www.fluidco.co.za 40 Industry Road, Paarden Eiland

**HC-D20 Series** | Directional Control Valve | Sectional Valves | 1" BSP -G16
Max Flow Rate 250Lpm | Operating Pressure 350Bar 5000Psi | Max Pressure on T 20Bar

# HC-D20

## Sectional valve

**INDEX**



## GENERAL SPECIFICATIONS

### Universal products and solutions

*HC-D20 control valve belongs to the wide range of Hydrocontrol S.p.A. modular sectional valves and is capable of working with a maximum flow of 250 litres/min. at an operating pressure of 350 bar.*

*Numerous integrated valve features in addition to countless configuration options make HC-D20 highly flexible and easily adaptable to the widest applications range.*

*Sections are equipped with auxiliary valves and a wide variety of interchangeable spools.*

### Standard working conditions

- FLOW RATE . . . . . 66 GPM
- PRESSURE RATE . . . . . 5000 PSI
- MAX PRESSURE ON (T) . . . . . 290 PSI
- OPERATING TEMPERATURE . . . . . -25°C / +80°C
- KINEMATIC VISCOSITY . . . . . from 10 to 460 mm²/s
- CONTAMINATION LEVEL . . . . . 19/16 ISO 4406
- FILTRATION LEVEL . . . . . β 10 > 75

### Technical specifications

- WORKING SECTION NUMBER . . . . . 1 - 12
- SPOOL STROKE . . . . . 0,37 + 0,37 in
- SPOOLS PITCH . . . . . 2,52 in

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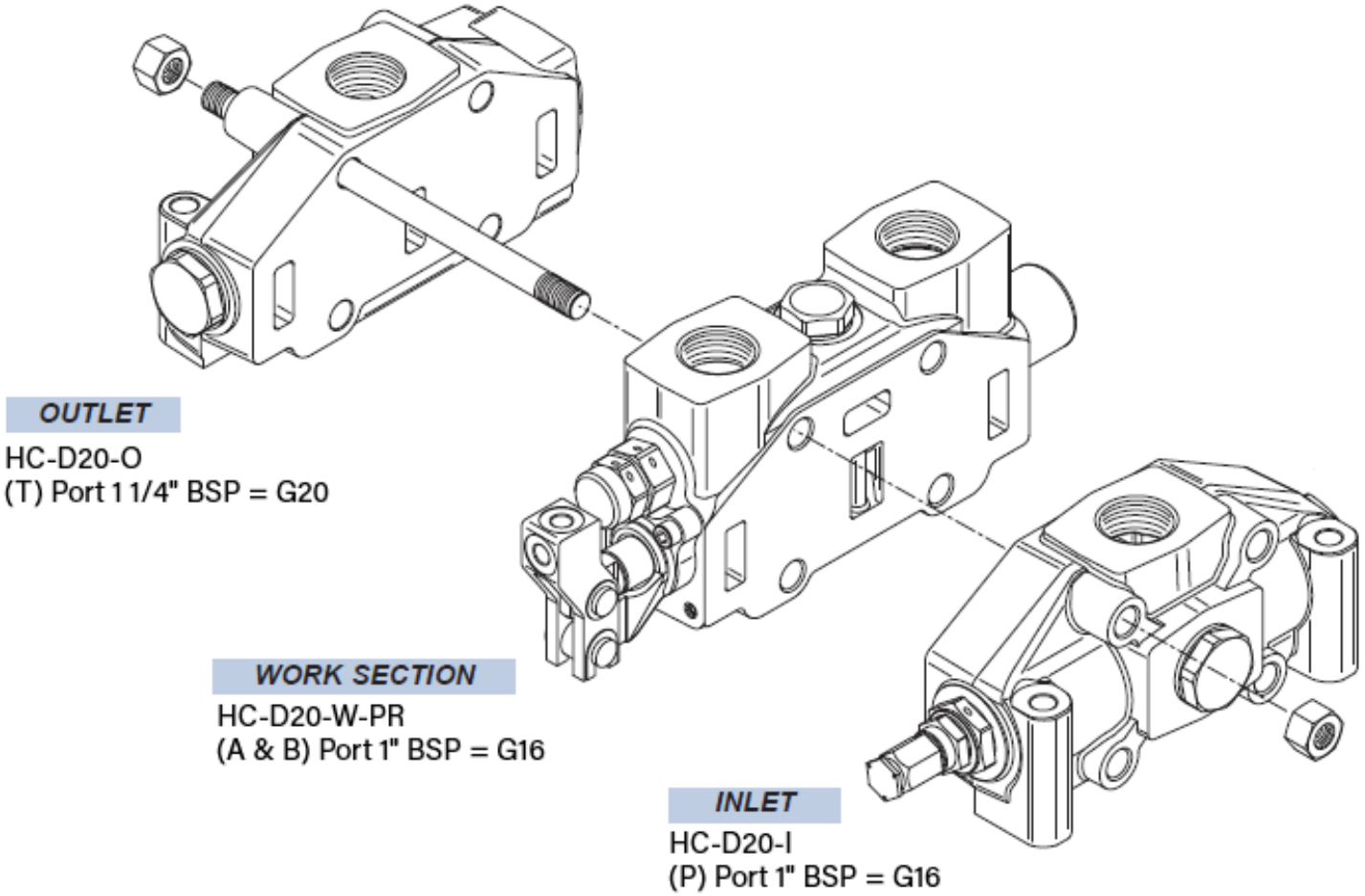
## HC-D20 Series Sectional Valve Layout

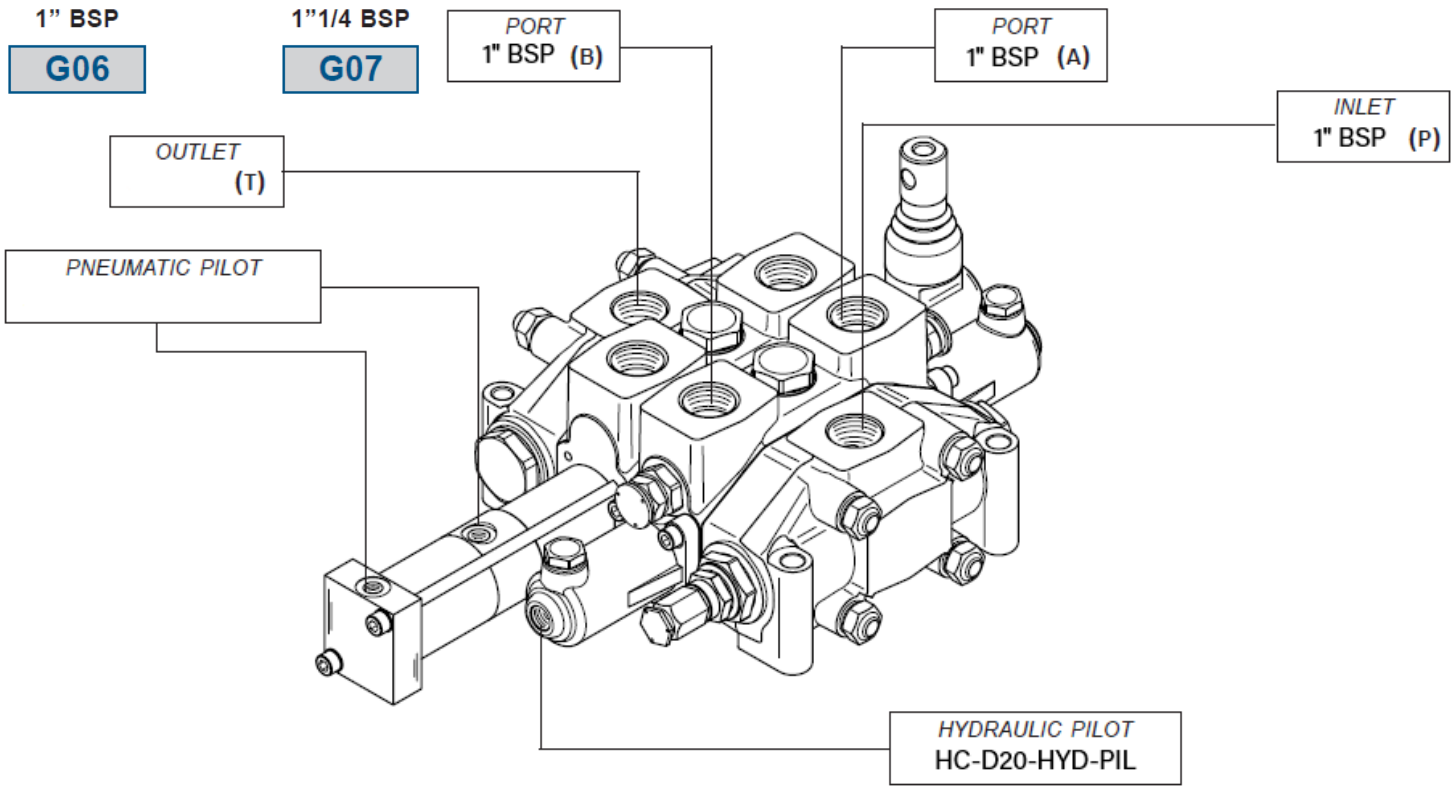


***OUTLET***
HC-D20-O
(T) Port 1 1/4" BSP = G20

***WORK SECTION***
HC-D20-W-PR
(A & B) Port 1" BSP = G16

***INLET***
HC-D20-I
(P) Port 1" BSP = G16

## *DIMENSIONS - Standard Thread*




**Hydraulic Pilot Port – 1/4" BSP = -G04**

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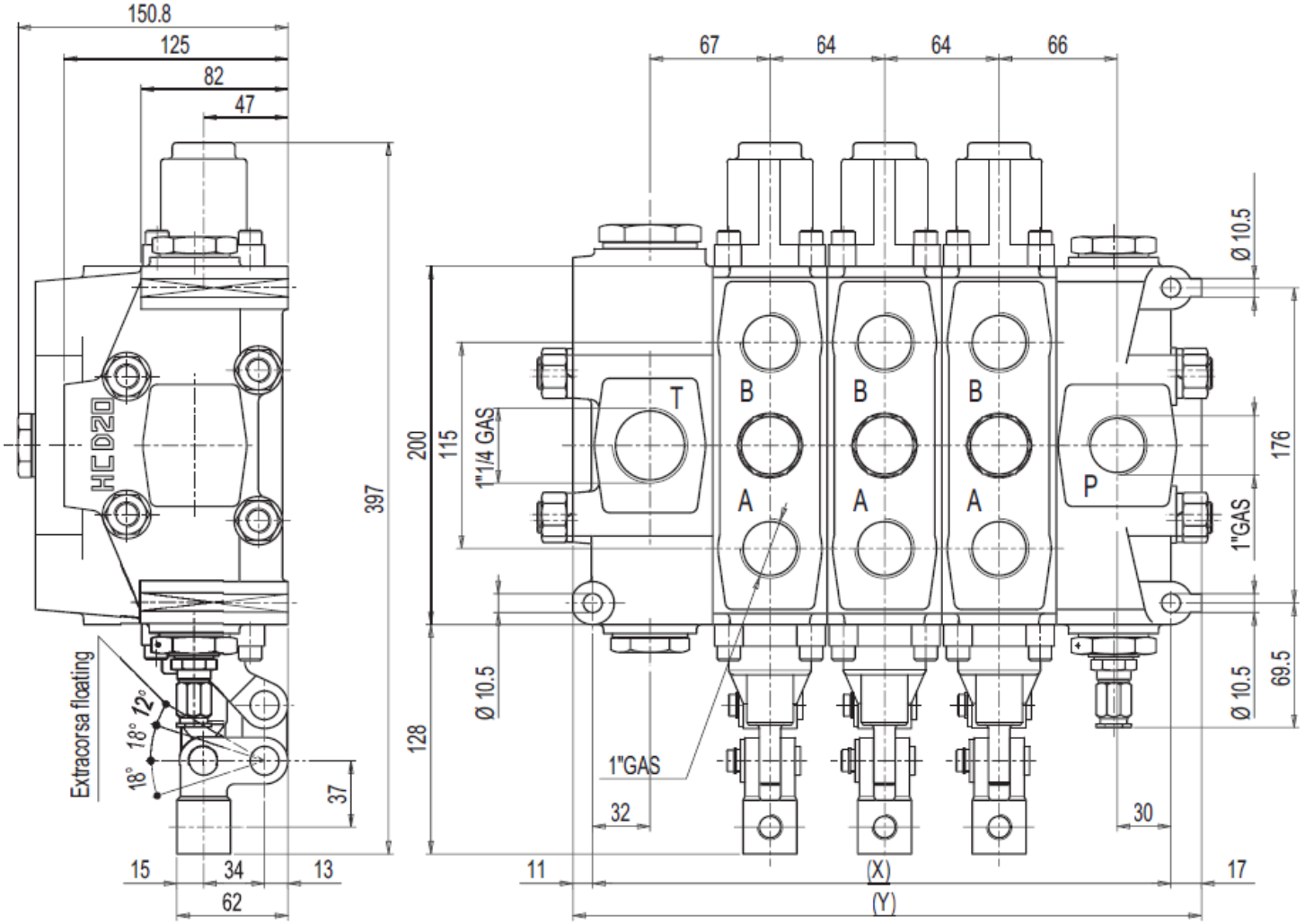
FLUIDCO HYDRAULIC SYSTEMS

## DIMENSIONAL DRAWING




### VARIABLE DIMENSIONS

**/1 = 1x HC-D20-I (Inlet Section) + 1x HC-D20-W-PR (Work Section) + 1x HC-D20-O (Outlet Section)**
**/2 = 1x HC-D20-I + 2x HC-D20-W-PR + 1x HC-D20-O**
**/3 = 1x HC-D20-I + 3x HC-D20-W-PR + 1x HC-D20-O etc.**

| Type | /1 | /2 | /3 | /4 | /5 | /6 | /7 | /8 | /9 | /10 | /11 | /12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X (mm) | 195 | 259 | 323 | 387 | 451 | 515 | 579 | 643 | 707 | 771 | 835 | 899 |
| *X (in)* | *7,7* | *10,2* | *12,7* | *15,2* | *17,7* | *20,2* | *22,7* | *25,2* | *27,7* | *30,2* | *32,7* | *35,2* |
| Y (mm) | 223 | 287 | 351 | 415 | 479 | 543 | 607 | 671 | 735 | 799 | 863 | 927 |
| *Y (in)* | *8,8* | *11,3* | *13,8* | *16,3* | *18,8* | *21,3* | *23,8* | *26,3* | *28,8* | *31,3* | *33,8* | *36,3* |

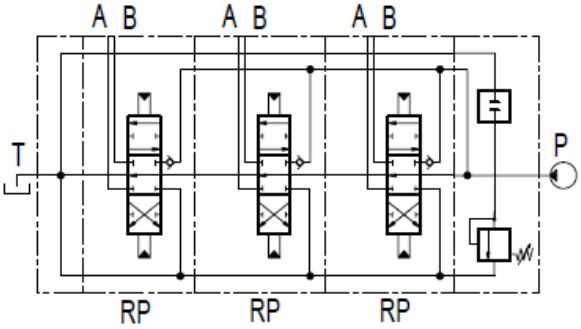
### WEIGHTS

| Type | /1 | /2 | /3 | /4 | /5 | /6 | /7 | /8 | /9 | /10 | /11 | /12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kg | 28,6 | 39,6 | 50,6 | 61,6 | 72,6 | 83,6 | 94,6 | 105,5 | 116,4 | 127,4 | 138,4 | 149,4 |

## HYDRAULIC SPECIFICATIONS

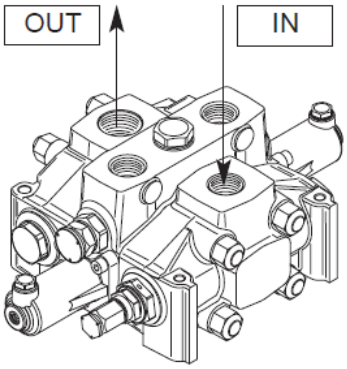
### Parallel circuit

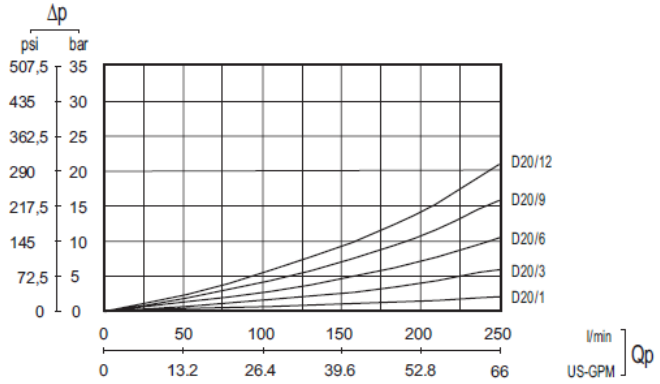
*When the spool is operated it intercepts the switch gallery by diverting the flow of oil to service port A or B. If two or more spools are actuated at the same time, the oil will power the service port that has the lower load by selecting the path with the least resistance; by throtting the spools, the flow of oil can be divided between two or more service ports.*



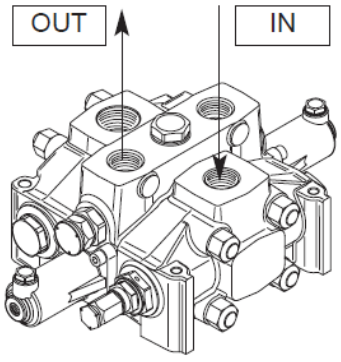

## TYPICAL CURVES - Pressure Setting Options

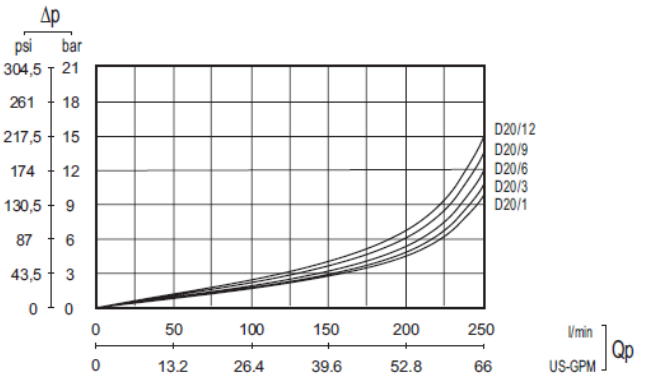
### Pressure drop (P - T)



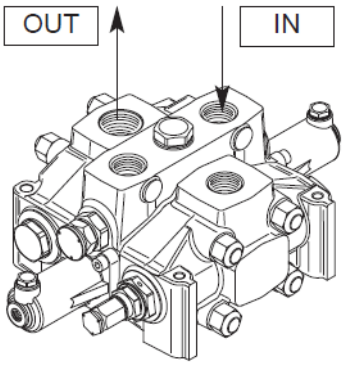



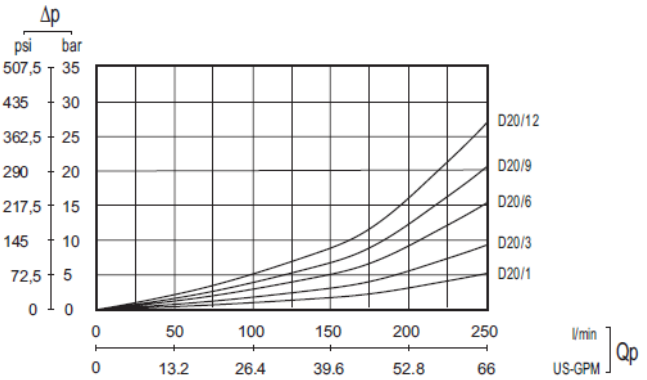

### Pressure drop (P - A/B)



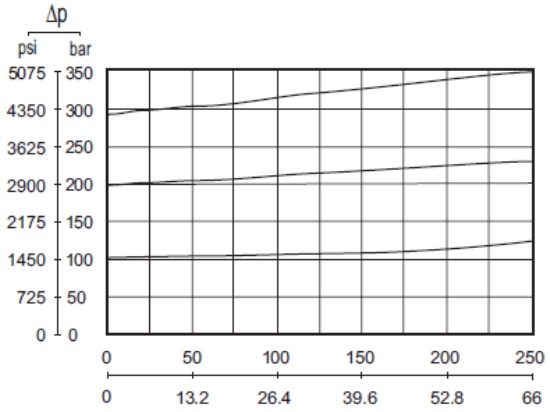




### Pressure drop (A/B - T)



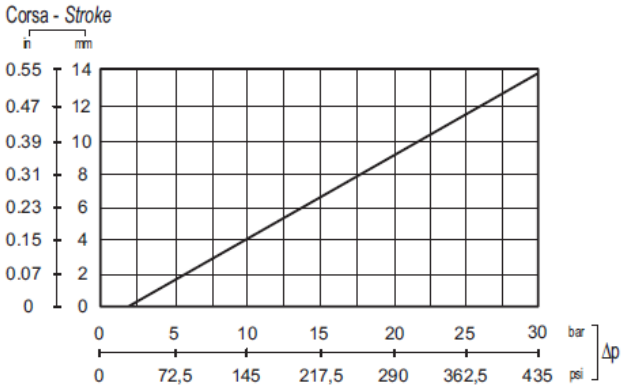
## Pilot relief valve curve




***Setting range***
(A) = 0 / 350 (bar)

***NOTE:*** *indicated values have been tested with standard sectional valve and W001A spools.*

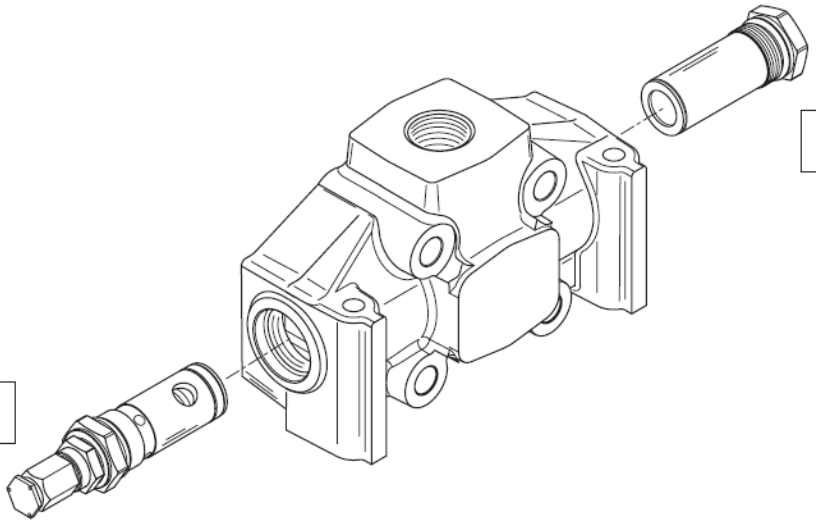
## Hydraulic pilot control curve



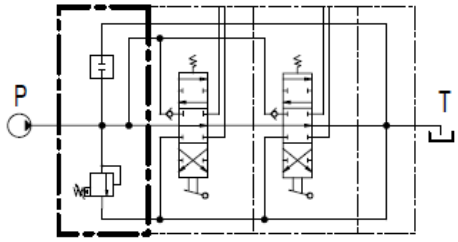
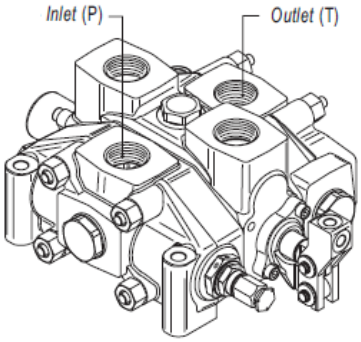

***NOTE:*** *the graphic shows the spool stroke as a function of the pressure operating.*

**HC-D20-PR-180** = HC-D20 Port Relief Cartridge Valve
**HC-D20-HYD-PIL** = HC-D20 Hydraulic Pilot Actuator kit

**HC-D20-I | Inlet Section with Main Relief Valve | 1" BSP Port | Max. 350Lpm 250Lpm - Layout**




## *Inlet side*

| *HYDRAULIC DIAGRAM* | *LAYOUT* | *DESCRIPTION + CODE* |
|---|---|---|
|  |  | *LEFT INLET SECTION* **IL** |



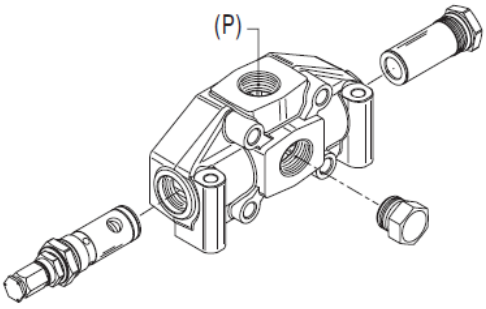
**1x HC-D20-I Inlet Section + 1x HC-D20-W-PR Work Section + 1x HC-D20-O Outlet Section**

**HC-D20-I | Upper Inlet | Code A Inlet G06 | = 1" BSP -G16**

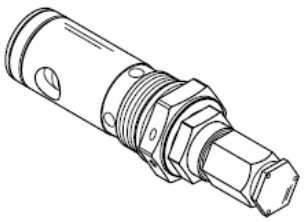
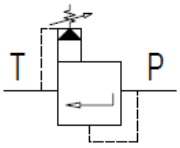
**A**

Upper Inlet with Main Relief Valve - (P) 1" BSP - Left Inlet Section

**G06**



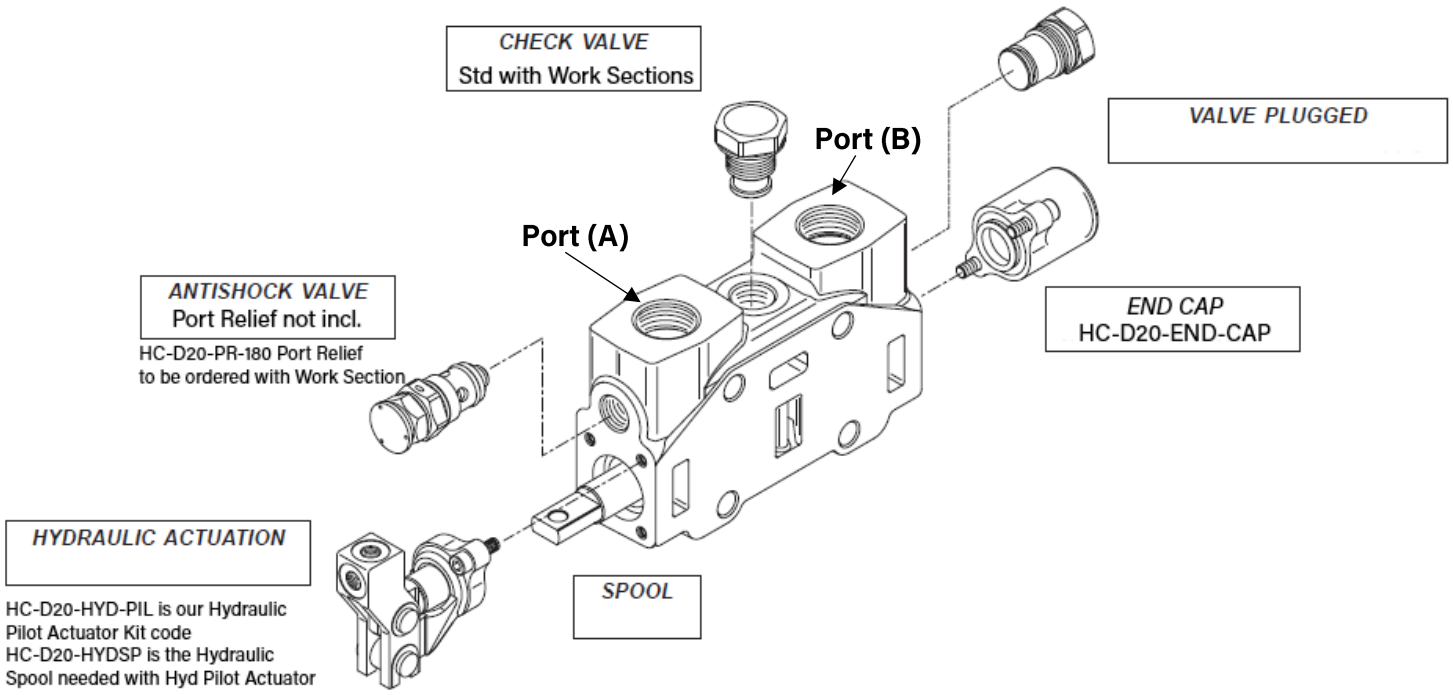

**INLET ARRANGEMENT - Valve Identification**

| *TYPE* | *DESIGN* | *DIAGRAM* | *DESCRIPTION* |
|---|---|---|---|
| **2** |  |  | *Pilot operated pressure relief valve* |



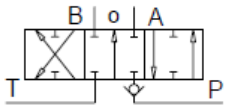
D20 Main Relief Cartridge Valve

## HC-D20-W-PR | Work Section | 1" BSP = -G16 | with Port Relief Facility - Layout




***Parallel circuit section*** **RP** **Service Ports A&B are 1" BSP | -G16** **G06**

### SPOOL ACTUATION IDENTIFICATION – Spool Type:

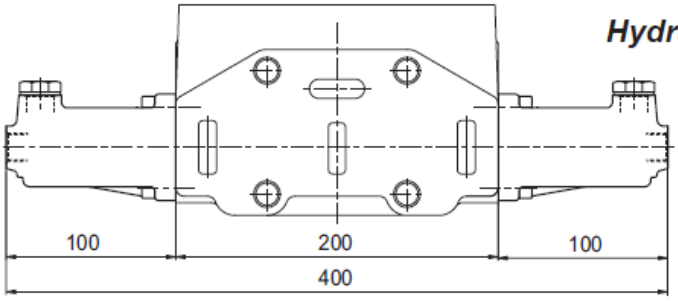
| HYDRAULIC SCHEMA | CIRCUIT DESCRIPTION | CODE |
|---|---|---|
|  | ***3 Positions Double-Acting*** | **W001** |
| | | **W001A** |



**The above Spool is standard A with HC-D20-W-PR Work Section**

## HC-D20-HYD-PIL | code for the Hydraulic Pilot Actuator Kit Only | 2x Needed for setup - Dimensions

**HC-D20-HYD-PIL Hydraulic Pilot Actuator Dimensions 2x needed for setup**

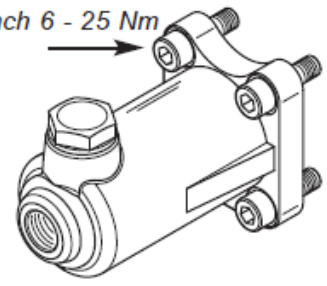



***Hydraulic actuation***

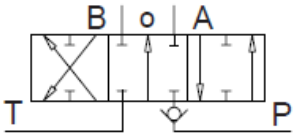
**H005**

**CLAMPING TORQUE**

*Allen wrench 6 - 25 Nm*



**The HC-D20-HYD-PIL Kit contains only 1x Actuator, you need to order 2x with the HC-D20-M-HYDSP Motor Spool for the Hydraulic Pilot Actuator setup. HC-D20-M-HYDSP details below.**

| HYDRAULIC SCHEMA | CIRCUIT DESCRIPTION | CODE |
|---|---|---|
|  | *3 positions double-acting* | **W001** |

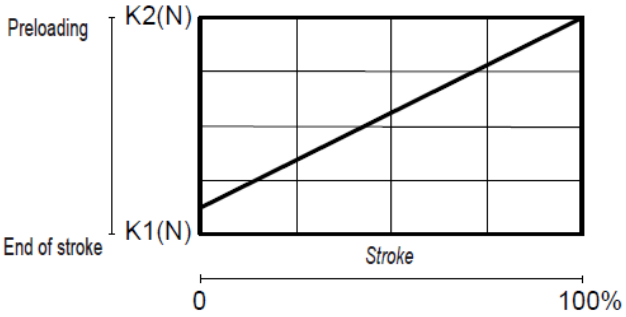
## *SPOOL RETURN ACTION* - Spring Load Valves | Standard Spring

***STANDARD SPRING***

**A**

*Preloading* **196,2 N**

*End of stroke* **245,2 N**

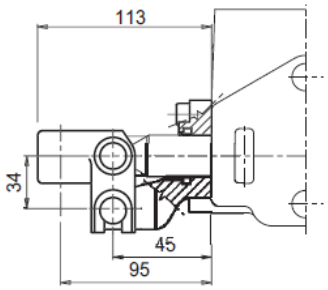



***Spool return kit*** **F001A**

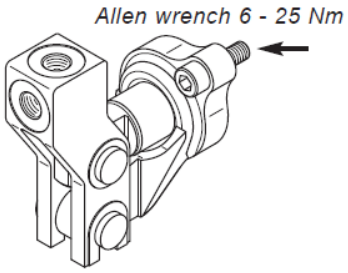
*3 positions spring-centred spool*
***(standard spring)***

## *SPOOL ACTUATION* - Identification | Description and Dimensions

**HC-D20-LEV-CAP | Lever Cap with Linkage Kit | Unproteced Lever Spool Actuation | No Lever Included in Kit**



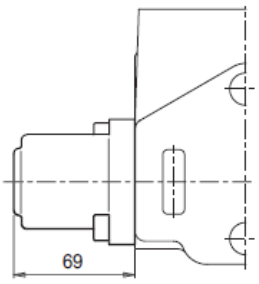

**H101**



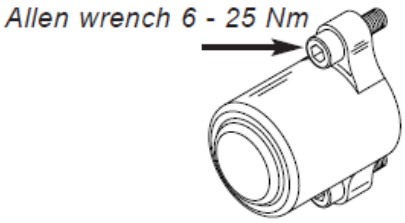

**When ordering a replacement HC-D20-LEV-CAP kit, note there is no Lever included.**
**Lever needed is the HC-LEVER-M14 which is sold separately.**

## *SPOOL RETURN ACTION* - Identification | Descriptions and Dimensions

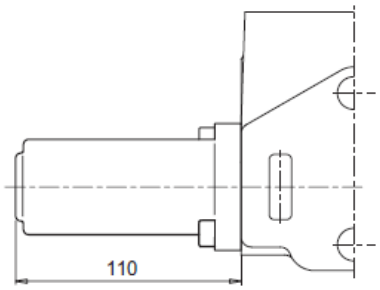
**HC-D20-END-CAP | 3 Position Spring Centred Spool | End Cap Kit | for HC-D20-W-PR Work Section**




**F001A**

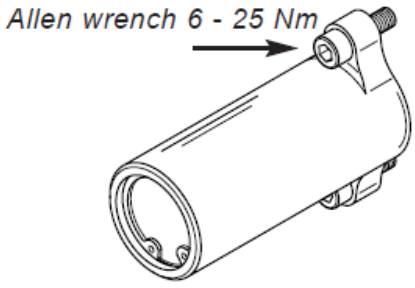



**HC-D20-DETENT-3 | 3 Position Spring Centered Spool Detent in A & B | Detent Cap Kit only**



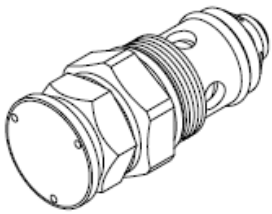


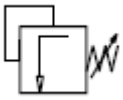
**F002A**



## *AUXILIARY VALVES* - Identification | Hydraulic Schema | Setting Range

**HC-D20-PR-180 | Port Relief Valve only | Antishock Valve | ARV | for the D20 & D25 series | Setting Range B**



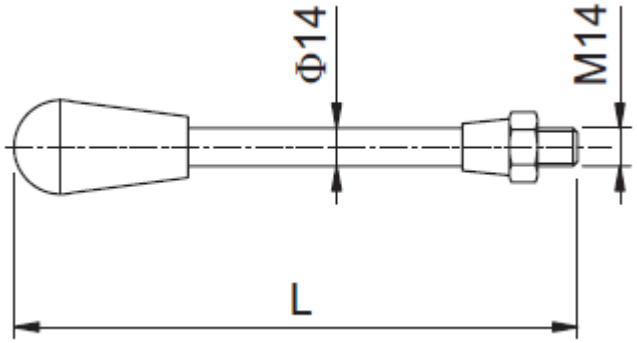


**01 PA**

**Setting Range D**
**151Bar / 300Bar at full flow**
**111Bar / 240Bar at min. flow**

**HC-LEVER-M14 | is the code of the Lever needed for the HC-D20 series Sectional Valves | Length between 350 - 590mm**

***Lever with knob***

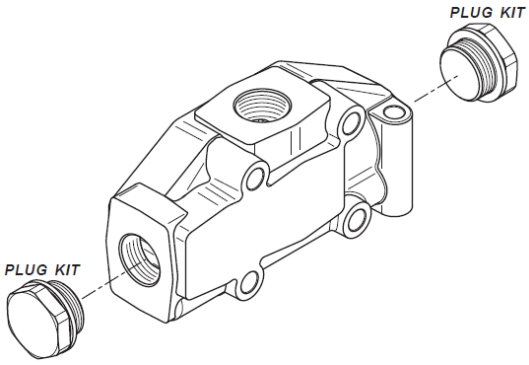



**ZA**

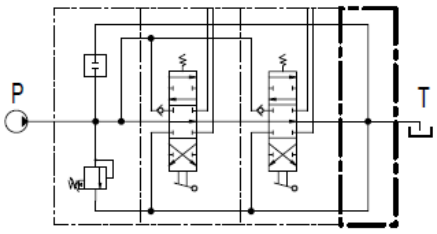
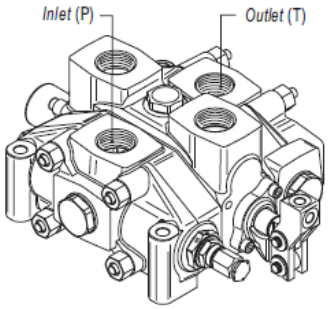
***L (in) = 13,8 - 23,2***
**L (mm) = 350 - 590**

**OUTLET SECTION | HC-D20-O is our code | 1 1/4" BSP -G20 on P Port | Outlet Section with Single Return (T) Left Side Inlet (P)**

## Outlet Section Layout




***Outlet with single tank classification***

| HYDRAULIC DIAGRAM | LAYOUT | DESCRIPTION + CODE |
|---|---|---|
|   |   | *OUTLET SECTION WITH SINGLE RETURN (T) LEFT-SIDE INLET (P)* **TK** |

***Outlet position and available thread type***

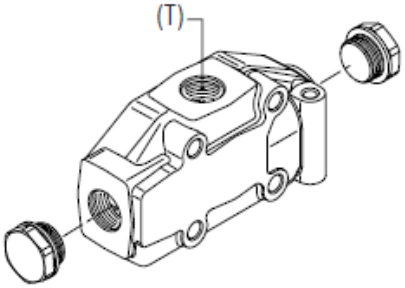
**A**

*Upper outlet*

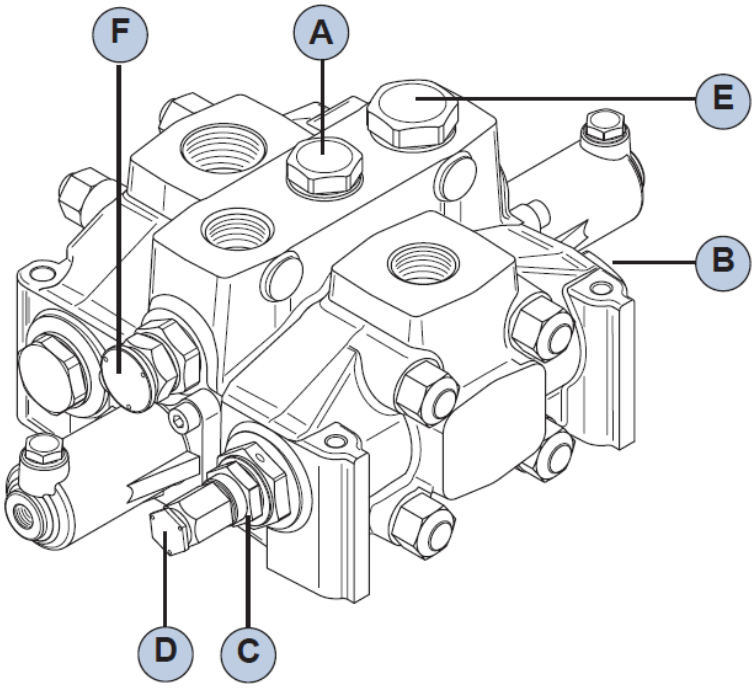
Uscita superiore

**G07**

(T) Port = 1 1/4" BSP | -G20



## INSTALLATION AND MAINTENANCE -




### General clamping torque

| POSITION | DESCRIPTION | CLAMPING TORQUE (Nm) |
|---|---|---|
| A | load check valve plug | 120 |
| B | plug to replace pressure relief valve | 120 |
| C | pressure relief valve body | 120 |
| D | pressure relief valve cap | 120 |
| E | fittings in service ports A-B-P-T | G06 = 120 / G07 = 120<br>Ports P 1" BSP \| A & B 1" BSP \| T 1 1/4" BSP |
| F | clamping torque auxiliary valve | *see table (X)* |

**Table X Below**

ANTISHOCK VALVE PLUG

**60 Nm**

ANTISHOCK VALVE BODY

**120 Nm**

PILOT COMBINED VALVE PLUG

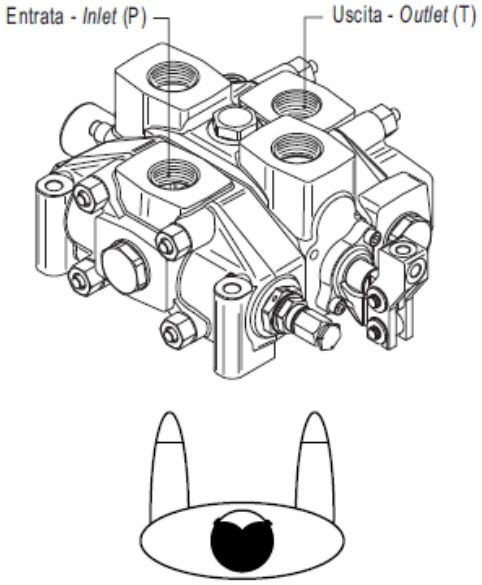
**60 Nm**

**INSTALLATION AND MAINTENANCE -**

## Assembly instructions

*Since our directional control valve casings have symmetrical galleries, they can be converted from right-side inlet (IR) to left-side inlet (IL) simply by turning the spool and relative controls through 180°.*
*This operation is not possible when using spool types: 012 - 013.*

*Recommended curve for our standard directional control valves* ***A01***




*Sectional valve with left inlet (IL)*

## Fluid compatybility

| TYPE OF FLUID (Oil and Solution) | TEMP. (C°) min | TEMP. (C°) max | GASKET NBR | GASKET VITON(*) |
|---|---|---|---|---|
| Mineral oil HPL (DIN 51524) | -25 | +80 | • | • |
| Oil in water emulsion HFA(*) | +5 | +55 | • | • |
| Water in oil emulsion HFB(*) | +5 | +55 | • | • |
| Polyglycol-based aqueous sol. HFC(*) | -25 | +60 | • | |
| Ester of phosphoric acid HCD(*) | -20 | +150 | | • |

**Unit of measure - Conversion factors**

| Systems / Unit | BSP |
|---|---|
| LENGTH | 1 in = 25,4 mm |
| MASS | 1 lb = 0,4536 kg |
| FORCE | 1 kgf = 9,8067 Nm |
| VOLUME | 1 gal UK = 4,546 l<br>1 gal US = 3,785 l |
| PRESSURE | 1 Pa = 0,00001 bar<br>1 psi = 0.0689 bar |