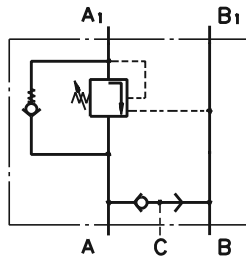


VALVES FOR HYDRAULIC MOTORS

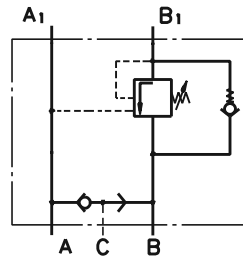
CONTENTS

| | | | |
|---|----|---|-------|
| Valves for MP, MR and MH type KPBR ... | 48 | Crossover Relief Valves | 57 |
| Valves for MS type KPBS | 49 | Valves for MP, MR and MH type KP...R | 58 |
| Valves for MT type KPBT | 50 | Valves for MS type KP...S | 58 |
| Valves for MV type KPBV | 51 | Valves for MT type KP...T | 59 |
| Valves for RW and HW type KPBW | 52 | Valves for MV type KP...V | 61 |
| Valves for HP and HR type KPBHR...E ... | 53 | Valves for RW and HW type KP...W | 63 |
| Valves for HP and HR type KPBHR...D ... | 54 | Valves for HR and RK type KPDHR and KPDRK ... | 65 |
| Switch valves type KPWR and KPWS ... | 55 | Order Code | 66+67 |
| Switch valves type KPWT and KPWW | 56 | | |

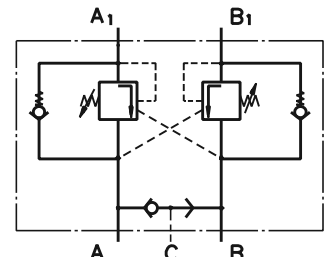
OVERCENTER VALVES WITH BRAKE CONTROL



Single Overcenter Valves with Brake Control type KPBR ... AE



Single Overcenter Valves with Brake Control type KPBR ... BE



Dual Overcenter Valves with Brake Control type KPBR ... D

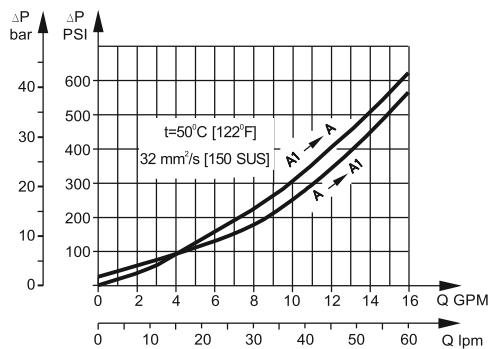
SPECIFICATION DATA

| Parameters | Type | | | | | | | | | | | |
|----------------------------|-------------------|--------------|---------------|---------------|---------------|---------------|--------------------|---------------|----------------|----------------|----------------|----------------|
| | KPBR...E | KPBS...E | KPBR...D | KPBS...D | KPBW...E | KPBW...D | KPBHR...E | KPBHR...D | KPBT...E | KPBT...D | KPBV...E | KPBV...D |
| Flow Rate, lpm [GPM] | 60 [15.85] | | | | | | 100 [26.4] | | 200 [52.8] | | | |
| Rated Pressure*, bar [PSI] | 60÷280 [870÷4060] | | | | | | 70÷250 [1015÷3625] | | | | | |
| Pilot Ratio | 4,25:1 | | | | | | | | | | | |
| Weight, kg [lb] | 3,020 [6.658] | 2,900 [6.39] | 3,060 [6.746] | 2,920 [6.437] | 3,050 [7.724] | 3,140 [6.923] | 2,300 [5.071] | 2,400 [5.291] | 5,400 [11.905] | 5,800 [12.787] | 9,200 [20.283] | 9,750 [21.495] |

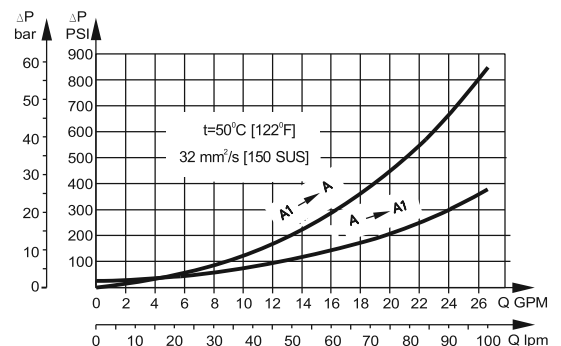
*Pressure Settings are at flow rate of 5 lpm [1.3 GPM] and viscosity 32 mm²/s [150 SUS] at 50 °C [122° F].

PRESSURE LOSSES

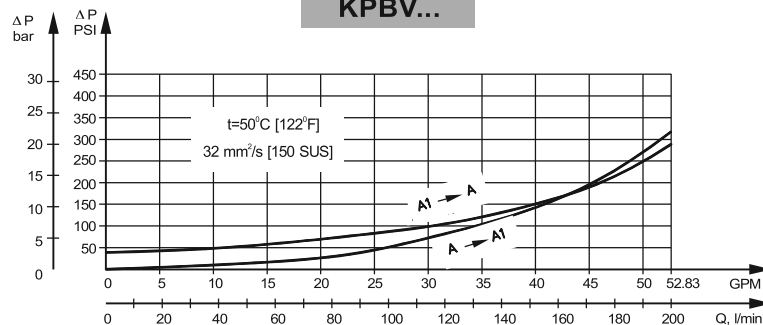
KPBR..., KPBS..., KPBW..., KPBHR...



KPBT...



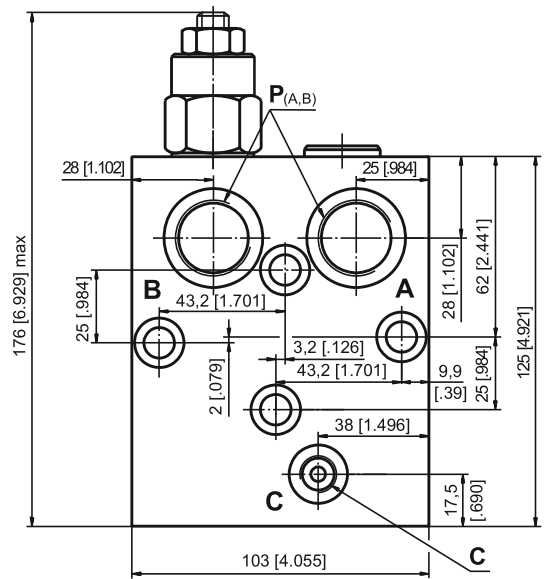
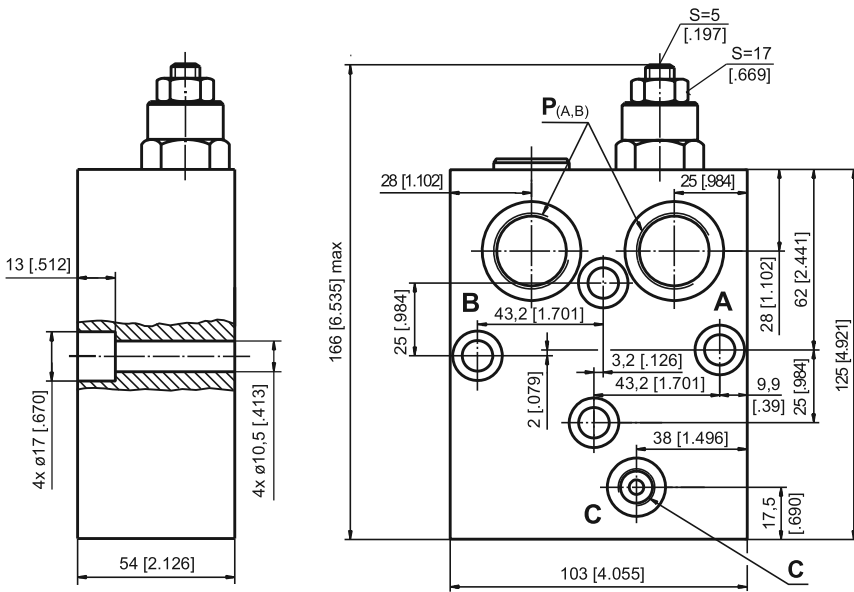
KPBV...



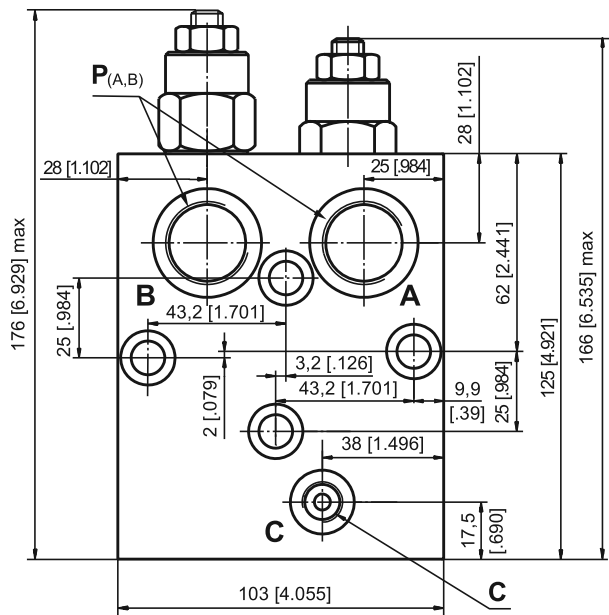
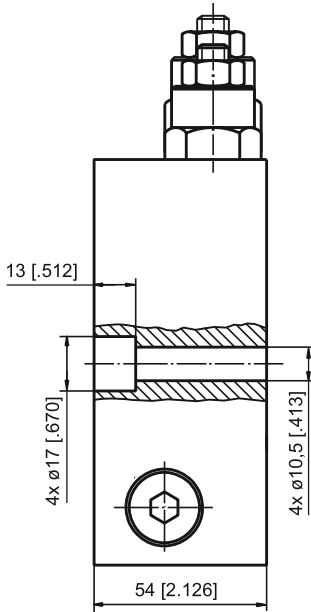
VALVES FOR MT HYDRAULIC MOTORS

SINGLE VALVE KPBT-250/1/AE...

SINGLE VALVE KPBT-250/1/BE...



DUAL VALVE KPBT-250/1/D...



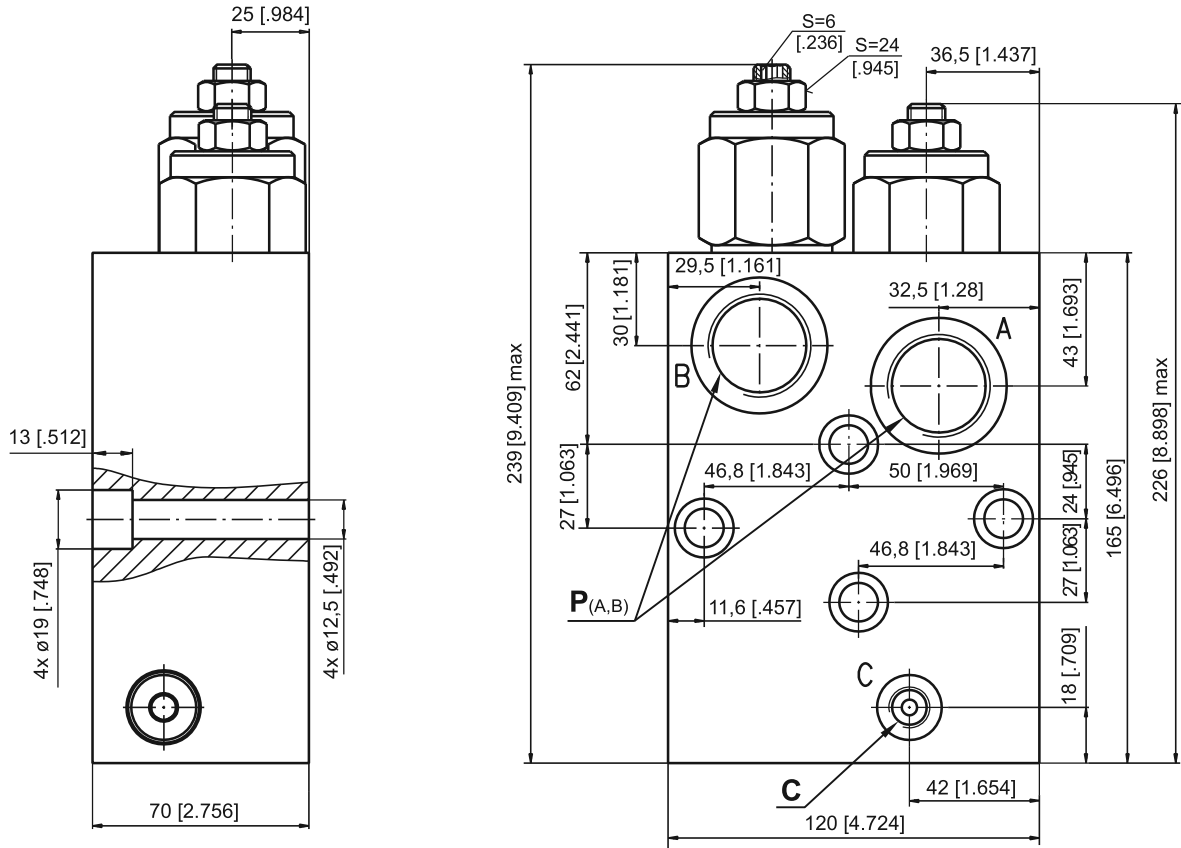
| | Thread Ports - P _(A,B) | Thread Port - C |
|---|---------------------------------------|--|
| - | G3/4 17 [.67] depth | G1/4 14 [.55] depth |
| M | M27x2 17 [.67] depth | M14x1,5 14 [.55] depth |
| A | 1 1/16-12 UN O-ring 17 [.67] depth | 7/16 - 20 UNF O-ring 12,7 [.50] depth |



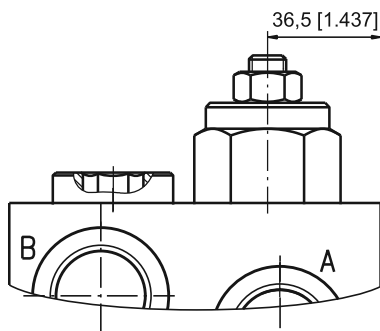
Note : KPBT Blocks are installed directly on MT Motors with four screws M10x50 - 8.8 DIN 912. Tightening torque 3,5 daNm [310 lb-in].

VALVES FOR MV HYDRAULIC MOTORS

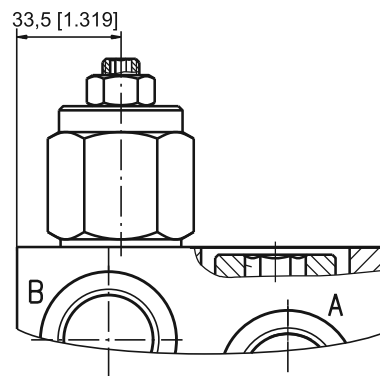
DUAL VALVE KPBV-250/1/D...



SINGLE VALVE KPBV-250/1/AE...



SINGLE VALVE KPBV-250/1/BE...



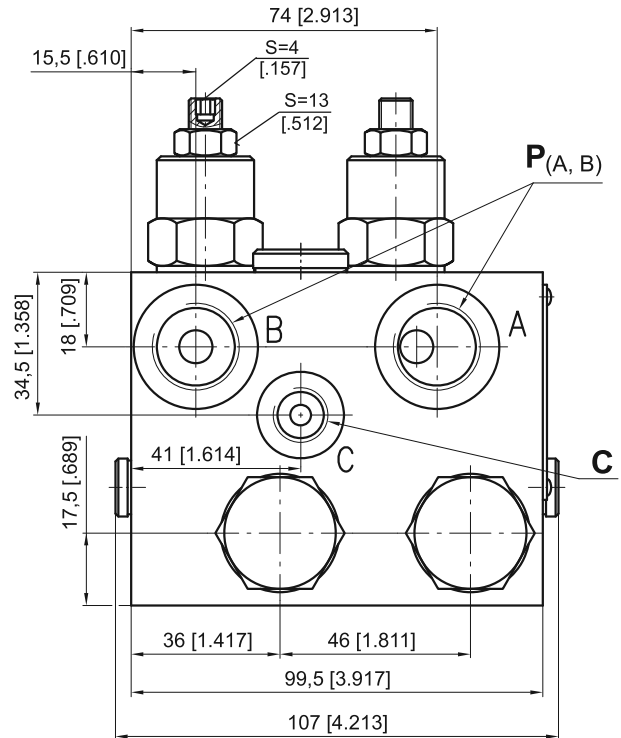
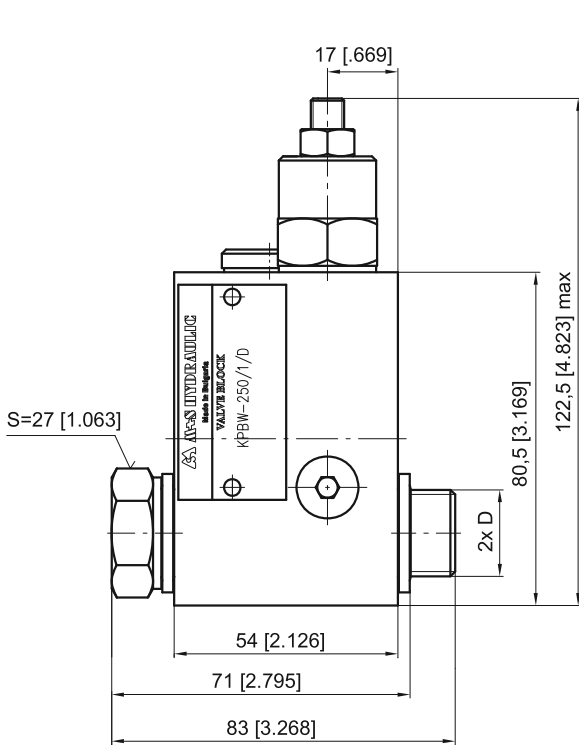
| | Thread Ports - P _(A,B) | Thread Port - C |
|---|---|--|
| - | G 1 20 [.79] depth | G1/4 14 [.55] depth |
| M | M33x2 20 [.79] depth | M14x1,5 14 [.55] depth |
| A | 1 5/16 - 12 UN O-ring 20 [.79] depth | 7/16 - 20 UNF O-ring 12,7 [.50] depth |



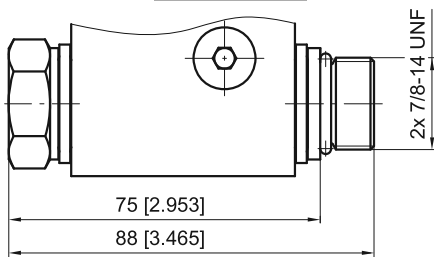
Note : KPBV Blocks are installed directly on MV Motors with four screws M12x70 - 8.8 DIN 912. Tightening torque 6,5 daNm [575 lb-in].

VALVES FOR RW and HW HYDRAULIC MOTORS

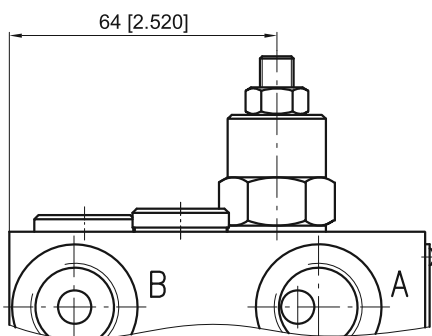
DUAL VALVE KPBW-250/1/D...



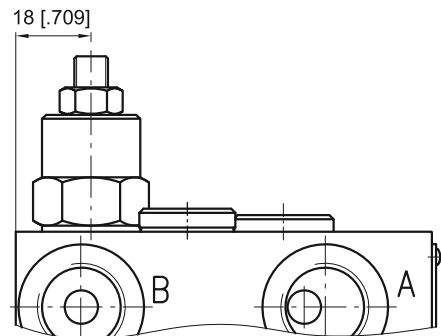
KPBW-...A



SINGLE VALVE KPBW-250/1/AE...



SINGLE VALVE KPBW-250/1/BE...

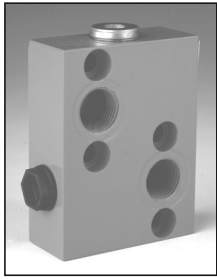


| | Thread Ports - P _(A,B) | Thread Port - C | Thread Ports - D |
|---|--|---|---|
| - | G1/2 16 [0.63] depth | G1/4 12 [0.47] depth | G1/2 12 [0.47] length |
| M | M22x1,5 16 [0.63] depth | M14x1,5 12 [0.47] depth | M22x1,5 12 [0.47] length |
| A | 7/8 - 14 UNF O-ring 16 [0.63] depth | 7/16 - 20 UNF O-ring 12,7 [0.50] depth | 7/8 - 14 UNF O-ring 13 [0.51] length |



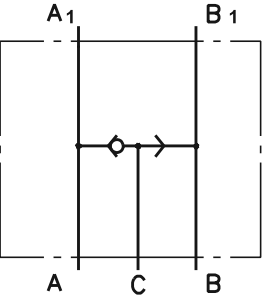
Note : KPBW Blocks assembly to RW or HW motors is done with two screws (thread D) included in the valve set. Tightening torque 8 daNm [710 lb-in].

SWITCH VALVE



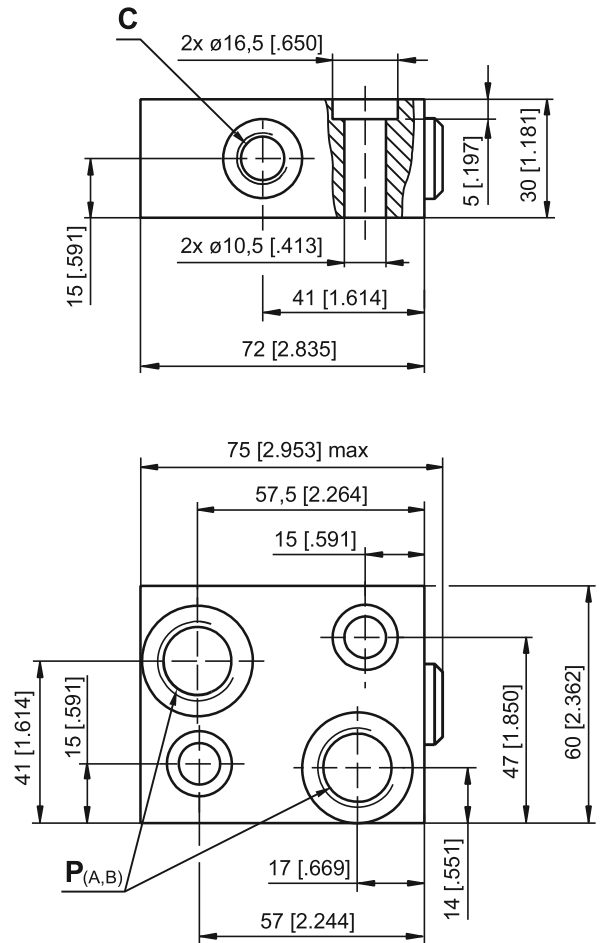
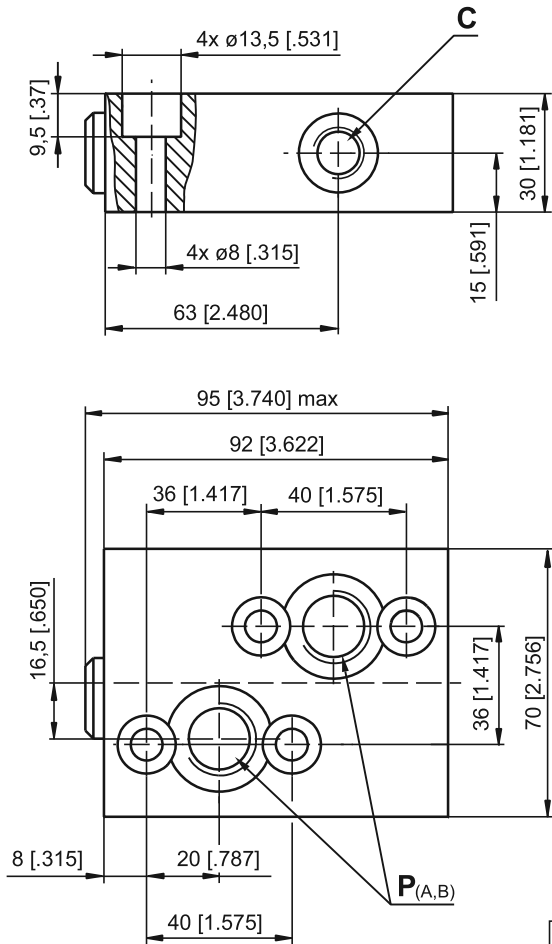
SPECIFICATION DATA

| Parameters | Type | |
|----------------------------|------|---------|
| | KPWR | KPWS |
| Flow Rate , l/min [GPM] | 60 | [15.85] |
| Rated Pressure , bar [PSI] | 250 | [3625] |
| Weight , | kg | 0,850 |
| | [lb] | [1.874] |
| | | 0,670 |
| | | [1.477] |



**VALVE FOR MP, MR, MH HYDRAULIC MOTORS
KPWR**

**VALVE FOR MS HYDRAULIC MOTORS
KPWS**



| | Thread Ports - P _(A,B) | Thread Port - C |
|---|---------------------------------------|--|
| - | G1/2 17 [.67] depth | G1/4 14 [.55] depth |
| M | M22x1,5 17 [.67] depth | M14x1,5 14 [.55] depth |
| A | 7/8 - 14 UNF O-ring 17 [.67] depth | 7/16 - 20 UNF O-ring 12,7 [.50] depth |

Note: KPWR Blocks are installed directly on MP, MR and MH Motors with four screws M8x30 - 8.8 DIN 912 or 5/16-18UNC, 1.25 [.049] long ANSI B 18.3 .
Tightening torque 2,0^{+0,5} daNm [177⁺⁴⁴ lb-in].
KPWS Blocks are installed directly on MS Motors with two screws M10x35 - 8.8 DIN 912 or 3/8-16UNC, 1.5 [.059] long ANSI B 18.3.
Tightening torque 3,5 daNm [336 lb-in].

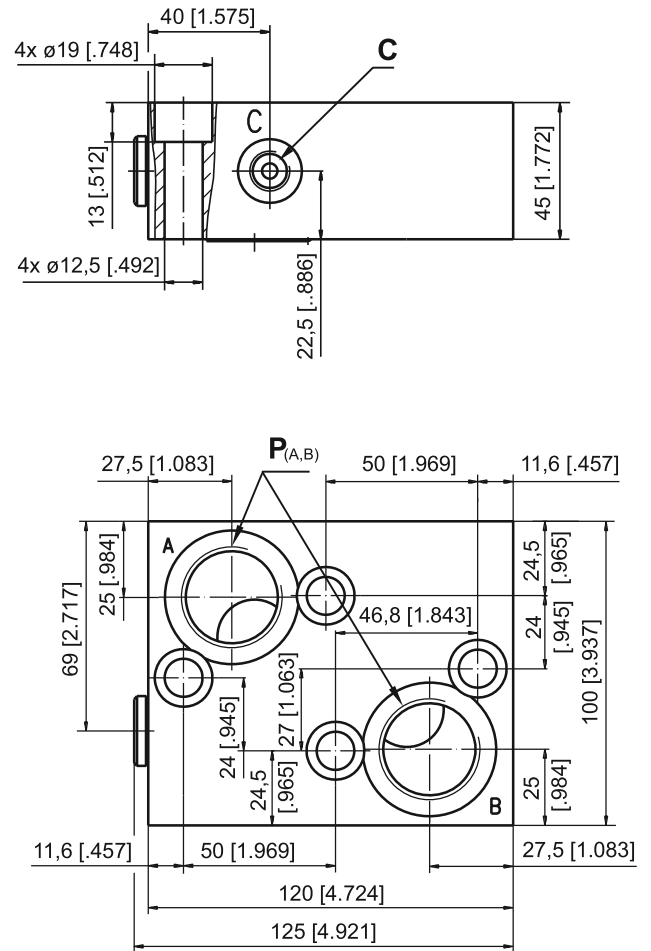
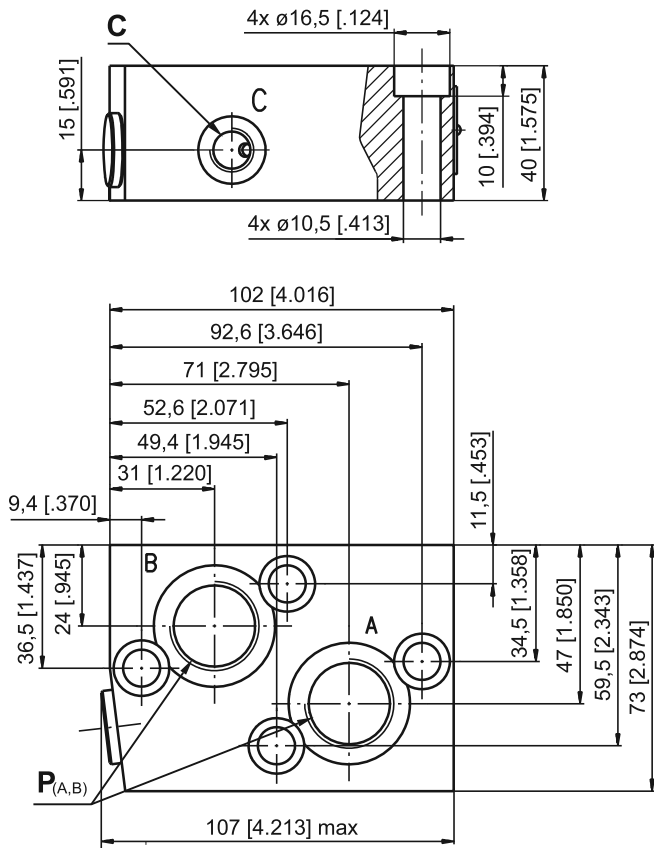
SWITCH VALVE (continued)

SPECIFICATION DATA

| Parameters | Type | |
|----------------------------|---------------|---------------|
| | KPWT | KPWW |
| Flow Rate , l/min [GPM] | 100 [26.4] | 200 [52.8] |
| Rated Pressure , bar [PSI] | 250 | [3625] |
| Weight , kg [lb] | 1,800 [3.968] | 3,150 [6.945] |

**VALVE FOR MT HYDRAULIC MOTORS
KPWT**

**VALVE FOR MV HYDRAULIC MOTORS
KPWW**



| | Thread Ports - P _(A,B) | Thread Port - C |
|---|---------------------------------------|--|
| - | G3/4 17 [.67] depth | G1/4 14 [.55] depth |
| M | M27x2 17 [.67] depth | M14x1,5 14 [.55] depth |
| A | 1 1/16-12 UN O-ring 17 [.67] depth | 7/16 - 20 UNF O-ring 12,7 [.50] depth |

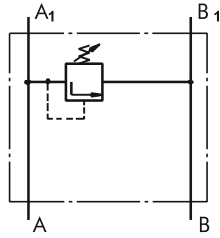


| | Thread Ports - P _(A,B) | Thread Port - C |
|---|---|--|
| - | G 1 20 [.79] depth | G1/4 14 [.55] depth |
| M | M33x2 20 [.79] depth | M14x1,5 14 [.55] depth |
| A | 1 5/16 - 12 UN O-ring 20 [.79] depth | 7/16 - 20 UNF O-ring 12,7 [.50] depth |

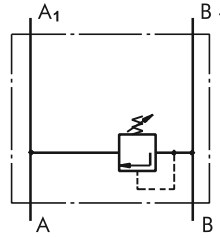
Note: KPWT Blocks are installed directly on MT Motors with four screws M10x40 - 8.8 DIN 912. Tightening torque 3,5 daNm [336 lb-in].

KPWW Blocks are installed directly on MV Motors with four screws M12x45 - 8.8 DIN 912. Tightening torque 6,5 daNm [425 lb-in].

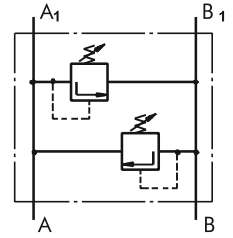
CROSSOVER RELIEF VALVES



Single Crossover Relief Valve type KPE ...



Single Crossover Relief Valve type KPE ...



Dual Crossover Relief Valve type KPD ...

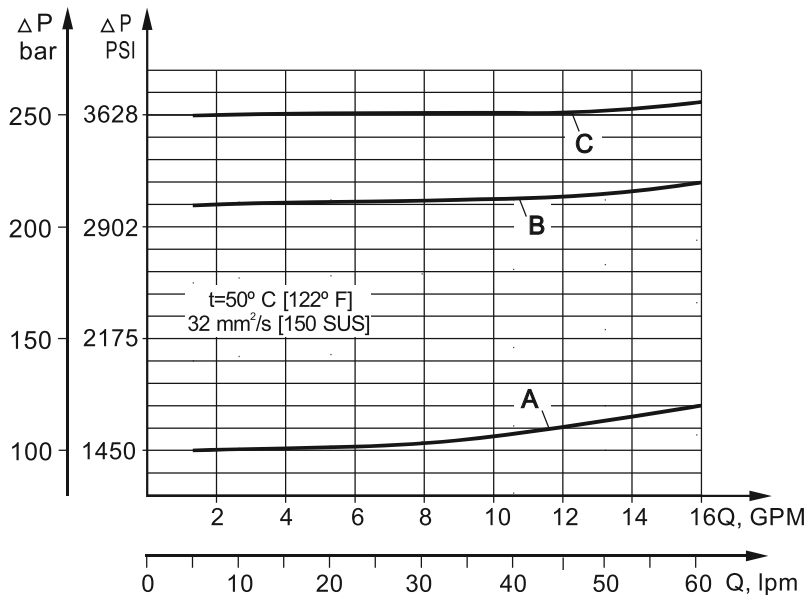
SPECIFICATION DATA

| Parameters | Type | | | |
|--------------------------------|-------------------------|-------------------------|-------------------------|------|
| | KPER | KPDR | KPES | KPDS |
| Flow Rate , lpm [GPM] | 60 [15.85] | | | |
| Pressure Range* , bar [PSI] | 30 ÷ 100; [435÷1450] | 50 ÷ 210; [725÷3050] | 80 ÷ 300 [1160÷4350] | |
| Weight , kg [lb] | 1,55 [3.42] | | 1,50 [3.31] | |

*Pressure Settings are at flow rate of 5 lpm [1.32 GPM] and viscosity 32 mm²/s [150 SUS] (50 °C [122° F]).

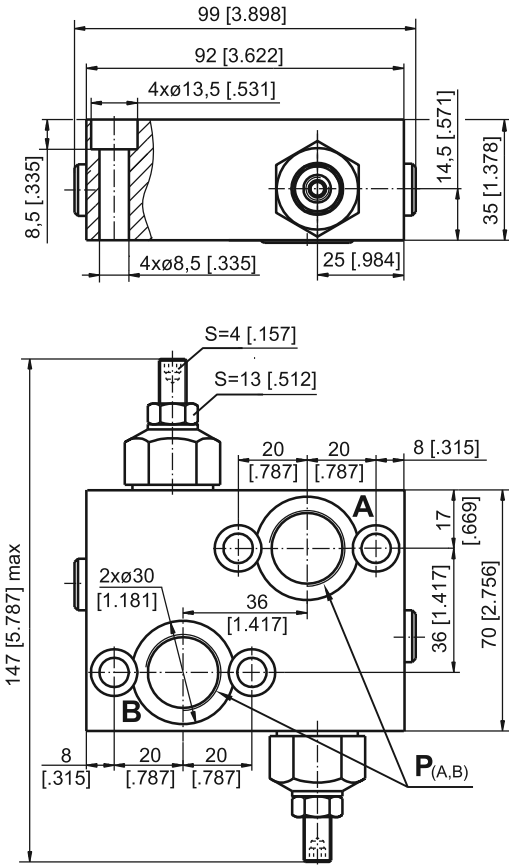
Rated Pressure

- A → 100 bar [1450 PSI]
- B → 210 bar [3050 PSI]
- C → 250 bar [3625 PSI]

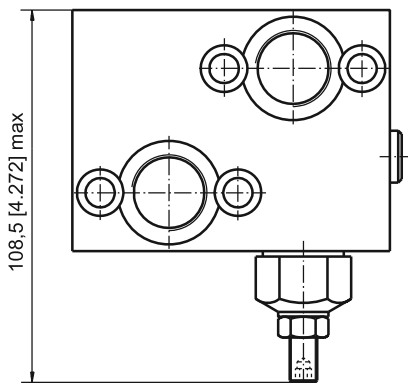


**VALVES FOR MP, MR, MH
HYDRAULIC MOTORS**

DUAL VALVE KPDR

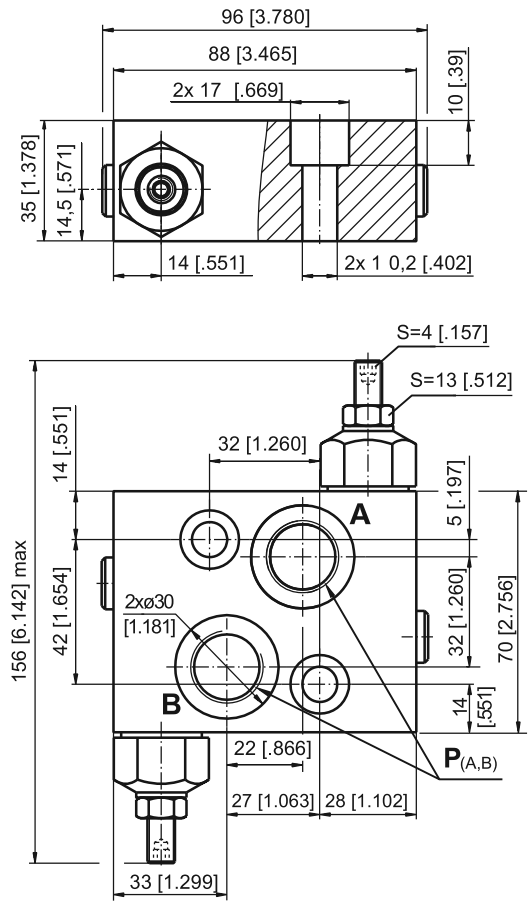


SINGLE VALVE KPER

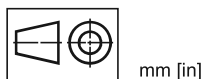
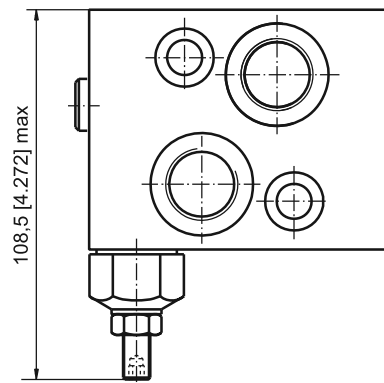


**VALVES FOR MS
HYDRAULIC MOTORS**

DUAL VALVE KPDS



SINGLE VALVE KPES

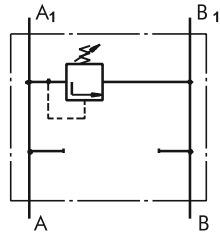


| | Thread Ports - P _(A,B) |
|---|---------------------------------------|
| - | G1/2 20 [.79] depth |
| M | M22x1,5 20 [.79] depth |
| A | 7/8 - 14 UNF O-ring 20 [.79] depth |

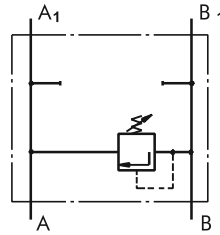
Note : **KPDR** and **KPER** Blocks are installed directly on MP, MR and MH Motors with four screws M8x35 - 8.8 DIN 912 or 5/16-18 UNC, 1.5 long ANSI B 18.3 . Tightening torque 2,0^{+0,5} daNm [177⁺⁴⁴ lb-in].

KPDS and **KPES** Blocks are installed directly on MS Motors with two screws M10x35 - 8.8 DIN 912 or 3/8-16 UNC, 1.5 long ANSI B 18.3 . Tightening torque 3,5 daNm [310 lb-in].

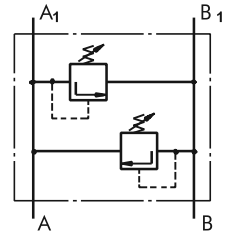
VALVES FOR MT HYDRAULIC MOTORS



Single Crossover
Relief Valve
type KPEAT ...



Single Crossover
Relief Valve
type KPEBT ...



Dual Crossover
Relief Valve
type KPDT ...

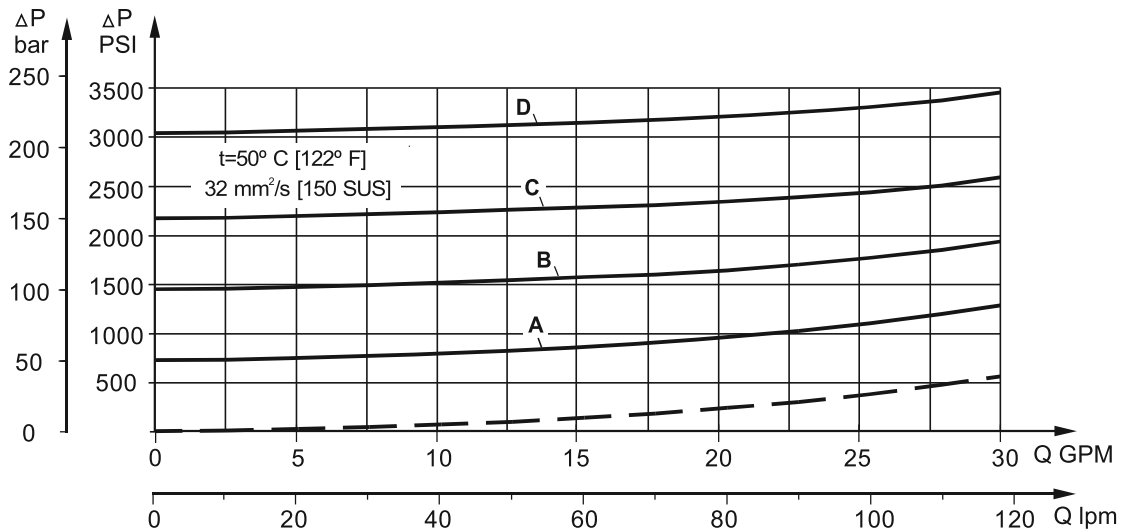
SPECIFICATION DATA

| Parameters | Type | |
|--------------------------------|-----------------------|-----------------|
| | KPE...T | KPDT |
| Flow Rate , lpm [GPM] | 120 [32] | |
| Pressure Range* , bar [PSI] | 80÷210 [1160÷3050] | |
| Weight , kg [lb] | 5,10 [11.24] | 5,54 [12.21] |

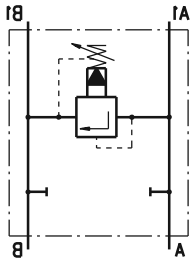
*Pressure Settings are at flow rate of 5 lpm [1.32 GPM] and viscosity 32 mm²/s [150 SUS] (50 °C [122° F]).

Rated Pressure

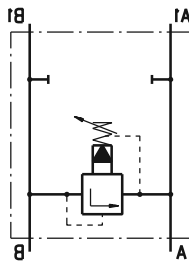
- A → 50 bar [725 PSI]
- B → 100 bar [1450 PSI]
- C → 150 bar [2175 PSI]
- D → 210 bar [3045 PSI]



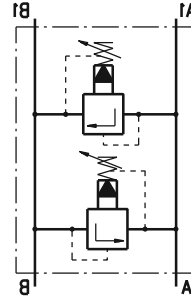
VALVES FOR MV HYDRAULIC MOTORS



Single Crossover Relief Valve type KPEAV ...



Single Crossover Relief Valve type KPEBV ...



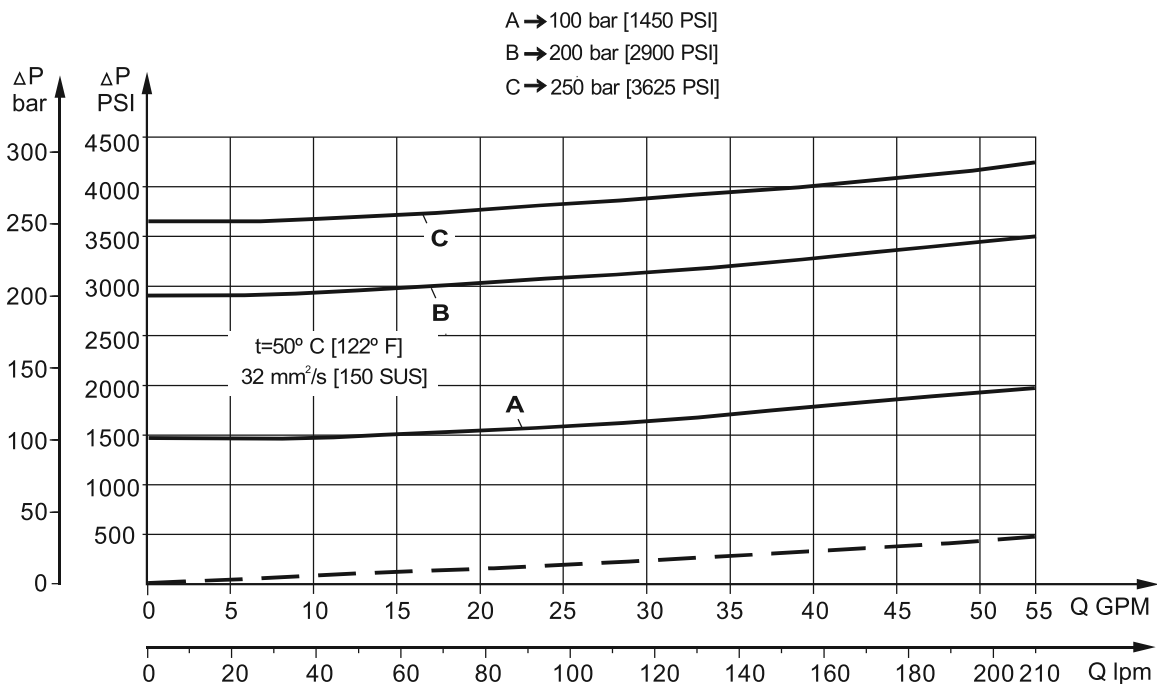
Dual Crossover Relief Valve type KPDRV ...

SPECIFICATION DATA

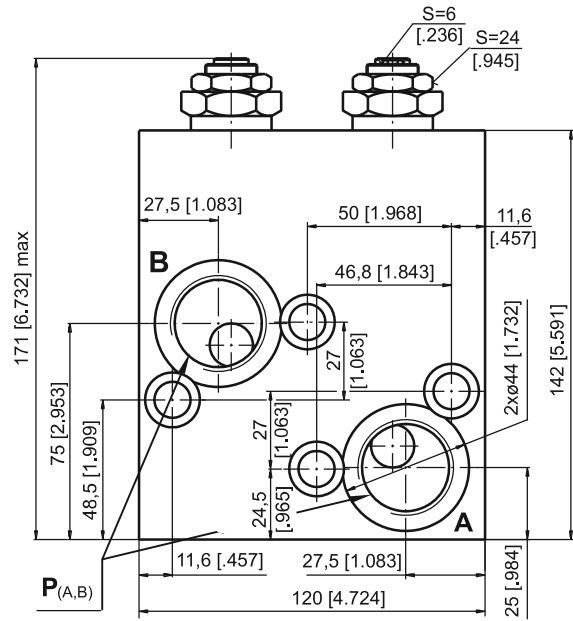
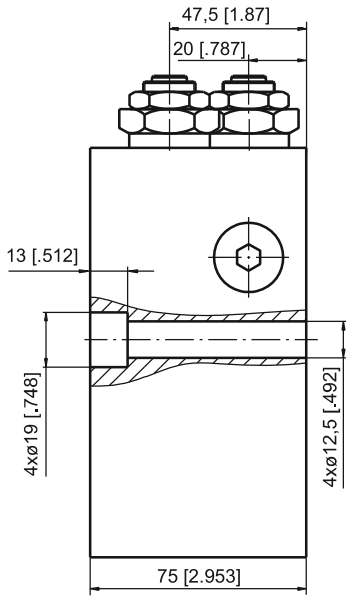
| Parameters | Type | | |
|--------------------------------|--|-----------------|-----------------|
| | KPEAV | KPEBV | KPDRV |
| Flow Rate , lpm [GPM] | 200 [53] | | |
| Pressure Range* , bar [PSI] | 10÷100; 20÷250 [145÷1450]; [290÷3625] | | |
| Weight , kg [lb] | 4,90 [10.8] | 7,10 [15.65] | 8,00 [17.64] |

*Pressure Settings are at flow rate of 5 lpm [1.3 GPM] and viscosity 32 mm²/s [150 SUS] (50 °C [122° F]).

Rated Pressure

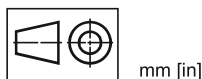
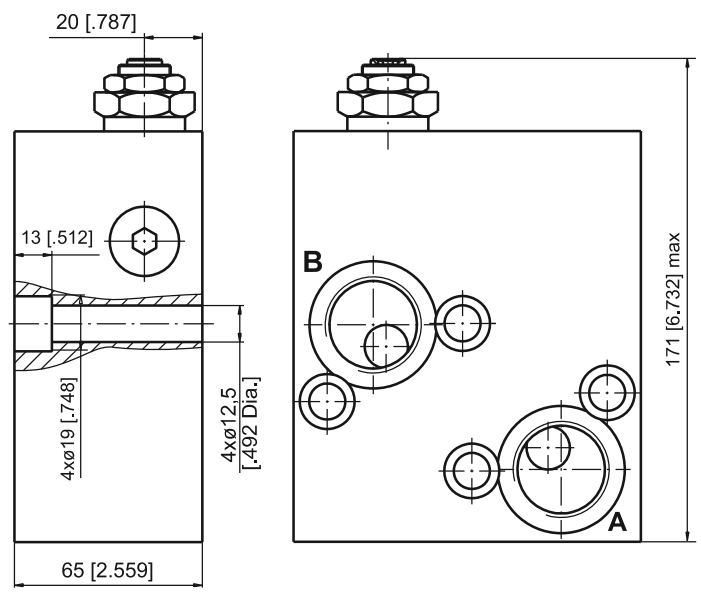
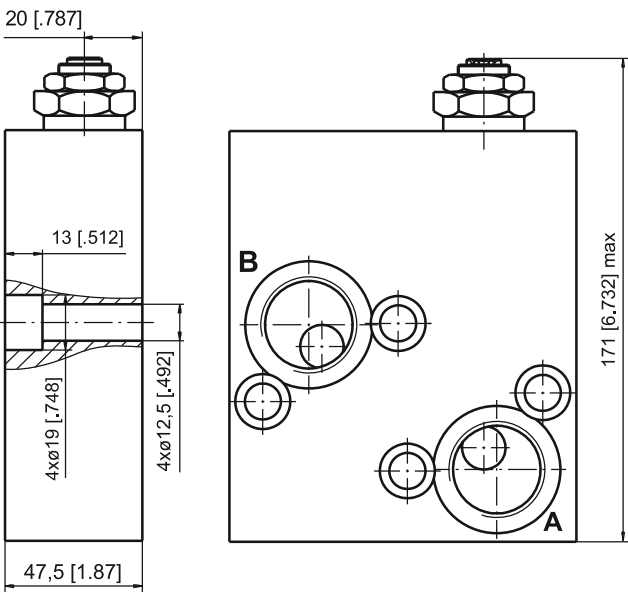


DUAL VALVE KPDV



SINGLE VALVE KPEAV

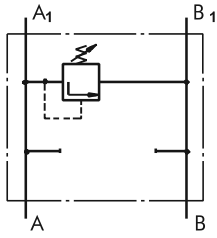
SINGLE VALVE KPEBV



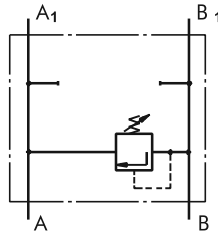
| | Thread Ports - P _(A,B) |
|---|---|
| - | G1-A 20 [0.79] depth |
| M | M33x2 20 [0.79] depth |
| A | 1 5/16 -12 UN O-ring 20 [0.79] depth |

Note : KPDV Blocks are installed directly on MV Motors with four screws M12x75 - 8.8 DIN 912.
KPEAV Blocks are installed directly on MV Motors with four screws M12x50 - 8.8 DIN 912.
KPEBV Blocks are installed directly on MV Motors with four screws M12x65 - 8.8 DIN 912.
 Tightening torque 7,5 daNm [665 lb-in].

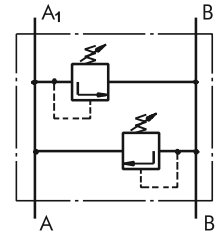
VALVES FOR RW and HW HYDRAULIC MOTORS



Single Crossover
Relief Valve
type KPEAW ...



Single Crossover
Relief Valve
type KPEBW ...



Dual Crossover
Relief Valve
type KPDW ...

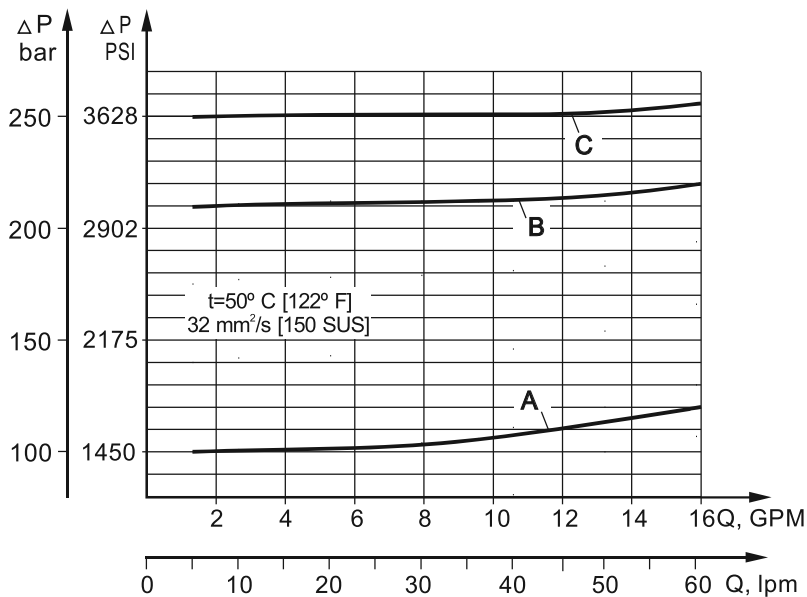
SPECIFICATION DATA

| Parameters | Type | |
|--------------------------------|---|-----------------|
| | KPE...W | KPDW |
| Flow Rate , lpm [GPM] | 60 [15.85] | |
| Pressure Range* , bar [PSI] | 5 ÷ 40; 30 ÷ 100; 80 ÷ 250 [75÷580]; [435÷1450]; [1160÷3625] | |
| Weight , kg [lb] | 2,700 [5.95] | 2,800 [6.17] |

*Pressure Settings are at flow rate of 5 lpm [1.32 GPM] and viscosity 32 mm²/s [150 SUS] (50 °C [122° F]).

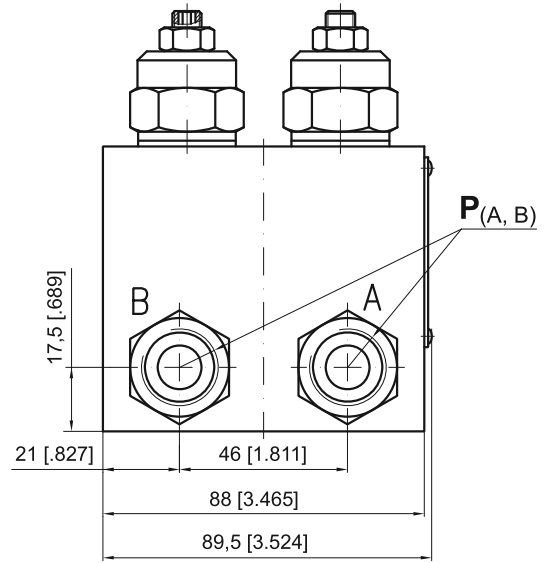
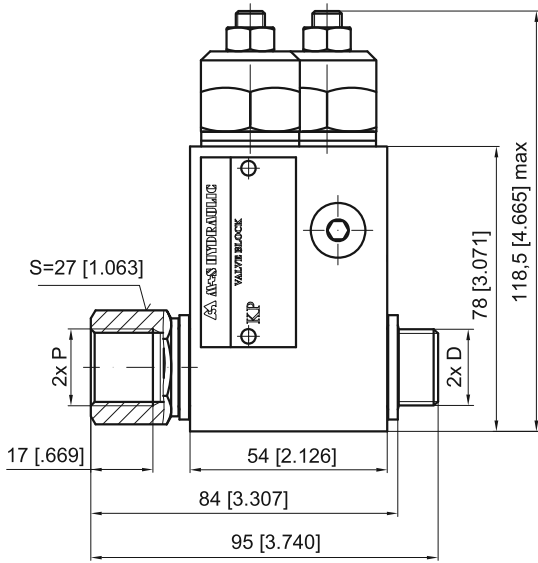
Rated Pressure

- A → 100 bar [1450 PSI]
- B → 210 bar [3050 PSI]
- C → 250 bar [3625 PSI]

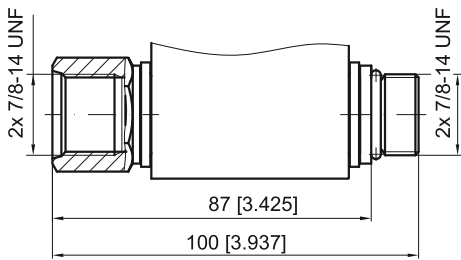


VALVES FOR RW and HW HYDRAULIC MOTORS

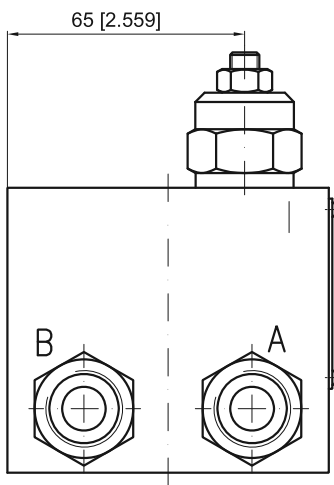
DUAL VALVE KPDW...



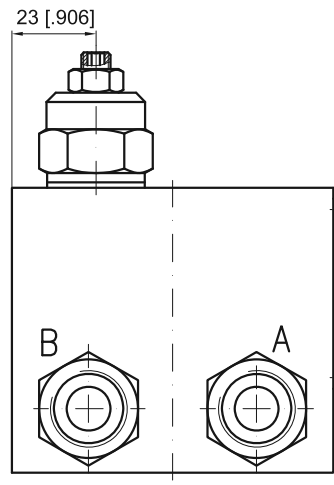
KPDW-...A



SINGLE VALVE KPEAW...



SINGLE VALVE KPEBW...

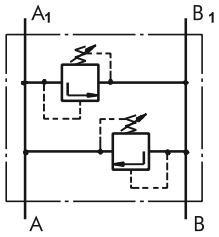


| | Thread Ports - P _(A,B) | Thread Ports - D |
|---|---------------------------------------|--|
| - | G1/2 16 [.63] depth | G1/2 12 [.47] length |
| M | M22x1,5 16 [.63] depth | M22x1,5 12 [.47] length |
| A | 7/8 - 14 UNF O-ring 16 [.63] depth | 7/8 - 14 UNF O-ring 13 [.51] length |

Note : KPDW and KPE..W Blocks assembly to RW or HW motors is done with two screws (thread D) included in the valve set. Tightening torque 8 daNm [710 lb-in].

CROSSOVER RELIEF VALVES

SPECIFICATION DATA



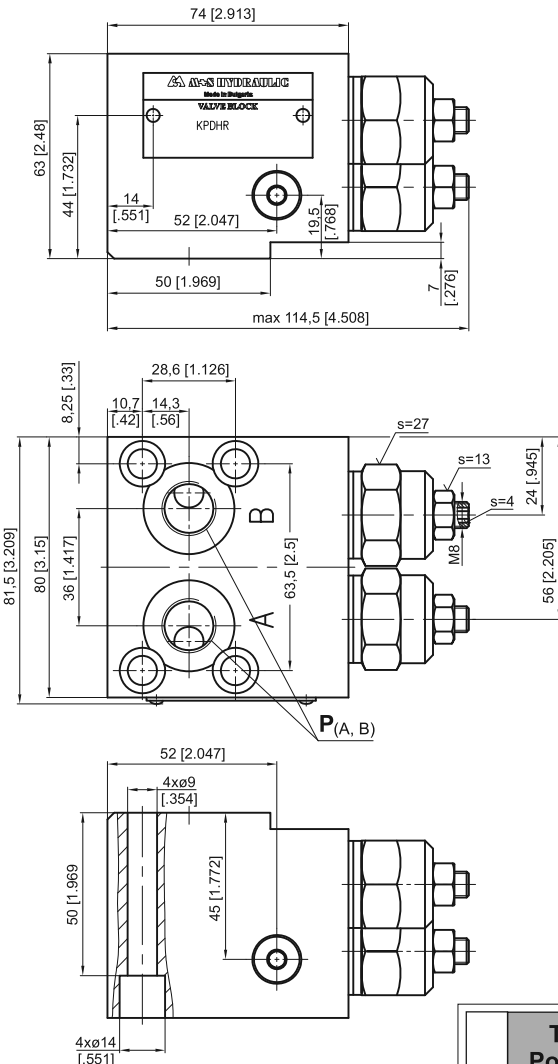
Dual Crossover Relief Valves type KPDHR... and KPDRK...

| Parameters | Type | | | | | |
|----------------------|--------------|------------|-------------|--------------|------------|-------------|
| | KPDHR | | | KPDRK | | |
| Flow Rate, lpm [GPM] | 60 [15.85] | | | | | |
| Pressure bar | 5÷40 | 30÷100 | 80÷250 | 10÷40 | 30÷100 | 80÷250 |
| Range*, [PSI] | [70÷580] | [435÷1450] | [1160÷3625] | [145÷580] | [435÷1450] | [1160÷3625] |
| Weight, kg [lb] | 2,420 [5.34] | | | 1,600 [3.53] | | |

*Pressure Settings are at flow rate of 5 lpm [1.3 GPM] and viscosity 32 mm²/s [150 SUS] (50 °C [122° F]).

VALVES FOR HP AND HR HYDRAULIC MOTORS

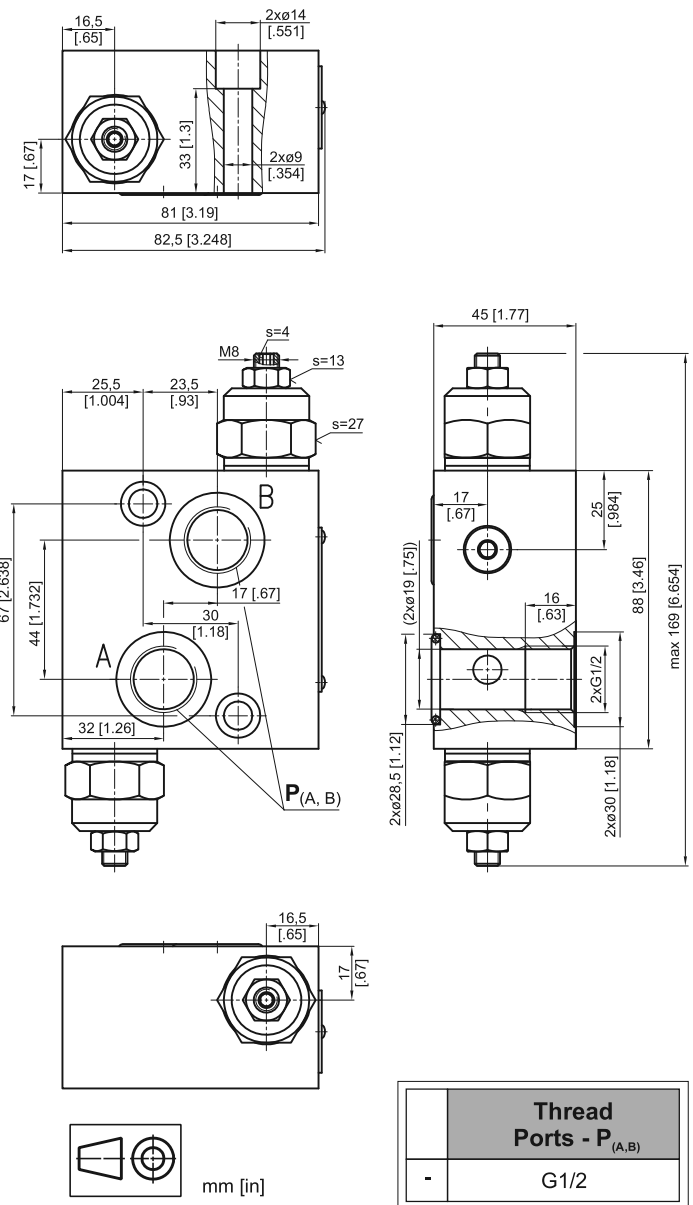
DUAL VALVE KPDHR



| Thread Ports - P _(A,B) | |
|-----------------------------------|----------------------|
| - | G3/8 |
| M | M18x1,5 |
| A | 3/4-16 UNF O-ring |

VALVES FOR RK HYDRAULIC MOTORS

DUAL VALVE KPDRK



| Thread Ports - P _(A,B) | |
|-----------------------------------|------|
| - | G1/2 |

Note : KPDHR Blocks are installed directly on HP and HR Motors with four screws M8x60 - 8.8 DIN 912 or 5/16-18 UNC, 2.5 long ANSI B 18.3.
 KPDRK Blocks are installed directly on RK Motors with two screws M8x45 - 8.8 DIN 912 or 5/16-18 UNC, 1.75 long ANSI B 18.3.
 Tightening torque 2,0^{+0,5} daNm [177⁺⁴⁵ lb-in].

ORDER CODE - OVERCENTER VALVES WITH BRAKE CONTROL

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| K | P | B | - | / | / | |

Pos.1 - Housing Type

- R** - Valve block for MP, MR and MH Motors
- S** - Valve block for MS Motors
- W** - Valve block for RW and HW Motors
- T** - Valve block for MT Motors
- V** - Valve block for MV Motors
- HR** - Valve block for HP and HR Motors

Pos.2 - Pressure Range, bar [PSI]

250 - 70÷250 [1015÷3625], Std Setting 250 bar@5 lpm

Pos.3 - Pilot Ratio

1 - 4,25:1

Pos.4 - Number of Valves

- D** - Two Valves - Dual
- E** - One Valve - Single (for R and S only)
- AE** - One Valve on line A - Single (for T,V,W,HP and HR)
- BE** - One Valve on line B - Single (for T,V,W,HP and HR)

Pos.5 - Threaded Ports

- omit - BSPP thread - ISO 228
- M** - Metric thread - ISO 262
- A** - Unified inch screw threads ANSI B 1.1 - 1982

Pos.6 - Option [Paint]**

- omit - no Paint
- P** - Painted
- PC** - Corrosion Protected Paint

Pos.7 - Design Series

omit - Factory specified

Notes: * Color at customer's request.

ORDER CODE - SWITCH VALVES

| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| K | P | W | |

Pos.1 - Housing Type

- R** - Valve block for MP, MR and MH Motors
- S** - Valve block for MS Motors
- T** - Valve block for MT Motors
- V** - Valve block for MV Motors

Pos.2 - Threaded Ports

- omit - BSPP thread - ISO 228
- M** - Metric thread - ISO 262
- A** - Unified inch screw threads ANSI B 1.1 - 1982

Pos.3 - Option [Paint]**

- omit - no Paint
- P** - Painted
- PC** - Corrosion Protected Paint

Pos.4 - Design Series

omit - Factory specified

Notes: * Color at customer's request.

ORDER CODE - CROSSOVER RELIEF VALVE

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| K | P | | / | | |

Pos.1 - Number of Valves

- D** - Two Valves - Dual
- E** - One Valve - Single (for R and S only)
- EA** - One Valve on line A - Single (for T, V and W only)
- EB** - One Valve on line B - Single (for T, V and W only)

Pos.2 - Housing Type

- R** - Valve block for MP, MR and MH Motors
- S** - Valve block for MS Motors
- W** - Valve block for RW and HW Motors
- T** - Valve block for MT Motors
- V** - Valve block for MV Motors

Pos.3 - Pressure Range, bar [PSI]

- 100*** - 30÷100 [435÷1450], Std Setting 100 bar@5 lpm
- 210*** - 50÷210 [725÷3050], Std Setting 210 bar@5 lpm
- 300*** - 80÷300 [1160÷4350], Std Setting 250 bar@5 lpm
- 210**** - 80÷210 [1160÷3050], Std Setting 210 bar@5 lpm
- 100***** - 10÷100 [145÷1450], Std Setting 100 bar@5 lpm
- 250***** - 20÷250 [290÷3625], Std Setting 250 bar@5 lpm

Pos.4 - Threaded Ports

- omit - BSPP thread - ISO 228
- M** - Metric thread - ISO 262
- A** - Unified inch screw threads ANSI B 1.1 - 1982

Pos.5 - Option [Paint]****

- omit - no Paint
- P** - Painted
- PC** - Corrosion Protected Paint

Pos.6 - Design Series

omit - Factory specified

Notes: * Useful for types R and S only.
 ** Useful for types T only.
 *** Useful for types V only.
 **** Color at customer's request.

The Valve Blocks are mangano phosphatized as standard.