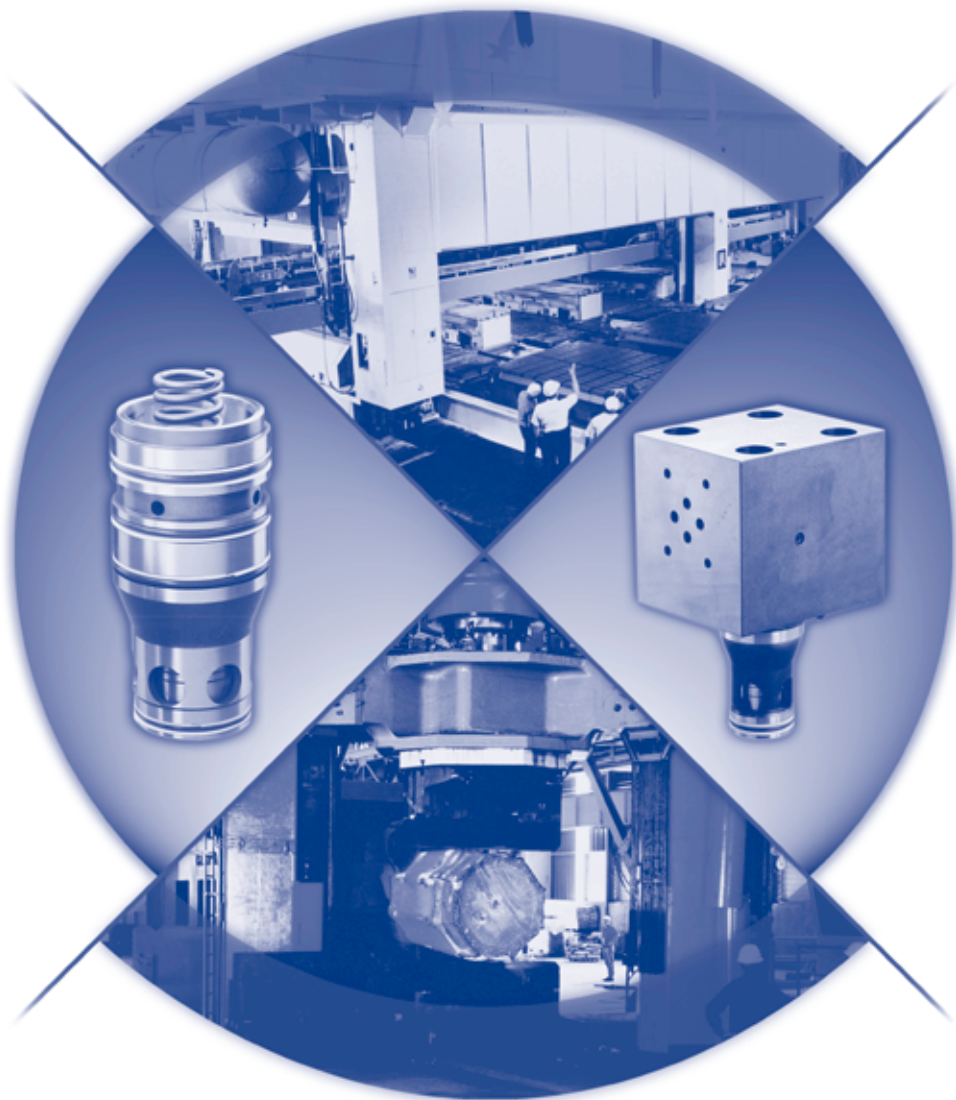


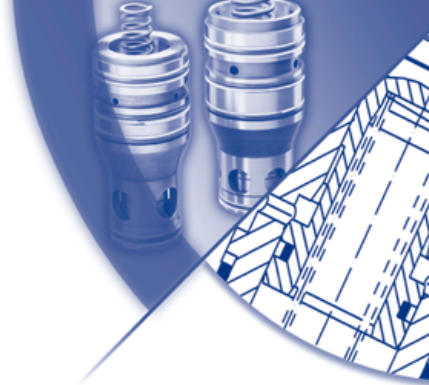
# Oilgear

## ACTIVE CARTRIDGE VALVES





| DESIGNATION   | SYMBOL | PAGE  |
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## General Description

Oilgear's Active Cartridge valve was designed to eliminate many of the limitations of Standard Cartridge Valves. The Active Cartridge contains an additional control area that provides more robust control of switching pressure for high speed and response machines where low system pressure can delay closing times. In essence, Active Cartridges have a double acting pilot piston for 4-way directional control of the cone or poppet, whereas a Standard Cartridge uses a single acting piston for 3-way control.

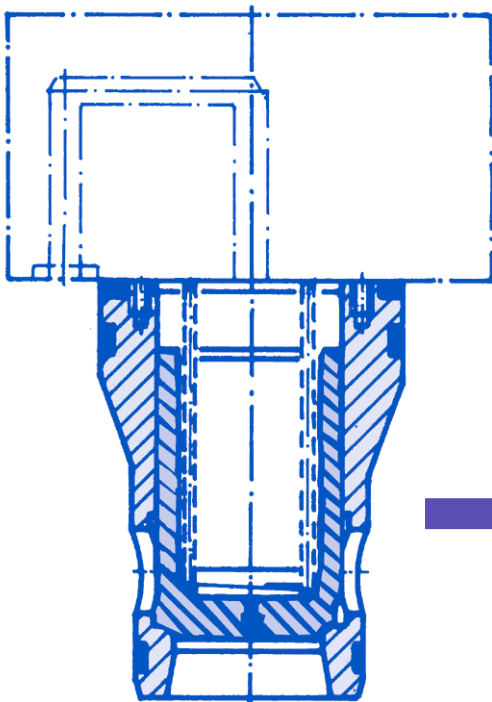
As a result, the Active Cartridge can offer improvements in:

- Closing time
- Opening time
- Closing under load

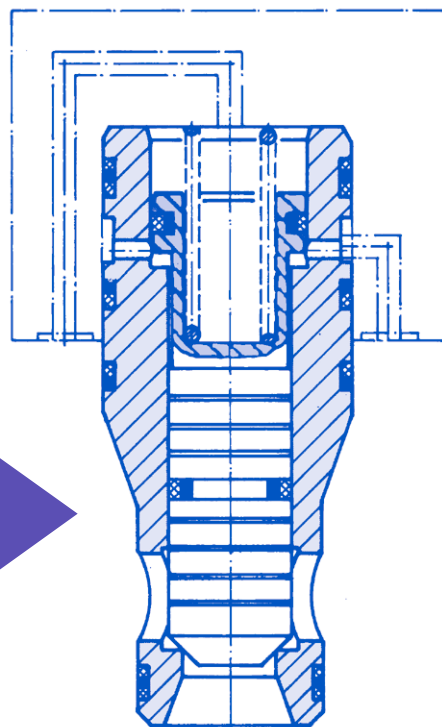
An Active Cartridge may be used for the following functions:

- Hydraulically pilot operated check or direction control
- Solenoid pilot operated check or direction control

Standard Cartridge



Active Cartridge



## Features

- All pilot and poppet seals create a tight fit at all ports to prevent leakage in either direction
- Can operate without a spring when a defined spool position is not required and hydraulic system pressure is lost
- Cartridge can be closed by a considerably lower control pressure at X due to the larger control surface area  $A_X$  (compared to the surface area  $A_A$ )
- Opening function and velocity of the cartridge are independent of the pressure in the working ports A and B
- Ability to be equipped with X-, S-, T-, and special cones
- Sizes NG16 to NG100 per DIN 24342

## Types of Cones and Sleeves

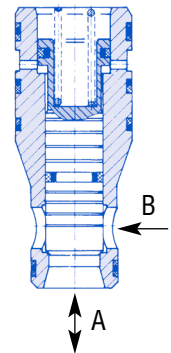
### Sleeve A, Cone X:

An active-cartridge with sleeve-A and cone-X (differential area  $A_B = 0$ ) can be used for all directional and check functions where a larger flow area and lower pressure losses are desired.

Due to the lower throttle function ( $A_B = 0$ ) the switching operations are not as soft as when using cones with a differential area  $A_B > 0$  (Cones S and T).

With non-active control, the flow of this cartridge can only be from A to B.

Sleeve A, Cone X

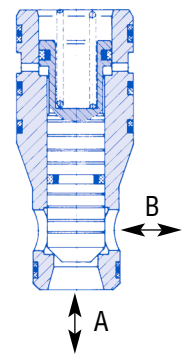


### Sleeve B, Cone S:

Used in all directional, check, and flow control functions.

Due to the cone differential area  $A_B > 0$ , the flow direction can be chosen also with non-active control.

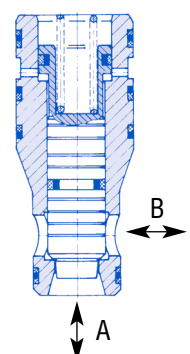
Sleeve B, Cone S



### Sleeve B, Cone T:

Cone T, with a dampening nose, can be used to avoid additional pressure peaks in tank circuits or to obtain a better adjustment of flow control valves.

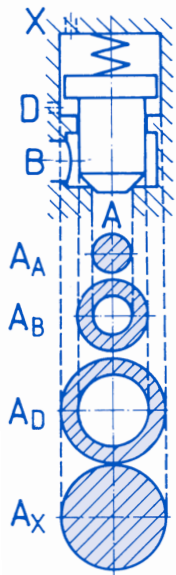
Sleeve B, Cone T



## Specifications

| General Data               | Value | Unit                                   | Specifications  |
|----------------------------|-------|--|---|
| Designation and Symbol     | —     | —                                      | 2-way Seat Valve (Cartridge)  |
| Mode of Construction       | —     | —                                      | Pilot Operated Seat Valve   |
| Manner of Mounting         | —     | —                                      | Manifold Cartridge Mounting   |
| Branch Circuit Connection  | —     | —                                      | Drilling in the Manifold  |
| Mounting Dimensions        | —     | —                                      | See Mounting Dimensions Page 17   |
| Mounting Position          | —     | —                                      | Any   |
| Flow Direction             | —     | —                                      | See Cone Types Page 5   |
| Ambient Temperature Range  | min.  | °F (°C)                                | -13° (-25°)   |
|                            | max.  | °F (°C)                                | +140° (+60°)  |
| <b>Working Pressure</b>    |       |  |   |
| Inlet                      | min.  | psi (bar)                              | 0 (0)   |
|                            | max.  | psi (bar)                              | 5075 (350)  |
| Outlet                     | min.  | psi (bar)                              | 0 (0)   |
|                            | max.  | psi (bar)                              | 5075 (350)  |
| Temperature Range          | min.  | °F (°C)                                | -13° (-25°)   |
|                            | max.  | °F (°C)                                | +176° (+80°)  |
| Viscosity Range            | min.  | mm <sup>2</sup> ·s <sup>-1</sup> [cSt] | 2.8   |
|                            | max.  | mm <sup>2</sup> ·s <sup>-1</sup> [cSt] | 380   |
| Operational Viscosity      | Vn    | mm <sup>2</sup> ·s <sup>-1</sup> [cSt] | 35  |
| Nominal Bore Size          | —     | mm                                     | <b>NG16 NG25 NG32 NG40 NG50 NG60 NG80 NG100</b>   |
| Pilot Volume (S & T Cones) | —     | cu. in (cc)                            | 0.12 (2.00) 0.50 (8.00) 1.04 (17.00) 1.77 (29.00) 4.70 (77.00) 11.66 (191.00) 17.40 (285.00) 30.14 (494.00) |
| Pilot Volume (X Cone)      | —     | cu. in (cc)                            | 0.13 (2.03) 0.47 (7.70) 1.05 (17.10) 1.99 (32.61) 4.71 (77.00) 11.6 (190.50) 17.43 (286.00) 30.11 (492.50)  |

## Characteristic Parameters

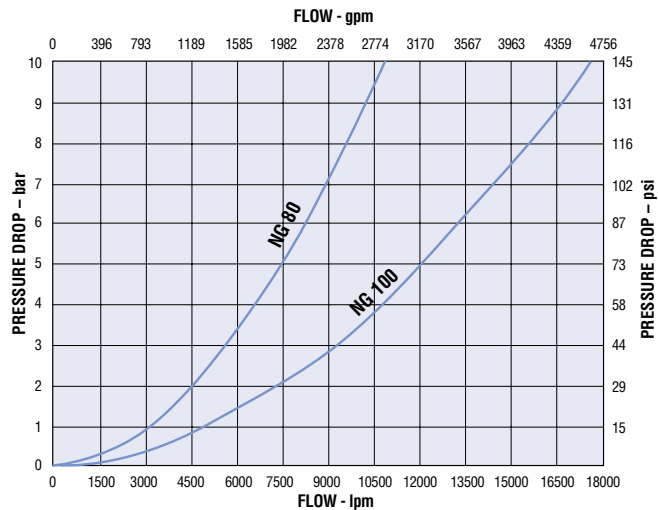
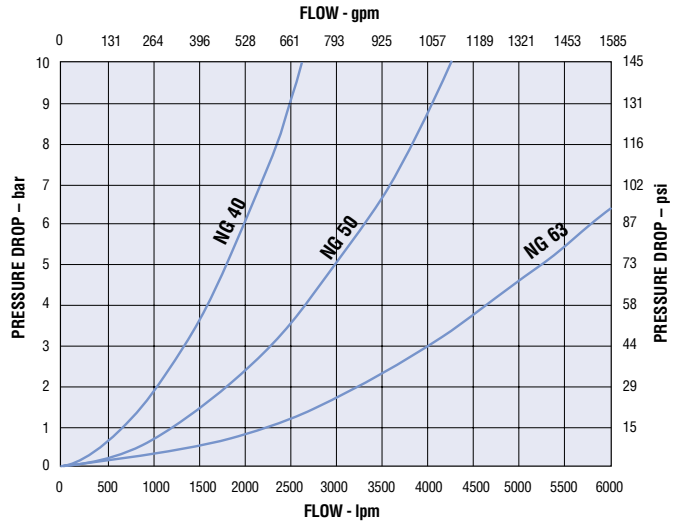
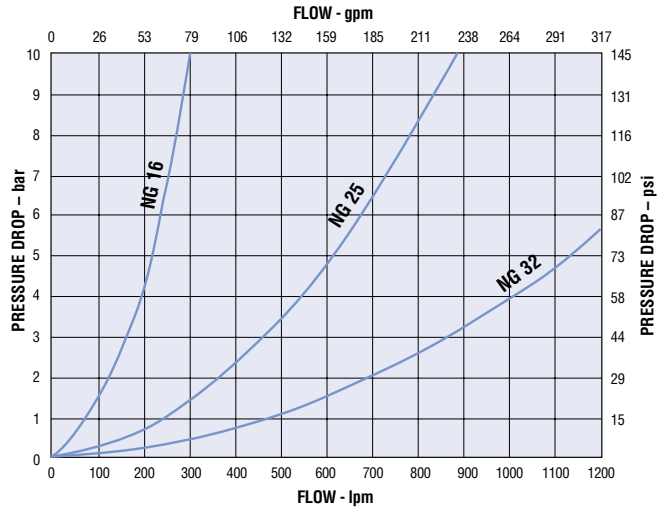


| Reference Surface A <sub>A</sub>                  |               |                |                |                |                |                |                |                 |  |
|---|---------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|--|
|   | NG16          | NG25           | NG32           | NG40           | NG50           | NG63           | NG80           | NG100           |  |
| <b>Cones S and T</b>                              |               |                |                |                |                |                |                |                 |  |
| Stroke in (mm)                                    | 0.26<br>(6.5) | 0.49<br>(12.5) | 0.59<br>(15.0) | 0.59<br>(15.0) | 0.79<br>(20)   | 1.18<br>(30.0) | 1.18<br>(30.0) | 1.40<br>(35.5)  |  |
| A <sub>A</sub> in <sup>2</sup> (mm <sup>2</sup> ) | 0.19<br>(123) | 0.35<br>(227)  | 0.70<br>(452)  | 1.25<br>(804)  | 2.46<br>(1590) | 4.10<br>(2642) | 5.96<br>(3848) | 8.80<br>(5675)  |  |
| A <sub>A</sub> (Ref)                              | 1             | 1              | 1              | 1              | 1              | 1              | 1              | 1               |  |
| A <sub>B</sub>                                    | 0.64          | 0.67           | 0.56           | 0.41           | 0.49           | 0.46           | 0.47           | 0.68            |  |
| A <sub>D</sub>                                    | 0.92          | 1.04           | 0.95           | 1.03           | 0.93           | 0.95           | 1.00           | 0.77            |  |
| A <sub>X</sub>                                    | 2.56          | 2.71           | 2.51           | 2.44           | 2.42           | 2.41           | 2.47           | 2.45            |  |
| <b>Cone X</b>                                     |               |                |                |                |                |                |                |                 |  |
| Stroke in (mm)                                    | 0.26<br>(6.5) | 0.49<br>(12.5) | 0.59<br>(15.0) | 0.59<br>(15.0) | 0.79<br>(20.0) | 1.18<br>(30.0) | 1.18<br>(30.0) | 1.40<br>(35.5)  |  |
| A <sub>A</sub> in <sup>2</sup> (mm <sup>2</sup> ) | 0.31<br>(201) | 0.59<br>(380)  | 1.10<br>(707)  | 1.95<br>(1257) | 3.68<br>(2376) | 5.96<br>(3848) | 8.79<br>(5674) | 14.73<br>(9503) |  |
| A <sub>A</sub> (Ref)                              | 1             | 1              | 1              | 1              | 1              | 1              | 1              | 1               |  |
| A <sub>B</sub>                                    | —             | —              | —              | —              | —              | —              | —              | —               |  |
| A <sub>D</sub>                                    | 0.56          | 0.62           | 0.61           | 0.73           | 0.62           | 0.65           | 0.68           | 0.46            |  |
| A <sub>X</sub>                                    | 1.56          | 1.62           | 1.61           | 1.73           | 1.62           | 1.65           | 1.68           | 1.46            |  |

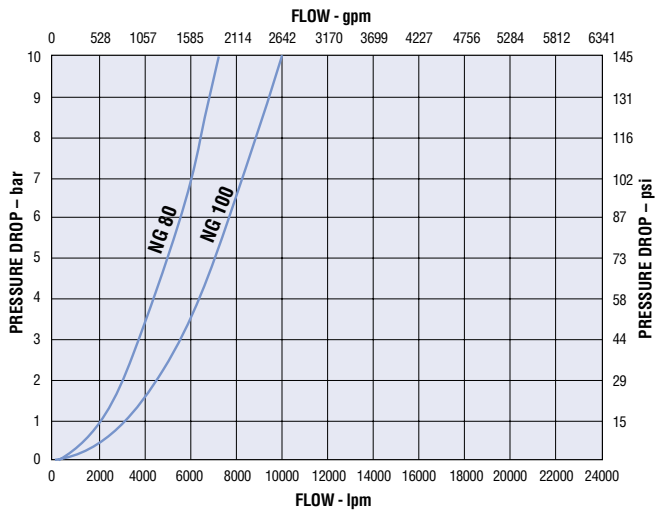
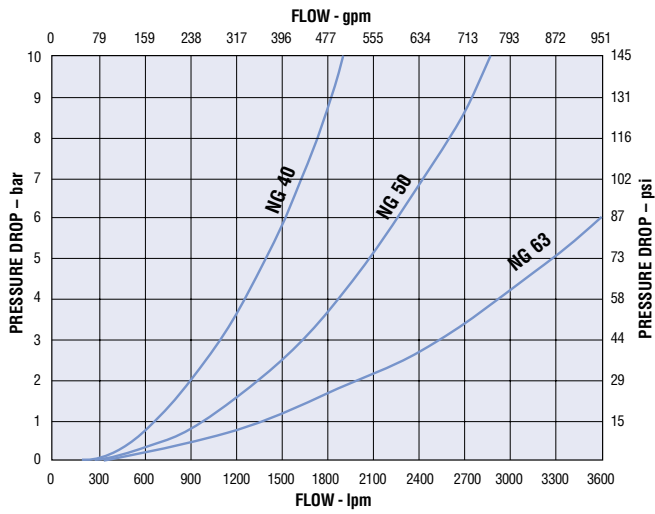
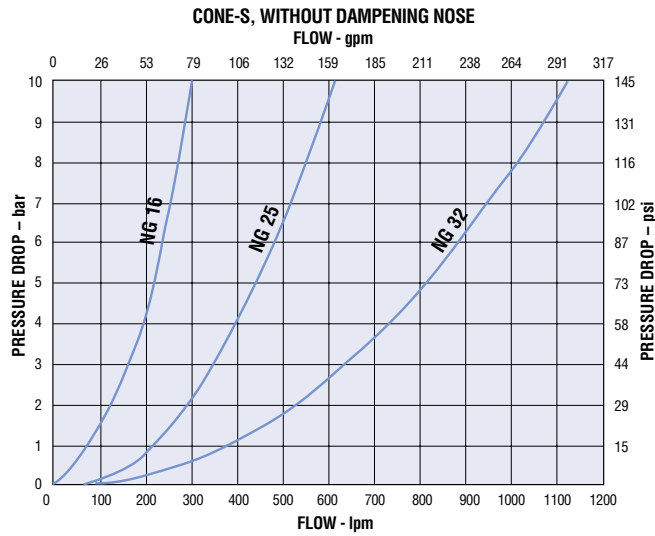
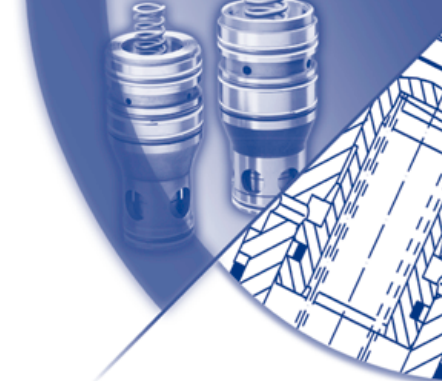


## Direction and Check Functions

CONE-X, WITHOUT DAMPENING NOSE



## Direction; Check and Flow Control Functions



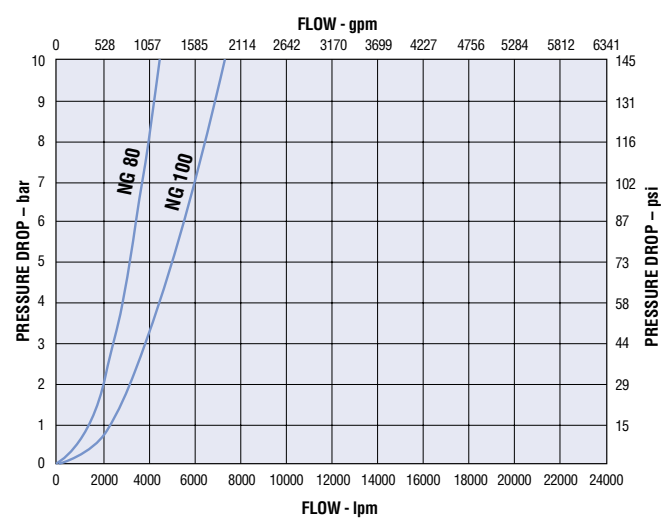
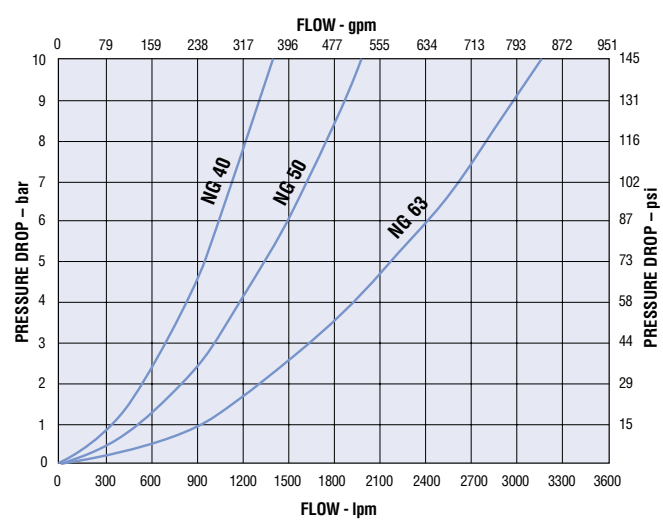
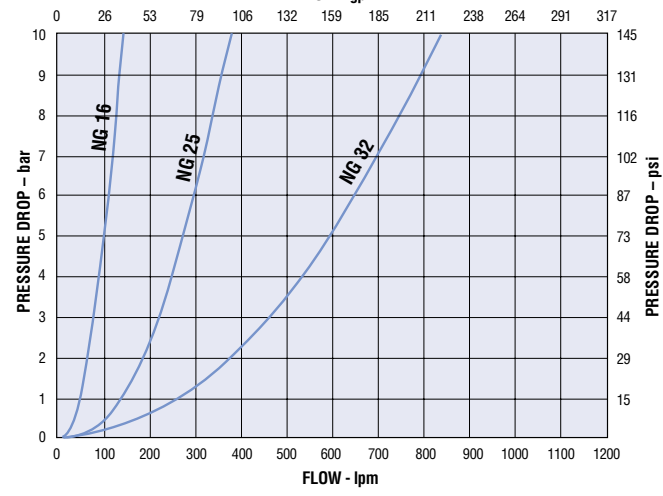


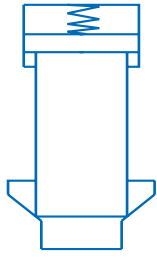
## Direction; Check and Flow Control Functions

# Oilgear Performance Data



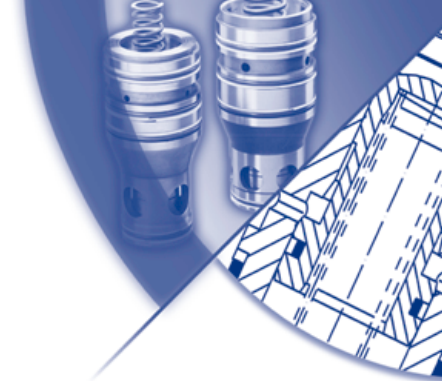
**CONE-T, WITH DAMPENING NOSE**  
FLOW - gpm





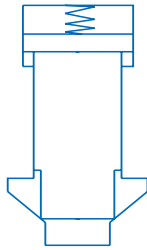
**Symbol**

## X-Cone for Direction Control and Check Functions (without dampening nose)



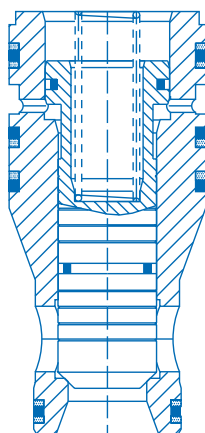
| Function   | Size<br>NG [mm] | Weight<br>lb (kg) | Spring<br>Rating<br>psi (bar) | Part<br>Designation | Part<br>Number  |
|------------|-----------------|-------------------|-------------------------------|---------------------|-----------------|
|            | 16              | 0.88 (0.4)        | 14.5 (1.0)                    | M-CHE16A6XS         | XCB10866-000-00 |
|            |                 |                   | 29.0 (2.0)                    | M-CHE16A6XT         | XCB10867-000-00 |
|            |                 |                   | 58.0 (4.0)                    | M-CHE16A6XU         | XCB10868-000-00 |
|            |                 |                   | 87.0 (6.0)                    | M-CHE16A6XV         | XCB10869-000-00 |
|            | 25              | 1.76 (0.8)        | 14.5 (1.0)                    | M-CHE25A6XS         | XCB10878-000-00 |
|            |                 |                   | 29.0 (2.0)                    | M-CHE25A6XT         | XCB10879-000-00 |
|            |                 |                   | 58.0 (4.0)                    | M-CHE25A6XU         | XCB10880-000-00 |
|            |                 |                   | 87.0 (6.0)                    | M-CHE25A6XV         | XCB10881-000-00 |
|            | 32              | 3.3 (1.5)         | 14.5 (1.0)                    | M-CHE32A6XS         | XCB10886-000-00 |
|            |                 |                   | 29.0 (2.0)                    | M-CHE32A6XT         | XCB10887-000-00 |
| 58.0 (4.0) |                 |                   | M-CHE32A6XU                   | XCB10888-000-00     |                 |
| 40         | 7.04 (3.2)      | 14.5 (1.0)        | M-CHE40A6XS                   | XCB11104-000-00     |                 |
|            |                 | 29.0 (2.0)        | M-CHE40A6XT                   | XCB11105-000-00     |                 |
|            |                 | 58.0 (4.0)        | M-CHE40A6XU                   | XCB11106-000-00     |                 |
| 50         | 12.1 (5.5)      | 14.5 (1.0)        | M-CHE50A6XS                   | XCB10901-000-00     |                 |
|            |                 | 29.0 (2.0)        | M-CHE50A6XT                   | XCB10902-000-00     |                 |
|            |                 | 58.0 (4.0)        | M-CHE50A6XU                   | XCB10903-000-00     |                 |
| 63         | 24.6 (11.2)     | 14.5 (1.0)        | M-CHE63A6XS                   | XCB10910-000-00     |                 |
|            |                 | 29.0 (2.0)        | M-CHE63A6XT                   | XCB10911-000-00     |                 |
|            |                 | 58.0 (4.0)        | M-CHE63A6XU                   | XCB10912-000-00     |                 |
| 80         | 53.0 (24.1)     | 14.5 (1.0)        | M-CHE80A6XS                   | XCB11160-000-00     |                 |
|            |                 | 29.0 (2.0)        | M-CHE80A6XT                   | XCB11161-000-00     |                 |
|            |                 | 58.0 (4.0)        | M-CHE80A6XU                   | XCB11162-000-00     |                 |
| 100        | 86.2 (39.2)     | 14.5 (1.0)        | M-CHE100A6XS                  | XCB10923-000-00     |                 |
|            |                 | 29.0 (2.0)        | M-CHE100A6XT                  | XCB10924-000-00     |                 |
|            |                 | 58.0 (4.0)        | M-CHE100A6XU                  | XCB11026-000-00     |                 |

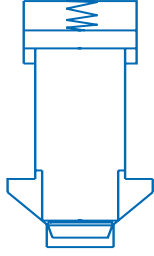
**Oilgear**  
Standard Models



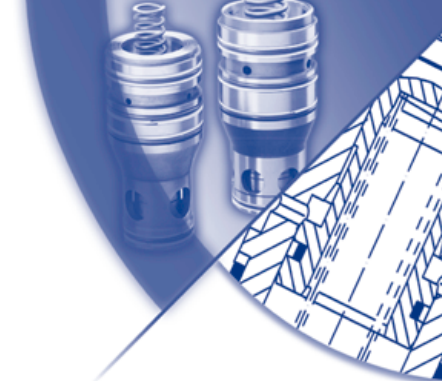
**Symbol**

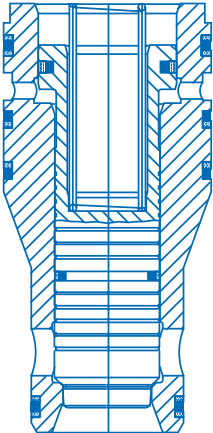
**S-Cone for Direction; Check and Flow Control Functions (without dampening nose)**

| Function  | Size NG [mm] | Weight lb (kg) | Spring Rating psi (bar) | Part Designation | Part Number     |
|---|--------------|----------------|-------------------------|------------------|-----------------|
|  | 16           | 0.88 (0.4)     | 14.5 (1.0)              | M-CHE16A6SS      | XEB10870-000-00 |
|   |              |                | 29.0 (2.0)              | M-CHE16A6ST      | XEB10871-000-00 |
|   |              |                | 58.0 (4.0)              | M-CHE16A6SU      | XEB10872-000-00 |
|   |              |                | 87.0 (6.0)              | M-CHE16A6SV      | XEB10873-000-00 |
|   | 25           | 1.76 (0.8)     | 14.5 (1.0)              | M-CHE25A6SS      | XCB10001-000-00 |
|   |              |                | 29.0 (2.0)              | M-CHE25A6ST      | XCB10002-000-00 |
|   |              |                | 58.0 (4.0)              | M-CHE25A6SU      | XCB10003-000-00 |
|   |              |                | 87.0 (6.0)              | M-CHE25A6SV      | XCB10004-000-00 |
|   | 32           | 3.3 (1.5)      | 14.5 (1.0)              | M-CHE32A6SS      | XCB10889-000-00 |
|   |              |                | 29.0 (2.0)              | M-CHE32A6ST      | XCB10890-000-00 |
|   |              |                | 58.0 (4.0)              | M-CHE32A6SU      | XCB10891-000-00 |
|   | 40           | 7.04 (3.2)     | 14.5 (1.0)              | M-CHE40A6SS      | XCB10895-000-00 |
| 29.0 (2.0)  |              |                | M-CHE40A6ST             | XCB10896-000-00  |                 |
| 58.0 (4.0)  |              |                | M-CHE40A6SU             | XCB10897-000-00  |                 |
| 50  | 12.1 (5.5)   | 14.5 (1.0)     | M-CHE50A6SS             | XCB10904-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE50A6ST             | XCB10905-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE50A6SU             | XCB10906-000-00  |                 |
| 63  | 24.6 (11.2)  | 14.5 (1.0)     | M-CHE63A6SS             | XCB10913-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE63A6ST             | XCB10914-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE63A6SU             | XCB10915-000-00  |                 |
| 80  | 53.0 (24.1)  | 14.5 (1.0)     | M-CHE80A6SS             | XCB10919-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE80A6ST             | XCB10920-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE80A6SU             | XCB11078-000-00  |                 |
| 100   | 86.2 (39.2)  | 14.5 (1.0)     | M-CHE100A6SS            | XCB10925-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE100A6ST            | XCB10926-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE100A6SU            | XCB11027-000-00  |                 |



**Symbol** T-Cone for Direction; Check and Flow Control Functions (with dampening nose)



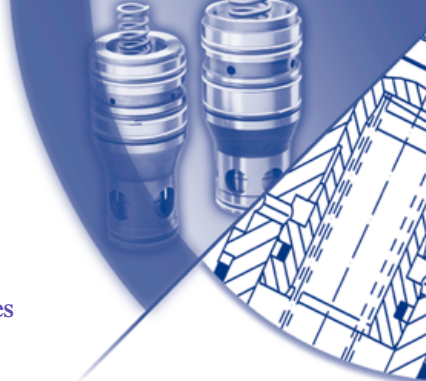
| Function  | Size NG [mm] | Weight lb (kg) | Spring Rating psi (bar) | Part Designation | Part Number     |
|---|--------------|----------------|-------------------------|------------------|-----------------|
|  | 16           | 0.88 (0.4)     | 14.5 (1.0)              | M-CHE16A6TS      | XCB10874-000-00 |
|   |              |                | 29.0 (2.0)              | M-CHE16A6TT      | XCB10875-000-00 |
|   |              |                | 58.0 (4.0)              | M-CHE16A6TU      | XCB10876-000-00 |
|   |              |                | 87.0 (6.0)              | M-CHE16A6TV      | XCB10877-000-00 |
|   | 25           | 1.76 (0.8)     | 14.5 (1.0)              | M-CHE25A6TS      | XCB10882-000-00 |
|   |              |                | 29.0 (2.0)              | M-CHE25A6TT      | XCB10883-000-00 |
|   |              |                | 58.0 (4.0)              | M-CHE25A6TU      | XCB10884-000-00 |
|   |              |                | 87.0 (6.0)              | M-CHE25A6TV      | XCB10885-000-00 |
|   | 32           | 3.3 (1.5)      | 14.5 (1.0)              | M-CHE32A6TS      | XCB10892-000-00 |
|   |              |                | 29.0 (2.0)              | M-CHE32A6TT      | XCB10893-000-00 |
|   |              |                | 58.0 (4.0)              | M-CHE32A6TU      | XCB10894-000-00 |
|   | 40           | 7.04 (3.2)     | 14.5 (1.0)              | M-CHE40A6TS      | XCB10898-000-00 |
| 29.0 (2.0)  |              |                | M-CHE40A6TT             | XCB10899-000-00  |                 |
| 58.0 (4.0)  |              |                | M-CHE40A6TU             | XCB10900-000-00  |                 |
| 50  | 12.1 (5.5)   | 14.5 (1.0)     | M-CHE50A6TS             | XCB10907-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE50A6TT             | XCB10908-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE50A6TU             | XCB10909-000-00  |                 |
| 63  | 24.6 (11.2)  | 14.5 (1.0)     | M-CHE63A6TS             | XCB10916-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE63A6TT             | XCB10917-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE63A6TU             | XCB10918-000-00  |                 |
| 80  | 53.0 (24.1)  | 14.5 (1.0)     | M-CHE80A6TS             | XCB10921-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE80A6TT             | XCB10922-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE80A6TU             | XCB11079-000-00  |                 |
| 100   | 86.2 (39.2)  | 14.5 (1.0)     | M-CHE100A6TS            | XCB11404-000-00  |                 |
|   |              | 29.0 (2.0)     | M-CHE100A6TT            | XCB11405-000-00  |                 |
|   |              | 58.0 (4.0)     | M-CHE100A6TU            | XCB11406-000-00  |                 |



## DIN Covers

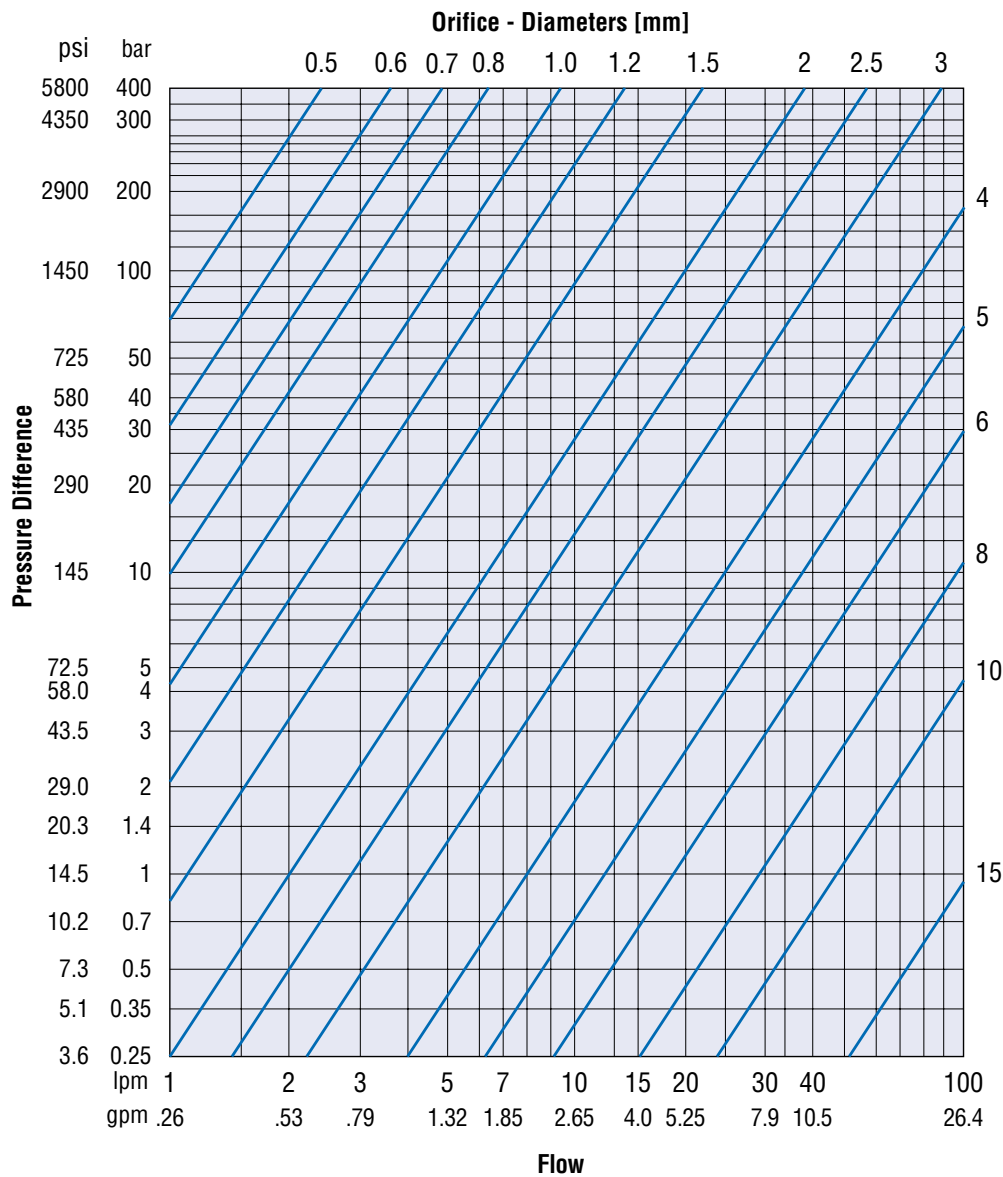
# Standard Models

| Symbol | Function                               | Size<br>NG [mm] | Weight<br>lb (kg) | Part<br>Designation | Part<br>Number  |
|--------|--|-----------------|-------------------|---------------------|-----------------|
|        | Normally Open<br>or<br>Normally Closed | 16              | 8.8 (4.0)         | CCE16A6RH1X06       | XEB14151-000-01 |
|        |  | 25              | 13.2 (6.0)        | CCE25A6RH1X06       | XEB13343-000-01 |
|        |  | 32              | 17.6 (8.0)        | CCE32A6RH1X06       | XEB12705-000-01 |
|        |  | 40              | 28.6 (13.0)       | CCE40A6RH1X06       | XEB13558-000-01 |
|        |  | 50              | 46.2 (21.0)       | CCE50A6RH1X10       | XEB12603-000-01 |
|        |  | 63              | 85.8 (39.0)       | CCE63A6RH1X10       | XEB13861-000-01 |
|        |  | 80              | 125.4 (57.0)      | CCE80A6RH1X10       | XEB13959-000-01 |
|        |  | 100             | 189.2 (86.0)      | CCE100A6RH1X10      | XEB14346-000-01 |
|        | Externally Piloted                     | 16              | 4.4 (2.0)         | CCE16A6RH3X         | XEB14065-000-01 |
|        |  | 25              | 8.8 (4.0)         | CCE25A6RH3X         | XEB14150-000-01 |
|        |  | 32              | 13.2 (6.0)        | CCE32A6RH3X         | XEB13410-000-01 |
|        |  | 40              | 22.0 (10.0)       | CCE40A6RH3X         | XEB13287-000-01 |
|        |  | 50              | 39.6 (18.0)       | CCE50A6RH3X         | XEB12923-000-01 |
|        |  | 63              | 79.2 (36.0)       | CCE63A6RH3X         | XEB14463-000-01 |
|        |  | 80              | 125.4 (57.0)      | CCE80A6RH3X         | XEB13462-000-01 |
|        |  | 100             | 132.0 (60.0)      | CCE100A6RH3X        | XEB14040-000-01 |



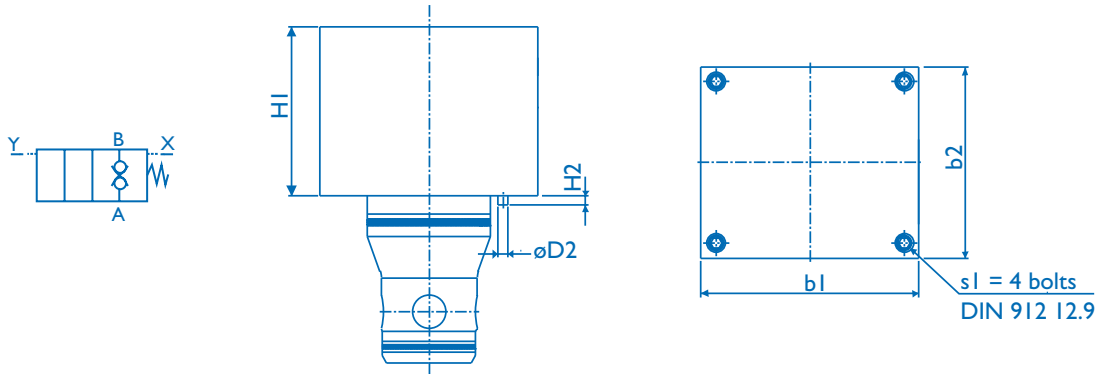
The function and switching velocity of a cartridge-valve can be influenced by changes in the metering-in and metering-out flow through the pilot lines. This is achieved by changing mounting orifices as required.

The following diagram should be used for selecting the correct orifice diameter.



Viscosity : 35 mm<sup>2</sup> · s<sup>-1</sup> [cSt]  
 Oil temperature : 122°F / 50°C

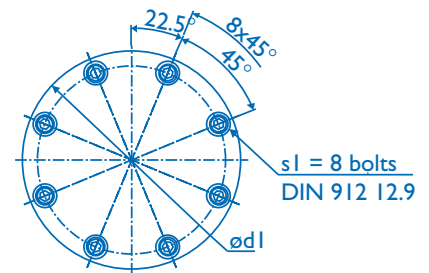
## Hydraulically Operated Valves



**NG16-NG63**

| Dimensions in (mm) |        | NG16           | NG25          | NG32          | NG40          | NG50        | NG63          |
|--------------------|--------|----------------|---------------|---------------|---------------|-------------|---------------|
| H1                 |        | 2.56 (65)      | 2.56 (65)     | 3.15 (80)     | 3.15 (80)     | 4.72 (120)  | 5.51 (140)    |
| H2                 |        | 0.20 (5)       | 0.20 (5)      | 0.20 (5)      | 0.20 (5)      | 0.24 (6)    | 0.24 (6)      |
| D2                 |        | 0.20 (5)       | 0.20 (5)      | 0.20 (5)      | 0.20 (5)      | 0.24 (6)    | 0.24 (6)      |
| b1                 |        | 2.56 (65)      | 3.35 (85)     | 4.02 (102)    | 4.92 (125)    | 5.51 (140)  | 7.09 (180)    |
| b2                 |        | 2.56 (65)      | 3.35 (85)     | 4.02 (102)    | 4.92 (125)    | 5.51 (140)  | 7.09 (180)    |
| s1                 | UNC    | 5/16" x 2 3/4" | 1/2" x 2 3/4" | 5/8" x 3 1/4" | 3/4" x 3 1/2" | 3/4" x 5.0" | 1 1/4" x 6.0" |
|                    | Metric | M8X70          | M12X65        | M16X80        | M20X90        | M20X120     | M30X150       |
| Tightening Torque  | ft-lb  | 23             | 75            | 225           | 413           | 413         | 1350          |
|                    | N-m    | 30             | 100           | 300           | 550           | 550         | 1800          |

| Dimensions in (mm) |        | NG80        | NG100           |
|--------------------|--------|-------------|-----------------|
| d1                 |        | 9.84 (250)  | 11.81 (300)     |
| H1                 |        | 5.91 (150)  | 6.30 (160)      |
| H2                 |        | 0.24 (6)    | 0.24 (6)        |
| D2                 |        | 0.31 (8)    | 0.31 (8)        |
| s1                 | UNC    | 1" x 6 1/2" | 1 1/4" x 6 1/2" |
|                    | Metric | M24X160     | M30X160         |
| Tightening Torque  | ft-lb  | 675         | 1350            |
|                    | N-m    | 900         | 1800            |



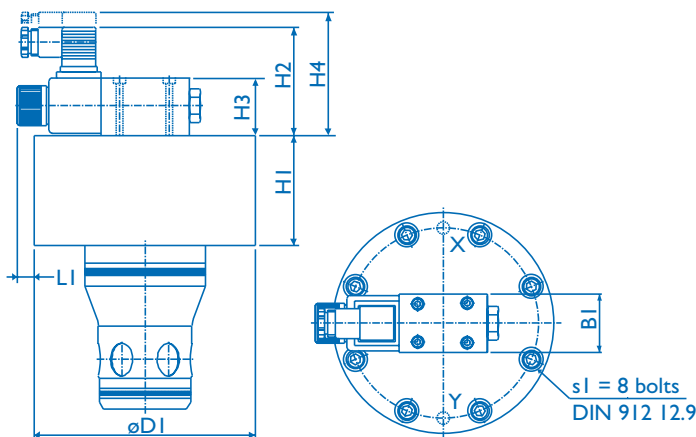
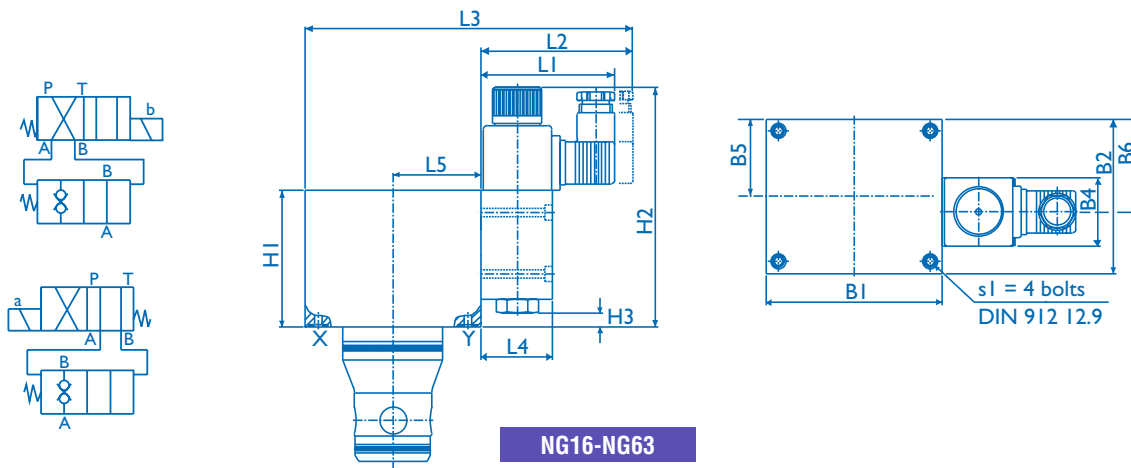
**NG80-NG100**

Note: Fastening screws are not part of the delivery.

## Solenoid Operated Valves

| Dimensions in (mm) |        | NG16         | NG25        | NG32        | NG40        | NG50          | NG63          |
|--------------------|--------|--------------|-------------|-------------|-------------|---------------|---------------|
| H1                 |        | 3.54 (90)    | 3.54 (90)   | 3.54 (90)   | 3.54 (90)   | 4.72 (120)    | 5.51 (140)    |
| H2                 |        | 6.54 (166)   | 6.54 (166)  | 6.54 (166)  | 6.54 (166)  | 8.98 (228)    | 8.98 (228)    |
| H3                 |        | 0.31 (8)     | 0.31 (8)    | 0.31 (8)    | 0.31 (8)    | 0.20 (5)      | 0.20 (5)      |
| L1                 |        | 3.66 (93)    | 3.66 (93)   | 3.66 (93)   | 3.66 (93)   | 4.72 (120)    | 4.72 (120)    |
| L2                 |        | 4.13 (105)   | 4.13 (105)  | 4.13 (105)  | 4.13 (105)  | 5.20 (132)    | 5.20 (132)    |
| L3                 |        | 7.48 (190)   | 8.07 (205)  | 8.70 (221)  | 9.88 (251)  | 11.49 (292)   | 13.23 (336)   |
| L4                 |        | 1.81 (46)    | 1.81 (46)   | 1.81 (46)   | 1.81 (46)   | 3.78 (96)     | 3.78 (96)     |
| L5                 |        | 1.67 (42.5)  | 1.97 (50)   | 2.29 (58)   | 2.87 (73)   | 3.15 (80)     | 3.94 (100)    |
| la*                |        | y            | y           | y           | y           | y             | y             |
| B1                 |        | 3.35 (85)    | 3.94 (100)  | 4.57 (116)  | 5.75 (146)  | 6.30 (160)    | 7.87 (200)    |
| B2                 |        | 2.56 (65)    | 3.35 (85)   | 4.02 (102)  | 4.92 (125)  | 5.51 (140)    | 7.09 (180)    |
| B4                 |        | 1.81 (46)    | 1.81 (46)   | 1.81 (46)   | 1.81 (46)   | 2.76 (70)     | 2.76 (70)     |
| B5                 |        | 1.28 (32.5)  | 1.67 (42.5) | 2.03 (51.5) | 2.46 (62.5) | 2.76 (70)     | 3.54 (90)     |
| B6                 |        | 1.28 (32.5)  | 1.67 (42.5) | 2.41(61.3)  | 2.46 (62.5) | 2.82 (71.6)   | 3.54 (90)     |
| s1                 | UNC    | 5/16" x 3/2" | 1/2" x 3/4" | 5/8" x 3/4" | 3/4" x 4"   | 3/4" x 4 1/4" | 1 1/4" x 6.0" |
|                    | Metric | M8X90        | M12X100     | M16X90      | M20X100     | M20X120       | M30X150       |
| Tightening Torque  | ft-lb  | 23           | 75          | 225         | 413         | 413           | 1350          |
|                    | N-m    | 30           | 100         | 300         | 550         | 550           | 1800          |

\*la = Mounted side of pilot valve

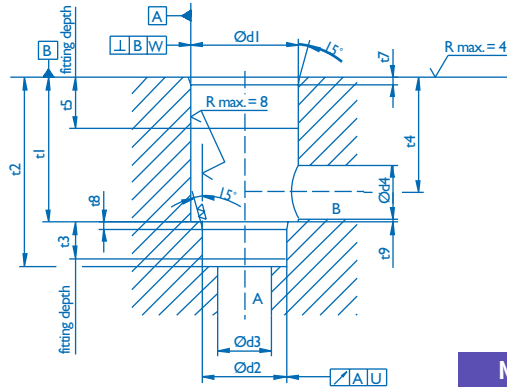


| Dimensions in (mm) |        | NG80        | NG100           |
|--------------------|--------|-------------|-----------------|
| D1                 |        | 9.84 (250)  | 11.81 (300)     |
| H1                 |        | 5.91 (150)  | 6.30 (160)      |
| H2                 |        | 4.37 (111)  | 4.37 (111)      |
| H3                 |        | 2.76 (70)   | 2.76 (70)       |
| H4                 |        | 4.84 (123)  | 4.84 (123)      |
| L1                 |        | 1.73 (44)   | 0.75 (19)       |
| B1                 |        | 2.76 (70)   | 2.76 (70)       |
| s1                 | UNC    | 1" x 6 1/2" | 1 1/4" x 6 1/2" |
|                    | Metric | M24X160     | M30X160         |
| Tightening Torque  | ft-lb  | 675         | 1350            |
|                    | N-m    | 900         | 1800            |

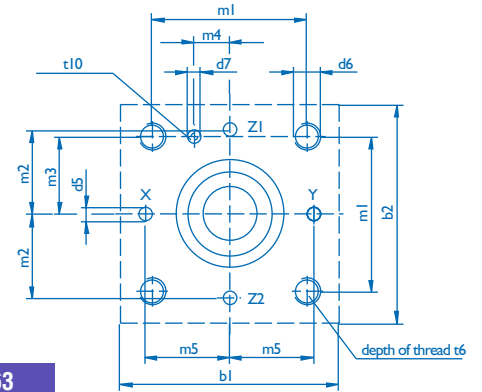
Note: Fastening screws are not part of the delivery.

## Cavity and Porting Pattern as per DIN 24342

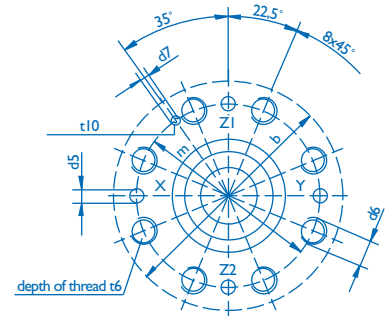
| Dimensions (mm)    | NG16 | NG25 | NG32 | NG40 | NG50 | NG63 |
|--------------------|------|------|------|------|------|------|
| b1                 | 65   | 85   | 102  | 125  | 140  | 180  |
| b2                 | 65   | 85   | 102  | 125  | 140  | 180  |
| d1 H7              | 32   | 45   | 60   | 75   | 90   | 120  |
| d2 H7              | 25   | 34   | 45   | 55   | 68   | 90   |
| d3                 | 16   | 25   | 32   | 40   | 50   | 63   |
| d3 max             | 17   | 25   | 32   | 43   | 54   | 66   |
| d4                 | 16   | 25   | 32   | 40   | 50   | 63   |
| d4 max             | 25   | 32   | 40   | 50   | 63   | 80   |
| d5 max             | 4    | 6    | 8    | 10   | 10   | 12   |
| d6                 | M8   | M12  | M16  | M20  | M20  | M30  |
| d7 H13             | 6    | 6    | 6    | 6    | 8    | 8    |
| m1 ±0.2            | 46   | 58   | 70   | 85   | 100  | 125  |
| m2 ±0.2            | 25   | 33   | 41   | 50   | 58   | 75   |
| m3 ±0.2            | 23   | 29   | 35   | 42.5 | 50   | 62.5 |
| m4 ±0.2            | 10.5 | 16   | 17   | 23   | 30   | 38   |
| m5 ±0.2            | 25   | 33   | 41   | 50   | 58   | 75   |
| t1 ±0.1            | 43   | 58   | 70   | 87   | 100  | 130  |
| t2 ±0.1            | 56   | 72   | 85   | 105  | 122  | 155  |
| t3                 | 11   | 12   | 13   | 15   | 17   | 20   |
| t4                 | 34   | 44   | 52   | 64   | 72   | 95   |
| t4 at d4 max       | 29.5 | 40.5 | 48   | 59   | 65.5 | 86.5 |
| t5                 | 20   | 30   | 30   | 30   | 35   | 35   |
| t6                 | 20   | 25   | 35   | 45   | 45   | 65   |
| t7                 | 2    | 2.5  | 2.5  | 3    | 4    | 4    |
| t8                 | 2    | 2.5  | 2.5  | 3    | 4    | 4    |
| t9 cont. dim. min. | 0.5  | 1.0  | 1.5  | 2.5  | 2.5  | 3    |
| t10 min.           | 10   | 10   | 10   | 10   | 10   | 10   |
| U                  | 0.03 | 0.03 | 0.03 | 0.05 | 0.05 | 0.05 |
| W                  | 0.05 | 0.05 | 0.1  | 0.1  | 0.1  | 0.2  |



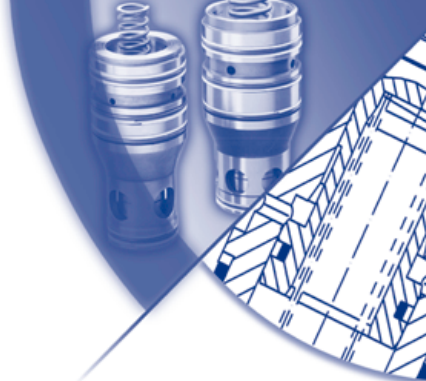
NG16-NG63



| Dimensions (mm)    | NG80 | NG100 |
|--------------------|------|-------|
| b1 max             | 250  | 300   |
| d1 H7              | 145  | 180   |
| d2 H7              | 110  | 135   |
| d3                 | 80   | 100   |
| d3 max             | 82   | 107   |
| d4                 | 80   | 100   |
| d4 max             | 104  | 120   |
| d5 max             | 16   | 20    |
| d6                 | M24  | M30   |
| d7 H               | 10   | 10    |
| t1                 | 175  | 210   |
| t2 ±0.2            | 205  | 245   |
| t3                 | 25   | 29    |
| t4                 | 130  | 155   |
| t4 at d4 max       | 118  | 145   |
| t5                 | 40   | 50    |
| t6                 | 45   | 55    |
| t7                 | 5    | 5     |
| t8                 | 5    | 5     |
| t9 cont. dim. min. | 5    | 5     |
| t10 min.           | 10   | 10    |
| m ±0.3             | 200  | 245   |
| U                  | 0.05 | 0.05  |
| W                  | 0.2  | 0.2   |



NG80-NG100



## Active Cartridge Only

M - C H E    A 6

| Type of Seals |                          |
|---------------|--------------------------|
| <b>M</b>      | Mixed Viton and PU Seals |
| <b>V</b>      | Viton Seals              |
| <b>N</b>      | Buna N Seals             |
| <b>S</b>      | Special Seals on Request |

| Valve Type |                         |
|------------|-------------------------|
| <b>C</b>   | Cartridge without cover |

| Valve Function |                  |
|----------------|------------------|
| <b>H</b>       | Active Cartridge |

| Mounting |                   |
|----------|-------------------|
| <b>E</b> | Manifold Mounting |

| Nominal Bore Size (mm) |       |
|------------------------|-------|
| <b>16</b>              | NG16  |
| <b>25</b>              | NG25  |
| <b>32</b>              | NG32  |
| <b>40</b>              | NG40  |
| <b>50</b>              | NG50  |
| <b>63</b>              | NG63  |
| <b>80</b>              | NG80  |
| <b>100</b>             | NG100 |

|          |               |
|----------|---------------|
| <b>A</b> | Serial Number |
|----------|---------------|

| Type of Poppet/Cone |  |
|---------------------|--|
| <b>X</b>            | Step Poppet                                    |
| <b>S</b>            | Step Poppet with Small Seat                    |
| <b>T</b>            | Step Poppet with Small Seat and Dampening nose |
|                     | Special Poppet on request                      |

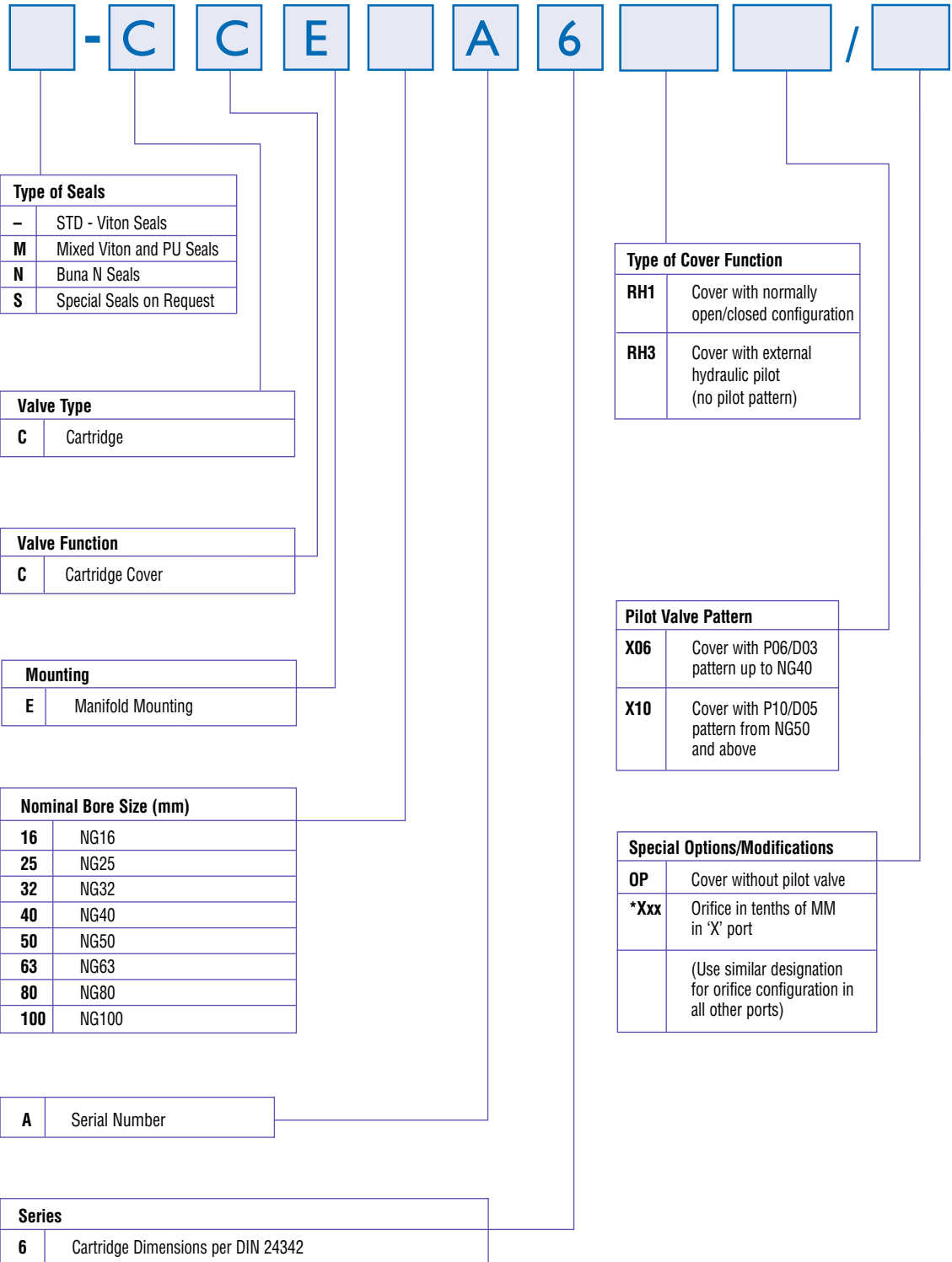
| Opening Pressure |                    |
|------------------|--------------------|
| <b>S</b>         | 1.0 bar (14.5 psi) |
| <b>T</b>         | 2.0 bar (29.0 psi) |
| <b>U</b>         | 4.0 bar (58.0 psi) |
| <b>V</b>         | 6.0 bar (87.0 psi) |

| Series   |                                    |
|----------|------------------------------------|
| <b>6</b> | Cartridge Dimensions per DIN 24342 |

# Oilgear Ordering Information



## Active Cartridge Covers Only



## Active Cartridge with Cover



### Type of Seals

|          |                          |
|----------|--------------------------|
| -        | STD - Viton Seals        |
| <b>M</b> | Mixed Viton and PU Seals |
| <b>N</b> | Buna N Seals             |
| <b>S</b> | Special Seals on Request |

### Valve Type

|          |                             |
|----------|-----------------------------|
| <b>R</b> | Active Cartridge with Cover |
|----------|-----------------------------|

### Valve function

|          |                  |
|----------|------------------|
| <b>H</b> | Active Cartridge |
|----------|------------------|

### Mounting

|          |                   |
|----------|-------------------|
| <b>E</b> | Manifold Mounting |
|----------|-------------------|

### Nominal Bore Size (mm)

|            |       |
|------------|-------|
| <b>16</b>  | NG16  |
| <b>25</b>  | NG25  |
| <b>32</b>  | NG32  |
| <b>40</b>  | NG40  |
| <b>50</b>  | NG50  |
| <b>63</b>  | NG63  |
| <b>80</b>  | NG80  |
| <b>100</b> | NG100 |

|          |               |
|----------|---------------|
| <b>A</b> | Serial Number |
|----------|---------------|

### Spring

|          |                    |
|----------|--------------------|
| <b>S</b> | 1.0 bar (14.5 psi) |
| <b>T</b> | 2.0 bar (29.0 psi) |
| <b>U</b> | 4.0 bar (58.0 psi) |
| <b>V</b> | 6.0 bar (87.0 psi) |

### Series

|          |   |
|----------|---|
| <b>6</b> | Cartridge mounting dimensions per DIN 24342 |
|----------|---|

### Type of Poppet/Cone

|          |  |
|----------|--|
| <b>X</b> | Step Poppet                                    |
| <b>S</b> | Step Poppet with Small Seat                    |
| <b>T</b> | Step Poppet with Small Seat and Dampening nose |
| -        | Special Poppet on request                      |

### Surface Area Ratio $A_A: A_x$

|          |       |
|----------|-------|
| <b>1</b> | *E16  |
| <b>2</b> | *E25  |
| <b>3</b> | *E32  |
| <b>4</b> | *E40  |
| <b>5</b> | *E50  |
| <b>6</b> | *E63  |
| <b>7</b> | *E80  |
| <b>8</b> | *E100 |

\* see specifications

|          |        |
|----------|--------|
| <b>W</b> | Active |
|----------|--------|

### Pilot Control

|          | X Port           | Y Port           |
|----------|------------------|------------------|
| <b>X</b> | Mounting Surface | Mounting Surface |

### Function

|          |  |
|----------|--|
| <b>1</b> | Actively opened with energized solenoid    |
| <b>2</b> | Actively closed with energized solenoid    |
| <b>3</b> | Externally hydraulically operated          |
|          | Refer to page 21 for schematic information |

### Solenoid Supply

|          |                  |
|----------|------------------|
| <b>A</b> | 12V DC           |
| <b>B</b> | 24V DC           |
| <b>M</b> | 110V AC, 50/60Hz |
| <b>N</b> | 220V AC, 50/60Hz |

### Electrical Connection (optional)

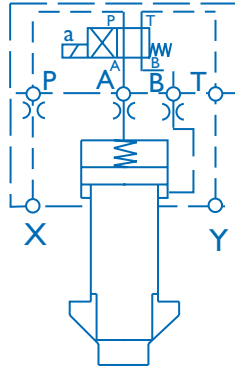
|          |  |
|----------|--|
| <b>1</b> | Cube plug (5-pin DIN connector) per DIN 43650                |
| <b>2</b> | Large cube plug with cable strain relief and lamp            |
| <b>3</b> | Large cube plug with cable strain relief and rectifier       |
| <b>4</b> | Large cube plug with cable strain relief, lamp and rectifier |
| <b>5</b> | Touchel plug   |

### Special Modifications

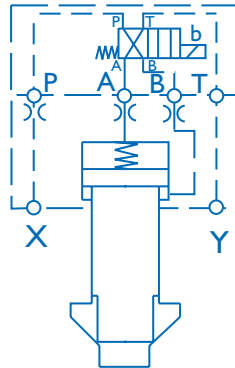
**Oilgear** Ordering Information

Subject to technical changes.  
Not all combinations are available.

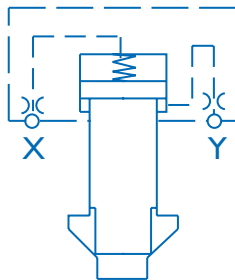
## Configurations



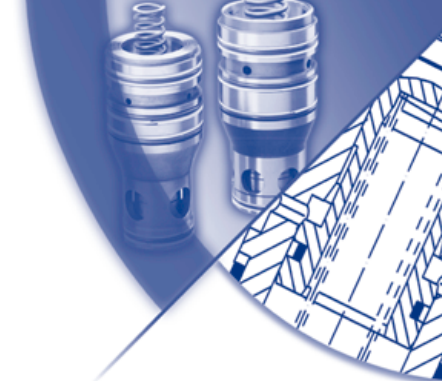
**RHE...WX1..**  
(Normally Closed - Energize solenoid to open)



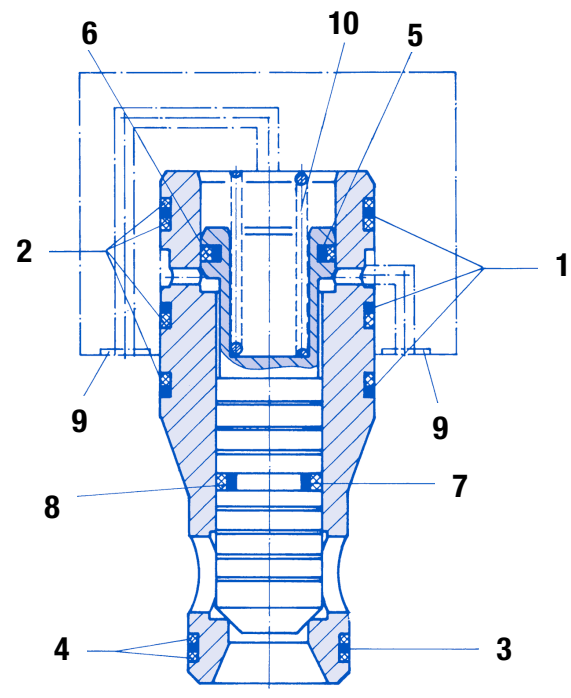
**RHE...WX2..**  
(Normally Open - Energize solenoid to close)



**RHE...WX3..**  
(externally hydraulically operated)



# Oilgear Spare Parts



| Item | Designation                   | Order Number |       |                |       |       |       |       |                |                |
|------|-------------------------------|--------------|-------|----------------|-------|-------|-------|-------|----------------|----------------|
|      |                               | XEB          | NG16  | NG25           | NG32  | NG40  | NG50  | NG63  | NG80           | NG100          |
|      | Seal kit                      | XEB          | 12240 | 12241          | 12242 | 12243 | 12244 | 12245 | 12246          | 12247          |
| 1    | O-Ring 80 Shore               | X980-        | 02024 | 02129          | 02227 | 02231 | 02338 | 02347 | 02430          | 02439          |
| 2    | Back-up Ring                  | X780-        | 18024 | 18129          | 08227 | 18231 | 18338 | 08348 | 08431          | 18439          |
| 3    | O-Ring 80 Shore               | X980-        | 02020 | 02122          | 02222 | 02225 | 02229 | 02338 | 02344          | 02427          |
| 4    | Back-up Ring                  | X780-        | 08020 | 18122          | 18222 | 18225 | 18229 | 18338 | 18344          | 18427          |
| 5    | O-Ring 70 Shore               | X980-        | 02112 | 02116          | 02123 | 02222 | 02228 | 02336 | 02343          | 02425          |
| 6    | Turcon Glyd Ring              | X780-        | 40200 | 40280          | 40380 | 40500 | 40700 | 40900 | 41100          | 41330          |
| 7    | O-Ring 70 Shore               | X980-        | 02109 | 02113          | 02118 | 02123 | 02224 | 02228 | 02335          | 02343          |
| 8    | Turcon Glyd Ring              | X780-        | 40160 | 40220          | 40300 | 40380 | 40550 | 40700 | 40850          | 41100          |
| 9    | O-Ring 80 Shore               | X980-        | 02010 | 02012          | 02013 | 02112 | 02112 | 02116 | 02215          | 02220          |
|      | <b>Springs</b>                |              |       |                |       |       |       |       |                |                |
| 10   | Spring S - 14.5 psi (1.0 bar) | XEF          | 10006 | 10013          | 10138 | 10106 | 10037 | 10044 | 10051          | 10058          |
| 10   | Spring T - 29.0 psi (2.0 bar) | XEF          | 10007 | 10014          | 10140 | 10105 | 10038 | 10045 | 10052          | 10059          |
| 10   | Spring U - 58.0 psi (4.0 bar) | XEF          | 10008 | 10015          | 10191 | 10104 | 10173 | 10046 | 10052<br>10250 | 10059<br>10253 |
| 10   | Spring V - 87.0 psi (6.0 bar) | XEF          | 10009 | 10015<br>10016 | —     | —     | —     | —     | —              | —              |

Order examples:  
 O-Ring Item 5 for NG25      Spring 29.0 psi (2.0 bar) Item 10 for NG25  
 Order number: X980-02116      Order number: XEF10014

## Performance Assurance

Each Oilgear component manufactured is shipped with corporate commitment to stay with the installation until the unit performs as specified.

This total dedication to performance is based upon experience gained since 1921 in matching fluid power systems to a tremendous range of machines and applications.

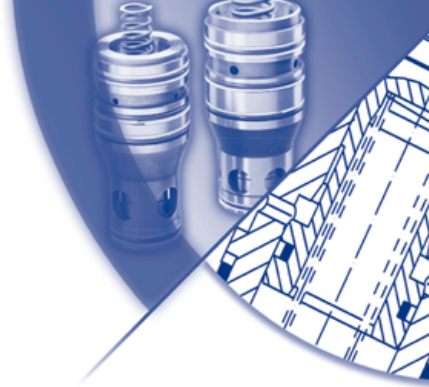


Oilgear's Performance Assurance is made possible because of the many hydraulic techniques learned over the years in supplying machinery builders and users with unique solutions to hundreds of unusual fluid power problems.

Historically, Oilgear has concentrated its energies on hydraulic equipment and systems. Every Oilgear facility is staffed with factory trained and field experienced application engineers.

Performance Assurance doesn't stop with the design of the system or the sale of the component. Oilgear engineers will be there — when they are needed, where they are needed — supplying the technical support, field service, parts and repairs to make sure each component operates correctly.





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# **Oilgear** Notes

# Oilgear

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For more information about your application or the products in this brochure, please contact your nearest Oilgear facility.



## **AUSTRALIA**

Oilgear Towler Australia Pty. Ltd.

## **BRAZIL**

Oilgear do Brazil Hydraulica Ltd.

## **CANADA**

The Oilgear Company

## **FRANCE**

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## **GERMANY**

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## **INDIA**

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Towler Automation Pvt. Ltd.

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