shaft        | A   | CO001 - Tapered 1:8 - ø22 - key thk.4 |
| Body         | IN  | B inlet - Ø51 Ø27 M10                 |
|              | OUT | B outlet - Ø51 Ø27 M10                |
| Cover        | E   | with external drainage                |



XR301

Technical data table

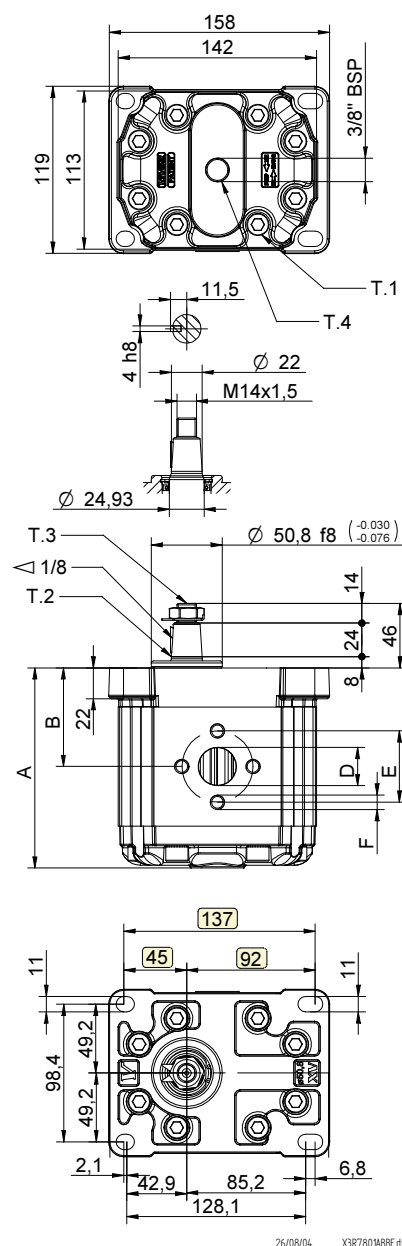
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|----------|-------------------------|---------------|--------|---------------------|---------------------|
|          |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-3R/15 | 14,89                   | 250           | 270    | X 3 R 66 01 A A A E | X 3 R 66 01 A A A F |
| XV-3R/18 | 17,37                   | 250           | 270    | X 3 R 68 01 A A A E | X 3 R 68 01 A A A F |
| XV-3R/21 | 21,10                   | 250           | 270    | X 3 R 70 01 A A A E | X 3 R 70 01 A A A F |
| XV-3R/27 | 26,97                   | 250           | 270    | X 3 R 72 01 A A A E | X 3 R 72 01 A A A F |
| XV-3R/32 | 32,27                   | 250           | 270    | X 3 R 74 01 A B B E | X 3 R 74 01 A B B F |
| XV-3R/38 | 38,47                   | 250           | 270    | X 3 R 78 01 A B B E | X 3 R 78 01 A B B F |
| XV-3R/43 | 43,44                   | 250           | 270    | X 3 R 79 01 A B B E | X 3 R 79 01 A B B F |
| XV-3R/47 | 47,16                   | 230           | 250    | X 3 R 80 01 A B B E | X 3 R 80 01 A B B F |
| XV-3R/51 | 50,88                   | 230           | 250    | X 3 R 81 01 A B B E | X 3 R 81 01 A B B F |
| XV-3R/54 | 54,60                   | 230           | 250    | X 3 R 82 01 A B B E | X 3 R 82 01 A B B F |
| XV-3R/61 | 60,81                   | 230           | 250    | X 3 R 83 01 A C C E | X 3 R 83 01 A C C F |
| XV-3R/64 | 64,53                   | 210           | 230    | X 3 R 85 01 A C C E | X 3 R 85 01 A C C F |
| XV-3R/70 | 70,74                   | 200           | 220    | X 3 R 86 01 A C C E | X 3 R 86 01 A C C F |
| XV-3R/74 | 74,46                   | 180           | 200    | X 3 R 87 01 A C C E | X 3 R 87 01 A C C F |
| XV-3R/90 | 86,87                   | 150           | 170    | X 3 R 89 01 A C C E | X 3 R 89 01 A C C F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight | A     | B    | D   | E  | F   | D   | E  | F   |
|----------|--------|-------|------|-----|----|-----|-----|----|-----|
|          | kg     | mm    | mm   | IN  |    |     | OUT |    |     |
| XV-3R/15 | 7,010  | 124,0 | 61,0 | ø20 | 40 | M8  | ø20 | 40 | M8  |
| XV-3R/18 | 7,070  | 126,0 | 62,0 | ø20 | 40 | M8  | ø20 | 40 | M8  |
| XV-3R/21 | 7,150  | 129,0 | 63,5 | ø20 | 40 | M8  | ø20 | 40 | M8  |
| XV-3R/27 | 7,250  | 133,0 | 65,5 | ø20 | 40 | M8  | ø20 | 40 | M8  |
| XV-3R/32 | 7,390  | 138,0 | 68,0 | ø27 | 51 | M10 | ø27 | 51 | M10 |
| XV-3R/38 | 7,520  | 143,0 | 70,5 | ø27 | 51 | M10 | ø27 | 51 | M10 |
| XV-3R/43 | 7,630  | 147,0 | 72,5 | ø27 | 51 | M10 | ø27 | 51 | M10 |
| XV-3R/47 | 7,710  | 150,0 | 74,0 | ø27 | 51 | M10 | ø27 | 51 | M10 |
| XV-3R/51 | 7,790  | 153,0 | 75,5 | ø27 | 51 | M10 | ø27 | 51 | M10 |
| XV-3R/54 | 7,870  | 156,0 | 77,0 | ø27 | 51 | M10 | ø27 | 51 | M10 |
| XV-3R/61 | 8,010  | 161,0 | 79,5 | ø36 | 62 | M10 | ø36 | 62 | M10 |
| XV-3R/64 | 8,090  | 164,0 | 81,0 | ø36 | 62 | M10 | ø36 | 62 | M10 |
| XV-3R/70 | 8,220  | 169,0 | 83,5 | ø36 | 62 | M10 | ø36 | 62 | M10 |
| XV-3R/74 | 8,300  | 172,0 | 85,0 | ø36 | 62 | M10 | ø36 | 62 | M10 |
| XV-3R/90 | 8,570  | 182,0 | 90,0 | ø36 | 62 | M10 | ø36 | 62 | M10 |



T.1 = 60÷65 [Nm] - screw tightening torque M10

T.3 = 75 [Nm] - torque wrench setting 22

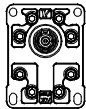
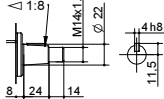
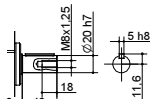
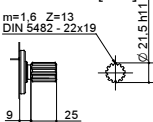
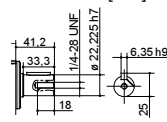
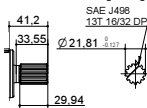
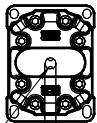
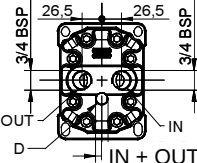
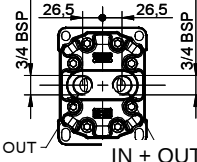
T.2 = 482 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-3R**

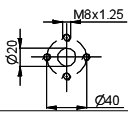
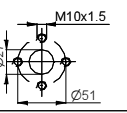
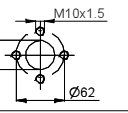
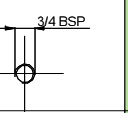
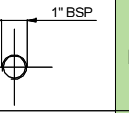
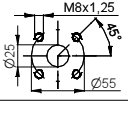
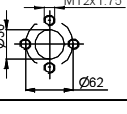
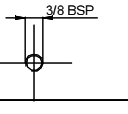
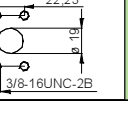
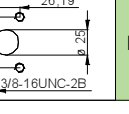
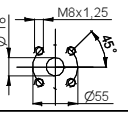
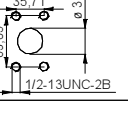
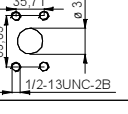
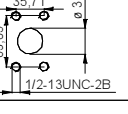
## ø50.8 FLANGE

| ø50.8 FLANGE                                                                      |    | Shaft                                                                                                                                                    |   | Cover                                                                                                                   |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------|---|
|  | 01 | CO001 - Tapered<br>T.2 = 482 [Nm]<br>                                   | A | CI001 - Parallel<br>T.2 = 181 [Nm]<br> | B |
|                                                                                   |    | SCF03 - Splined<br>T.2 = 223 [Nm]<br>m=1.6 Z=13<br>DIN 5482 - 22x19<br> | C | CI004 - Parallel<br>T.2 = 180 [Nm]<br> | H |
|                                                                                   |    | SCF04 - Splined<br>T.2 = 264 [Nm]<br>SAE J498<br>13T 16/32 DP<br>       | I |                                                                                                                         |   |
|                                                                                   |    |                                                                                                                                                          |   | <br>External drainage                | E |
|                                                                                   |    |                                                                                                                                                          |   | <br>Internal drainage                | F |
|                                                                                   |    |                                                                                                                                                          |   | <br>IN + OUT + external              | K |
|                                                                                   |    |                                                                                                                                                          |   | <br>IN + OUT + internal             | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-3R/15     | 66   |
| XV-3R/18     | 68   |
| XV-3R/21     | 70   |
| XV-3R/27     | 72   |
| XV-3R/32     | 74   |
| XV-3R/38     | 78   |
| XV-3R/43     | 79   |
| XV-3R/47     | 80   |
| XV-3R/51     | 81   |
| XV-3R/54     | 82   |
| XV-3R/61     | 83   |
| XV-3R/64     | 85   |
| XV-3R/70     | 86   |
| XV-3R/74     | 87   |
| XV-3R/90     | 89   |

| Standard bodies      |                  |       |       |  |
|----------------------|------------------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |  |
| 15                   | A - A            | D - D | H - H |  |
| 18                   | A - A            | D - D | H - H |  |
| 21                   | A - A            | D - D | H - H |  |
| 27                   | A - A            | E - E | H - H |  |
| 32                   | B - B            | E - E | H - H |  |
| 38                   | B - B            | E - E | H - H |  |
| 43                   | B - B            | E - E | H - H |  |
| 47                   | B - B            | E - E | H - H |  |
| 51                   | B - B            | E - E | H - H |  |
| 54                   | B - B            | E - E | H - H |  |
| 61                   | C - C            | F - F |       |  |
| 64                   | C - C            | F - F |       |  |
| 70                   | C - C            | F - F |       |  |
| 74                   | C - C            | F - F |       |  |
| 90                   | C - C            | F - F |       |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                                |   |                                                                                       |   |                                                                                       |   |                                                                                       |   |                                                                                      |   |
|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|    | A |    | B |    | C |    | D |  | E |
|    | H |    | I |    | L |    | M |  | N |
|  | F |  | G |  | O |  | P |                                                                                      |   |
| Closed Body                                                                           | Z |                                                                                       |   |                                                                                       |   |                                                                                       |   |                                                                                      |   |

# reversible pump - series XV

STANDARD EUROPEAN PUMP  
ø50.8 FLANGE - TAPER SHAFT

XV-3R

|   |   |   |    |    |   |   |   |   |
|---|---|---|----|----|---|---|---|---|
| X | 3 | R | 78 | 01 | A | E | E | E |
|---|---|---|----|----|---|---|---|---|

|              |     |                                       |
|--------------|-----|---------------------------------------|
| Series       | X   | series XV                             |
| Group        | 3   | group 3                               |
| Category     | R   | reversible pump                       |
| Displacement | 78  | 38                                    |
| Flange       | 01  | ø50.8 reversible rotation             |
| Shaft        | A   | CO001 - Tapered 1:8 - ø22 - key thk.4 |
| Body         | IN  | E inlet - 1" BSP                      |
|              | OUT | E outlet - 1" BSP                     |
| Cover        | E   | with external drainage                |



XR302

Technical data table

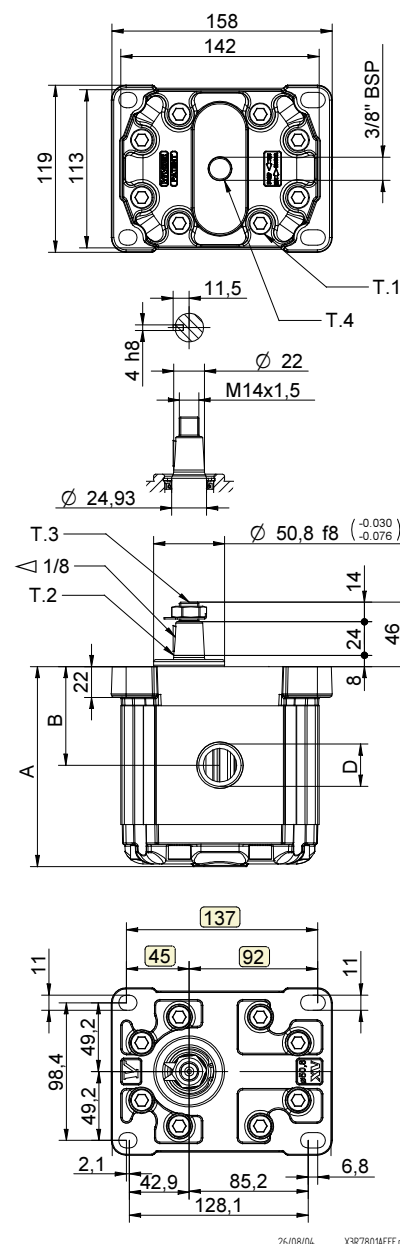
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|----------|-------------------------|---------------|--------|---------------------|---------------------|
|          |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-3R/15 | 14,89                   | 250           | 270    | X 3 P 66 01 A D D E | X 3 P 66 02 A D D F |
| XV-3R/18 | 17,37                   | 250           | 270    | X 3 P 68 01 A D D E | X 3 P 68 02 A D D F |
| XV-3R/21 | 21,10                   | 250           | 270    | X 3 P 70 01 A D D E | X 3 P 70 02 A D D F |
| XV-3R/27 | 26,97                   | 250           | 270    | X 3 P 72 01 A E E E | X 3 P 72 02 A E E F |
| XV-3R/32 | 32,27                   | 250           | 270    | X 3 P 74 01 A E E E | X 3 P 74 02 A E E F |
| XV-3R/38 | 38,47                   | 250           | 270    | X 3 P 78 01 A E E E | X 3 P 78 02 A E E F |
| XV-3R/43 | 43,44                   | 250           | 270    | X 3 P 79 01 A E E E | X 3 P 79 02 A E E F |
| XV-3R/47 | 47,16                   | 230           | 250    | X 3 P 80 01 A E E E | X 3 P 80 02 A E E F |
| XV-3R/51 | 50,88                   | 230           | 250    | X 3 P 81 01 A E E E | X 3 P 81 02 A E E F |
| XV-3R/54 | 54,60                   | 230           | 250    | X 3 P 82 01 A E E E | X 3 P 82 02 A E E F |
| XV-3R/61 | 60,81                   | 230           | 250    | X 3 P 83 01 A F F E | X 3 P 83 02 A F F F |
| XV-3R/64 | 64,53                   | 210           | 230    | X 3 P 85 01 A F F E | X 3 P 85 02 A F F F |
| XV-3R/70 | 70,74                   | 200           | 220    | X 3 P 86 01 A F F E | X 3 P 86 02 A F F F |
| XV-3R/74 | 74,46                   | 180           | 200    | X 3 P 87 01 A F F E | X 3 P 87 02 A F F F |
| XV-3R/90 | 86,87                   | 150           | 170    | X 3 P 89 01 A F F E | X 3 P 89 02 A F F F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

Dimensions table

| TYPE     | Weight | A     | B    | D           | D           |
|----------|--------|-------|------|-------------|-------------|
|          | kg     | mm    | mm   | IN          | OUT         |
| XV-3R/15 | 7,010  | 124,0 | 61,0 | 3/4" BSPP   | 3/4" BSPP   |
| XV-3R/18 | 7,070  | 126,0 | 62,0 | 3/4" BSPP   | 3/4" BSPP   |
| XV-3R/21 | 7,150  | 129,0 | 63,5 | 3/4" BSPP   | 3/4" BSPP   |
| XV-3R/27 | 7,250  | 133,0 | 65,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/32 | 7,390  | 138,0 | 68,0 | 1" BSPP     | 1" BSPP     |
| XV-3R/38 | 7,520  | 143,0 | 70,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/43 | 7,630  | 147,0 | 72,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/47 | 7,710  | 150,0 | 74,0 | 1" BSPP     | 1" BSPP     |
| XV-3R/51 | 7,790  | 153,0 | 75,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/54 | 7,870  | 156,0 | 77,0 | 1" BSPP     | 1" BSPP     |
| XV-3R/61 | 8,010  | 161,0 | 79,5 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/64 | 8,090  | 164,0 | 81,0 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/70 | 8,220  | 169,0 | 83,5 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/74 | 8,300  | 172,0 | 85,0 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/90 | 8,570  | 182,0 | 90,0 | 1" 1/4 BSPP | 1" 1/4 BSPP |



T.1 = 60÷65 [Nm] - screw tightening torque M10

T.3 = 75 [Nm] - torque wrench setting 22

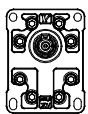
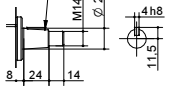
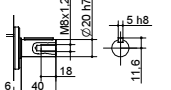
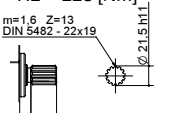
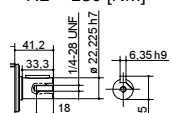
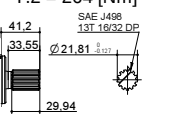
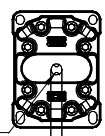
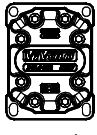
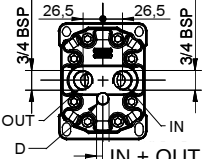
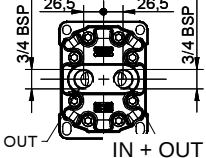
T.2 = 482 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-3R**

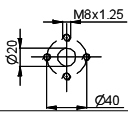
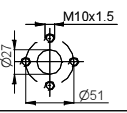
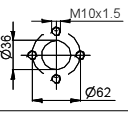
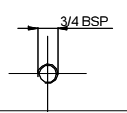
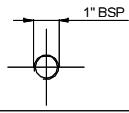
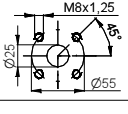
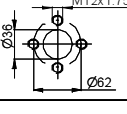
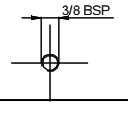
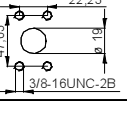
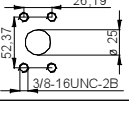
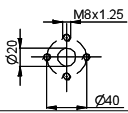
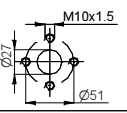
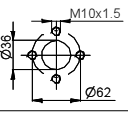
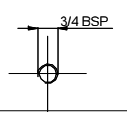
## ø50.8 FLANGE

| ø50.8 FLANGE                                                                      |    | Shaft                                                                                                                                                    |   | Cover                                                                                                                   |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------|---|
|  | 01 | CO001 - Tapered<br>T.2 = 482 [Nm]<br>                                   | A | CI001 - Parallel<br>T.2 = 181 [Nm]<br> | B |
|                                                                                   |    | SCF03 - Splined<br>T.2 = 223 [Nm]<br>m=1.6 Z=13<br>DIN 5482 - 22x19<br> | C | CI004 - Parallel<br>T.2 = 180 [Nm]<br> | H |
|                                                                                   |    | SCF04 - Splined<br>T.2 = 264 [Nm]<br>SAE J498<br>13T 16/32 DP<br>       | I |                                                                                                                         |   |
|                                                                                   |    |                                                                                                                                                          |   | <br>External drainage                | E |
|                                                                                   |    |                                                                                                                                                          |   | <br>Internal drainage                | F |
|                                                                                   |    |                                                                                                                                                          |   | <br>IN + OUT + external              | K |
|                                                                                   |    |                                                                                                                                                          |   | <br>IN + OUT + internal             | L |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-3R/15     | 66   |
| XV-3R/18     | 68   |
| XV-3R/21     | 70   |
| XV-3R/27     | 72   |
| XV-3R/32     | 74   |
| XV-3R/38     | 78   |
| XV-3R/43     | 79   |
| XV-3R/47     | 80   |
| XV-3R/51     | 81   |
| XV-3R/54     | 82   |
| XV-3R/61     | 83   |
| XV-3R/64     | 85   |
| XV-3R/70     | 86   |
| XV-3R/74     | 87   |
| XV-3R/90     | 89   |

| Standard bodies      |                  |       |       |  |
|----------------------|------------------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |  |
| 15                   | A - A            | D - D | H - H |  |
| 18                   | A - A            | D - D | H - H |  |
| 21                   | A - A            | D - D | H - H |  |
| 27                   | A - A            | E - E | H - H |  |
| 32                   | B - B            | E - E | H - H |  |
| 38                   | B - B            | E - E | H - H |  |
| 43                   | B - B            | E - E | H - H |  |
| 47                   | B - B            | E - E | H - H |  |
| 51                   | B - B            | E - E | H - H |  |
| 54                   | B - B            | E - E | H - H |  |
| 61                   | C - C            | F - F |       |  |
| 64                   | C - C            | F - F |       |  |
| 70                   | C - C            | F - F |       |  |
| 74                   | C - C            | F - F |       |  |
| 90                   | C - C            | F - F |       |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |
|  | H |  | I |  | L |  | M |  | N |
|  | F |  | G |  | O |  | P |                                                                                      |   |
| Closed Body                                                                         | Z |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |

# reversible pump - series XV

**XV-3R**

## SAE B TYPE PUMP

Ø101.6 FLANGE - SPLINED SHAFT

|          |          |          |           |           |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|
| <b>X</b> | <b>3</b> | <b>R</b> | <b>78</b> | <b>31</b> | <b>I</b> | <b>E</b> | <b>E</b> | <b>E</b> |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|

|              |     |                                                                    |
|--------------|-----|--------------------------------------------------------------------|
| Series       | X   | series XV                                                          |
| Group        | 3   | group 3                                                            |
| Category     | R   | reversible pump                                                    |
| Displacement | 78  | 38                                                                 |
| Flange       | 31  | Ø101.6 SAE B reversible rotation                                   |
| Shaft        | I   | SCF04 - Splined Ø21.81 z=13, H=33.55 SAE J498-13T -16/32DP (SAE B) |
| Body         | IN  | E inlet - 1" BSP                                                   |
|              | OUT | E outlet - 1" BSP                                                  |
| Cover        | E   | with external drainage                                             |



**XR331**

**Technical data table**

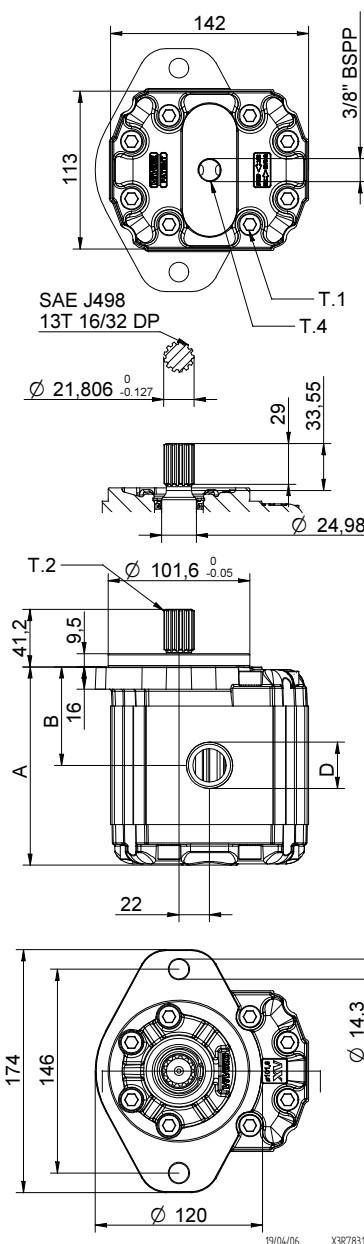
| TYPE     | Displacement<br>cm3/rev | Max. Pressure |        | CODE                |                     |
|----------|-------------------------|---------------|--------|---------------------|---------------------|
|          |                         | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-3R/15 | 14,89                   | 300           | 320    | X 3 R 66 31 I D D E | X 3 R 66 31 I D D F |
| XV-3R/18 | 17,37                   | 300           | 320    | X 3 R 68 31 I D D E | X 3 R 68 31 I D D F |
| XV-3R/21 | 21,10                   | 280           | 300    | X 3 R 70 31 I D D E | X 3 R 70 31 I D D F |
| XV-3R/27 | 26,97                   | 250           | 270    | X 3 R 72 31 I E E E | X 3 R 72 31 I E E F |
| XV-3R/32 | 32,27                   | 250           | 270    | X 3 R 74 31 I E E E | X 3 R 74 31 I E E F |
| XV-3R/38 | 38,47                   | 250           | 270    | X 3 R 78 31 I E E E | X 3 R 78 31 I E E F |
| XV-3R/43 | 43,44                   | 250           | 270    | X 3 R 79 31 I E E E | X 3 R 79 31 I E E F |
| XV-3R/47 | 47,16                   | 230           | 250    | X 3 R 80 31 I E E E | X 3 R 80 31 I E E F |
| XV-3R/51 | 50,88                   | 230           | 250    | X 3 R 81 31 I E E E | X 3 R 81 31 I E E F |
| XV-3R/54 | 54,60                   | 230           | 250    | X 3 R 82 31 I E E E | X 3 R 82 31 I E E F |
| XV-3R/61 | 60,81                   | 230           | 250    | X 3 R 83 31 I F F E | X 3 R 83 31 I F F F |
| XV-3R/64 | 64,53                   | 210           | 230    | X 3 R 85 31 I F F E | X 3 R 85 31 I F F F |
| XV-3R/70 | 70,74                   | 200           | 220    | X 3 R 86 31 I F F E | X 3 R 86 31 I F F F |
| XV-3R/74 | 74,46                   | 180           | 200    | X 3 R 87 31 I F F E | X 3 R 87 31 I F F F |
| XV-3R/90 | 86,87                   | 150           | 170    | X 3 R 89 31 I F F E | X 3 R 89 31 I F F F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

**Dimensions table**

| TYPE     | Weight | A     | B    | D           | D           |
|----------|--------|-------|------|-------------|-------------|
|          | kg     | mm    | mm   | IN          | OUT         |
| XV-3R/15 | 7,010  | 124,0 | 61,0 | 3/4" BSPP   | 3/4" BSPP   |
| XV-3R/18 | 7,070  | 126,0 | 62,0 | 3/4" BSPP   | 3/4" BSPP   |
| XV-3R/21 | 7,150  | 129,0 | 63,5 | 3/4" BSPP   | 3/4" BSPP   |
| XV-3R/27 | 7,250  | 133,0 | 65,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/32 | 7,390  | 138,0 | 68,0 | 1" BSPP     | 1" BSPP     |
| XV-3R/38 | 7,520  | 143,0 | 70,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/43 | 7,630  | 147,0 | 72,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/47 | 7,710  | 150,0 | 74,0 | 1" BSPP     | 1" BSPP     |
| XV-3R/51 | 7,790  | 153,0 | 75,5 | 1" BSPP     | 1" BSPP     |
| XV-3R/54 | 7,870  | 156,0 | 77,0 | 1" BSPP     | 1" BSPP     |
| XV-3R/61 | 8,010  | 161,0 | 79,5 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/64 | 8,090  | 164,0 | 81,0 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/70 | 8,220  | 169,0 | 83,5 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/74 | 8,300  | 172,0 | 85,0 | 1" 1/4 BSPP | 1" 1/4 BSPP |
| XV-3R/90 | 8,570  | 182,0 | 90,0 | 1" 1/4 BSPP | 1" 1/4 BSPP |



T.1 = 60÷65 [Nm] - screw tightening torque M10

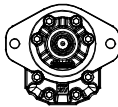
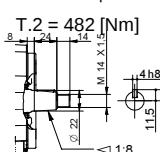
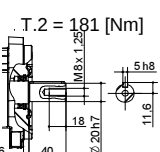
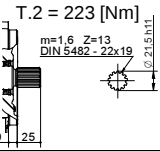
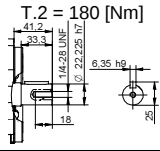
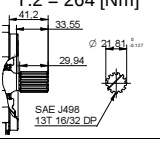
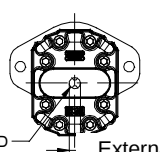
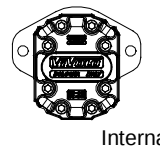
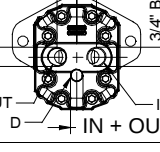
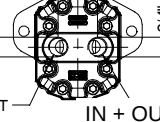
T.2 = 264 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-3R**

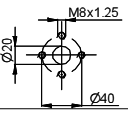
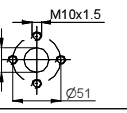
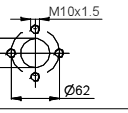
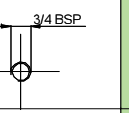
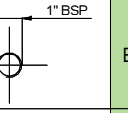
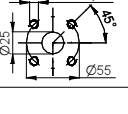
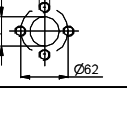
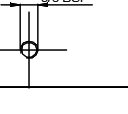
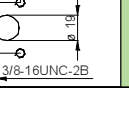
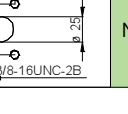
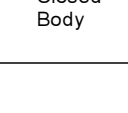
**ø101.6 FLANGE ""SAE B""**

| ø101.6 FLANGE ""SAE B""                                                           |    | Shaft                                                                                                                                                    |   | Cover                                                                                                                   |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------|---|
|  | 31 | CO001 - Tapered<br>T.2 = 482 [Nm]<br>                                   | A | CI001 - Parallel<br>T.2 = 181 [Nm]<br> | B |
|                                                                                   |    | SCF03 - Splined<br>T.2 = 223 [Nm]<br>m=1.6 Z=13<br>DIN 5482 - 22x19<br> | C | CI004 - Parallel<br>T.2 = 180 [Nm]<br> | H |
|                                                                                   |    | SCF04 - Splined<br>T.2 = 264 [Nm]<br>                                   | I |                                                                                                                         |   |
|                                                                                   |    | <br>External drainage                                                 |   | E                                                                                                                       |   |
|                                                                                   |    | <br>Internal drainage                                                 |   | F                                                                                                                       |   |
|                                                                                   |    | <br>IN + OUT + external                                               |   | K                                                                                                                       |   |
|                                                                                   |    | <br>IN + OUT + internal                                              |   | L                                                                                                                       |   |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-3R/15     | 66   |
| XV-3R/18     | 68   |
| XV-3R/21     | 70   |
| XV-3R/27     | 72   |
| XV-3R/32     | 74   |
| XV-3R/38     | 78   |
| XV-3R/43     | 79   |
| XV-3R/47     | 80   |
| XV-3R/51     | 81   |
| XV-3R/54     | 82   |
| XV-3R/61     | 83   |
| XV-3R/64     | 85   |
| XV-3R/70     | 86   |
| XV-3R/74     | 87   |
| XV-3R/90     | 89   |

| Standard bodies      |                  |       |       |  |
|----------------------|------------------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |  |
| 15                   | A - A            | D - D | H - H |  |
| 18                   | A - A            | D - D | H - H |  |
| 21                   | A - A            | D - D | H - H |  |
| 27                   | A - A            | E - E | H - H |  |
| 32                   | B - B            | E - E | H - H |  |
| 38                   | B - B            | E - E | H - H |  |
| 43                   | B - B            | E - E | H - H |  |
| 47                   | B - B            | E - E | H - H |  |
| 51                   | B - B            | E - E | H - H |  |
| 54                   | B - B            | E - E | H - H |  |
| 61                   | C - C            | F - F |       |  |
| 64                   | C - C            | F - F |       |  |
| 70                   | C - C            | F - F |       |  |
| 74                   | C - C            | F - F |       |  |
| 90                   | C - C            | F - F |       |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |
|  | H |  | I |  | L |  | M |  | N |
|  | F |  | G |  | O |  | P |  | Z |
| Closed Body                                                                         |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |

# reversible pump - series XV

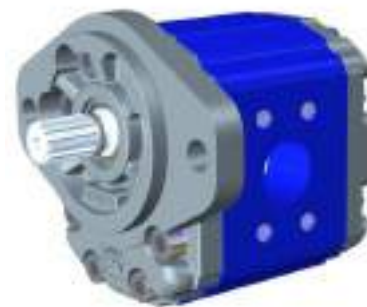
**XV-3R**

## SAE B TYPE PUMP

ø101.6 FLANGE - SPLINED SHAFT

**X 3 R 78 31 I O O E**

|              |     |                                                                    |
|--------------|-----|--------------------------------------------------------------------|
| Series       | X   | series XV                                                          |
| Group        | 3   | group 3                                                            |
| Category     | R   | reversible pump                                                    |
| Displacement | 78  | 38                                                                 |
| Flange       | 31  | Ø101.6 SAE B reversible rotation                                   |
| Shaft        | I   | SCF04 - Splined ø21.81 z=13, H=33.55 SAE J498-13T -16/32DP (SAE B) |
| Body         | IN  | inlet - SAE 30,18 X 58,72 - ø32 - 7/16-14UNC-2B                    |
|              | OUT | outlet - SAE 30,18 X 58,72 - ø32 - 7/16-14UNC-2B                   |
| Cover        | E   | with external drainage                                             |



**XR332**

**Technical data table**

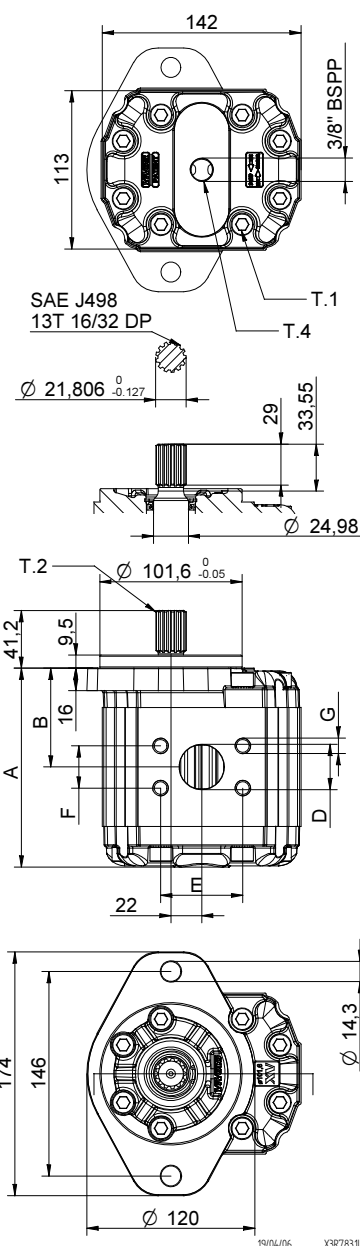
| TYPE     | Displacement | Max. Pressure |        | CODE                |                     |
|----------|--------------|---------------|--------|---------------------|---------------------|
|          | cm3/rev      | P1 bar        | P3 bar | External drainage   | Internal drainage   |
| XV-3R/15 | 14,89        | 300           | 320    | X 3 R 66 31 I N N E | X 3 R 66 31 I N N F |
| XV-3R/18 | 17,37        | 300           | 320    | X 3 R 68 31 I N N E | X 3 R 68 31 I N N F |
| XV-3R/21 | 21,10        | 280           | 300    | X 3 R 70 31 I N N E | X 3 R 70 31 I N N F |
| XV-3R/27 | 26,97        | 250           | 270    | X 3 R 72 31 I N N E | X 3 R 72 31 I N N F |
| XV-3R/32 | 32,27        | 250           | 270    | X 3 R 74 31 I O O E | X 3 R 74 31 I O O F |
| XV-3R/38 | 38,47        | 250           | 270    | X 3 R 78 31 I O O E | X 3 R 78 31 I O O F |
| XV-3R/43 | 43,44        | 250           | 270    | X 3 R 79 31 I O O E | X 3 R 79 31 I O O F |
| XV-3R/47 | 47,16        | 230           | 250    | X 3 R 80 31 I O O E | X 3 R 80 31 I O O F |
| XV-3R/51 | 50,88        | 230           | 250    | X 3 R 81 31 I O O E | X 3 R 81 31 I O O F |
| XV-3R/54 | 54,60        | 230           | 250    | X 3 R 82 31 I O O E | X 3 R 82 31 I O O F |
| XV-3R/61 | 60,81        | 230           | 250    | X 3 R 83 31 I P P E | X 3 R 83 31 I P P F |
| XV-3R/64 | 64,53        | 210           | 230    | X 3 R 85 31 I P P E | X 3 R 85 31 I P P F |
| XV-3R/70 | 70,74        | 200           | 220    | X 3 R 86 31 I P P E | X 3 R 86 31 I P P F |
| XV-3R/74 | 74,46        | 180           | 200    | X 3 R 87 31 I P P E | X 3 R 87 31 I P P F |
| XV-3R/90 | 86,87        | 150           | 170    | X 3 R 89 31 I P P E | X 3 R 89 31 I P P F |

P1) Max. working pressure - P3) Max. peak pressure

For heavy-duty applications, it is recommended to check the admissible torque of the shaft

**Dimensions table**

| TYPE     | Weight | A     | B    | D        | E     | F     | G             |
|----------|--------|-------|------|----------|-------|-------|---------------|
|          | kg     | mm    | mm   | IN - OUT |       |       |               |
| XV-3R/15 | 7,010  | 124,0 | 61,0 | ø25      | 52,37 | 26,19 | 3/8-16UNC-2B  |
| XV-3R/18 | 7,070  | 126,0 | 62,0 | ø25      | 52,37 | 26,19 | 3/8-16UNC-2B  |
| XV-3R/21 | 7,150  | 129,0 | 63,5 | ø25      | 52,37 | 26,19 | 3/8-16UNC-2B  |
| XV-3R/27 | 7,250  | 133,0 | 65,5 | ø25      | 52,37 | 26,19 | 3/8-16UNC-2B  |
| XV-3R/32 | 7,390  | 138,0 | 68,0 | ø32      | 58,72 | 30,18 | 7/16-14UNC-2B |
| XV-3R/38 | 7,520  | 143,0 | 70,5 | ø32      | 58,72 | 30,18 | 7/16-14UNC-2B |
| XV-3R/43 | 7,630  | 147,0 | 72,5 | ø32      | 58,72 | 30,18 | 7/16-14UNC-2B |
| XV-3R/47 | 7,710  | 150,0 | 74,0 | ø32      | 58,72 | 30,18 | 7/16-14UNC-2B |
| XV-3R/51 | 7,790  | 153,0 | 75,5 | ø32      | 58,72 | 30,18 | 7/16-14UNC-2B |
| XV-3R/54 | 7,870  | 156,0 | 77,0 | ø32      | 58,72 | 30,18 | 7/16-14UNC-2B |
| XV-3R/61 | 8,010  | 161,0 | 79,5 | ø38      | 69,85 | 35,71 | 1/2-13UNC-2B  |
| XV-3R/64 | 8,090  | 164,0 | 81,0 | ø38      | 69,85 | 35,71 | 1/2-13UNC-2B  |
| XV-3R/70 | 8,220  | 169,0 | 83,5 | ø38      | 69,85 | 35,71 | 1/2-13UNC-2B  |
| XV-3R/74 | 8,300  | 172,0 | 85,0 | ø38      | 69,85 | 35,71 | 1/2-13UNC-2B  |
| XV-3R/90 | 8,570  | 182,0 | 90,0 | ø38      | 69,85 | 35,71 | 1/2-13UNC-2B  |



T.1 = 60÷65 [Nm] - screw tightening torque M10

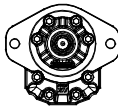
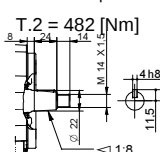
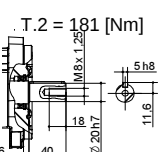
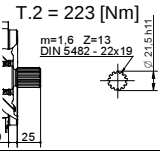
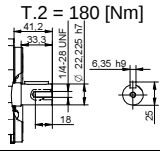
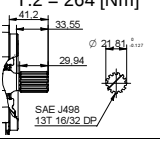
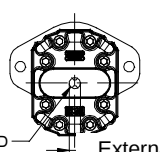
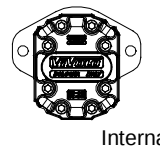
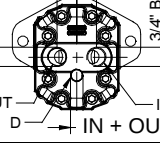
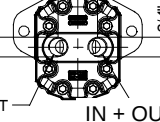
T.2 = 264 [Nm] - admissible shaft torque (N.B. When choosing a shaft, always check the admissible torque).

T.4 = 0.3÷0.5 bar - max. drainage pressure

# Table of variations

**XV-3R**

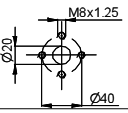
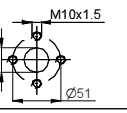
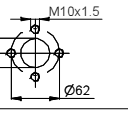
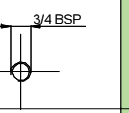
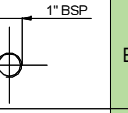
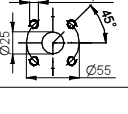
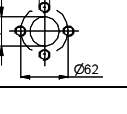
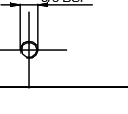
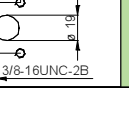
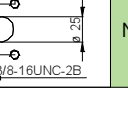
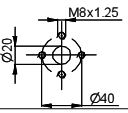
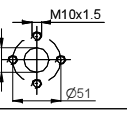
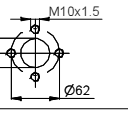
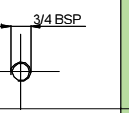
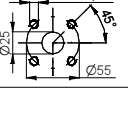
**ø101.6 FLANGE ""SAE B""**

| ø101.6 FLANGE ""SAE B""                                                           |    | Shaft                                                                                                                                                    |   | Cover                                                                                                                   |   |
|-----------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------|---|
|  | 31 | CO001 - Tapered<br>T.2 = 482 [Nm]<br>                                   | A | CI001 - Parallel<br>T.2 = 181 [Nm]<br> | B |
|                                                                                   |    | SCF03 - Splined<br>T.2 = 223 [Nm]<br>m=1.6 Z=13<br>DIN 5482 - 22x19<br> | C | CI004 - Parallel<br>T.2 = 180 [Nm]<br> | H |
|                                                                                   |    | SCF04 - Splined<br>T.2 = 264 [Nm]<br>                                   | I |                                                                                                                         |   |
|                                                                                   |    | <br>External drainage                                                 |   | E                                                                                                                       |   |
|                                                                                   |    | <br>Internal drainage                                                 |   | F                                                                                                                       |   |
|                                                                                   |    | <br>IN + OUT + external                                               |   | K                                                                                                                       |   |
|                                                                                   |    | <br>IN + OUT + internal                                              |   | L                                                                                                                       |   |

| Displacement |      |
|--------------|------|
| TYPE         | CODE |
| XV-3R/15     | 66   |
| XV-3R/18     | 68   |
| XV-3R/21     | 70   |
| XV-3R/27     | 72   |
| XV-3R/32     | 74   |
| XV-3R/38     | 78   |
| XV-3R/43     | 79   |
| XV-3R/47     | 80   |
| XV-3R/51     | 81   |
| XV-3R/54     | 82   |
| XV-3R/61     | 83   |
| XV-3R/64     | 85   |
| XV-3R/70     | 86   |
| XV-3R/74     | 87   |
| XV-3R/90     | 89   |

| Standard bodies      |                  |       |       |  |
|----------------------|------------------|-------|-------|--|
| Displacement cm3/rev | Standard threads |       |       |  |
| 15                   | A - A            | D - D | H - H |  |
| 18                   | A - A            | D - D | H - H |  |
| 21                   | A - A            | D - D | H - H |  |
| 27                   | A - A            | E - E | H - H |  |
| 32                   | B - B            | E - E | H - H |  |
| 38                   | B - B            | E - E | H - H |  |
| 43                   | B - B            | E - E | H - H |  |
| 47                   | B - B            | E - E | H - H |  |
| 51                   | B - B            | E - E | H - H |  |
| 54                   | B - B            | E - E | H - H |  |
| 61                   | C - C            | F - F |       |  |
| 64                   | C - C            | F - F |       |  |
| 70                   | C - C            | F - F |       |  |
| 74                   | C - C            | F - F |       |  |
| 90                   | C - C            | F - F |       |  |

Table showing standard flange and thread combinations available in stock

| Body (threads/flanges)                                                              |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|
|  | A |  | B |  | C |  | D |  | E |
|  | H |  | I |  | L |  | M |  | N |
|  | F |  | G |  | O |  | P |   | Z |
| Closed Body                                                                         |   |                                                                                     |   |                                                                                     |   |                                                                                     |   |                                                                                      |   |



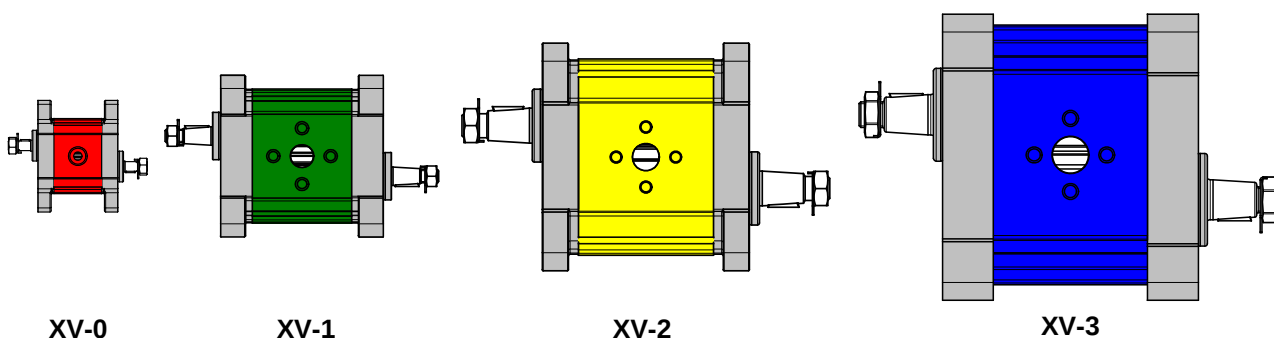
## DOUBLE SHAFT - Variant VA

All versions may be supplied with a double shaft using all types of shafts and flanges  
As per catalogue

Example of order code

Standard -----X0P0602ABBA

With double shaft -----X0P0602ABBA **VA**



## SEALS made of FKM (viton) variant VITON

All versions may be supplied with **FKM (viton)** seals

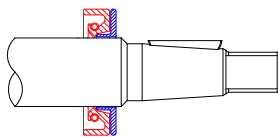
Example of order code

Standard-----X0P0602ABBA

With FKM (viton ) seals -----X0P0602ABBA **VITON**

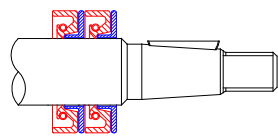
## O-RINGS

Variant **VDC**



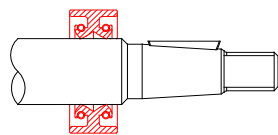
Oil seal with backup washer  
(standard for motors)

Variant **VDCX**



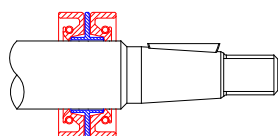
Double oil seal with double  
backup washer

Variant **VDB**



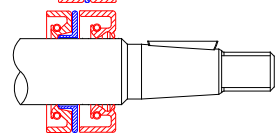
DUPLEX oil seal

Variant **VDBX**



Double opposed oil seal with  
backup washer

Variant **VDCO**



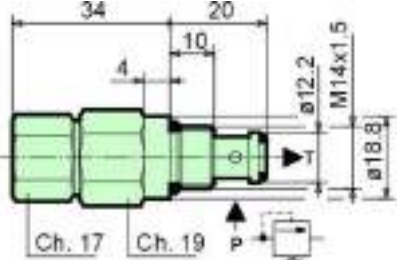
Motor Oil Seal with backup  
washer  
+  
Standard Oil Seal

Example of order code

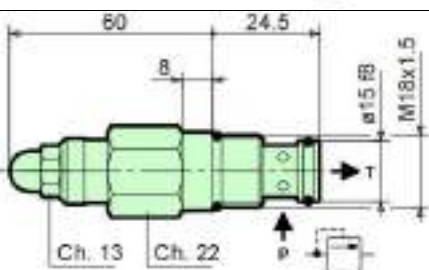
Standard-----X1P0602FIIA

With oil seal and retaining washer -----X1P0602FIIA **VDC**

## Pressure-relief valve VM25 for XV0 series

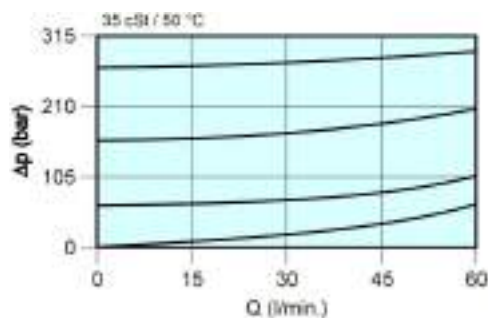
| <br> | Technical specifications                                                |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------|
|                                                                                                                                                                        | Capacity                                                                | 25 l/min        |
|                                                                                                                                                                        | Max pressure in P                                                       | 315 bars        |
|                                                                                                                                                                        | Max pressure in T                                                       | 315 bars        |
|                                                                                                                                                                        | Setting range of spring <b>Type 01</b>                                  | 20-140 bars     |
|                                                                                                                                                                        | Setting range of spring <b>Type 02</b>                                  | 70-315 bars     |
|                                                                                                                                                                        | Required filtration                                                     | 10-15 µm        |
|                                                                                                                                                                        | Oil viscosity range                                                     | 2.8-350 cSt     |
|                                                                                                                                                                        | Recommended oil temperature                                             | -20 + 80 °C     |
|                                                                                                                                                                        | Seal material                                                           | Buna N          |
|                                                                                                                                                                        | Weight                                                                  | 0.110 kg        |
|                                                                                                                                                                        | Pressures with flow of 1 l/min:<br>opening value in relation to setting | 95%             |
|                                                                                                                                                                        | Closing value in relation to setting                                    | 75%             |
|                                                                                                                                                                        | Hydraulic oil                                                           | HM, HV ISO 6074 |

## Pressure-relief valve VM50 for XV1 and XV2 series

| <br> | Technical specifications                                                |                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------|
|                                                                                                                                                                           | Capacity                                                                | 50/min          |
|                                                                                                                                                                           | Max pressure in P                                                       | 350 bars        |
|                                                                                                                                                                           | Max pressure in T                                                       | 350 bars        |
|                                                                                                                                                                           | Setting range of spring <b>Type 01</b>                                  | 10-105 bars     |
|                                                                                                                                                                           | Setting range of spring <b>Type 02</b>                                  | 70-210 bars     |
|                                                                                                                                                                           | Setting range of spring <b>Type 03</b>                                  | 140-350 bars    |
|                                                                                                                                                                           | Required filtration                                                     | 10-15 µm        |
|                                                                                                                                                                           | Oil viscosity range                                                     | 2.8-350 cSt     |
|                                                                                                                                                                           | Recommended oil temperature                                             | -20 + 80 °C     |
|                                                                                                                                                                           | Seal material                                                           | Buna N          |
|                                                                                                                                                                           | Weight                                                                  | 0.125 kg        |
|                                                                                                                                                                           | Pressures with flow of 1 l/min:<br>opening value in relation to setting | 95%             |
|                                                                                                                                                                           | Closing value in relation to setting                                    | 75%             |
|                                                                                                                                                                           | Hydraulic oil                                                           | HM, HV ISO 6074 |

## Standard test settings

| TYPE                    | Pressure (bars) | Capacity (l/min) | Pressure increase<br>(bars x turn of screw) |
|-------------------------|-----------------|------------------|---------------------------------------------|
| <b>1</b> (10-105 bars)  | 50              | 5                | 15                                          |
| <b>2</b> (70-210 bars)  | 130             | 5                | 32                                          |
| <b>3</b> (140-350 bars) | 200             | 5                | 67                                          |



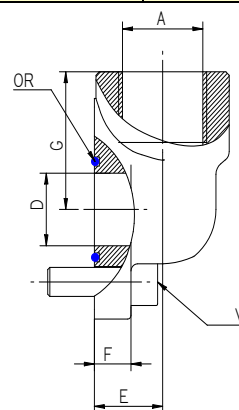
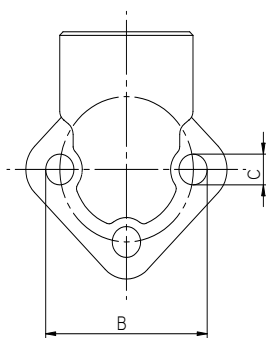
## Performance of VM25 and VM50 valves

**Δp**= Pressure drop in bars

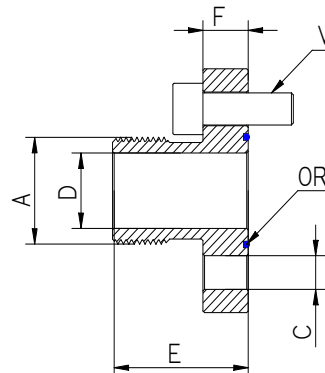
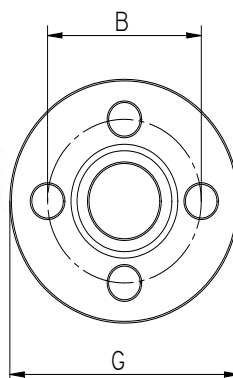
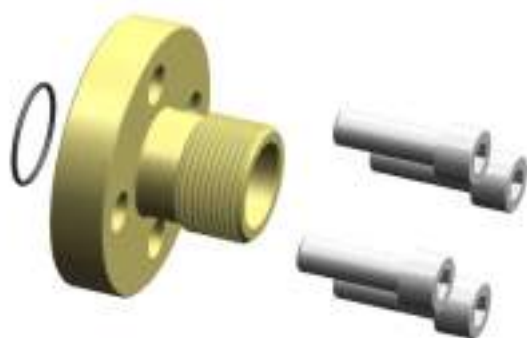
**Q** = Capacity in litres per minute

**90° STEEL ELBOWS**

| Code    | Type                   | A     | B    | C    | D    | E  | F    | G  | OR          | V      | weight |
|---------|------------------------|-------|------|------|------|----|------|----|-------------|--------|--------|
|         |                        |       |      |      |      |    |      |    | O ring      | Screw  |        |
| 8KRG001 | RG 26/12-3/8"BSP       | 3/8"  | 26   | 5,5  | 12   | 18 | 9,5  | 27 | ø14,00x1,78 | M5x18  | 0,13   |
| 8KRG002 | RG 26/12-1/2"BSP       | 1/2"  | 26   | 5,5  | 12   | 18 | 9,5  | 27 | ø14,00x1,78 | M5x18  | 0,12   |
| 8KRG003 | RG 30/13,5 -3/8"BSP    | 3/8"  | 30   | 6,5  | 13,5 | 18 | 9,5  | 27 | ø15,88x2,62 | M6x20  | 0,17   |
| 8KRG004 | RG 30/13,5 -1/2"BSP    | 1/2"  | 30   | 6,5  | 13,5 | 18 | 9,5  | 27 | ø15,88x2,62 | M6x20  | 0,16   |
| 8KRG005 | RG 40/20-1/2"BSP       | 1/2"  | 40   | 8,5  | 20   | 21 | 10,5 | 38 | ø23,81x2,62 | M8x25  | 0,36   |
| 8KRG006 | RG 40/20-3/4"BSP       | 3/4"  | 40   | 8,5  | 20   | 21 | 10,5 | 38 | ø23,81x2,62 | M8x25  | 0,32   |
| 8KRG007 | RG 40/23-3/4"BSP       | 3/4"  | 40   | 8,5  | 23,5 | 21 | 10,5 | 38 | ø25,12x1,78 | M8x25  | 0,29   |
| 8KRG008 | RG 51/27-1"BSP         | 1"    | 51   | 10,5 | 27   | 27 | 13,5 | 47 | ø31,42x2,62 | M10x30 | 0,7    |
| 8KRG009 | RG 51/27-3/4" BSP      | 3/4"  | 51   | 10,5 | 27   | 27 | 13,5 | 47 | ø31,42x2,62 | M10x30 | 0,7    |
| 8KRG011 | RG 56/34-3/4" BSP      | 3/4"  | 56   | 10,5 | 34   | 27 | 13,5 | 47 | ø37,77x2,62 | M10x30 | 0,72   |
| 8KRG012 | RG 62/36-1"1/4 BSP     | 1"1/4 | 62   | 10,5 | 36   | 36 | 19   | 56 | ø41,28x3,53 | M10x30 | 0,94   |
| 8KRG015 | RG 62/36-1"1/4 BSP M12 | 1"1/4 | 62   | 12,5 | 36   | 36 | 19   | 56 | ø41,28x3,53 | M12x35 | 0,94   |
| 8KRG013 | RG 72,5/45-1"1/2 BSP   | 1"1/2 | 72,5 | 12,5 | 45   | 38 | 16   | 58 | ø49,20x3,53 | M12x35 | 1,23   |
| 8KRG014 | RG 92/65-2" BSP        | 2     | 92   | 12,5 | 65   | 50 | 21   | 75 | ø69,85x3,53 | M12x40 | 1,65   |

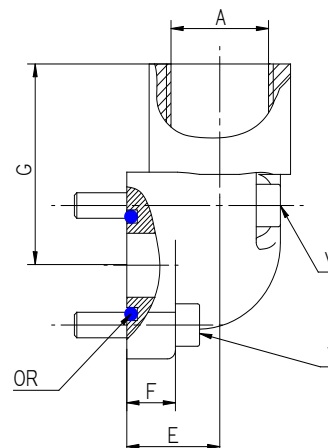
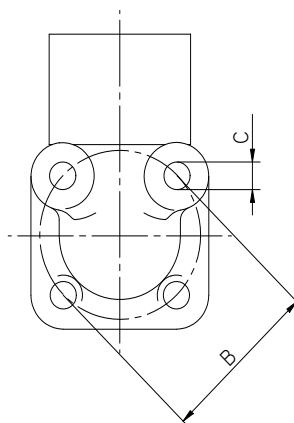

**STRAIGHT STEEL UNIONS**

| Code    | Type                 | A      | B    | C    | D    | E  | F  | G   | OR          | V      | Weight |
|---------|----------------------|--------|------|------|------|----|----|-----|-------------|--------|--------|
|         |                      |        |      |      |      |    |    |     | O ring      | Screw  |        |
| 8KRD001 | RD 26/12-3/8"BSP     | 3/8"   | 26   | 5,5  | 12   | 32 | 10 | 39  | ø14,00x1,78 | M5x18  | 0,11   |
| 8KRD002 | RD 30/13,5-1/2"BSP   | 1/2"   | 30   | 6,5  | 13,5 | 40 | 10 | 44  | ø15,88x2,62 | M6x20  | 0,14   |
| 8KRD005 | RD 40/20-3/4"BSP     | 3/4"   | 40   | 8,5  | 20   | 42 | 12 | 51  | ø23,81x2,62 | M8x25  | 0,3    |
| 8KRD006 | RD 40/23,5-3/4"BSP   | 3/4"   | 40   | 8,5  | 23,5 | 42 | 12 | 51  | ø25,12x1,78 | M8x25  | 0,29   |
| 8KRD007 | RD 51/27-1"BSP       | 1"     | 51   | 10,5 | 27   | 43 | 12 | 68  | ø31,42x2,62 | M10x25 | 0,46   |
| 8KRD008 | RD 56/34-1"1/4 BSP   | 1" 1/4 | 56   | 10,5 | 34   | 53 | 12 | 73  | ø37,77x2,62 | M10x25 | 0,68   |
| 8KRD009 | RD 62/36-1"1/4 BSP   | 1" 1/4 | 62   | 10,5 | 36   | 47 | 13 | 78  | ø41,28x3,53 | M10x25 | 0,9    |
| 8KRD010 | RD 72,5/45-1"1/2 BSP | 1" 1/2 | 72,5 | 12,5 | 45   | 49 | 14 | 89  | ø49,20x3,53 | M12x30 | 1,05   |
| 8KRD011 | RD 92/65-2"1/2 BSP   | 2" 1/2 | 92   | 12,5 | 65   | 60 | 18 | 114 | ø69,85x3,53 | M12x40 | 1,15   |

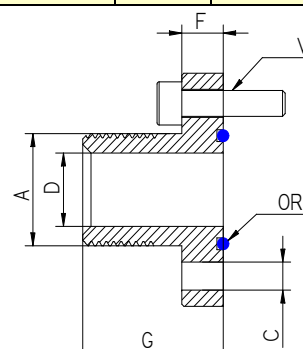
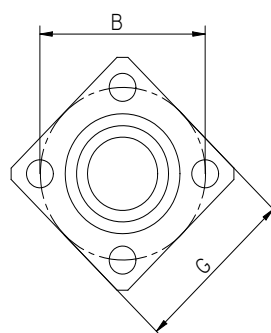
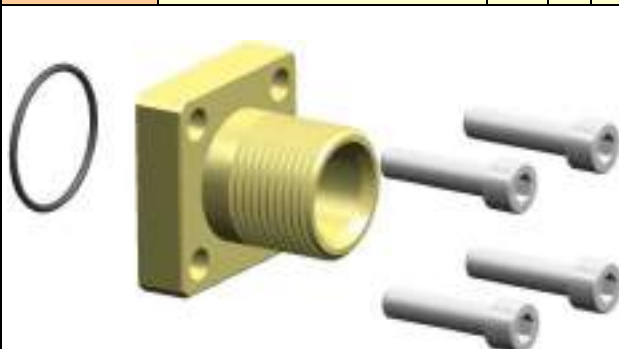


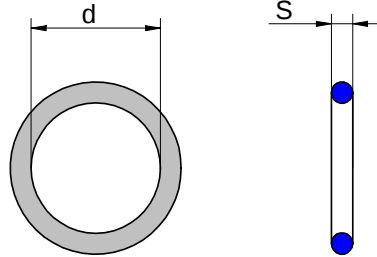
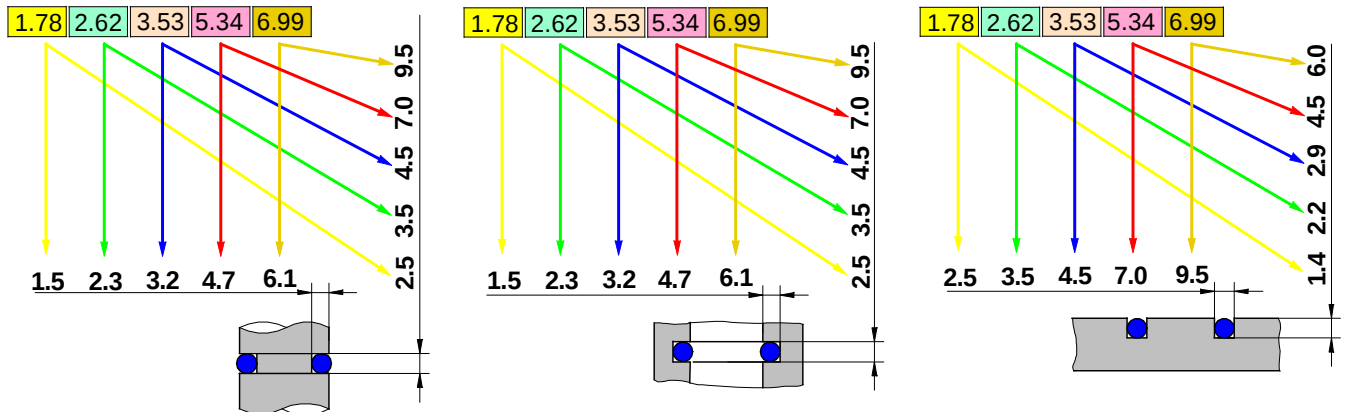
**SQUARED STEEL ELBOWS**

| Code    | Type              | A    | B  | C   | D  | E  | F  | G  | OR          | V                      | Weight |
|---------|-------------------|------|----|-----|----|----|----|----|-------------|------------------------|--------|
|         |                   |      |    |     |    |    |    |    | O ring      | Screw                  |        |
| 8KRQ001 | RQ 30/12-3/8"BSP  | 3/8" | 30 | 6,5 | 12 | 19 | 11 | 41 | ø15,88x2,61 | Nº2 M6x20<br>Nº2 M6x35 | 0,29   |
| 8KRQ002 | RQ 30/12-1/2"BSP  | 1/2" | 30 | 6,5 | 12 | 19 | 11 | 41 | ø15,88x2,62 | Nº2 M6x20<br>Nº2 M6x35 | 0,29   |
| 8KRQ003 | RQ 35/15 -3/8"BSP | 3/8" | 35 | 6,5 | 15 | 18 | 11 | 40 | ø18,72x2,62 | Nº2 M6x20<br>Nº2 M6x35 | 0,34   |
| 8KRQ004 | RQ 35/15 -1/2"BSP | 1/2" | 35 | 6,5 | 15 | 18 | 11 | 40 | ø18,72x2,62 | Nº2 M6x20<br>Nº2 M6x35 | 0,34   |
| 8KRQ005 | RQ 40/20-1/2"BSP  | 1/2" | 40 | 6,5 | 20 | 24 | 10 | 45 | ø22,22x2,62 | Nº2 M6x25<br>Nº2 M6x45 | 0,4    |
| 8KRQ006 | RQ 40/20-3/4"BSP  | 3/4" | 40 | 6,5 | 20 | 24 | 10 | 45 | ø22,22x2,62 | Nº2 M6x25<br>Nº2 M6x45 | 0,4    |
| 8KRQ007 | RQ 55/25-3/4"BSP  | 3/4" | 55 | 8,5 | 25 | 35 | 13 | 54 | ø29,75x3,53 | Nº2 M8x25<br>Nº2 M8x60 | 0,45   |
| 8KRQ008 | RQ 55/25-1" BSP   | 1"   | 55 | 8,5 | 25 | 35 | 13 | 54 | ø29,75x3,53 | Nº2 M8x25<br>Nº2 M8x60 | 0,45   |


**STRAIGHT STEEL UNIONS**

| Code    | Type                  | A    | B  | C   | D  | E  | F  | G  | OR          | V     | Weight |
|---------|-----------------------|------|----|-----|----|----|----|----|-------------|-------|--------|
|         |                       |      |    |     |    |    |    |    | O ring      | Screw |        |
| 8KRD003 | RD 35/15 (BH)-1/2"BSP | 1/2" | 35 | 6,5 | 14 | 35 | 10 | 40 | ø18,72x2,62 | M6x20 | 0,15   |
| 8KRD004 | RD 40/20 (BH)-3/4"BSP | 3/4" | 40 | 6,5 | 17 | 35 | 10 | 40 | ø22,22x2,62 | M6x20 | 0,17   |





| S=1,78 |        | S=2,62 |       |        |        | S=3,53 |       |       |       | S=5,34 |        |        |        | S=6,99 |       |       |
|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|--------|--------|--------|--------|--------|-------|-------|
| 1,78   | 33,05  | 9,13   | 34,60 | 82,22  | 247,33 | 18,64  | 52,39 | 88,50 | 190,1 | 37,43  | 107,2  | 158,12 | 481,46 | 113,7  | 181,0 | 342,3 |
| 2,57   | 34,65  | 9,19   | 36,14 | 88,57  |        | 20,22  | 53,37 | 91,67 | 196,4 | 40,65  | 109,5  | 164,47 | 506,86 | 114,7  | 183,5 | 354,9 |
| 2,90   | 37,82  | 9,92   | 37,77 | 94,92  |        | 21,82  | 53,98 | 94,84 | 202,8 | 43,82  | 110,5  | 170,82 | 532,26 | 116,8  | 187,3 | 367,7 |
| 3,68   | 41,00  | 10,78  | 39,34 | 101,27 |        | 23,40  | 55,56 | 98,02 | 209,1 | 47,00  | 113,7  | 117,17 | 557,66 | 120,0  | 189,9 | 380,3 |
| 4,47   | 44,17  | 11,91  | 40,95 | 107,63 |        | 24,99  | 56,74 | 101,2 | 215,5 | 50,16  | 116,84 | 183,52 | 582,68 | 123,2  | 193,7 | 393,1 |
| 5,28   | 47,35  | 12,37  | 42,52 | 113,98 |        | 25,80  | 57,15 | 104,4 | 221,8 | 53,34  | 117,5  | 189,87 | 608,08 | 124,6  | 196,2 |       |
| 6,07   | 50,52  | 13,10  | 44,12 | 120,33 |        | 26,58  | 58,74 | 107,5 | 228,2 | 56,52  | 120,02 | 196,22 | 633,48 | 126,4  | 200,0 |       |
| 6,75   | 53,70  | 13,95  | 45,69 | 126,67 |        | 28,17  | 59,92 | 110,7 | 234,5 | 59,69  | 120,7  | 202,57 | 658,88 | 129,5  | 202,6 |       |
| 7,65   | 56,87  | 15,08  | 47,30 | 133,00 |        | 29,75  | 60,33 | 113,9 | 240,9 | 62,87  | 123,2  | 208,92 |        | 132,7  | 208,9 |       |
| 8,73   | 60,05  | 15,54  | 48,99 | 139,38 |        | 31,34  | 61,91 | 117,1 | 247,2 | 66,04  | 123,8  | 215,27 |        | 134,5  | 215,3 |       |
| 9,25   | 63,22  | 15,88  | 50,47 | 145,73 |        | 32,93  | 63,09 | 120,2 | 253,6 | 69,22  | 126,37 | 221,62 |        | 135,9  | 221,6 |       |
| 10,82  | 66,40  | 17,13  | 52,07 | 152,07 |        | 34,52  | 63,50 | 123,4 | 266,3 | 72,39  | 127,0  | 227,97 |        | 139,1  | 227,9 |       |
| 11,11  | 69,57  | 17,86  | 53,65 | 158,43 |        | 36,10  | 56,09 | 126,6 | 279,0 | 74,63  | 129,54 | 234,32 |        | 142,2  | 234,3 |       |
| 12,42  | 72,75  | 18,72  | 55,25 | 164,78 |        | 37,89  | 66,27 | 129,8 | 291,7 | 75,57  | 130,2  | 240,67 |        | 145,4  | 240,7 |       |
| 14,00  | 75,92  | 20,29  | 56,82 | 171,13 |        | 39,69  | 66,68 | 132,9 | 304,4 | 78,74  | 132,72 | 247,02 |        | 148,6  | 247,0 |       |
| 15,60  | 82,27  | 20,63  | 58,42 | 177,48 |        | 40,89  | 68,26 | 136,1 | 329,8 | 79,77  | 133,4  | 253,37 |        | 151,8  | 253,3 |       |
| 17,17  | 88,62  | 21,89  | 60,00 | 183,83 |        | 41,28  | 69,44 | 139,3 | 355,2 | 81,92  | 135,9  | 266,07 |        | 155,6  | 259,7 |       |
| 18,77  | 94,97  | 22,22  | 61,60 | 190,18 |        | 42,86  | 69,85 | 142,5 | 380,6 | 85,09  | 136,5  | 278,77 |        | 158,1  | 266,1 |       |
| 20,35  | 101,32 | 23,47  | 63,17 | 196,53 |        | 44,04  | 71,44 | 145,6 | 405,2 | 88,27  | 139,07 | 291,5  |        | 159,5  | 272,4 |       |
| 31,95  | 107,67 | 23,81  | 64,77 | 202,88 |        | 44,45  | 72,62 | 148,8 | 430,6 | 89,69  | 139,7  | 304,17 |        | 161,9  | 278,7 |       |
| 23,52  | 114,02 | 25,07  | 66,35 | 209,23 |        | 46,04  | 73,03 | 152,0 | 456,0 | 91,44  | 142,9  | 329,57 |        | 164,5  | 285,1 |       |
| 25,12  | 120,37 | 26,65  | 67,95 | 215,58 |        | 47,22  | 74,61 | 158,3 |       | 94,62  | 145,42 | 354,97 |        | 166,7  | 291,5 |       |
| 26,70  | 126,72 | 28,25  | 69,52 | 221,93 |        | 47,63  | 75,80 | 164,7 |       | 97,79  | 146,1  | 380,37 |        | 168,3  | 297,8 |       |
| 28,30  | 133,07 | 29,82  | 71,12 | 228,28 |        | 49,21  | 78,97 | 171,0 |       | 100,0  | 148,6  | 405,26 |        | 170,8  | 304,1 |       |
| 29,87  |        | 31,42  | 72,69 | 234,63 |        | 50,39  | 82,14 | 177,4 |       | 101,0  | 149,2  | 430,66 |        | 174,6  | 316,9 |       |
| 31,47  |        | 32,99  | 75,87 | 240,98 |        | 50,80  | 85,32 | 183,7 |       | 104,1  | 151,77 | 456,06 |        | 177,2  | 329,6 |       |

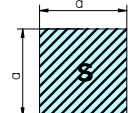
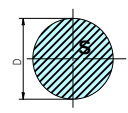
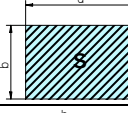
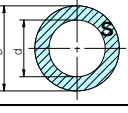
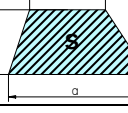
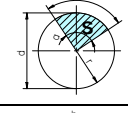
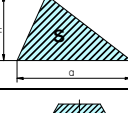
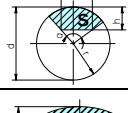
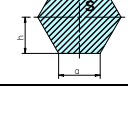
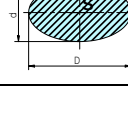
| Speed<br>m/sec |      | Capacities - l/min       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                |      | 5                        | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   | 90   | 95   | 100  |
| Inlet          | 0,5  | 14,6                     | 20,6 | 25,2 | 29,1 | 32,6 | 35,7 | 38,5 | 41,2 | 43,7 | 46,0 | 48,3 | 50,4 | 52,5 | 54,5 | 56,4 | 58,2 | 60,0 | 61,8 | 63,5 | 65,1 |
|                | 1,0  | 10,3                     | 14,6 | 17,8 | 20,6 | 23,0 | 25,2 | 27,2 | 29,1 | 30,9 | 32,6 | 34,1 | 35,7 | 37,1 | 38,5 | 39,9 | 41,2 | 42,4 | 43,7 | 44,9 | 46,0 |
|                | 1,3  | 9,2                      | 13,0 | 15,9 | 18,4 | 20,6 | 22,6 | 24,4 | 26,0 | 27,6 | 29,1 | 30,5 | 31,9 | 33,2 | 34,5 | 35,7 | 36,8 | 38,0 | 39,1 | 40,1 | 41,2 |
|                | 1,5  | 8,4                      | 11,9 | 14,6 | 16,8 | 18,8 | 20,6 | 22,2 | 23,8 | 25,2 | 26,6 | 27,9 | 29,1 | 30,3 | 31,5 | 32,6 | 33,6 | 34,7 | 35,7 | 36,6 | 37,6 |
| Return         | 1,8  | 7,8                      | 11,0 | 13,5 | 15,6 | 17,4 | 19,1 | 20,6 | 22,0 | 23,3 | 24,6 | 25,8 | 27,0 | 28,1 | 29,1 | 30,1 | 31,1 | 32,1 | 33,0 | 33,9 | 34,8 |
|                | 2,0  | 7,3                      | 10,3 | 12,6 | 14,6 | 16,3 | 17,8 | 19,3 | 20,6 | 21,8 | 23,0 | 24,1 | 25,2 | 26,2 | 27,2 | 28,2 | 29,1 | 30,0 | 30,9 | 31,7 | 32,6 |
|                | 2,5  | 6,5                      | 9,2  | 11,3 | 13,0 | 14,6 | 15,9 | 17,2 | 18,4 | 19,5 | 20,6 | 21,6 | 22,6 | 23,5 | 24,4 | 25,2 | 26,0 | 26,8 | 27,6 | 28,4 | 29,1 |
| Outlet         | 3,0  | 5,9                      | 8,4  | 10,3 | 11,9 | 13,3 | 14,6 | 15,7 | 16,8 | 17,8 | 18,8 | 19,7 | 20,6 | 21,4 | 22,2 | 23,0 | 23,8 | 24,5 | 25,2 | 25,9 | 26,6 |
|                | 3,5  | 5,5                      | 7,8  | 9,5  | 11,0 | 12,3 | 13,5 | 14,6 | 15,6 | 16,5 | 17,4 | 18,3 | 19,1 | 19,8 | 20,6 | 21,3 | 22,0 | 22,7 | 23,3 | 24,0 | 24,6 |
|                | 4,0  | 5,1                      | 7,3  | 8,9  | 10,3 | 11,5 | 12,6 | 13,6 | 14,6 | 15,4 | 16,3 | 17,1 | 17,8 | 18,6 | 19,3 | 19,9 | 20,6 | 21,2 | 21,8 | 22,4 | 23,0 |
|                | 4,5  | 4,9                      | 6,9  | 8,4  | 9,7  | 10,9 | 11,9 | 12,8 | 13,7 | 14,6 | 15,3 | 16,1 | 16,8 | 17,5 | 18,2 | 18,8 | 19,4 | 20,0 | 20,6 | 21,2 | 21,7 |
|                | 5,0  | 4,6                      | 6,5  | 8,0  | 9,2  | 10,3 | 11,3 | 12,2 | 13,0 | 13,8 | 14,6 | 15,3 | 15,9 | 16,6 | 17,2 | 17,8 | 18,4 | 19,0 | 19,5 | 20,1 | 20,6 |
|                | 5,5  | 4,4                      | 6,2  | 7,6  | 8,8  | 9,8  | 10,8 | 11,6 | 12,4 | 13,2 | 13,9 | 14,6 | 15,2 | 15,8 | 16,4 | 17,0 | 17,6 | 18,1 | 18,6 | 19,1 | 19,6 |
|                | 6,0  | 4,2                      | 5,9  | 7,3  | 8,4  | 9,4  | 10,3 | 11,1 | 11,9 | 12,6 | 13,3 | 13,9 | 14,6 | 15,2 | 15,7 | 16,3 | 16,8 | 17,3 | 17,8 | 18,3 | 18,8 |
|                | 6,5  | 4,0                      | 5,7  | 7,0  | 8,1  | 9,0  | 9,9  | 10,7 | 11,4 | 12,1 | 12,8 | 13,4 | 14,0 | 14,6 | 15,1 | 15,6 | 16,2 | 16,7 | 17,1 | 17,6 | 18,1 |
|                | 7,0  | 3,9                      | 5,5  | 6,7  | 7,8  | 8,7  | 9,5  | 10,3 | 11,0 | 11,7 | 12,3 | 12,9 | 13,5 | 14,0 | 14,6 | 15,1 | 15,6 | 16,0 | 16,5 | 17,0 | 17,4 |
|                | 7,5  | 3,8                      | 5,3  | 6,5  | 7,5  | 8,4  | 9,2  | 9,9  | 10,6 | 11,3 | 11,9 | 12,5 | 13,0 | 13,6 | 14,1 | 14,6 | 15,0 | 15,5 | 15,9 | 16,4 | 16,8 |
|                | 8,0  | 3,6                      | 5,1  | 6,3  | 7,3  | 8,1  | 8,9  | 9,6  | 10,3 | 10,9 | 11,5 | 12,1 | 12,6 | 13,1 | 13,6 | 14,1 | 14,6 | 15,0 | 15,4 | 15,9 | 16,3 |
|                | 8,5  | 3,5                      | 5,0  | 6,1  | 7,1  | 7,9  | 8,7  | 9,3  | 10,0 | 10,6 | 11,2 | 11,7 | 12,2 | 12,7 | 13,2 | 13,7 | 14,1 | 14,6 | 15,0 | 15,4 | 15,8 |
|                | 9,0  | 3,4                      | 4,9  | 5,9  | 6,9  | 7,7  | 8,4  | 9,1  | 9,7  | 10,3 | 10,9 | 11,4 | 11,9 | 12,4 | 12,8 | 13,3 | 13,7 | 14,1 | 14,6 | 15,0 | 15,3 |
|                | 9,5  | 3,3                      | 4,7  | 5,8  | 6,7  | 7,5  | 8,2  | 8,8  | 9,4  | 10,0 | 10,6 | 11,1 | 11,6 | 12,0 | 12,5 | 12,9 | 13,4 | 13,8 | 14,2 | 14,6 | 14,9 |
|                | 10,0 | 3,3                      | 4,6  | 5,6  | 6,5  | 7,3  | 8,0  | 8,6  | 9,2  | 9,8  | 10,3 | 10,8 | 11,3 | 11,7 | 12,2 | 12,6 | 13,0 | 13,4 | 13,8 | 14,2 | 14,6 |
| Speed<br>m/sec |      | Inner pipe diameter - mm |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| Speed<br>m/sec |      | Capacities - l/min       |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |
|----------------|------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                |      | 110                      | 120  | 130  | 140  | 150  | 160  | 170  | 180  | 190  | 200  | 210  | 220  | 230  | 240   | 250   | 260   | 270   | 280   | 290   | 300   |
| Inlet          | 0,5  | 68,3                     | 71,3 | 74,2 | 77,0 | 79,7 | 82,4 | 84,9 | 87,4 | 89,8 | 92,1 | 94,4 | 96,6 | 98,8 | 100,9 | 103,0 | 105,0 | 107,0 | 109,0 | 110,9 | 112,8 |
|                | 1,0  | 48,3                     | 50,4 | 52,5 | 54,5 | 56,4 | 58,2 | 60,0 | 61,8 | 63,5 | 65,1 | 66,7 | 68,3 | 69,8 | 71,3  | 72,8  | 74,2  | 75,7  | 77,0  | 78,4  | 79,7  |
|                | 1,3  | 43,2                     | 45,1 | 47,0 | 48,7 | 50,4 | 52,1 | 53,7 | 55,3 | 56,8 | 58,2 | 59,7 | 61,1 | 62,5 | 63,8  | 65,1  | 66,4  | 67,7  | 68,9  | 70,1  | 71,3  |
|                | 1,5  | 39,4                     | 41,2 | 42,9 | 44,5 | 46,0 | 47,6 | 49,0 | 50,4 | 51,8 | 53,2 | 54,5 | 55,8 | 57,0 | 58,2  | 59,4  | 60,6  | 61,8  | 62,9  | 64,0  | 65,1  |
| Return         | 1,8  | 36,5                     | 38,1 | 39,7 | 41,2 | 42,6 | 44,0 | 45,4 | 46,7 | 48,0 | 49,2 | 50,4 | 51,6 | 52,8 | 53,9  | 55,0  | 56,1  | 57,2  | 58,2  | 59,3  | 60,3  |
|                | 2,0  | 34,1                     | 35,7 | 37,1 | 38,5 | 39,9 | 41,2 | 42,4 | 43,7 | 44,9 | 46,0 | 47,2 | 48,3 | 49,4 | 50,4  | 51,5  | 52,5  | 53,5  | 54,5  | 55,4  | 56,4  |
|                | 2,5  | 30,5                     | 31,9 | 33,2 | 34,5 | 35,7 | 36,8 | 38,0 | 39,1 | 40,1 | 41,2 | 42,2 | 43,2 | 44,2 | 45,1  | 46,0  | 47,0  | 47,8  | 48,7  | 49,6  | 50,4  |
| Outlet         | 3,0  | 27,9                     | 29,1 | 30,3 | 31,5 | 32,6 | 33,6 | 34,7 | 35,7 | 36,6 | 37,6 | 38,5 | 39,4 | 40,3 | 41,2  | 42,0  | 42,9  | 43,7  | 44,5  | 45,3  | 46,0  |
|                | 3,5  | 25,8                     | 27,0 | 28,1 | 29,1 | 30,1 | 31,1 | 32,1 | 33,0 | 33,9 | 34,8 | 35,7 | 36,5 | 37,3 | 38,1  | 38,9  | 39,7  | 40,4  | 41,2  | 41,9  | 42,6  |
|                | 4,0  | 24,1                     | 25,2 | 26,2 | 27,2 | 28,2 | 29,1 | 30,0 | 30,9 | 31,7 | 32,6 | 33,4 | 34,1 | 34,9 | 35,7  | 36,4  | 37,1  | 37,8  | 38,5  | 39,2  | 39,9  |
|                | 4,5  | 22,8                     | 23,8 | 24,7 | 25,7 | 26,6 | 27,5 | 28,3 | 29,1 | 29,9 | 30,7 | 31,5 | 32,2 | 32,9 | 33,6  | 34,3  | 35,0  | 35,7  | 36,3  | 37,0  | 37,6  |
|                | 5,0  | 21,6                     | 22,6 | 23,5 | 24,4 | 25,2 | 26,0 | 26,8 | 27,6 | 28,4 | 29,1 | 29,8 | 30,5 | 31,2 | 31,9  | 32,6  | 33,2  | 33,8  | 34,5  | 35,1  | 35,7  |
|                | 5,5  | 20,6                     | 21,5 | 22,4 | 23,2 | 24,0 | 24,8 | 25,6 | 26,3 | 27,1 | 27,8 | 28,5 | 29,1 | 29,8 | 30,4  | 31,0  | 31,7  | 32,3  | 32,9  | 33,4  | 34,0  |
|                | 6,0  | 19,7                     | 20,6 | 21,4 | 22,2 | 23,0 | 23,8 | 24,5 | 25,2 | 25,9 | 26,6 | 27,2 | 27,9 | 28,5 | 29,1  | 29,7  | 30,3  | 30,9  | 31,5  | 32,0  | 32,6  |
|                | 6,5  | 18,9                     | 19,8 | 20,6 | 21,4 | 22,1 | 22,8 | 23,5 | 24,2 | 24,9 | 25,5 | 26,2 | 26,8 | 27,4 | 28,0  | 28,6  | 29,1  | 29,7  | 30,2  | 30,8  | 31,3  |
|                | 7,0  | 18,3                     | 19,1 | 19,8 | 20,6 | 21,3 | 22,0 | 22,7 | 23,3 | 24,0 | 24,6 | 25,2 | 25,8 | 26,4 | 27,0  | 27,5  | 28,1  | 28,6  | 29,1  | 29,6  | 30,1  |
|                | 7,5  | 17,6                     | 18,4 | 19,2 | 19,9 | 20,6 | 21,3 | 21,9 | 22,6 | 23,2 | 23,8 | 24,4 | 24,9 | 25,5 | 26,0  | 26,6  | 27,1  | 27,6  | 28,1  | 28,6  | 29,1  |
|                | 8,0  | 17,1                     | 17,8 | 18,6 | 19,3 | 19,9 | 20,6 | 21,2 | 21,8 | 22,4 | 23,0 | 23,6 | 24,1 | 24,7 | 25,2  | 25,7  | 26,2  | 26,7  | 27,2  | 27,7  | 28,2  |
|                | 8,5  | 16,6                     | 17,3 | 18,0 | 18,7 | 19,3 | 20,0 | 20,6 | 21,2 | 21,8 | 22,3 | 22,9 | 23,4 | 24,0 | 24,5  | 25,0  | 25,5  | 26,0  | 26,4  | 26,9  | 27,4  |
|                | 9,0  | 16,1                     | 16,8 | 17,5 | 18,2 | 18,8 | 19,4 | 20,0 | 20,6 | 21,2 | 21,7 | 22,2 | 22,8 | 23,3 | 23,8  | 24,3  | 24,7  | 25,2  | 25,7  | 26,1  | 26,6  |
|                | 9,5  | 15,7                     | 16,4 | 17,0 | 17,7 | 18,3 | 18,9 | 19,5 | 20,0 | 20,6 | 21,1 | 21,6 | 22,2 | 22,7 | 23,1  | 23,6  | 24,1  | 24,5  | 25,0  | 25,4  | 25,9  |
|                | 10,0 | 15,3                     | 15,9 | 16,6 | 17,2 | 17,8 | 18,4 | 19,0 | 19,5 | 20,1 | 20,6 | 21,1 | 21,6 | 22,1 | 22,6  | 23,0  | 23,5  | 23,9  | 24,4  | 24,8  | 25,2  |
| Speed<br>m/sec |      | Inner pipe diameter - mm |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |

| Speed<br>m/sec |      | Capacities - l/min       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                |      | 320                      | 340   | 360   | 380   | 400   | 420   | 440   | 460   | 480   | 500   | 520   | 540   | 560   | 580   | 600   | 620   | 640   | 660   | 680   | 700   |
| Inlet          | 0,5  | 116,5                    | 120,1 | 123,5 | 126,9 | 130,2 | 133,4 | 136,6 | 139,7 | 142,7 | 145,6 | 148,5 | 151,3 | 154,1 | 156,8 | 159,5 | 162,1 | 164,7 | 167,3 | 169,8 | 172,3 |
|                | 1,0  | 82,4                     | 84,9  | 87,4  | 89,8  | 92,1  | 94,4  | 96,6  | 98,8  | 100,9 | 103,0 | 105,0 | 107,0 | 109,0 | 110,9 | 112,8 | 114,6 | 116,5 | 118,3 | 120,1 | 121,8 |
|                | 1,3  | 73,7                     | 75,9  | 78,1  | 80,3  | 82,4  | 84,4  | 86,4  | 88,3  | 90,2  | 92,1  | 93,9  | 95,7  | 97,5  | 99,2  | 100,9 | 102,5 | 104,2 | 105,8 | 107,4 | 109,0 |
|                | 1,5  | 67,3                     | 69,3  | 71,3  | 73,3  | 75,2  | 77,0  | 78,9  | 80,6  | 82,4  | 84,1  | 85,7  | 87,4  | 89,0  | 90,5  | 92,1  | 93,6  | 95,1  | 96,6  | 98,0  | 99,5  |
| Return         | 1,8  | 62,3                     | 64,2  | 66,0  | 67,8  | 69,6  | 71,3  | 73,0  | 74,6  | 76,3  | 77,8  | 79,4  | 80,9  | 82,4  | 83,8  | 85,3  | 86,7  | 88,1  | 89,4  | 90,8  | 92,1  |
|                | 2,0  | 58,2                     | 60,0  | 61,8  | 63,5  | 65,1  | 66,7  | 68,3  | 69,8  | 71,3  | 72,8  | 74,2  | 75,7  | 77,0  | 78,4  | 79,7  | 81,1  | 82,4  | 83,6  | 84,9  | 86,1  |
|                | 2,5  | 52,1                     | 53,7  | 55,3  | 56,8  | 58,2  | 59,7  | 61,1  | 62,5  | 63,8  | 65,1  | 66,4  | 67,7  | 68,9  | 70,1  | 71,3  | 72,5  | 73,7  | 74,8  | 75,9  | 77,0  |
| Outlet         | 3,0  | 47,6                     | 49,0  | 50,4  | 51,8  | 53,2  | 54,5  | 55,8  | 57,0  | 58,2  | 59,4  | 60,6  | 61,8  | 62,9  | 64,0  | 65,1  | 66,2  | 67,3  | 68,3  | 69,3  | 70,3  |
|                | 3,5  | 44,0                     | 45,4  | 46,7  | 48,0  | 49,2  | 50,4  | 51,6  | 52,8  | 53,9  | 55,0  | 56,1  | 57,2  | 58,2  | 59,3  | 60,3  | 61,3  | 62,3  | 63,2  | 64,2  | 65,1  |
|                | 4,0  | 41,2                     | 42,4  | 43,7  | 44,9  | 46,0  | 47,2  | 48,3  | 49,4  | 50,4  | 51,5  | 52,5  | 53,5  | 54,5  | 55,4  | 56,4  | 57,3  | 58,2  | 59,1  | 60,0  | 60,9  |
|                | 4,5  | 38,8                     | 40,0  | 41,2  | 42,3  | 43,4  | 44,5  | 45,5  | 46,6  | 47,6  | 48,5  | 49,5  | 50,4  | 51,4  | 52,3  | 53,2  | 54,0  | 54,9  | 55,8  | 56,6  | 57,4  |
|                | 5,0  | 36,8                     | 38,0  | 39,1  | 40,1  | 41,2  | 42,2  | 43,2  | 44,2  | 45,1  | 46,0  | 47,0  | 47,8  | 48,7  | 49,6  | 50,4  | 51,3  | 52,1  | 52,9  | 53,7  | 54,5  |
|                | 5,5  | 35,1                     | 36,2  | 37,3  | 38,3  | 39,3  | 40,2  | 41,2  | 42,1  | 43,0  | 43,9  | 44,8  | 45,6  | 46,5  | 47,3  | 48,1  | 48,9  | 49,7  | 50,4  | 51,2  | 51,9  |
|                | 6,0  | 33,6                     | 34,7  | 35,7  | 36,6  | 37,6  | 38,5  | 39,4  | 40,3  | 41,2  | 42,0  | 42,9  | 43,7  | 44,5  | 45,3  | 46,0  | 46,8  | 47,6  | 48,3  | 49,0  | 49,7  |
|                | 6,5  | 32,3                     | 33,3  | 34,3  | 35,2  | 36,1  | 37,0  | 37,9  | 38,7  | 39,6  | 40,4  | 41,2  | 42,0  | 42,7  | 43,5  | 44,2  | 45,0  | 45,7  | 46,4  | 47,1  | 47,8  |
|                | 7,0  | 31,1                     | 32,1  | 33,0  | 33,9  | 34,8  | 35,7  | 36,5  | 37,3  | 38,1  | 38,9  | 39,7  | 40,4  | 41,2  | 41,9  | 42,6  | 43,3  | 44,0  | 44,7  | 45,4  | 46,0  |
|                | 7,5  | 30,1                     | 31,0  | 31,9  | 32,8  | 33,6  | 34,5  | 35,3  | 36,1  | 36,8  | 37,6  | 38,3  | 39,1  | 39,8  | 40,5  | 41,2  | 41,9  | 42,5  | 43,2  | 43,8  | 44,5  |
|                | 8,0  | 29,1                     | 30,0  | 30,9  | 31,7  | 32,6  | 33,4  | 34,1  | 34,9  | 35,7  | 36,4  | 37,1  | 37,8  | 38,5  | 39,2  | 39,9  | 40,5  | 41,2  | 41,8  | 42,4  | 43,1  |
|                | 8,5  | 28,3                     | 29,1  | 30,0  | 30,8  | 31,6  | 32,4  | 33,1  | 33,9  | 34,6  | 35,3  | 36,0  | 36,7  | 37,4  | 38,0  | 38,7  | 39,3  | 40,0  | 40,6  | 41,2  | 41,8  |
|                | 9,0  | 27,5                     | 28,3  | 29,1  | 29,9  | 30,7  | 31,5  | 32,2  | 32,9  | 33,6  | 34,3  | 35,0  | 35,7  | 36,3  | 37,0  | 37,6  | 38,2  | 38,8  | 39,4  | 40,0  | 40,6  |
|                | 9,5  | 26,7                     | 27,5  | 28,3  | 29,1  | 29,9  | 30,6  | 31,3  | 32,0  | 32,7  | 33,4  | 34,1  | 34,7  | 35,4  | 36,0  | 36,6  | 37,2  | 37,8  | 38,4  | 39,0  | 39,5  |
|                | 10,0 | 26,0                     | 26,8  | 27,6  | 28,4  | 29,1  | 29,8  | 30,5  | 31,2  | 31,9  | 32,6  | 33,2  | 33,8  | 34,5  | 35,1  | 35,7  | 36,3  | 36,8  | 37,4  | 38,0  | 38,5  |
| Speed<br>m/sec |      | Inner pipe diameter - mm |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

|                                |                                                                                                                                |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| $d$ = Inner pipe diameter [mm] | $d = \sqrt{\frac{Q \cdot 21.2}{V}} [mm] \quad V = \frac{Q \cdot 21.2}{d^2} [m/sec] \quad Q = \frac{d^2 \cdot V}{21.2} [l/min]$ |
| $Q$ = Capacities [ l ]         |                                                                                                                                |
| $V$ = Speed [m/sec ]           |                                                                                                                                |

| Table of Areas and Perimeters                                                       |                                    |                                                                                     |                                                                                                |
|-------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| S= Area                                                                             | S= Area                            | S= Area                                                                             |                                                                                                |
|  | $S = a^2$<br>$P = a \times 4$      |  | $S = \pi/4 \times D^2$<br>$P = \pi \times D$                                                   |
|  | $S = a \times b$<br>$P = 2(a + b)$ |  | $S = \pi/4 \times (D^2 - d^2)$                                                                 |
|  | $S = (a + b) \times h/2$           |  | $S = \pi \times r^2 \times \alpha / 360^\circ$<br>$b = \pi \times \alpha \times d / 360^\circ$ |
|  | $S = a \times h/2$                 |  | $S = (\pi r^2 \times \alpha / 360^\circ) - (b \times (r - h) / 2)$                             |
|  | $S = 3 \times a \times h$          |  | $S = \pi/4 \times D \times d$                                                                  |

| Mpa                                                             | bar  | Kg/cm <sup>2</sup> | PSI    | bar                                                            | Mpa | Kg/cm <sup>2</sup> | PSI   | Kg/cm <sup>2</sup>                                                                                  | Mpa    | bar    | PSI    | PSI                                                               | Mpa   | bar   | Kg/cm <sup>2</sup> |
|-----------------------------------------------------------------|------|--------------------|--------|----------------------------------------------------------------|-----|--------------------|-------|-----------------------------------------------------------------------------------------------------|--------|--------|--------|-------------------------------------------------------------------|-------|-------|--------------------|
| 1                                                               | 10   | 10,19              | 145,14 | 1                                                              | 0,1 | 1,019              | 14,5  | 1                                                                                                   | 0,902  | 0,981  | 14,22  | 1                                                                 | 0,007 | 0,069 | 0,0703             |
| 2                                                               | 20   | 20,38              | 290,28 | 2                                                              | 0,2 | 2,038              | 29    | 2                                                                                                   | 1,902  | 1,962  | 28,44  | 2                                                                 | 0,014 | 0,138 | 0,1406             |
| 3                                                               | 30   | 30,57              | 435,42 | 3                                                              | 0,3 | 3,057              | 43,5  | 3                                                                                                   | 2,902  | 2,943  | 42,66  | 3                                                                 | 0,021 | 0,207 | 0,2109             |
| 4                                                               | 40   | 40,76              | 580,56 | 4                                                              | 0,4 | 4,076              | 58    | 4                                                                                                   | 3,902  | 3,924  | 56,88  | 4                                                                 | 0,028 | 0,276 | 0,2812             |
| 5                                                               | 50   | 50,95              | 725,7  | 5                                                              | 0,5 | 5,095              | 72,5  | 5                                                                                                   | 4,902  | 4,905  | 71,1   | 5                                                                 | 0,035 | 0,345 | 0,3515             |
| 6                                                               | 60   | 61,14              | 870,84 | 6                                                              | 0,6 | 6,114              | 87    | 6                                                                                                   | 5,902  | 5,886  | 85,32  | 6                                                                 | 0,042 | 0,414 | 0,4218             |
| 7                                                               | 70   | 71,33              | 1016   | 7                                                              | 0,7 | 7,133              | 101,5 | 7                                                                                                   | 6,902  | 6,867  | 99,54  | 7                                                                 | 0,049 | 0,483 | 0,4921             |
| 8                                                               | 80   | 81,52              | 1161,1 | 8                                                              | 0,8 | 8,152              | 116   | 8                                                                                                   | 7,902  | 7,848  | 113,76 | 8                                                                 | 0,056 | 0,552 | 0,5624             |
| 9                                                               | 90   | 91,71              | 1306,3 | 9                                                              | 0,9 | 9,171              | 130,5 | 9                                                                                                   | 8,902  | 8,829  | 127,98 | 9                                                                 | 0,063 | 0,621 | 0,6327             |
| 10                                                              | 100  | 101,9              | 1451,4 | 10                                                             | 1   | 10,19              | 145   | 10                                                                                                  | 9,902  | 9,81   | 142,2  | 10                                                                | 0,07  | 0,69  | 0,703              |
| 20                                                              | 200  | 203,8              | 2902,8 | 20                                                             | 2   | 20,38              | 290   | 20                                                                                                  | 19,902 | 19,62  | 284,4  | 20                                                                | 0,14  | 1,38  | 1,406              |
| 30                                                              | 300  | 305,7              | 4354,2 | 30                                                             | 3   | 30,57              | 435   | 30                                                                                                  | 29,902 | 29,43  | 426,6  | 30                                                                | 0,21  | 2,07  | 2,109              |
| 40                                                              | 400  | 407,6              | 5805,6 | 40                                                             | 4   | 40,76              | 580   | 40                                                                                                  | 39,902 | 39,24  | 568,8  | 40                                                                | 0,28  | 2,76  | 2,812              |
| 50                                                              | 500  | 509,5              | 7257   | 50                                                             | 5   | 50,95              | 725   | 50                                                                                                  | 49,902 | 49,05  | 711    | 50                                                                | 0,35  | 3,45  | 3,515              |
| 60                                                              | 600  | 611,4              | 8708,4 | 60                                                             | 6   | 61,14              | 870   | 60                                                                                                  | 59,902 | 58,86  | 853,2  | 60                                                                | 0,42  | 4,14  | 4,218              |
| 70                                                              | 700  | 713,3              | 10160  | 70                                                             | 7   | 71,33              | 1015  | 70                                                                                                  | 69,902 | 68,67  | 995,4  | 70                                                                | 0,49  | 4,83  | 4,921              |
| 80                                                              | 800  | 815,2              | 11611  | 80                                                             | 8   | 81,52              | 1160  | 80                                                                                                  | 79,902 | 78,48  | 1137,6 | 80                                                                | 0,56  | 5,52  | 5,624              |
| 90                                                              | 900  | 917,1              | 13063  | 90                                                             | 9   | 91,71              | 1305  | 90                                                                                                  | 89,902 | 88,29  | 1279,8 | 90                                                                | 0,63  | 6,21  | 6,327              |
| 100                                                             | 1000 | 1019               | 14514  | 100                                                            | 10  | 101,9              | 1450  | 100                                                                                                 | 99,902 | 98,1   | 1422   | 100                                                               | 0,7   | 6,9   | 7,03               |
| 110                                                             | 1100 | 1120,9             | 15965  | 110                                                            | 11  | 112,09             | 1595  | 110                                                                                                 | 109,9  | 107,91 | 1564,2 | 110                                                               | 0,77  | 7,59  | 7,733              |
| 120                                                             | 1200 | 1222,8             | 17417  | 120                                                            | 12  | 122,28             | 1740  | 120                                                                                                 | 119,9  | 117,72 | 1706,4 | 120                                                               | 0,84  | 8,28  | 8,436              |
| 130                                                             | 1300 | 1324,7             | 18868  | 130                                                            | 13  | 132,47             | 1885  | 130                                                                                                 | 129,9  | 127,53 | 1848,6 | 130                                                               | 0,91  | 8,97  | 9,139              |
| 140                                                             | 1400 | 1426,6             | 20320  | 140                                                            | 14  | 142,66             | 2030  | 140                                                                                                 | 139,9  | 137,34 | 1990,8 | 140                                                               | 0,98  | 9,66  | 9,842              |
| 150                                                             | 1500 | 1528,5             | 21771  | 150                                                            | 15  | 152,85             | 2175  | 150                                                                                                 | 149,9  | 147,15 | 2133   | 150                                                               | 1,05  | 10,35 | 10,545             |
| 160                                                             | 1600 | 1630,4             | 23222  | 160                                                            | 16  | 163,04             | 2320  | 160                                                                                                 | 159,9  | 156,96 | 2275,2 | 160                                                               | 1,12  | 11,04 | 11,248             |
| 170                                                             | 1700 | 1732,3             | 24674  | 170                                                            | 17  | 173,23             | 2465  | 170                                                                                                 | 169,9  | 166,77 | 2417,4 | 170                                                               | 1,19  | 11,73 | 11,951             |
| 180                                                             | 1800 | 1834,2             | 26125  | 180                                                            | 18  | 183,42             | 2610  | 180                                                                                                 | 179,9  | 176,58 | 2559,6 | 180                                                               | 1,26  | 12,42 | 12,654             |
| 190                                                             | 1900 | 1936,1             | 27577  | 190                                                            | 19  | 193,61             | 2755  | 190                                                                                                 | 189,9  | 186,39 | 2701,8 | 190                                                               | 1,33  | 13,11 | 13,357             |
| 200                                                             | 2000 | 2038               | 29028  | 200                                                            | 20  | 203,8              | 2900  | 200                                                                                                 | 199,9  | 196,2  | 2844   | 200                                                               | 1,4   | 13,8  | 14,06              |
| 210                                                             | 2100 | 2139,9             | 30479  | 210                                                            | 21  | 213,99             | 3045  | 210                                                                                                 | 209,9  | 206,01 | 2986,2 | 210                                                               | 1,47  | 14,49 | 14,763             |
| 220                                                             | 2200 | 2241,8             | 31931  | 220                                                            | 22  | 224,18             | 3190  | 220                                                                                                 | 219,9  | 215,82 | 3128,4 | 220                                                               | 1,54  | 15,18 | 15,466             |
| 230                                                             | 2300 | 2343,7             | 33382  | 230                                                            | 23  | 234,37             | 3335  | 230                                                                                                 | 229,9  | 225,63 | 3270,6 | 230                                                               | 1,61  | 15,87 | 16,169             |
| 240                                                             | 2400 | 2445,6             | 34834  | 240                                                            | 24  | 244,56             | 3480  | 240                                                                                                 | 239,9  | 235,44 | 3412,8 | 240                                                               | 1,68  | 16,56 | 16,872             |
| 250                                                             | 2500 | 2547,5             | 36285  | 250                                                            | 25  | 254,75             | 3625  | 250                                                                                                 | 249,9  | 245,25 | 3555   | 250                                                               | 1,75  | 17,25 | 17,575             |
| 260                                                             | 2600 | 2649,4             | 37736  | 260                                                            | 26  | 264,94             | 3770  | 260                                                                                                 | 259,9  | 255,06 | 3697,2 | 260                                                               | 1,82  | 17,94 | 18,278             |
| 270                                                             | 2700 | 2751,3             | 39188  | 270                                                            | 27  | 275,13             | 3915  | 270                                                                                                 | 269,9  | 264,87 | 3839,4 | 270                                                               | 1,89  | 18,63 | 18,981             |
| 280                                                             | 2800 | 2853,2             | 40639  | 280                                                            | 28  | 285,32             | 4060  | 280                                                                                                 | 279,9  | 274,68 | 3981,6 | 280                                                               | 1,96  | 19,32 | 19,684             |
| 290                                                             | 2900 | 2955,1             | 42091  | 290                                                            | 29  | 295,51             | 4205  | 290                                                                                                 | 289,9  | 284,49 | 4123,8 | 290                                                               | 2,03  | 20,01 | 20,387             |
| 300                                                             | 3000 | 3057               | 43542  | 300                                                            | 30  | 305,7              | 4350  | 300                                                                                                 | 299,9  | 294,3  | 4266   | 300                                                               | 2,1   | 20,7  | 21,09              |
| 310                                                             | 3100 | 3158,9             | 44993  | 310                                                            | 31  | 315,89             | 4495  | 310                                                                                                 | 309,9  | 304,11 | 4408,2 | 310                                                               | 2,17  | 21,39 | 21,793             |
| 320                                                             | 3200 | 3260,8             | 46445  | 320                                                            | 32  | 326,08             | 4640  | 320                                                                                                 | 319,9  | 313,92 | 4550,4 | 320                                                               | 2,24  | 22,08 | 22,496             |
| 330                                                             | 3300 | 3362,7             | 47896  | 330                                                            | 33  | 336,27             | 4785  | 330                                                                                                 | 329,9  | 323,73 | 4692,6 | 330                                                               | 2,31  | 22,77 | 23,199             |
| 340                                                             | 3400 | 3464,6             | 49348  | 340                                                            | 34  | 346,46             | 4930  | 340                                                                                                 | 339,9  | 333,54 | 4834,8 | 340                                                               | 2,38  | 23,46 | 23,902             |
| 350                                                             | 3500 | 3566,5             | 50799  | 350                                                            | 35  | 356,65             | 5075  | 350                                                                                                 | 349,9  | 343,35 | 4977   | 350                                                               | 2,45  | 24,15 | 24,605             |
| Mpa= 0,1 bar<br>Mpa= 0,098 Kg/cm <sup>2</sup><br>Mpa= 0,007 PSI |      |                    |        | bar= 10 MPa<br>bar= 0,981 Kg/cm <sup>2</sup><br>bar= 0,069 PSI |     |                    |       | Kg/cm <sup>2</sup> = 10,19 MPa<br>Kg/cm <sup>2</sup> = 1,019 bar<br>Kg/cm <sup>2</sup> = 0,0703 PSI |        |        |        | PSI= 145,14 MPa<br>PSI= 14,5 bar<br>PSI= 14,22 kg/cm <sup>2</sup> |       |       |                    |

| Inches -> Millimetres<br>1Poll. = 25,40 mm |       |       |       |    |       |     |        |
|--------------------------------------------|-------|-------|-------|----|-------|-----|--------|
| in                                         | mm    | in    | mm    | in | mm    | in  | mm     |
| 1/64                                       | 0,397 | 1 1/2 | 38,1  | 15 | 381   | 36  | 914,4  |
| 1/32                                       | 0,764 | 1 3/4 | 44,45 | 16 | 406,4 | 38  | 965,2  |
| 3/64                                       | 1,191 | 2     | 50,8  | 17 | 431,8 | 40  | 1016   |
| 1/16                                       | 1,588 | 2 1/2 | 63,5  | 18 | 457,2 | 42  | 1066,8 |
| 3/32                                       | 2,381 | 3     | 76,2  | 19 | 482,6 | 44  | 1117,6 |
| 1/8                                        | 3,175 | 3 1/2 | 88,9  | 20 | 508   | 46  | 1168,4 |
| 5/32                                       | 3,969 | 4     | 101,6 | 21 | 533,4 | 48  | 1219,2 |
| 3/16                                       | 4,763 | 4 1/2 | 114,3 | 22 | 558,8 | 50  | 1270   |
| 1/4                                        | 6,35  | 5     | 127   | 23 | 584,2 | 55  | 1397   |
| 5/16                                       | 7,938 | 6     | 152,4 | 24 | 609,6 | 60  | 1524   |
| 3/8                                        | 9,525 | 7     | 177,8 | 25 | 635   | 65  | 1651   |
| 7/16                                       | 11,11 | 8     | 203,2 | 26 | 660,4 | 70  | 1778   |
| 1/2                                        | 12,7  | 9     | 228,6 | 27 | 685,8 | 75  | 1905   |
| 5/8                                        | 15,88 | 10    | 254   | 28 | 711,2 | 80  | 2032   |
| 3/4                                        | 19,05 | 11    | 279,4 | 29 | 736,6 | 85  | 2159   |
| 7/8                                        | 22,23 | 12    | 304,8 | 30 | 762   | 90  | 2286   |
| 1                                          | 25,4  | 13    | 330,2 | 32 | 812,8 | 95  | 2413   |
| 1 1/4                                      | 31,75 | 14    | 355,6 | 34 | 863,6 | 100 | 2540   |

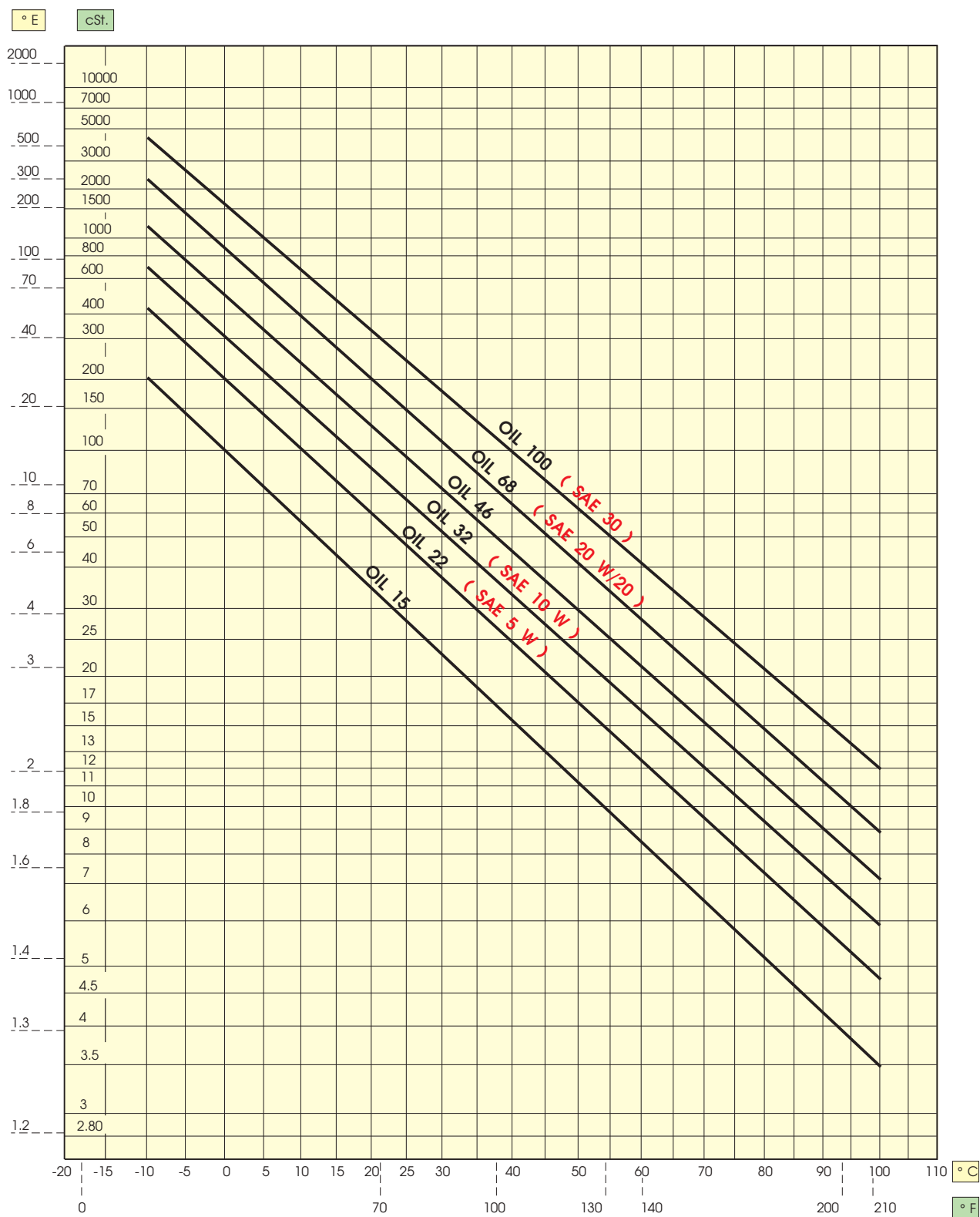
| Millimetres -> Inches<br>1 mm = 0,03937008 pollici |       |     |       |     |       |       |        |
|----------------------------------------------------|-------|-----|-------|-----|-------|-------|--------|
| mm                                                 | in    | mm  | in    | mm  | in    | mm    | in     |
| 1                                                  | 0,039 | 28  | 1,102 | 130 | 5,12  | 750   | 29,53  |
| 2                                                  | 0,079 | 30  | 1,181 | 140 | 5,51  | 800   | 31,50  |
| 3                                                  | 0,118 | 35  | 1,378 | 150 | 5,91  | 850   | 33,46  |
| 4                                                  | 0,157 | 40  | 1,575 | 160 | 6,30  | 900   | 35,43  |
| 5                                                  | 0,197 | 45  | 1,772 | 170 | 6,69  | 950   | 37,40  |
| 6                                                  | 0,236 | 50  | 1,969 | 180 | 7,09  | 1000  | 39,37  |
| 7                                                  | 0,276 | 55  | 2,165 | 190 | 7,48  | 1250  | 49,21  |
| 8                                                  | 0,315 | 60  | 2,362 | 200 | 7,87  | 1500  | 59,06  |
| 9                                                  | 0,354 | 65  | 2,559 | 250 | 9,84  | 1750  | 68,90  |
| 10                                                 | 0,394 | 70  | 2,756 | 300 | 11,81 | 2000  | 78,74  |
| 11                                                 | 0,433 | 75  | 2,953 | 350 | 13,78 | 2500  | 98,43  |
| 12                                                 | 0,472 | 80  | 3,150 | 400 | 15,75 | 3000  | 118,11 |
| 14                                                 | 0,551 | 85  | 3,346 | 450 | 17,72 | 3500  | 137,80 |
| 16                                                 | 0,630 | 90  | 3,543 | 500 | 19,69 | 4000  | 157,48 |
| 18                                                 | 0,709 | 95  | 3,740 | 550 | 21,65 | 4500  | 177,17 |
| 20                                                 | 0,787 | 100 | 3,937 | 600 | 23,62 | 5000  | 196,85 |
| 22                                                 | 0,866 | 110 | 4,331 | 650 | 25,59 | 7500  | 295,28 |
| 26                                                 | 1,024 | 120 | 4,724 | 700 | 27,56 | 10000 | 393,70 |

| US Gallons -> Litres<br>1gallone = 3,785334 litri |       |      |       |      |       |      |       |
|---------------------------------------------------|-------|------|-------|------|-------|------|-------|
| gal.                                              | litri | gal. | litri | gal. | litri | gal. | litri |
| 1                                                 | 3,79  | 10   | 37,85 | 100  | 378,5 | 500  | 1893  |
| 2                                                 | 7,57  | 20   | 75,71 | 120  | 454,2 | 600  | 2271  |
| 3                                                 | 11,36 | 30   | 113,6 | 140  | 529,9 | 700  | 2650  |
| 4                                                 | 15,14 | 40   | 151,4 | 160  | 605,7 | 800  | 3028  |
| 5                                                 | 18,93 | 50   | 189,3 | 180  | 681,4 | 900  | 3407  |
| 6                                                 | 22,71 | 60   | 227,1 | 200  | 757,1 | 1000 | 3785  |
| 7                                                 | 26,50 | 70   | 265,0 | 250  | 946,3 | 1500 | 5678  |
| 8                                                 | 30,28 | 80   | 302,8 | 300  | 1136  | 2000 | 7571  |
| 9                                                 | 34,07 | 90   | 340,7 | 400  | 1514  | 3000 | 11356 |

| Litres -> US Gallons<br>1litro = 0,2641775 galloni |       |       |       |       |       |       |       |
|----------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| litri                                              | gal.  | litri | gal.  | litri | gal.  | litri | gal.  |
| 1                                                  | 0,264 | 10    | 2,642 | 300   | 79,25 | 3000  | 792,5 |
| 2                                                  | 0,528 | 20    | 5,284 | 400   | 105,7 | 4000  | 1057  |
| 3                                                  | 0,793 | 30    | 7,925 | 500   | 132,1 | 5000  | 1321  |
| 4                                                  | 1,057 | 40    | 10,57 | 600   | 158,5 | 6000  | 1585  |
| 5                                                  | 1,321 | 50    | 13,21 | 700   | 184,9 | 8000  | 2113  |
| 6                                                  | 1,585 | 100   | 26,42 | 800   | 211,3 | 10000 | 2642  |
| 7                                                  | 1,849 | 150   | 39,63 | 900   | 237,8 | 20000 | 5284  |
| 8                                                  | 2,113 | 200   | 52,84 | 1000  | 264,2 | 30000 | 7925  |
| 9                                                  | 2,378 | 250   | 66,04 | 2000  | 528,4 | 50000 | 13209 |

| Horsepower => Kilowatts<br>1 CV = 0,735 kW |      |    |       |    |       |     |        |
|--------------------------------------------|------|----|-------|----|-------|-----|--------|
| CV                                         | Kw   | CV | Kw    | CV | Kw    | CV  | Kw     |
| 1                                          | 0,74 | 9  | 6,62  | 24 | 17,64 | 60  | 44,10  |
| 2                                          | 1,47 | 10 | 7,35  | 26 | 19,11 | 70  | 51,45  |
| 3                                          | 2,21 | 12 | 8,82  | 28 | 20,58 | 80  | 58,80  |
| 4                                          | 2,94 | 14 | 10,29 | 30 | 22,05 | 90  | 66,15  |
| 5                                          | 3,68 | 16 | 11,76 | 35 | 25,73 | 100 | 73,50  |
| 6                                          | 4,41 | 18 | 13,23 | 40 | 29,40 | 150 | 110,25 |
| 7                                          | 5,15 | 20 | 14,70 | 45 | 33,08 | 200 | 147,00 |
| 8                                          | 5,88 | 22 | 16,17 | 50 | 36,75 | 300 | 220,50 |

| Kilowatts=>Horsepower<br>1 kW = 1,36 CV |       |    |       |    |       |     |       |
|-----------------------------------------|-------|----|-------|----|-------|-----|-------|
| Kw                                      | CV    | Kw | CV    | Kw | CV    | Kw  | CV    |
| 1                                       | 1,36  | 9  | 12,24 | 24 | 32,64 | 60  | 81,6  |
| 2                                       | 2,72  | 10 | 13,6  | 26 | 35,36 | 70  | 95,2  |
| 3                                       | 4,08  | 12 | 16,32 | 28 | 38,08 | 80  | 108,8 |
| 4                                       | 5,44  | 14 | 19,04 | 30 | 40,8  | 90  | 122,4 |
| 5                                       | 6,8   | 16 | 21,76 | 35 | 47,6  | 100 | 136   |
| 6                                       | 8,16  | 18 | 24,48 | 40 | 54,4  | 150 | 204   |
| 7                                       | 9,52  | 20 | 27,2  | 45 | 61,2  | 200 | 272   |
| 8                                       | 10,88 | 22 | 29,92 | 50 | 68    | 300 | 408   |



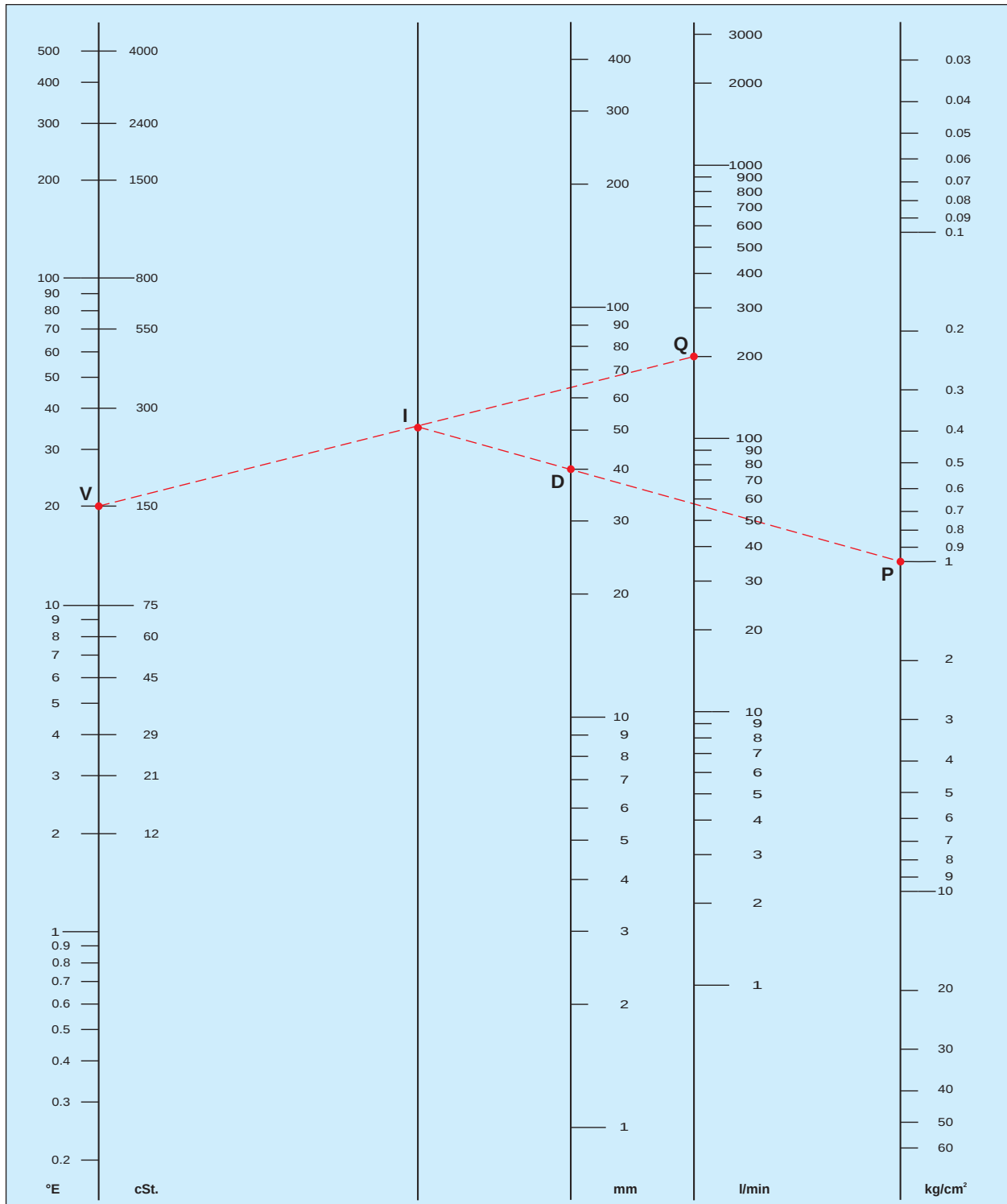
Note: based on the oil viscosity and capacity of a pump it is possible to determine the pressure drop for every 100 m of piping by means of the table.

On the viscosity, flow rate and internal pipe diameter scales, fix the corresponding values **V**, **Q** and **D**.

Join points **V** and **Q** with a straight line intersecting point **I** on the "index" line.

From this point **I**, pass a straight line through **D** until meeting the pressure drop scale at point **P**; the corresponding value represents the pressure drop at point **P**; the corresponding value represents the pressure drop along 100 m of piping.

EXAMPLE: a pipe through which a fluid having a viscosity of 150 cSt. flows at a rate of 200 l/min and which has a diameter of 40 mm will have a pressure drop of 1 kg/cm<sup>2</sup> for every 100 m of length.



**V**= Viscosity cSt -°E

**I**= Index line of intersection

**D**= Internal pipe diameter in mm

**Q**= Flow rate in l/min

**P**= Pressure drop kg/cm<sup>2</sup> per 100 m

## Table of elements

| Element     | Symbol | Atomic N° | Atom. Wgt. | Melt. point °C |
|-------------|--------|-----------|------------|----------------|
| Hafnium     | Hf     | 72        | 178,49     | 2150,00        |
| Aluminium   | Al     | 13        | 26,98      | 660,37         |
| Americium   | Am     | 95        | 243,00     | 994,00         |
| Antimony    | Sb     | 51        | 121,75     | 630,00         |
| Silver      | Ag     | 47        | 107,87     | 961,93         |
| Argon       | Ar     | 18        | 39,95      | -189,30        |
| Arsenic     | As     | 33        | 74,92      | 817,00         |
| Astetene    | At     | 85        | 210,00     | 302,00         |
| Actinium    | Ac     | 89        | 227,00     | 1050,00        |
| Nitrogen    | N      | 7         | 14,01      | -209,90        |
| Barium      | Ba     | 56        | 137,33     | 725,00         |
| Beryllium   | Be     | 4         | 9,01       | 1278,00        |
| Berkelium   | Bk     | 97        | 247,00     |                |
| Bismuth     | Bi     | 83        | 208,98     | 271,30         |
| Boron       | B      | 5         | 10,81      | 2300,00        |
| Bromine     | Br     | 35        | 79,90      | -7,20          |
| Cadmium     | Cd     | 48        | 112,41     | 320,90         |
| Calcium     | Ca     | 20        | 40,08      | 839,00         |
| Californium | Cf     | 98        | 251,00     |                |
| Carbon      | C      | 6         | 12,01      | 3500,00        |
| Cerium      | Ce     | 58        | 140,12     | 795,00         |
| Cesium      | Cs     | 55        | 132,91     | 28,50          |
| Chlorine    | Cl     | 17        | 35,45      | -100,98        |
| Cobalt      | Co     | 27        | 58,93      | 1495,00        |
| Krypton     | Kr     | 36        | 83,80      | -157,20        |
| Chromium    | Cr     | 24        | 52,00      | 1857,00        |
| Curium      | Cm     | 96        | 247,00     | 1340,00        |
| Dysprosium  | Dy     | 66        | 162,50     | 1412,00        |
| Einsteinium | Es     | 99        | 254,00     |                |
| Helium      | He     | 2         | 4,00       | -272,00        |
| Erbium      | Er     | 68        | 167,26     | 1522,00        |
| Europium    | Eu     | 63        | 151,96     | 822,00         |
| Fermium     | Fm     | 100       | 257,00     |                |
| Iron        | Fe     | 26        | 55,85      | 1535,00        |

| Element     | Symbol | Atomic N° | Atom. Wgt. | Melt. point °C |
|-------------|--------|-----------|------------|----------------|
| Fluorine    | F      | 9         | 19,00      | -219,62        |
| Phosphorus  | P      | 15        | 30,97      | 44,10          |
| Francium    | Fr     | 87        | 223,00     | 27,00          |
| Gadolinium  | Gd     | 64        | 157,25     | 1311,00        |
| Gallium     | Ga     | 31        | 69,74      | 29,78          |
| Germanium   | Ge     | 32        | 72,59      | 937,40         |
| Hydrogen    | H      | 1         | 1,01       | -259,14        |
| Indium      | In     | 49        | 114,82     | 156,61         |
| Iodine      | I      | 53        | 126,90     | 113,50         |
| Iridium     | Ir     | 77        | 192,22     | 2410,00        |
| Ytterbium   | Yb     | 70        | 173,04     | 824,00         |
| Yttrium     | Y      | 39        | 88,91      | 1523,00        |
| Lanthanum   | La     | 57        | 138,91     | 920,00         |
| Lithium     | Li     | 3         | 6,94       | 180,54         |
| Lutetium    | Lu     | 71        | 174,96     | 1656,00        |
| Magnesium   | Mg     | 12        | 24,31      | 638,80         |
| Manganese   | Mn     | 25        | 54,94      | 1245,00        |
| Mendelevium | Md     | 101       | 258,00     |                |
| Mercury     | Hg     | 80        | 200,59     | -38,87         |
| Molybdenum  | Mo     | 42        | 95,94      | 2617,00        |
| Neodymium   | Nd     | 60        | 144,24     | 1010,00        |
| Neon        | Ne     | 10        | 20,17      | -248,60        |
| Neptunium   | Np     | 93        | 237,05     | 640,00         |
| Nickel      | Ni     | 28        | 58,71      | 1453,00        |
| Niobium     | Nb     | 41        | 92,91      | 2468,00        |
| Nobelium    | No     | 102       | 259,00     |                |
| Holmium     | Ho     | 67        | 164,93     | 1470,00        |
| Gold        | Au     | 79        | 196,97     | 1064,43        |
| Osmium      | Os     | 76        | 190,20     | 3045,00        |
| Oxygen      | O      | 8         | 16,00      | -218,40        |
| Palladium   | Pd     | 46        | 106,40     | 1552,00        |
| Lead        | Pb     | 82        | 207,20     | 327,50         |
| Platinum    | Pt     | 78        | 195,09     | 1772,00        |
| Plutonium   | Pu     | 94        | 244,00     | 639,50         |

| Element      | Symbol | Atomic N° | Atom. Wgt. | Melt. point °C |
|--------------|--------|-----------|------------|----------------|
| Polonium     | Po     | 84        | 209,00     | 254,00         |
| Potassium    | K      | 19        | 39,10      | 63,65          |
| Praseodymium | Pr     | 59        | 140,91     | 935,00         |
| Promethium   | Pm     | 61        | 145,00     |                |
| Protactinium | Pa     | 91        | 231,04     | 1600,00        |
| Radium       | Ra     | 88        | 226,03     | 700,00         |
| Radon        | Rn     | 86        | 222,00     | -71,00         |
| Copper       | Cu     | 29        | 63,55      | 1083,00        |
| Rhenium      | Re     | 75        | 186,21     | 3180,00        |
| Rhodium      | Rh     | 45        | 102,91     | 1966,00        |
| Rubidium     | Rb     | 37        | 85,47      | 38,89          |
| Ruthenium    | Ru     | 44        | 101,07     | 2250,00        |
| Samarium     | Sm     | 62        | 150,40     | 1072,00        |
| Scandium     | Sc     | 21        | 44,96      | 1539,00        |
| Selenium     | Se     | 34        | 78,96      | 217,00         |
| Silicon      | Si     | 14        | 28,09      | 1410,00        |
| Sodium       | Na     | 11        | 22,99      | 97,80          |
| Tin          | Sn     | 50        | 118,69     | 231,90         |
| Strontium    | Sr     | 38        | 87,62      | 769,00         |
| Thallium     | Tl     | 81        | 204,37     | 303,50         |
| Tantalum     | Ta     | 73        | 180,95     | 2996,00        |
| Technetium   | Tc     | 43        | 98,91      | 2200,00        |
| Tellurium    | Te     | 52        | 127,60     | 449,50         |
| Terbium      | Tb     | 65        | 158,93     | 1360,00        |
| Titanium     | Ti     | 22        | 47,90      | 1660,00        |
| Thorium      | Th     | 90        | 232,04     | 1750,00        |
| Thulium      | Tm     | 69        | 168,93     | 1545,00        |
| Tungsten     | W      | 74        | 183,85     | 3410,00        |
| Uranium      | U      | 92        | 238,03     | 1132,00        |
| Vanadium     | V      | 23        | 50,94      | 1890,00        |
| Xenon        | Xe     | 54        | 131,30     | -111,90        |
| Zinc         | Zn     | 30        | 65,38      | 419,58         |
| Zirconium    | Zr     | 40        | 91,22      | 1852,00        |
| Sulfur       | S      | 16        | 32,06      | 112,80         |

## Specific weight of some substances

| SOLIDS     |       |
|------------|-------|
| Aluminium  | 2,70  |
| Silver     | 10,50 |
| Diamond    | 8,51  |
| Pure Iron  | 7,86  |
| Cast Iron  | 7,27  |
| Nickel     | 8,85  |
| Gold       | 19,33 |
| Brass      | 8,65  |
| Lead       | 11,34 |
| Platinum   | 21,45 |
| Plexiglass | 1,18  |
| Copper     | 8,93  |

| LIQUIDS         |       |
|-----------------|-------|
| Distilled water | 1,00  |
| Ethyl alcohol   | 0,79  |
| Gasoline        | 0,68  |
| Mercury         | 13,60 |
| Linseed Oil     | 0,93  |
| Petroleum       | 0,81  |

| GASES          |      |
|----------------|------|
| Acetylene      | 1,10 |
| Ammonia        | 0,77 |
| Carbon Dioxide | 1,98 |
| Air            | 1,29 |
| Nitrogen       | 1,25 |
| Helium         | 0,18 |
| Ethylene       | 1,26 |
| Hydrogen       | 0,09 |
| Methane        | 0,72 |
| Oxygen         | 1,43 |

| Class | Behaviour       | Effects on Physical Properties | Increase in Volume % | delta Sh.A      |
|-------|-----------------|--------------------------------|----------------------|-----------------|
| ●     | recommended     | small or none                  | less than 10         | less than 10    |
| ●     | satisfactory    | minor                          | from 10 to 30        | from 10 to 20   |
| ●     | unsatisfactory  | moderate                       | from 30 to 60        | from 20 to 30   |
| ●     | not recommended | severe                         | greater than 60      | greater than 30 |

**NR** = NATURAL RUBBER  
**SBR** = STYRENE-BUTADIENE RUBBER  
**EPDM** = ETHYLENE-PROPYLENE THERMOPOLYMER  
**NBR** = NITRILE RUBBER  
**CR** = POLYCHLOROPRENE  
**CSM** = CHLOROSULPHONATED POLYETHYLENE  
**VMQ** = SILICONE RUBBER  
**FKM** = FLUOROCARBON RUBBER (VITON®)

|                                 |      |   |   |   |   |   |   |   |   |
|---------------------------------|------|---|---|---|---|---|---|---|---|
| Acetylene                       | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Acetophenone                    | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Acetone                         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Acetic Acid                     | 10   | ● | ● | ● | ● | ● | ● | ● | ● |
| Acetic Acid                     | 50   | ● | ● | ● | ● | ● | ● | ● | ● |
| Acetic Acid                     | 25   | ● | ● | ● | ● | ● | ● | ● | ● |
| Acetic Acid                     | 100  | ● | ● | ● | ● | ● | ● | ● | ● |
| Boric Acid                      | 10   | ● | ● | ● | ● | ● | ● | ● | ● |
| Citric Acid                     | SAT  | ● | ● | ● | ● | ● | ● | ● | ● |
| Chloroacetic Acid               | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Chromic Acid                    | 40   | ● | ● | ● | ● | ● | ● | ● | ● |
| Formic Acid                     | SAT. | ● | ● | ● | ● | ● | ● | ● | ● |
| Formic Acid                     | SAT  | ● | ● | ● | ● | ● | ● | ● | ● |
| Phosphoric Acid                 | 60   | ● | ● | ● | ● | ● | ● | ● | ● |
| Hypochlorous Acid               | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Lactic Acid                     | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Maleic Acid                     | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Naphthenic Acid                 | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitric Acid                     | 10   | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitric Acid                     | 65   | ● | ● | ● | ● | ● | ● | ● | ● |
| Palmitic Acid                   | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Salicylic Acid                  | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Stearic Acid                    | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulphydic Acid                  | 10   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulphydic Acid                  | 20   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfuric Acid                   | 25   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfuric Acid                   | 50   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfuric Acid                   | 60   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfuric Acid                   | 75   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfuric Acid                   | 96   | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfurous Acid                  | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Tannic Acid                     | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Tartaric Acid                   | 10   | ● | ● | ● | ● | ● | ● | ● | ● |
| Deionized Water                 | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Turpentine                      | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Acrylonitrile                   | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Ammonia                         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Aniline                         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Aniline                         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Asphalt                         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| ASTM 1 OIL                      | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| ASTM 2 OIL                      | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| ASTM 3 OIL                      | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Benzene                         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Sodium Bicarbonate              | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Carbon Dioxide                  | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Butter                          | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Butadiene                       | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Liquid Butane                   | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Fuel A (Isooctane 100%)         | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Fuel B (Isooct. 70% Toluene 30) | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Fuel C (Isooct. 50% Toluene 50) | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Fuel with Methanol or Ethanol   | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Kerosene                        | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Cyclohexane                     | -    | ● | ● | ● | ● | ● | ● | ● | ● |
| Chloroacetone                   | -    | ● | ● | ● | ● | ● | ● | ● | ● |

|                         |    |   |   |   |   |   |   |   |   |
|-------------------------|----|---|---|---|---|---|---|---|---|
| Chloroform              | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Chloroprene             | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Dry Chlorine            | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Wet Chlorine            | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Dibutyl Phthalate       | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Diethylene Glycol       | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Diethyl Sebacate        | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Dinitrotoluene          | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Diocetyl Phthalate      | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Diocetyl Sebacate       | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Epichlorohydrin         | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Hexane                  | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Ethanol                 | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Fluorobenzene           | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Liquid Fluorine         | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Formaldehyde            | 40 | ● | ● | ● | ● | ● | ● | ● | ● |
| Formaldehyde            | 40 | ● | ● | ● | ● | ● | ● | ● | ● |
| Freon 11                | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Freon 12                | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Freon 21                | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Freon 22                | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Freon 113               | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Freon 114               | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Glycerine               | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Silicone Grease         | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Hydrogen                | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Calcium Hydroxide       | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Sodium Hypochlorite     | 10 | ● | ● | ● | ● | ● | ● | ● | ● |
| Milk                    | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Mercury                 | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Methanol                | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Methyl Ethyl Ketone     | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Naphtha                 | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitrobenzene            | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitroethane             | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitromethane            | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitropropane            | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Animal Oil (Whale-Seal) | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Grain Oil               | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Coconut Oil             | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Cod-Liver Oil           | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Olive Oil               | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Cottonseed Oil          | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Silicon Oil             | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Castor Oil              | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Oxygen                  | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Ozone                   | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Perchloroethylene       | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Potassium Permanganate  | 25 | ● | ● | ● | ● | ● | ● | ● | ● |
| Tetraethyl Lead         | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Propane                 | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Soda (Sodium Hydroxide) | 10 | ● | ● | ● | ● | ● | ● | ● | ● |
| Styrene                 | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Toluene                 | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Trichloroethylene       | -  | ● | ● | ● | ● | ● | ● | ● | ● |
| Sulfur                  | -  | ● | ● | ● | ● | ● | ● | ● | ● |

The data shown in the table are approximate

| ELASTOMERS                     |           | NR      | SBR     | EPDM    | NBR     | CR      | CSM     | VMQ     | FKM     |
|--------------------------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Specific weight                |           | 0.93    | 0.95    | 0.86    | 0.97    | 1.25    | 1.2     | 1.2     | 1.82    |
| Hardness                       | (Shore A) | 25÷95   | 35÷95   | 40÷85   | 30÷90   | 25÷90   | 40÷90   | 30÷80   | 50÷90   |
| Tensile strength               | (M Pa)    | 14÷30   | 7÷28    | 6÷18    | 7÷25    | 7÷24    | 12÷24   | 4÷9     | 5÷17    |
| Ultimate elongation            | (%)       | 150÷850 | 125÷850 | 150÷500 | 150÷750 | 100÷800 | 150÷500 | 400÷600 | 125÷300 |
| Resilience                     | (%)       | 30÷65   | 25÷55   | 35÷55   | 10÷50   | 20÷50   | 5÷20    | 40÷55   | 5÷10    |
| Extreme operating temperatures | (°C)      | -45÷85  | -40÷90  | -40÷155 | -40÷110 | -40÷100 | -15÷120 | -50÷225 | -20÷250 |
| Abrasion resistance            |           | ●       | ● ●     | ●       | ●       | ● ●     | ● ●     | ●       | ● ●     |
| Gas impermeability             |           | ●       | ● ●     | ●       | ● ●     | ●       | ●       | ●       | ●       |

| Class | Behaviour       |
|-------|-----------------|
| ●     | recommended     |
| ●     | satisfactory    |
| ●     | unsatisfactory  |
| ●     | not recommended |

**NR** = NATURAL RUBBER

**SBR** = STYRENE-BUTADIENE RUBBER

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VITON® is a registered trademark of Dupont Dow Elastomers L.L.C.

### Specifications of **TEFLON®** (Virgin PTFE)

| Properties                                     | U.m.              | Values (from-to)      |
|------------------------------------------------|-------------------|-----------------------|
| Specific weight                                | -                 | 2.14 - 2.20           |
| Ultimate strength                              | N/mm <sup>2</sup> | 20 - 35               |
| Ultimate elongation                            | %                 | 210 - 400             |
| Compressive strength 1% deformat.              | N/mm <sup>2</sup> | 4.00 - 4.50           |
| Flexural strength 0.7 N/mm <sup>2</sup>        | N/mm <sup>2</sup> | no breakage           |
| Shock resistance 57°C                          | J/cm              | 1,1                   |
| Shock resistance 23°C                          | J/cm              | 1,6                   |
| Shock resistance 77°C                          | J/cm              | 3,3                   |
| Hardness                                       | (shoreD)          | 50 - 60               |
| Static friction coefficient                    | -                 | 0,09                  |
| Dynamic friction coefficient                   | -                 | 0,05                  |
| PTFE - oil-lubricated steel                    | -                 | 0,02 - 0,06           |
| Coefficient of expansion from 25 to 100°C      | °C <sup>-1</sup>  | 16 x 10 <sup>-5</sup> |
| Thermal conductivity                           | W/mK              | 0,2                   |
| Distortion temperatures 0.46 N/mm <sup>2</sup> | °C                | 130 - 140             |
| Distortion temperatures 1.85 N/mm <sup>2</sup> | °C                | 50 - 60               |
| Water absorption                               | %                 | <0,01                 |
| Inflammability ATB                             | sec               | <5,00                 |
| Inflammability AEB                             | mm                | <5,00                 |
| Operating temperature                          | °C                | -200 +260             |

The data shown in the table are approximate

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| ISO METRIC<br><b>M</b> |                     |
|------------------------|---------------------|
| Thread Diameter        | Drill Hole Diameter |
| mm                     | mm                  |
| M 1 x 0,25             | 0,75                |
| M 1,1 x 0,25           | 0,85                |
| M 1,2 x 0,25           | 0,95                |
| M 1,4 x 0,30           | 1,1                 |
| M 1,6 x 0,35           | 1,25                |
| M 1,8 x 0,35           | 1,45                |
| M 2 x 0,4              | 1,6                 |
| M 2,2 x 0,45           | 1,75                |
| M 2,5 x 0,45           | 2,05                |
| M 3 x 0,5              | 2,5                 |
| M 3,5 x 0,6            | 2,9                 |
| M 4 x 0,7              | 3,3                 |
| M 4,5 x 0,75           | 3,7                 |
| M 5 x 0,8              | 4,2                 |
| M 6 x 1                | 5                   |
| M 7 x 1                | 6                   |
| M 8 x 1,25             | 6,8                 |
| M 9 x 1,25             | 7,8                 |
| M 10 x 1,5             | 8,5                 |
| M 11 x 1,5             | 9,5                 |
| M 12 x 1,75            | 10,2                |
| M 14 x 2               | 12                  |
| M 16 x 2               | 14                  |
| M 18 x 2,5             | 15,5                |
| M 20 x 2,5             | 17,5                |
| M 22 x 2,5             | 19,5                |
| M 24 x 3               | 21                  |
| M 27 x 3               | 24                  |
| M 30 x 3,5             | 26,5                |
| M 33 x 3,5             | 29,5                |
| M 36 x 4               | 32                  |
| M 39 x 4               | 35                  |
| M 42 x 4,5             | 37,5                |
| M 45 x 4,5             | 40,5                |
| M 48 x 5               | 43                  |
| M 52 x 5               | 47                  |
| M 56 x 5,5             | 50,5                |

| ISO METRIC FINE<br><b>MF</b> |                     |  |                 |                     |  |
|------------------------------|---------------------|--|-----------------|---------------------|--|
| Thread Diameter              | Drill Hole Diameter |  | Thread Diameter | Drill Hole Diameter |  |
| mm                           | mm                  |  | mm              | mm                  |  |
| M 1 x 0,2                    | 0,75                |  | M 24 x 2        | 22                  |  |
| M 1,1 x 0,2                  | 0,9                 |  | M 25 x 1        | 24                  |  |
| M 1,2 x 0,2                  | 1                   |  | M 25 x 1,5      | 23,5                |  |
| M 1,4 x 0,2                  | 1,2                 |  | M 25 x 2        | 23                  |  |
| M 1,4 x 0,25                 | 1,15                |  | M 26 x 1,5      | 24,5                |  |
| M 1,6 x 0,2                  | 1,4                 |  | M 27 x 1        | 26                  |  |
| M 1,8 x 0,2                  | 1,6                 |  | M 27 x 1,5      | 25,5                |  |
| M 2 x 0,25                   | 1,75                |  | M 27 x 2        | 25                  |  |
| M 2,2 x 0,25                 | 1,95                |  | M 28 x 1        | 27                  |  |
| M 2,5 x 0,35                 | 2,15                |  | M 28 x 1,5      | 26,5                |  |
| M 3 x 0,35                   | 2,65                |  | M 28 x 2        | 26                  |  |
| M 3,5 x 0,35                 | 3,15                |  | M 30 x 1        | 29                  |  |
| M 4 x 0,35                   | 3,65                |  | M 30 x 1,5      | 28,5                |  |
| M 4 x 0,5                    | 3,5                 |  | M 30 x 2        | 28                  |  |
| M 4,5 x 0,5                  | 4                   |  | M 30 x 3        | 27                  |  |
| M 5 x 0,5                    | 4,5                 |  | M 32 x 1,5      | 30,5                |  |
| M 5,5 x 0,5                  | 5                   |  | M 32 x 2        | 30                  |  |
| M 6 x 0,75                   | 5,2                 |  | M 33 x 1,5      | 31,5                |  |
| M 7 x 0,75                   | 6,2                 |  | M 33 x 2        | 31                  |  |
| M 8 x 1                      | 7                   |  | M 33 x 3        | 30                  |  |
| M 8 x 0,75                   | 7,2                 |  | M 35 x 1,5      | 33,5                |  |
| M 9 x 1                      | 8                   |  | M 36 x 1,5      | 34,5                |  |
| M 9 x 0,75                   | 8,2                 |  | M 36 x 2        | 34                  |  |
| M 10 x 1                     | 9                   |  | M 36 x 3        | 33                  |  |
| M 10 x 0,75                  | 9,2                 |  | M 38 x 1,5      | 36,5                |  |
| M 10 x 1,25                  | 8,8                 |  | M 39 x 1,5      | 37,5                |  |
| M 11 x 1                     | 10                  |  | M 39 x 2        | 37                  |  |
| M 11 x 0,75                  | 10,2                |  | M 39 x 3        | 36                  |  |
| M 12 x 1                     | 11                  |  | M 40 x 1,5      | 38,5                |  |
| M 12 x 1,25                  | 10,8                |  | M 40 x 2        | 38                  |  |
| M 12 x 1,5                   | 10,5                |  | M 40 x 3        | 37                  |  |
| M 14 x 1                     | 13                  |  | M 42 x 1,5      | 40,5                |  |
| M 14 x 1,25                  | 12,8                |  | M 42 x 2        | 40                  |  |
| M 14 x 1,5                   | 12,5                |  | M 42 x 3        | 39                  |  |
| M 15 x 1                     | 14                  |  | M 42 x 4        | 38                  |  |
| M 15 x 1,5                   | 13,5                |  | M 45 x 1,5      | 43,5                |  |
| M 16 x 1                     | 15                  |  | M 45 x 2        | 43                  |  |
| M 16 x 1,5                   | 14,5                |  | M 45 x 3        | 42                  |  |
| M 17 x 1                     | 16                  |  | M 45 x 4        | 41                  |  |
| M 17 x 1,5                   | 15,5                |  | M 48 x 1,5      | 46,5                |  |
| M 18 x 1                     | 17                  |  | M 48 x 2        | 46                  |  |
| M 18 x 1,5                   | 16,5                |  | M 48 x 3        | 45                  |  |
| M 18 x 2                     | 16                  |  | M 48 x 4        | 44                  |  |
| M 20 x 1                     | 19                  |  | M 50 x 1,5      | 48,5                |  |
| M 20 x 1,5                   | 18,5                |  | M 50 x 2        | 48                  |  |
| M 20 x 2                     | 18                  |  | M 50 x 3        | 47                  |  |
| M 22 x 1                     | 21                  |  | M 52 x 1,5      | 50,5                |  |
| M 22 x 1,5                   | 20,5                |  | M 52 x 2        | 50                  |  |
| M 22 x 2                     | 20                  |  | M 52 x 3        | 49                  |  |
| M 24 x 1                     | 23                  |  | M 52 x 4        | 48                  |  |
| M 24 x 1,5                   | 22,5                |  |                 |                     |  |

| WHITWORTH W<br>BSW      |                     |
|-------------------------|---------------------|
| Nominal Thread Diameter | Drill Hole Diameter |
| Inches                  | mm                  |
| 1/8 - 40                | 2,55                |
| 5/32 - 32               | 3,2                 |
| 3/16 - 24               | 3,7                 |
| 1/4 - 20                | 5,1                 |
| 5/16 - 18               | 6,5                 |
| 3/8 - 16                | 7,9                 |
| 7/16 - 14               | 9,2                 |
| 1/2 - 12                | 10,5                |
| 9/16 - 12               | 12                  |
| 5/8 - 11                | 13,5                |
| 3/4 - 10                | 16,25               |
| 7/8 - 9                 | 19,25               |
| 1 - 8                   | 21,75               |
| 1 1/8 - 7               | 24,75               |
| 1 1/4 - 7               | 27,75               |
| 1 3/8 - 6               | 30,5                |
| 1 1/2 - 6               | 33,5                |
| 1 5/8 - 5               | 35,5                |
| 1 3/4 - 5               | 39                  |
| 2 - 4 1/2               | 44,5                |
| 2 1/4 - 4               | 50                  |
| 2 1/2 - 4               | 56,5                |
| 2 3/4 - 3 1/2           | 62                  |
| 3 - 3 1/2               | 62                  |

| UNIFIED COARSE THREAD<br>UNC |                     |
|------------------------------|---------------------|
| Nominal Thread Diameter      | Drill Hole Diameter |
| Inches                       | mm                  |
| Nr. 1 - 64                   | 1,5                 |
| Nr. 2 - 56                   | 1,8                 |
| Nr. 3 - 48                   | 2,02                |
| Nr. 4 - 40                   | 2,25                |
| Nr. 5 - 40                   | 2,6                 |
| Nr. 6 - 32                   | 2,75                |
| Nr. 8 - 32                   | 3,4                 |
| Nr. 10 - 24                  | 3,8                 |
| Nr. 12 - 24                  | 4,5                 |
| 1/4 - 20                     | 5,1                 |
| 5/16 - 18                    | 6,5                 |
| 3/8 - 16                     | 8                   |
| 7/16 - 14                    | 9,4                 |
| 1/2 - 13                     | 10,75               |
| 9/16 - 12                    | 12,2                |
| 5/8 - 11                     | 13,6                |
| 3/4 - 10                     | 16,5                |
| 7/8 - 9                      | 19,5                |
| 1 - 8                        | 22,25               |
| 1 1/8 - 7                    | 25                  |
| 1 1/4 - 7                    | 28,25               |
| 1 3/8 - 6                    | 30,75               |
| 1 1/2 - 6                    | 34                  |
| 1 3/4 - 5                    | 39,5                |
| 2 - 4 1/2                    | 45                  |

| WHITWORTH GAS<br>BSP    |                     |
|-------------------------|---------------------|
| Nominal Thread Diameter | Drill Hole Diameter |
| Inches                  | mm                  |
| G 1/8 - 28              | 8,8                 |
| G 1/4 - 19              | 11,8                |
| G 3/8 - 19              | 15,25               |
| G 1/2 - 14              | 19                  |
| G 5/8 - 14              | 21                  |
| G 3/4 - 14              | 24,5                |
| G 7/8 - 14              | 28,25               |
| G 1 - 11                | 30,75               |
| G 1 1/8 - 11            | 35,3                |
| G 1 1/4 - 11            | 39,25               |
| G 1 3/8 - 11            | 41,9                |
| G 1 1/2 - 11            | 45,25               |
| G 1 3/4 - 11            | 51,3                |
| G 2 - 11                | 57                  |
| G 2 1/4 - 11            | 63,1                |
| G 2 1/2 - 11            | 72,6                |
| G 2 3/4 - 11            | 79,1                |
| G 3 - 11                | 85,5                |
| G 3 1/4 - 11            | 91,5                |
| G 3 1/2 - 11            | 97,7                |
| G 3 3/4 - 11            | 104                 |
| G 4 - 11                | 110,5               |

| UNIFIED COARSE THREAD<br>UNF |                     |
|------------------------------|---------------------|
| Nominal Thread Diameter      | Drill Hole Diameter |
| Inches                       | mm                  |
| Nr. 0 - 80                   | 1,25                |
| Nr. 1 - 72                   | 1,55                |
| Nr. 2 - 64                   | 1,85                |
| Nr. 3 - 56                   | 2,1                 |
| Nr. 4 - 48                   | 2,35                |
| Nr. 5 - 44                   | 2,65                |
| Nr. 6 - 40                   | 2,9                 |
| Nr. 8 - 36                   | 3,5                 |
| Nr. 10 - 32                  | 4,1                 |
| Nr. 12 - 28                  | 4,6                 |
| 1/4 - 28                     | 5,5                 |
| 5/16 - 24                    | 6,9                 |
| 3/8 - 24                     | 8,5                 |
| 7/16 - 20                    | 9,9                 |
| 1/2 - 20                     | 11,5                |
| 9/16 - 18                    | 12,9                |
| 5/8 - 18                     | 14,5                |
| 3/4 - 16                     | 17,5                |
| 7/8 - 14                     | 20,5                |
| 1 - 12                       | 23,25               |
| 1 1/8 - 12                   | 26,5                |
| 1 1/4 - 12                   | 29,75               |
| 1 3/8 - 12                   | 33                  |
| 1 1/2 - 12                   | 36                  |

| TAPERED GAS<br>BSPT     |                     |
|-------------------------|---------------------|
| Nominal Thread Diameter | Drill Hole Diameter |
| Inches                  | mm                  |
| 1/8 - 28                | 8,4                 |
| 1/4 - 19                | 11,2                |
| 3/8 - 19                | 14,75               |
| 1/2 - 14                | 18,25               |
| 3/4 - 14                | 23,75               |
| 1 - 11                  | 30                  |
| 1 1/4 - 11              | 38,5                |
| 1 1/2 - 11              | 44,5                |
| 2 - 11                  | 56                  |
| 2 1/2 - 11              | 71,5                |

| AMERICAN<br>NPT         |                     |
|-------------------------|---------------------|
| Nominal Thread Diameter | Drill Hole Diameter |
| Inches                  | mm                  |
| 1/6 - 27                | 6,25                |
| 1/8 - 27                | 8,5                 |
| 1/4 - 18                | 11                  |
| 3/8 - 18                | 14,5                |
| 1/2 - 14                | 18                  |
| 3/4 - 14                | 23                  |
| 1 - 11 1/2              | 29                  |
| 1 1/4 - 11 1/2          | 38                  |
| 1 1/2 - 11 1/2          | 44                  |
| 2 - 11 1/2              | 56                  |
| 2 1/2 - 8               | 67                  |

| AMERICAN<br>NPTF        |                     |
|-------------------------|---------------------|
| Nominal Thread Diameter | Drill Hole Diameter |
| Inches                  | mm                  |
| 1/6 - 27                | 6,15                |
| 1/8 - 27                | 8,4                 |
| 1/4 - 18                | 10,9                |
| 3/8 - 18                | 14,25               |
| 1/2 - 14                | 17,75               |
| 3/4 - 14                | 23                  |
| 1 - 11 1/2              | 29                  |
| 1 1/4 - 11 1/2          | 37,75               |
| 1 1/2 - 11 1/2          | 43,75               |
| 2 - 11 1/2              | 55,75               |
| 2 1/2 - 8               | 66,5                |

## DRILL HOLES FOR ROLL FORM TAPS

| ISO METRIC<br><b>M</b> |  |                     |
|------------------------|--|---------------------|
| Thread Diameter        |  | Drill Hole Diameter |
| mm                     |  | mm                  |
| M 1 x 0.25             |  | 0,9                 |
| M 1,2 x 0.25           |  | 1,1                 |
| M 1,4 x 0,3            |  | 1,25                |
| M 1,6 x 0.35           |  | 1,45                |
| M 1,8 x 0.35           |  | 1,65                |
| M 2 x 0.4              |  | 1,8                 |
| M 2,5 x 0.45           |  | 2,3                 |
| M 3 x 0,5              |  | 2,8                 |
| M 3,5 x 0,6            |  | 3,2                 |
| M 4 x 0,7              |  | 3,7                 |
| M 5 x 0,8              |  | 4,6                 |
| M 6 x 1                |  | 5,5                 |
| M 7 x 1                |  | 6,5                 |
| M 8 x 1.25             |  | 7,4                 |
| M 10 x 1,5             |  | 9,3                 |
| M 12 x 1.75            |  | 11,2                |
| M 14 x 2               |  | 13                  |
| M 16 x 2               |  | 15                  |

| UNIFIED COARSE THREAD<br><b>UNC</b> |  |                     |
|-------------------------------------|--|---------------------|
| Nominal Thread Diameter             |  | Drill Hole Diameter |
| Inches                              |  | mm                  |
| Nr. 1 - 64                          |  | 1,7                 |
| Nr. 2 - 56                          |  | 2                   |
| Nr. 3 - 48                          |  | 2,3                 |
| Nr. 4 - 40                          |  | 2,6                 |
| Nr. 5 - 40                          |  | 2,9                 |
| Nr. 6 - 32                          |  | 3,2                 |
| Nr. 8 - 32                          |  | 3,8                 |
| Nr. 10 - 24                         |  | 4,4                 |
| Nr. 12 - 24                         |  | 5                   |
| 1/4 - 20                            |  | 5,8                 |
| 5/16 - 18                           |  | 7,3                 |
| 3/8 - 16                            |  | 8,8                 |
| 7/16 - 14                           |  | 10,3                |
| 1/2 - 13                            |  | 11,9                |

| ISO METRIC FINE<br><b>MF</b> |  |                     |
|------------------------------|--|---------------------|
| Thread Diameter              |  | Drill Hole Diameter |
| mm                           |  | mm                  |
| M 4 x 0.5                    |  | 3,5                 |
| M 5 x 0,5                    |  | 4,5                 |
| M 6 x 0.75                   |  | 5,2                 |
| M 8 x 0.75                   |  | 7,2                 |
| M 8 x 1                      |  | 7,2                 |
| M 10 x 1                     |  | 9                   |
| M 10 x 1.25                  |  | 8,8                 |
| M 12 x 1                     |  | 11                  |
| M 12 x 1.25                  |  | 10,8                |
| M 12 x 1.5                   |  | 10,5                |
| M 14 x 1                     |  | 13                  |
| M 14 x 1.25                  |  | 12,8                |
| M 14 x 1,5                   |  | 12,5                |
| M 16 x 1                     |  | 15                  |
| M 16 x 1,5                   |  | 14,5                |

| UNIFIED COARSE THREAD<br><b>UNF</b> |  |                     |
|-------------------------------------|--|---------------------|
| Nominal Thread Diameter             |  | Drill Hole Diameter |
| Inches                              |  | mm                  |
| Nr. 1 - 72                          |  | 1,7                 |
| Nr. 2 - 64                          |  | 2                   |
| Nr. 3 - 56                          |  | 2,3                 |
| Nr. 4 - 48                          |  | 2,6                 |
| Nr. 5 - 44                          |  | 2,9                 |
| Nr. 6 - 40                          |  | 3,2                 |
| Nr. 8 - 36                          |  | 3,9                 |
| Nr. 10 - 32                         |  | 4,5                 |
| Nr. 12 - 28                         |  | 5,1                 |
| 1/4 - 28                            |  | 6                   |
| 5/16 - 24                           |  | 7,5                 |
| 3/8 - 24                            |  | 9,1                 |
| 7/16 - 20                           |  | 10,6                |
| 1/2 - 20                            |  | 12,1                |

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