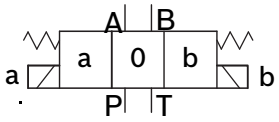
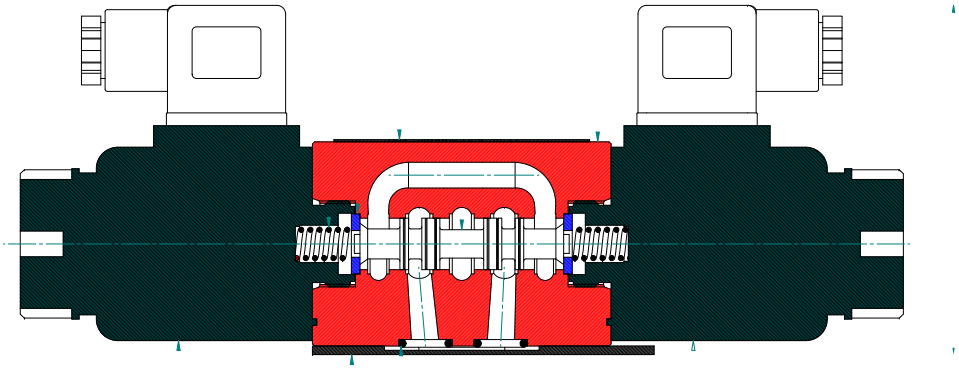
CMD 4DS/12.23	Direction Control Valve 4DS Series			A9 VALVES
Replaces : 4WE	Series : 4 WE	up to 315 Bar	up to 80 L/min.	

Fetaures :

- Solenoid Operated spool type valve
- Coil voltage 24VDC , 220V AC ,110V
- CETOP Standard.
- Manual Override.
- Coil can be rotated 360degree.

Symbols :



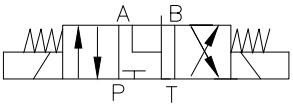


Ordering Code

	01	02	03	04	05	06	07
Eg	4WE	06	D	A220	X23	01	315

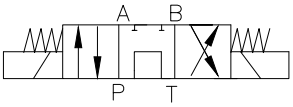
01: 4 Main port : **4DS**
02: Valve Size : NG6 = **06** , NG10 = **10**
03: Spool Type : Refer page 2 for spool type eg **D, E, J , G**
04: Coil Voltage. : 220 V = **A220**; 24VDC = **D24** ; 110VAC = **A110**
05: Design series : **X 23**
06: Din Cap : LED Indicator = **01 ;** No code for no indicator
07: pressure : 315 Bar = **3**

CMD 4DS 12.23	Direction Control Valve 4DS Series		
Replaces : 4WE	Series : 4WE	up to 315 Bar	up to 80 L/min.

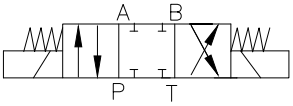


= J

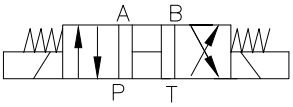
= D



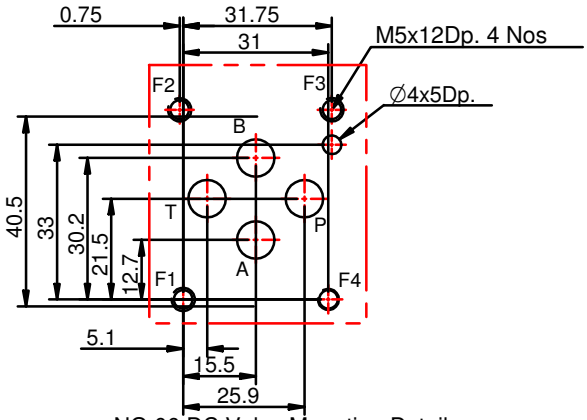
= G



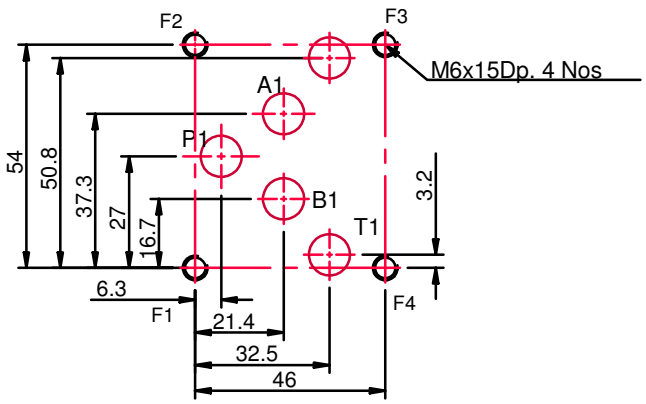
= E



= H



NG 06 DC Valve Mounting Details



NG 10 DC Valve Mounting Details

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315 Bar
Maxmium flow		NG 06 : 40 LPM ; NG 10: 80 LPM
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Pressure fluid - temperature range	°C	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

CMD
NRT/12.23

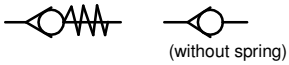
Replaces : NRT 11.11

Non Return valve type NRT

Size : 06 to 30 | up to 315 bar | up to 450 L/min.

A9 VALVES

Fetaures :
- For in-line mounting
- Leakage-free in one direction
- Various cracking pressure, optional (see ordering code)

Symbols : 

Ordering code

NRT | | | | *

Nominal size 06	=06
Nominal size 08	=08
Nominal size 10	=10
Nominal size 15	=15
Nominal size 20	=20
Nominal size 25	=25
Nominal size 30	=30

Further details to specify

Revision status index

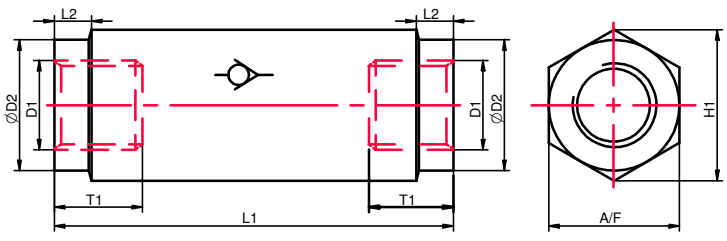
0=	Without spring
1=	1 Bar (Standard)
2=	2 Bar
3=	3 Bar
5=	5 Bar

Cracking pressure in BAR

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315						
Cracking pressure	bar	0,1,2,3 & 5						
Maxmium flow	Size	06	08	10	15	20	25	30
	L/min.	18	36	60	150	250	350	450
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request						
Pressure fluid - temperature range	℃	- 30 to + 80						
Viscosity range	mm^2/s	2.8 to 500						
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.						
Weight	Size	06	08	10	15	20	25	30
	Kg.	0.1	0.2	0.3	0.5	1.0	2.0	2.5

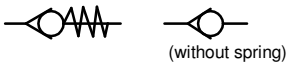
Unit dimensions (Dimensions in mm)

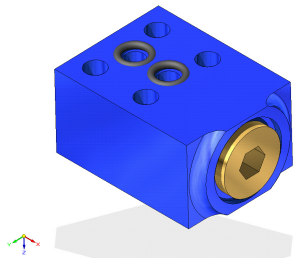


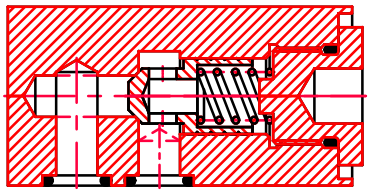
	Size 06	Size 08	Size 10	Size 15	Size 20	Size 25	Size 30
D1	G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2
ØD2	19	24	30	36	46	60	65
H1	22	28	34.5	41.5	53	69	75
L1	58	58	72	85	98	120	132
L2	5	5	5	5	5	5	5
T1	16	14	16	18	22	24	26
A/F	19	24	30	36	46	60	65

CMD NRS/12.23	Non Return valve type NRS			A9 VALVES
Replaces : NRS 11.11	Size : 06 to 30	up to 315 bar	up to 450 L/min.	

Fetaures :
- For Subplate mounting
- Leakage-free in one direction
- Various cracking pressure, optional (see ordering code)

Symbols :  (without spring)





Ordering code

NRS | | | | *

Nominal size 06 =06
Nominal size 10 =10
Nominal size 20 =20
Nominal size 30 =30

Further details to specify

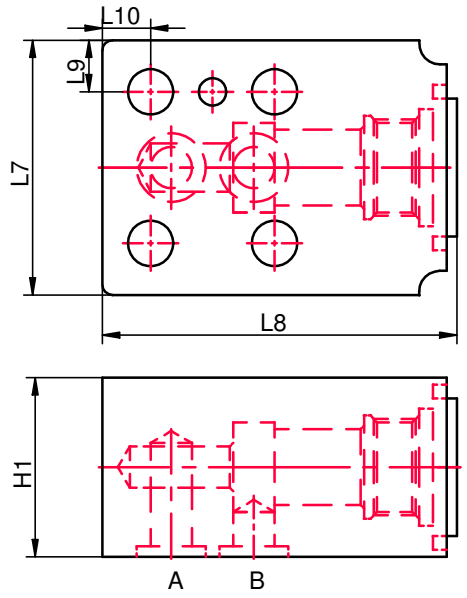
Revision status index

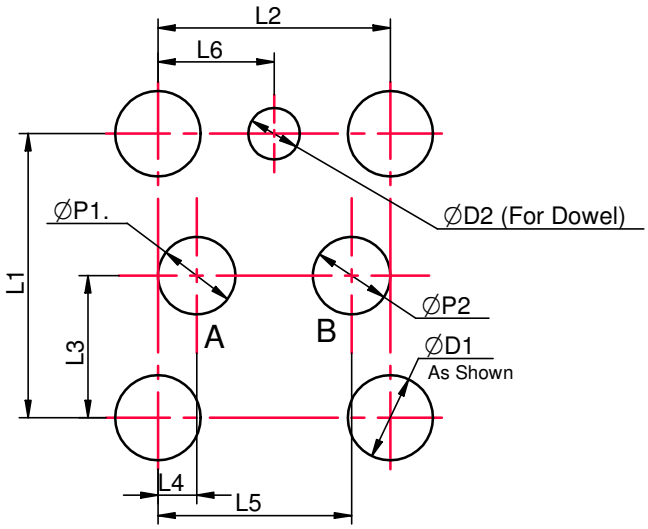
Cracking pressure
- 0= Without spring
- 1= 1 Bar (Standard)
- 2= 2 Bar
- 3= 3 Bar
- 5= 5 Bar

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315				
Cracking pressure	bar	0,1,2,3 & 5				
Maxmium flow	Size	06	10	20	30	
	L/min.	18	60	250	450	
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request				
Pressure fluid - temperature range	℃	- 30 to + 80				
Viscosity range	mm^2/s	2.8 to 500				
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.				
Weight	Size	06	10	20	30	
	Kg.	0.3	0.9	2.6	9	

CMD NRS/12.23	Non Return valve type NRS		
Replaces : NRS 11.11	Size : 06 to 30	up to 315 bar	up to 450 L/min.





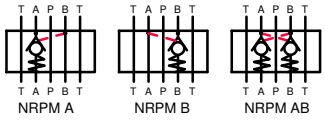
Size	L1	L2	L3	L4	L5	L6	ØP1	ØP2	ØD1	ØD2	L7	L8	L9	L10	H1	
06	22	18	11	3	15	9	6	6	6.6	4	37	52	7.5	7	26	
10	36	33	18	6	27	16.5	10	10	9	4	55	79	9.5	9	38	
20	50	55	25	10	45	27.5	20	20	11	6.3	70	103	10	10	55	
30	75	85	37.5	20	65	42.5	30	30	14	7	105	162	15	15	82	

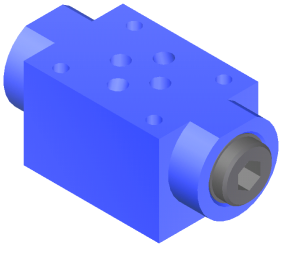
CMD NRPM/12.23	Pilot operated Non Return Valve Type NRPM			A9 VALVES
Replaces : NRPM 11.11	Size : 06 & 10	up to 315 bar	up to 80 L/min.	

Fetaures :

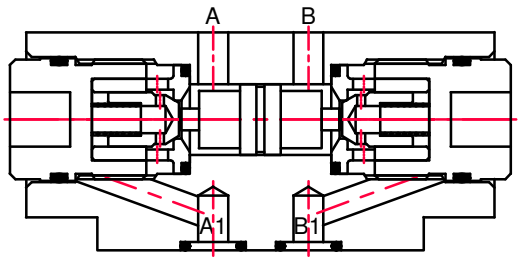
- Sandwich plate type valve
- Check valve facility on A,B or both A & B ports
- Free flow in reverse direction is achieved by means of pilot pressure in other working port
- Various cracking pressure, optional (see ordering code)

Symbol :





Sectional view



Ordering code

NRPM						*

Pilot operated Non Return valve (Modular construction)

Nominal size 06 =06
Nominal size 10 =10

Pilot optd.check facility

on port A & B =AB
on port A =A
on port B =B

For NBR seals =No code
For FPM seals =N

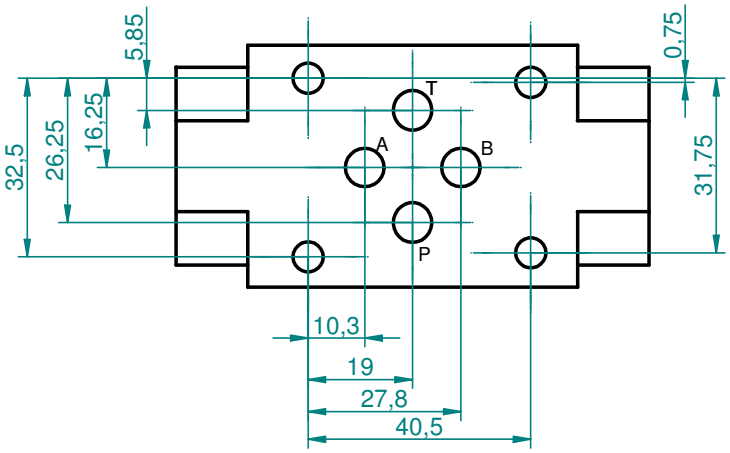
Further details to specify

Revision status index

0= Without spring
1= Standard
2=
3=
5=

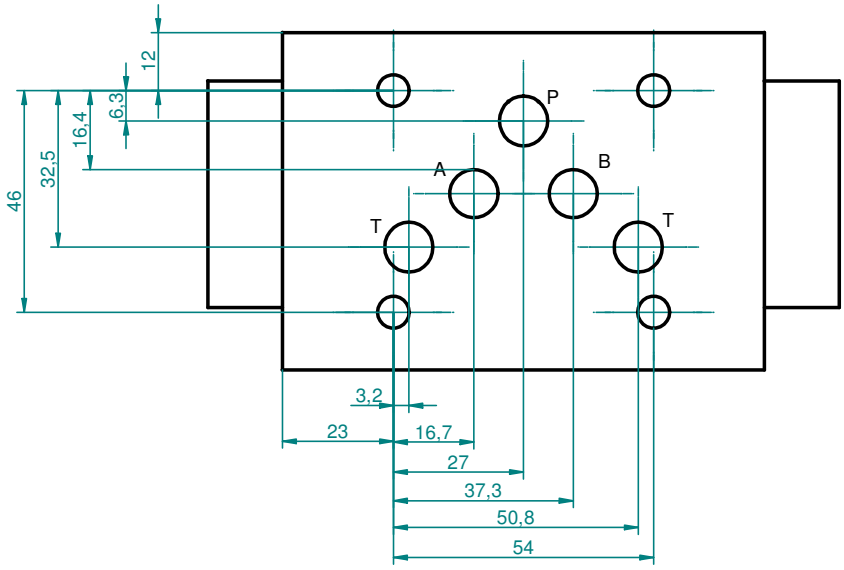
} Cracking pressure in bar

Unit dimensions NG 06



CMD NRPM/12.23	Pilot operated Non Return Valve Type NRPM			A9 VALVES
Replaces : NRPM 11.11	Size : 06 & 10	up to 315 bar	up to 80 L/min.	

Unit dimensions NG 10



Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Mounting style		Sandwich type valve	
Mounting position		optional	
Cracking pressure	bar	0,1,2,3 & 5	
Maxmium operating pressure	bar	315	
Flow Direction		From A to A1 or B to B1 free flow,pilot flow in other direction	
Maxmium flow	Size	06	10
	L/min.	35	80
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request	
Pressure fluid - temperature range	℃	- 30 to + 80	
Viscosity range	mm^2/s	2.8 to 500	
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.	
Weight	Size	06	10
	Kg.	0.86	2.05

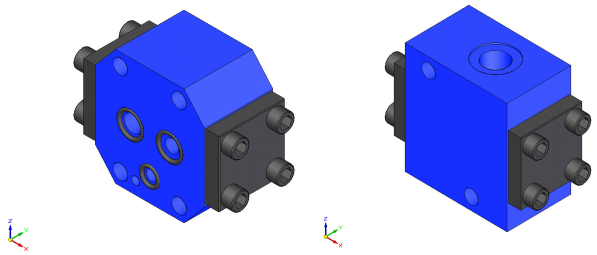
CMD NRP-I/12.23	Pilot operated Non Return Valve Type NRP-I		
Replaces : NRP-I 11.11	Size : 10,20 & 30	up to 315 bar	up to 350 L/min.

A9 VALVES

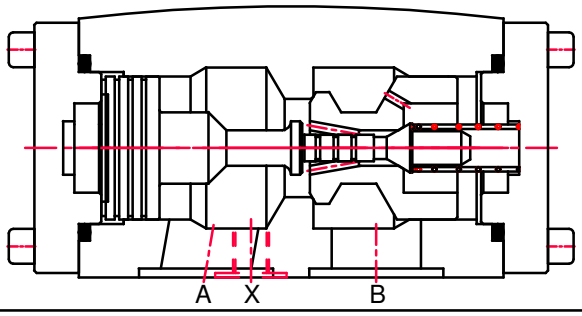
Fetaures :

- Seat type with decompression poppet
- Internal drain construction
- Free flow in one direction
- Pilot flow in another direction
- Various cracking pressure, optional (see ordering code)

Symbol :



Sectional view



Ordering code

NRP-I	10	T	1		*

Pilot operated Non Return valve (Internal drain)

Nominal size 10 =10
Nominal size 20 =20
Nominal size 30 =30

For subplate mounting =S
For threaded connection =T

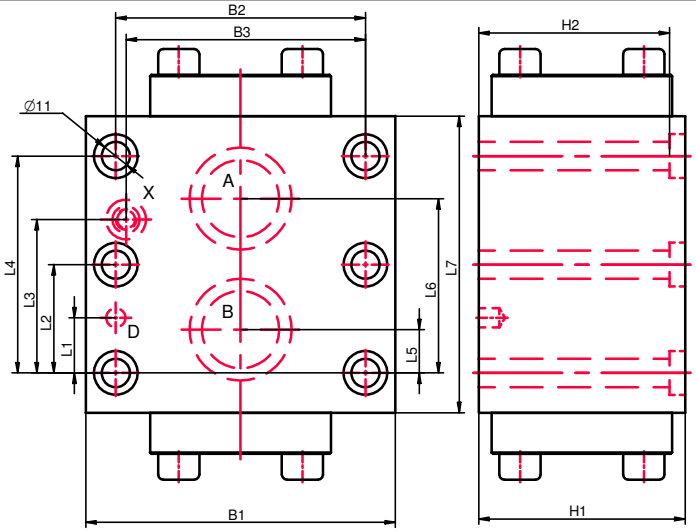
Further details to specify

Revision status index

0= Without spring
1= Standard
2=
3=
5=

Cracking pressure in bar

Subplate mounting body

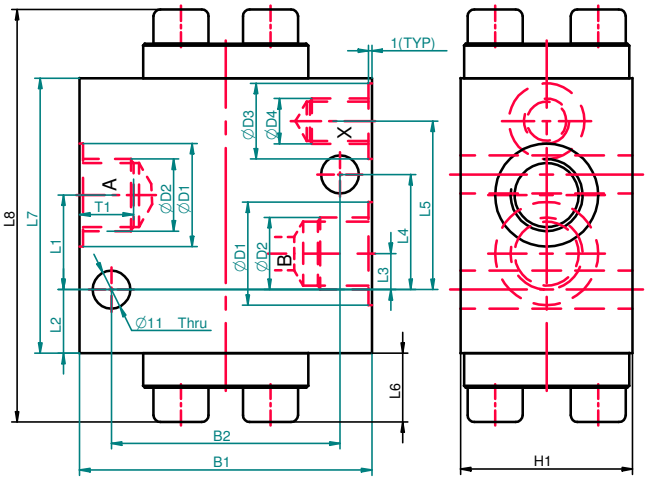


	Size 10	Size 20	Size 30
L1	31.8	44.5	31.8
L2	-	-	42.1
L3	21.5	20.6	24.6
L4	42.9	60.3	84.2
L5	35.8	49.2	67.5
L6	7.2	11.1	16.7
L7	116	135	173

	Size 10	Size 20	Size 30
L8	18.5	17.5	15.5
B1	85	100	120
B2	66.7	79.4	96.8
B3	58.8	73	92.8
H1	47	57	80
H2	-	-	74

CMD NRP-I/12.23	Pilot operated Non Return Valve Type NRP-I			A9 VALVES
Replaces : NRP-I 11.11	Size : 10,20 & 30	up to 315 bar	up to 350 L/min.	

Threaded port body



Size	L1	L2	L3	L4	L5	L6	L7	L8
10	27.5	18.5	10.5	33.5	49	18	80	116
20	36.7	17.3	13.5	50.5	67.7	20	95	135
30	54.5	15.5	20.5	73.5	89.5	29	115	173

Size	B1	B2	ØD1	ØD2	ØD3	ØD4	H1	T1
10	66.5	85	30	G 1/2	G 1/4	22	47	14
20	79.5	100	44	G 1	G 1/4	22	57	18
30	97	120	60	G 1 1/2	G 1/4	22	80	22

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

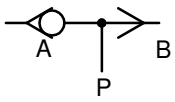
Mounting style		Threaded port or subplate		
Mounting position		optional		
Cracking pressure	bar	0,1,2,3 & 5		
Maxmium operating pressure	bar	315		
Flow Direction		From A to B free,from B to A through pilot		
Control Areas	Size	10	20	30
	Main Poppet	3.1 cm^2	8.0 cm^2	12.5 cm^2
	Pilot piston	0.7 cm^2	3.8 cm^2	6.1 cm^2
	Decompression Poppet	0.2 cm^2	0.5 cm^2	0.7 cm^2
Maxmium flow	Size	10	20	30
	L/min.	80	160	350
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request		
Pressure fluid - temperature range	℃	- 30 to + 80		
Viscosity range	mm^2/s	2.8 to 500		
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.		
Weight	Size	10	20	30
	Subplate Kg.	2.5	4.1	8.5
	Threaded body Kg.	2.4	4.0	8.4

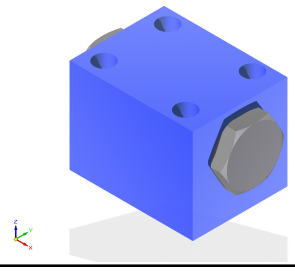
CMD SV/12.23	Shuttle Valve type SV		
Replaces : STL 11.11	Size : 06	up to 315 bar	up to 18 L/min.

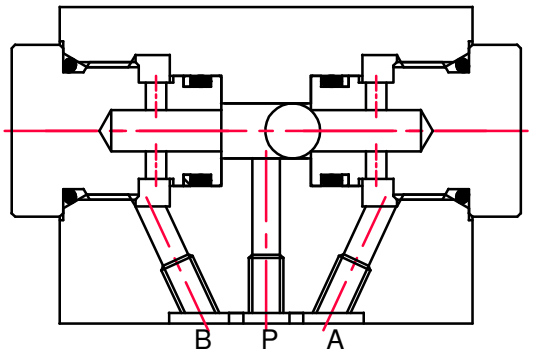
A9 VALVES

Fetaures :
- Port P connected to both A & B
- Isolates Port A & Port B from each other
- Available in subplate & threaded construction (see ordering code)

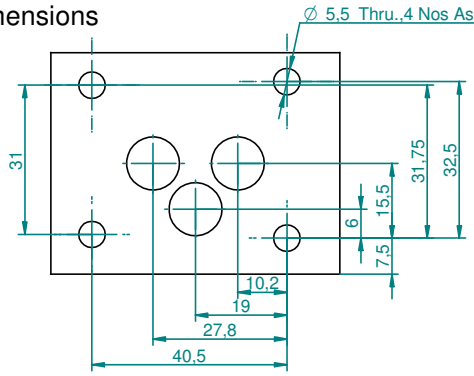
Symbols :







Mounting Dimensions



Ordering code

SV					*

Nominal size 06 =06

Subplate type =S

Further details to specify

Revision status index

Port Connection (for threaded)
1= 1/4" BSP
2= 3/8" BSP

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

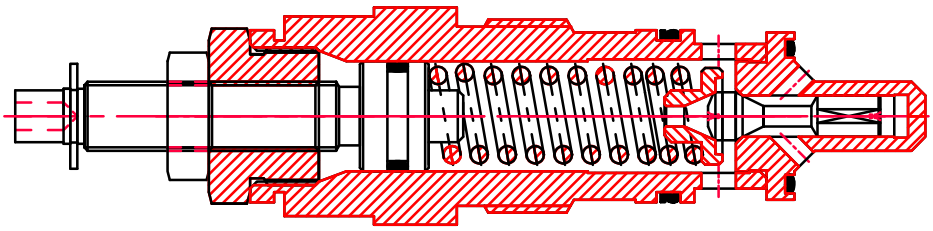
Maxmium operating pressure	bar		315
Maxmium flow	Size		06
	L/min.		18
Pressure fluid			Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Pressure fluid - temperature range	℃		- 30 to + 80
Viscosity range	mm^2/s		2.8 to 500
Degree of contamination			Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

CMD RVD/12.23	Relief valve type RVD		
Replaces : RVD 11.11	Size : 06 to 20	up to 315 bar	up to 450 L/min.

A9 VALVES

Fetaures :
- For Threaded connections
- With Cavity
- For Subplate mountings
- Adjustable Pressure settings
  (see ordering code)

Symbols :



Ordering code

RVD	S	06			*

Set Screw Adjustment =S
Hand Knob Adjustment =H

Nominal size 06 =06
Nominal size 10 =10
Nominal size 20 =20

Further details to specify

25 =	Pr. 25 Bar
50 =	Pr. 50 Bar
100 =	Pr. 100 Bar
200 =	Pr. 200 Bar
315 =	Pr. 315 Bar
400 =	Pr. 400 Bar
630 =	Pr. 630 Bar(Only for 10 Size)

K= Cartridge Type (See Page 2)
T= Threaded port body (See Page 2)
S= Subplate Connections (See Page 3)

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	400 Bar, 630 Bar			
Operating pressure	bar	25,50,100,200,315,400			
Maxmium flow	Size	06	10	20	
	L/min.	50	120	250	
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request			
Pressure fluid - temperature range	℃	- 30 to + 80			
Viscosity range	mm^2/s	2.8 to 500			
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.			
Weight	Size	06	10	20	
	Kg.	0.4	0.5	1.0	

CMD
RVD/12.23

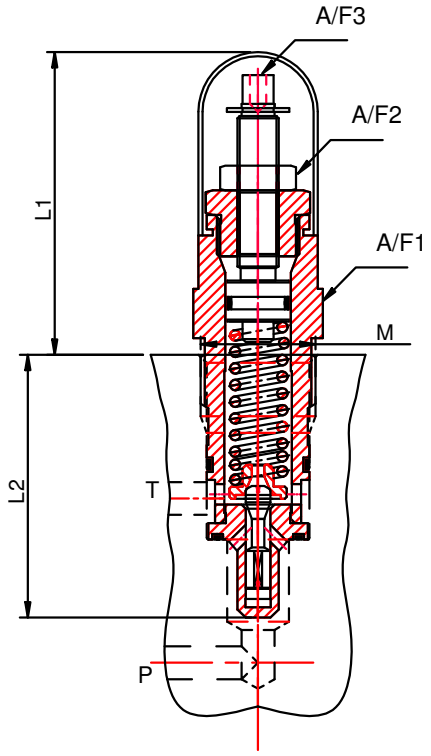
Replaces : RVD 11.11

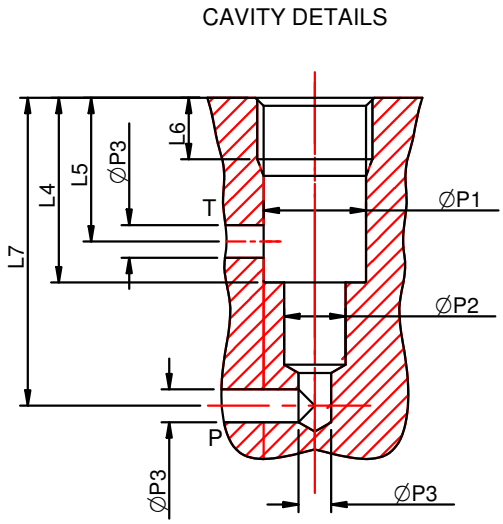
Relief valve type RVD

Size : 06 to 20 | up to 315 bar | up to 450 L/min.

A9 VALVES

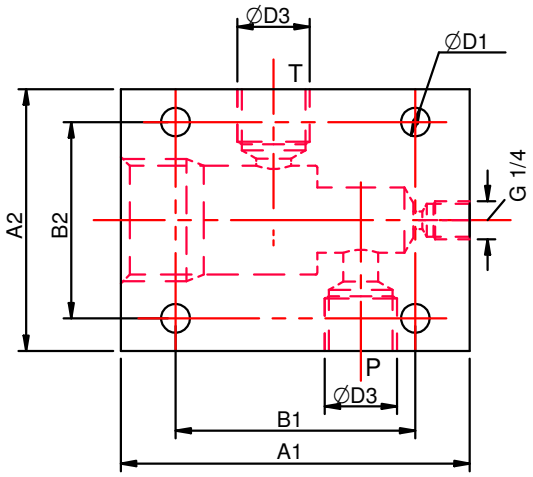
Cartridge Type

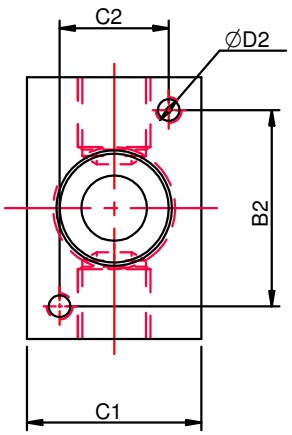




Size	A/F1	A/F2	A/F3	M	L1	L2	L4	L5	L6	L7	ØP1	ØP2	ØP3
06	30	16	4	M28x1.5	75	64	45	35	19	55	25	15	8
10	36	24	6	M35x1.5	85	77	52	41	23	69	32	19	10
20	46	19	6	M45x1.5	65	106	70	54	27	92	40	24	20

Threaded Port Body Type

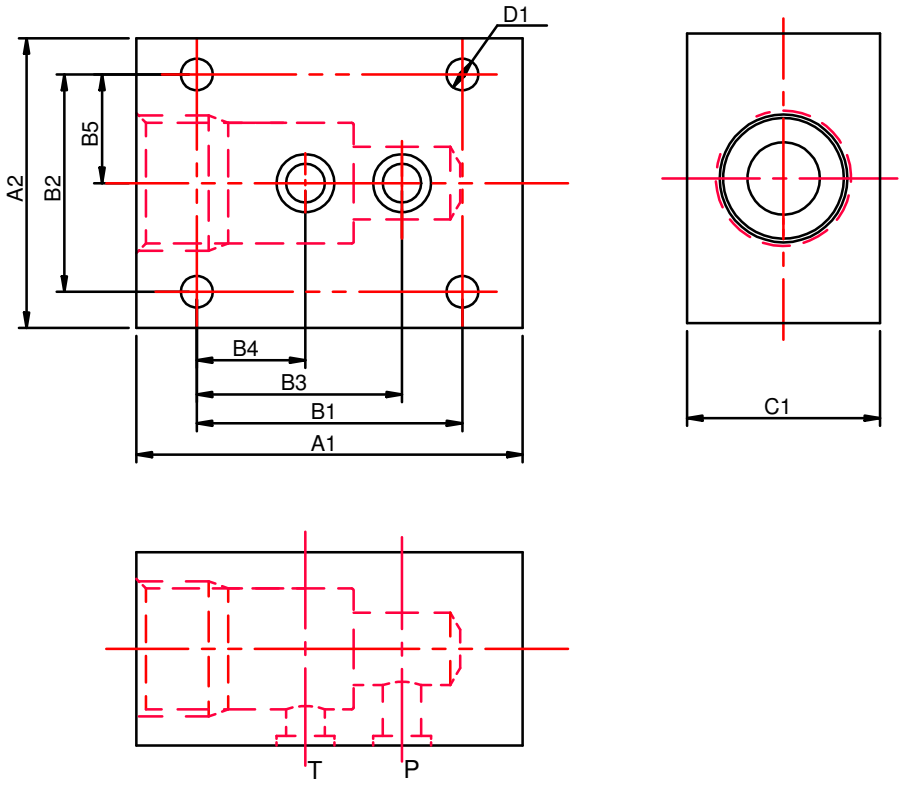




Size	A1	A2	B1	B2	ØD1	ØD2	ØD3	C1	C2
06	80	60	55	45	6.6	M4x10 Dp.	1/4" BSP	40	25
10	100	80	70	60	9	M8x20 Dp.	1/2" BSP	60	40
20	135	100	100	70	9	M8x20 Dp.	1" BSP	70	50

CMD RVD/12.23	Relief valve type RVD		
Replaces : RVD 11.11	Size : 06 to 20	up to 315 bar	up to 450 L/min.

Subplate Type

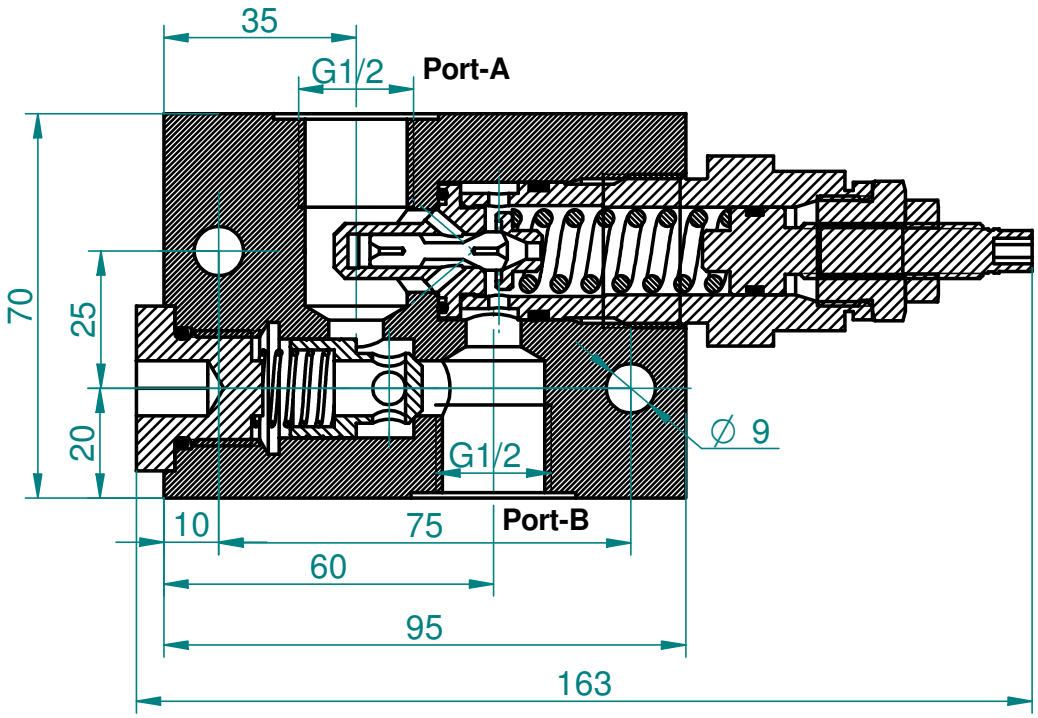


Size	A1	A2	B1	B2	B3	B4	B5	ØD1	C1
06	80	60	55	45	40	20	22.5	6.6	40
10	100	80	70	60	49	21	30	9	60
20	135	100	100	70	65	34	35	9	70

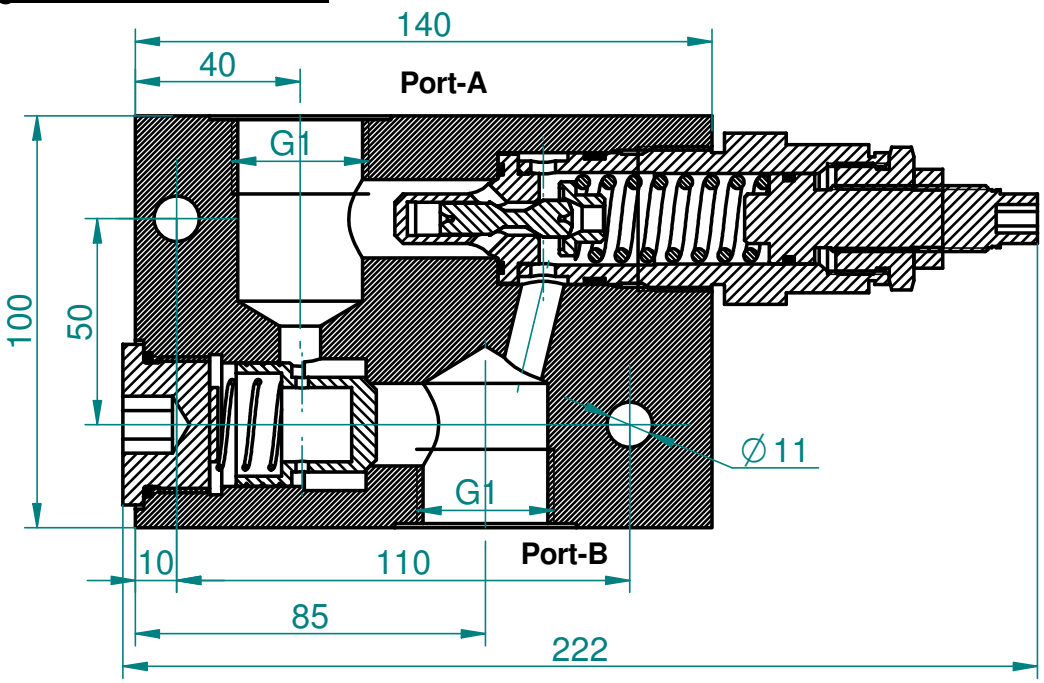
CMD FVD/12.23	Counter Balance Valve type FVD		
Replaces : 11.11	Size : 10 & 20	315 bar	40 L/min.

Mounting Details

Mounting Details Size NG 10:-



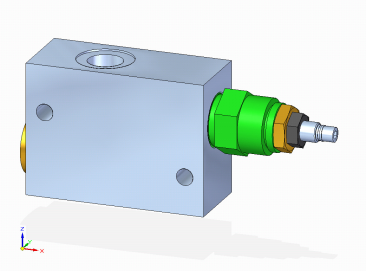
Mounting Details Size NG 20:-

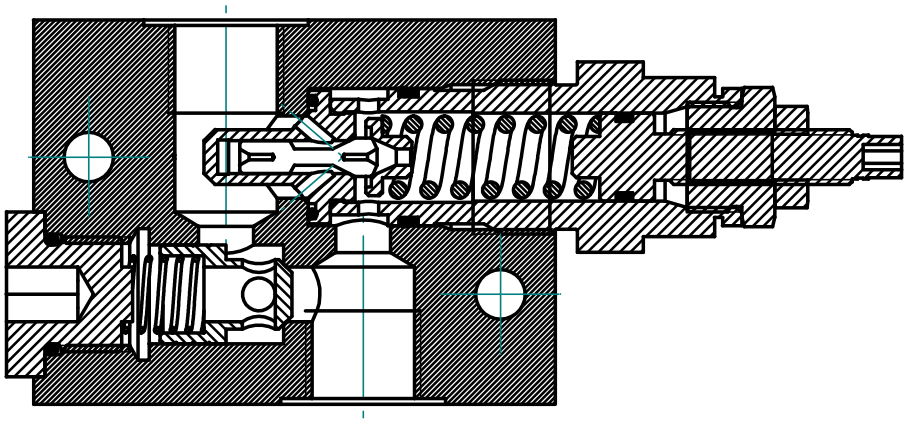


CMD FVD/12.23	Counter Balance Valve type FVD			A9 VALVES
Replaces :11.11	Size : 10 & 20	315 bar	Upto120 L/min.	

Fetaures :

- Modular construction
- Available in different sizes
- Available in different pressure ranges





Ordering code

FVD	S	10	T	100		*

Set screw type =S

Size
=10
=20

Threded

25 = Pr. 25 Bar
50 = Pr. 50 Bar
100 = Pr. 100 Bar
200 = Pr. 200 Bar
315 = Pr. 315 Bar

Revision status index

Further details to specify

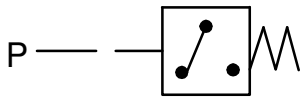
Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

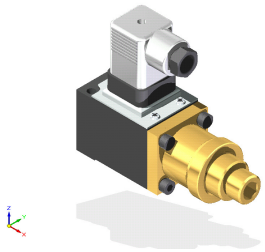
Maxmium operating pressure	bar	315 Bar
Operating pressure	bar	25, 50, 100, 200, 315
Maxmium flow	L/min.	NG 10=30; NG 20=120
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Pressure fluid - temperature range	℃	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.
Weight	Kg.	NG 10=2.1 Kg; NG 20= 6Kg.

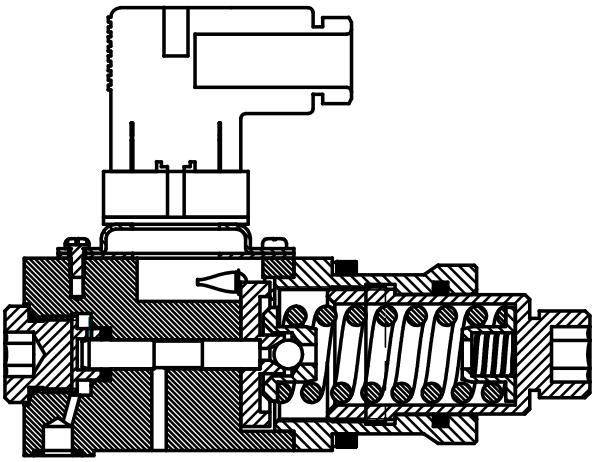
CMD HPS/12.23	Pressure Switch Type HPS			A9 VALVES
Replaces : 11..11	Size : 06	315 bar	-	

Fetaures :

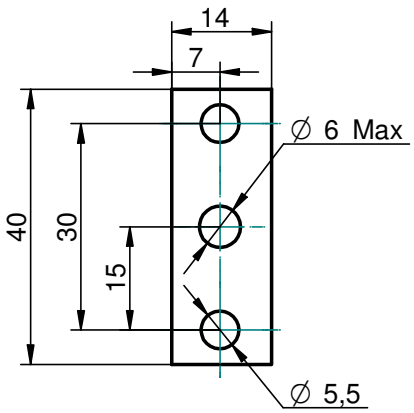
- Modular construction
- Piston type construction
- Available in different pressure ranges







Mounting Details:-



Ordering code

HPS	S	06	100		*

Subplate mounting =S

Size

Further details to specify

Revision status index

50 = Pr. 50 Bar
100 = Pr. 100 Bar
200 = Pr. 200 Bar
315 = Pr. 315 Bar

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315 Bar
Operating pressure	bar	50, 100, 200, 315
Maxmium flow	L/min.	-
Electrical rating		250 V.AC 5.0 Amps. 50 V.DC 1.0 Amps. 250 V.DC 0.2 Amps.
Electrical connection		Plug in DIN connector
Pressure fluid - temperature range	℃	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.
Weight	Kg.	1.2 Kg

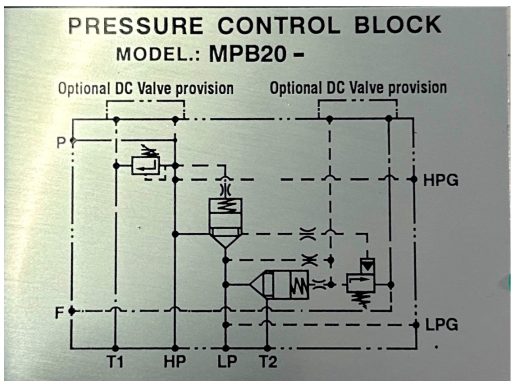
CMD MPB/12.23	Pressure Module Block		
Replaces : NIL	Series : MPB	up to 315 Bar	up to 160 L/min.

A9 VALVES

Fetaures :

- Hi Low operation for double pump
- Unloads low pressure at set pressure
- Unloading option for both pumps
- Compact design

Symbols :



HP - High Pressure connection
LP - Low Pressure connection
HPG- High pressure gauge
LPG - Low pressure gauge
T1- Tank high Pressure
T 2- Tank Low Pressure
F - Filter
P- Out Let Connection

Ordering Code

	01	02	03	04	05	06	07
Eg	MPB20	06	50	200	F	A	B

01: Pressure control Module : **MPB 20**
02: Hight Pressure Relief valve : NG6 = **06** , NG10 = **10**
03: Unloading pressure : 50 Bar ; 100 Bar
04: High Pressure relief valve : 100 Bar ; 200 Bar ; 315 bar
05: provision : **F** for Filter (omit if not required)
06: Unloading for high pressure : A (omit if not required)
07: Unloading for Low pressure : B (omit if not required)

CMD
TCNRM/12.23

Replaces : TCNRM 11.11

Throttle cum Non Return Valve Modulartype TCNRM

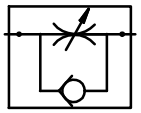
Size : 06 & 10 | up to 315 bar | up to 100 L/min.

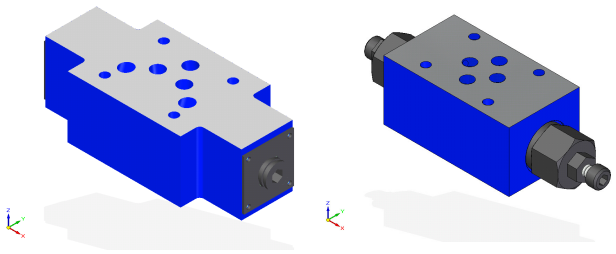
A9 VALVES

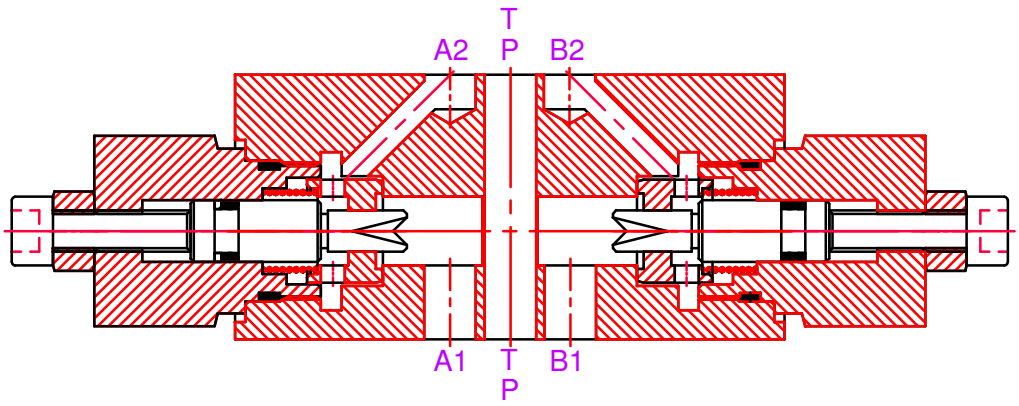
Fetaures :

- Modular construction (Subplate mounting)
- Material Steel & SS
- Fine throttling adjustments

Symbols :







Ordering code

TCNRM	06	AB	1		*

Nominal size 06 =06
Nominal size 10 =10

Throttling Port A & B =AB
Throttling Port A =A
Throttling Port B =B

Further details to specify

Revision status index

Check Valve Cracking pressure
0= Cracking pressure 0 bar
1= Cracking pressure 1 bar
2= Cracking pressure 2 bar
3= Cracking pressure 3 bar
5= Cracking pressure 5 bar

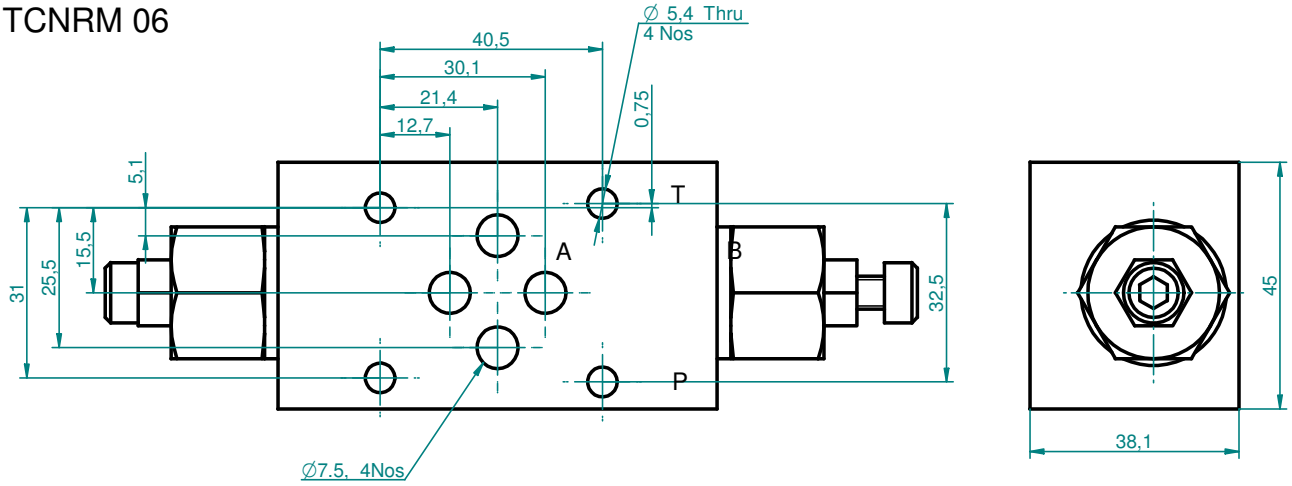
Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315 Bar	
Maxmium flow	Size	06	10
	L/min.	40	100
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request	
Pressure fluid - temperature range	℃	- 30 to + 80	
Viscosity range	mm^2/s	2.8 to 500	
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.	
Weight	Size	06	10
	Kg.	1.1	3.7

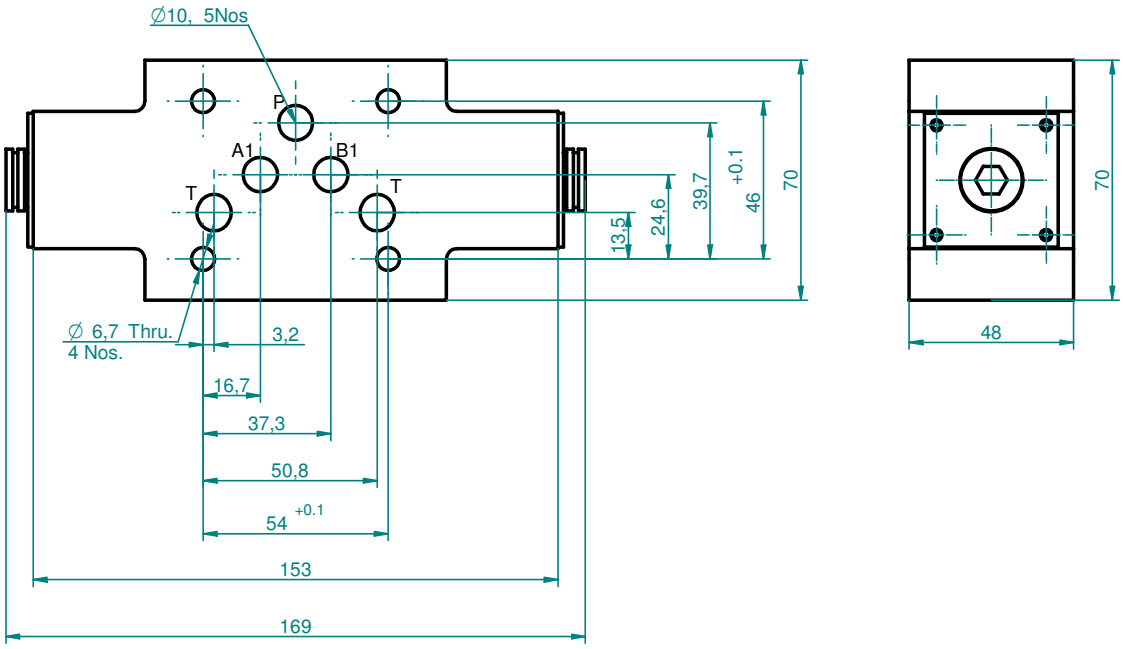
CMD TCNRM/12.23	Throttle cum Non Return Valve Modulartype TCNRM		
Replaces : TCNRM 11.11	Size : 06 to 25	up to 315 bar	up to 100 L/min.

Dimensional Details

TCNRM 06



TCNRM 10

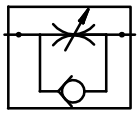


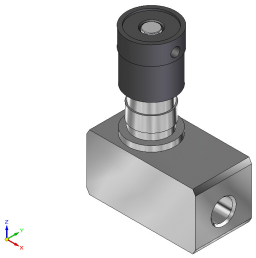
CMD TCNRT/12.23	Throttle cum Non Return Valve type TCNRT			A9 VALVES
Replaces : TCNRT 11.11	Size : 06 to 15	up to 400 bar	up to 450 L/min.	

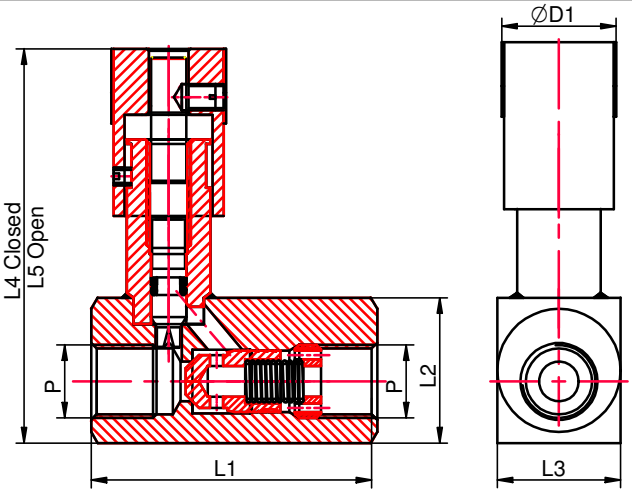
Fetaures :

- For Inline mounting
- Material Steel & SS
- Color Scale for better repeatability

Symbols :







Size	P	L1	L2	L3	L4	L5	ØD1
06	1/4" BSP	58	30	30	80	85	26
08	3/8" BSP	65	33	28	90	95	26
10	1/2" BSP	90	35	35	104	109	27
15	3/4" BSP	100	45	45	114	119	29

Ordering code

TCNRT		1			*

Nominal size 06 =06
Nominal size 08 =08
Nominal size 10 =10
Nominal size 15 =15

Material - Steel =1
Material - SS =2

Further details to specify

Revision status index

0= Cracking pressure 0 bar
1= Cracking pressure 1 bar
2= Cracking pressure 2 bar
3= Cracking pressure 3 bar
5= Cracking pressure 5 bar

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	400 Bar				
Maxmium flow	Size	06	08	10	15	
	L/min.	18	36	60	150	
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request				
Pressure fluid - temperature range	℃	- 30 to + 80				
Viscosity range	mm^2/s	2.8 to 500				
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.				
Weight	Size	06	08	10	15	
	Kg.	0.46	0.65	0.85	1.6	

CMD SOS/11.11	Shut Off Valve Type : SOS		
Replaces : SOS/10.09	Size : 06-15	up to 315 bar	up to 32 L/min.

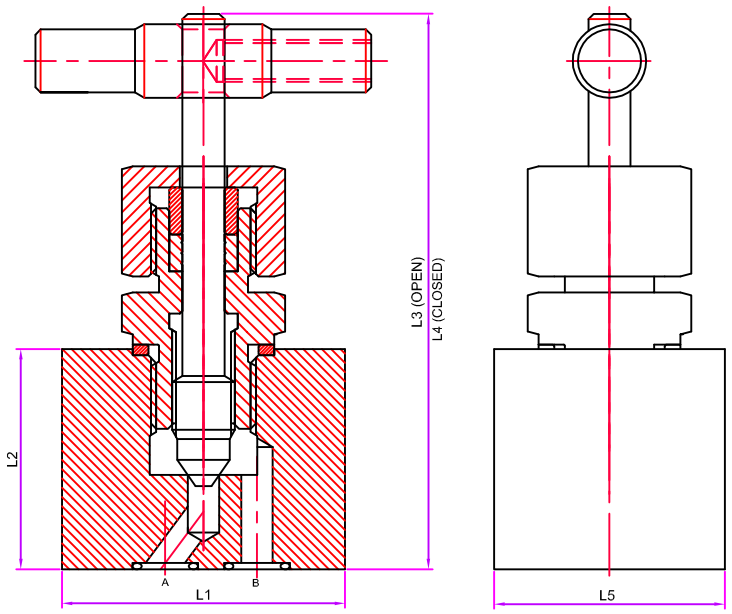
Fetaures :

- For subplate mounting
- Material Steel & SS

Symbol :

Space for 3-D view

Sectional view



Size	L1	L2	L3	L4	L5
06	54	42	114	105	44
08	54	42	114	105	44
10	75	50	116	126	65
15	75	50	119	130	65

Ordering code

SOS | | *

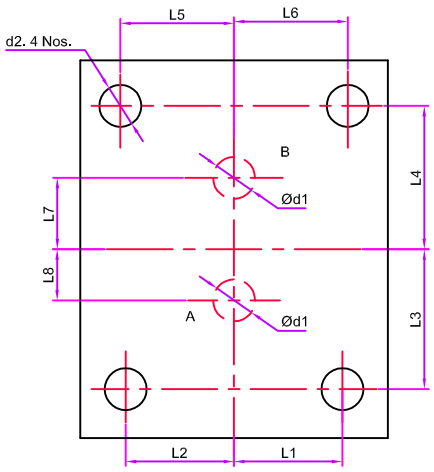
Shut Off Valve Subplate Mounting

Further details to specify

Nominal size 06	=06
Nominal size 08	=08
Nominal size 10	=10
Nominal size 15	=15

CMD SOS/11.11	Shut Off Valve Type : SOS		
Replaces : SOS/10.09	Size : 06-15	up to 315 bar	up to 32 L/min.

Mounting dimensions



Size	L1	L2	L3	L4	L5	L6	L7	L8	Ød1	d2
06	15.5	15.5	20	20.5	16.25	16.25	10.2	7.3	Ø6	M5
08	15.5	15.5	20	20.5	16.25	16.25	10.2	7.3	Ø8	M5
10	23	23	27	27	23	23	14.2	10.8	Ø10	M8
15	23	23	27	27	23	23	20.2	10.8	Ø15	M8

Technical data (for special application,please contact us)

Mounting style		Subplate Mounting				
Maxmium operating pressure	bar	315				
Maxmium flow	Size	06	08	10	15	
	L/min.					
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request				
Pressure fluid - temperature range	°C	- 30 to + 80				
Viscosity range	mm^2/s	2.8 to 500				
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.				
Weight	Size	06	08	10	15	
	Kg.	1	1	2.1	2.1	

CMD
NV/12.23

Replaces : NV/11.11

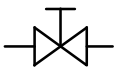
Needle valve type NV

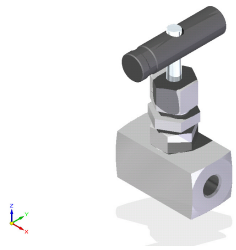
Size : 06 to 15 | up to 1000 bar | up to 450 L/min.

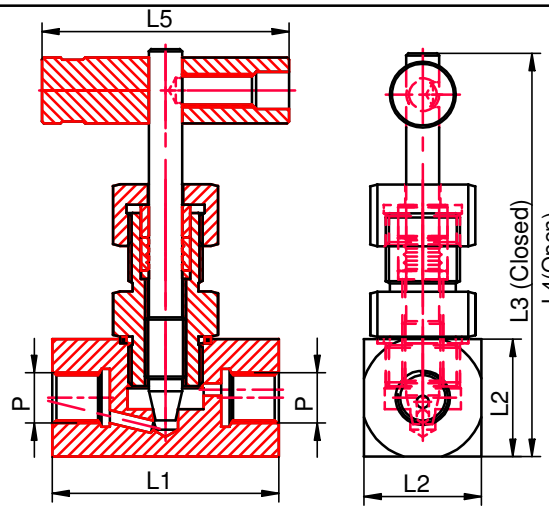
A9 VALVES

Fetaures :
- For Inline mounting
- For Panel Mounting
- Material Steel & SS

Symbols :







Size	P	L1	L2	L3	L4	L5
06	1/4" BSP	55	28.5	98	108	60
08	3/8" BSP	65	28.5	99	108	60
10	1/2" BSP	70	32	101	112	60
15	3/4" BSP	90	36	103	115	60

(For 400 Bar Pressure)

Ordering code

NV		1			*

Nominal size 06 =06
Nominal size 08 =08
Nominal size 10 =10
Nominal size 15 =15

Material - Steel =1
Material - SS =2

400= Up to 400 Bar
700= Up to 700 Bar

Revision status index

Further details to specify

Technical data (for special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	300, 700~1000 Bar				
Maxmium flow	Size	06	08	10	15	
	L/min.	18	36	60	150	
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request				
Pressure fluid - temperature range	℃	- 30 to + 80				
Viscosity range	mm^2/s	2.8 to 500				
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.				
Weight	Size	06	08	10	15	
	Kg.	0.55	0.55	0.75	0.8	

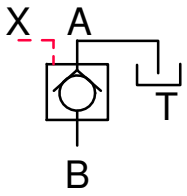
CMD EXP/12.23	Exhaust & Prefill Valve Type : EXP	
Replaces : EXP/11.11	Size : 50 to 80	up to 315 bar

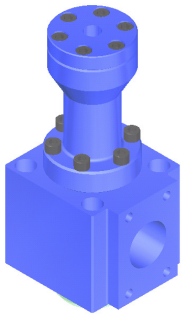
A9 VALVES

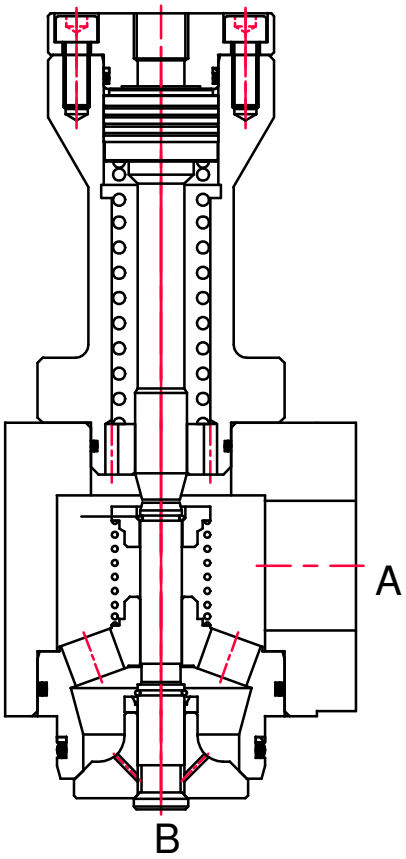
Fetaures :

- A to B free flow
- B to A Pilot Operated
- Available with decompression or without decompression
- Directly Mounted to Hydraulic Cylinder

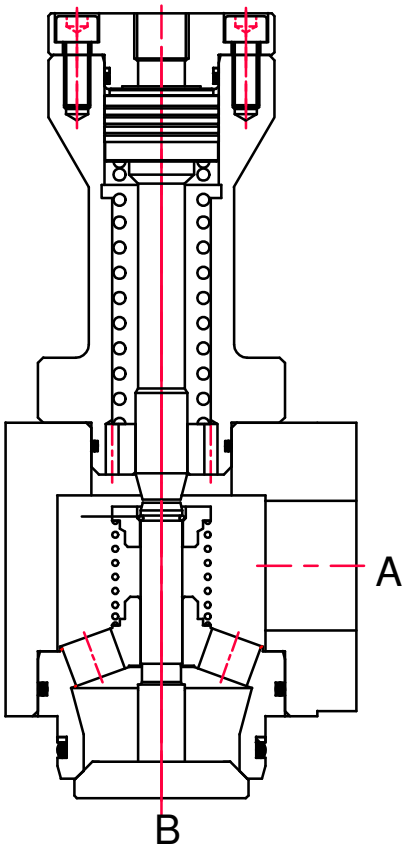
Symbols :







With Decompression



Without Decompression

Ordering code :

EXP					*

Nominal size 50 = 50
Nominal size 63 = 63
Nominal size 80 = 80

Mounting
Flange Mounting = 01
Inside Tank Mounting = 02

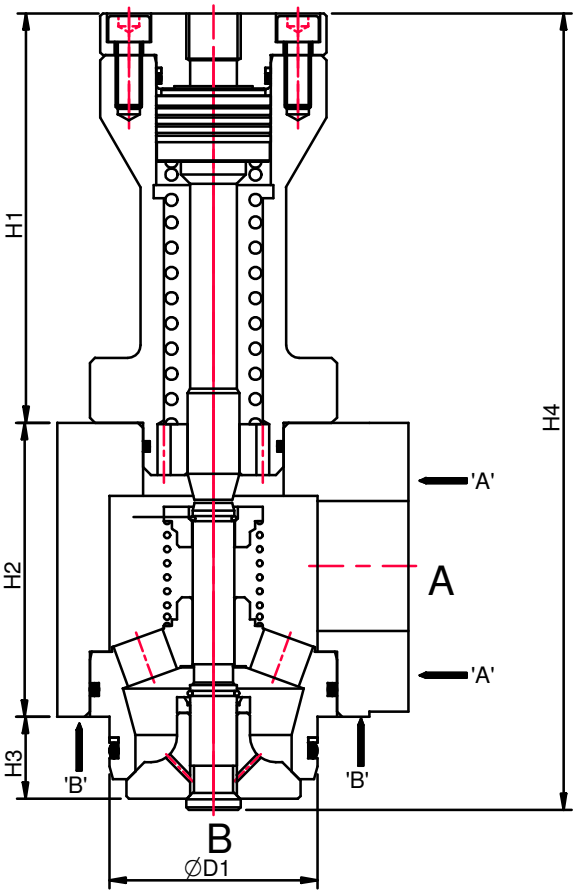
1 = With Decompression
2 = Without Decompression

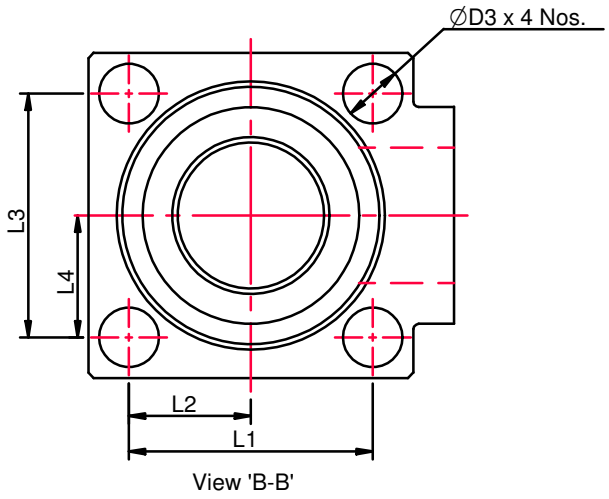
Revision status index

Further details to specify

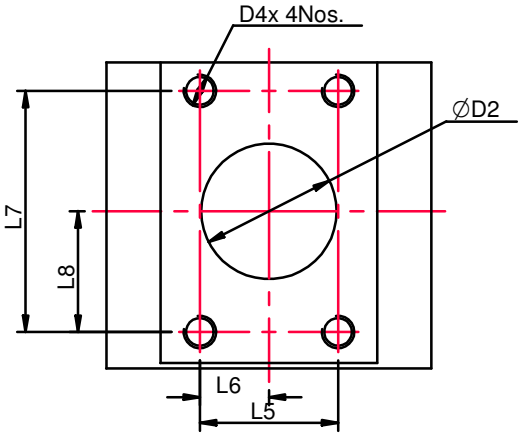
CMD EXP/12.23	Exhaust & Prefill Valve Type : EXP	
Replaces : EXP/11.11	Size : 50 to 80	up to 315 bar

Overall Dimensions





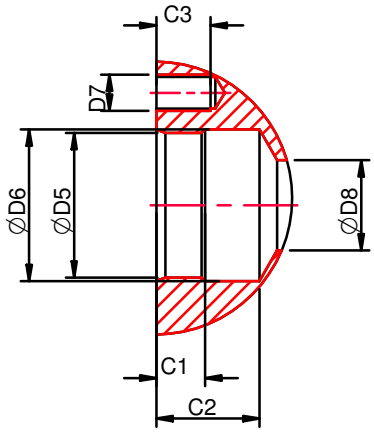
View 'B-B'



View 'A-A'

Size	H1	H2	H3	H4	ØD1	ØD2	ØD3	L1	L2	L3	L4	D4	L5	L6	L7	L8
50	158	113	32	307	80	50	22	90	45	90	45	M12	51	25.5	89	44.5
63	204	139	41	389	95	63	26	105	52.5	105	52.5	M16	62	31	106.5	53.25
80	227	160	38.5	430.5	115	76	33	130	65	130	65	M16	62	31	106.5	53.25

Mounting dimensions



Size	ØD5	ØD6	D7	ØD8	C1	C2	C3	Bolts Required
50	80	84	M20	50	25	57	30	SCH M20 x 140 Lg
63	95	104	M24	63	25	64	42	SCH M24 x 180 Lg
80	115	130	M30	80	30	76	50	SCH M30 x 200 Lg

CMD EXP/12.23	Exhaust & Prefill Valve Type : EXP	
Replaces : EXP/11.11	Size : 50 to 80	up to 315 bar

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315 Bar
Mounting Type		Flange Mounting Inside Tank Mounting

Maxmium flow (LPM)

Size	Velocity (m/sec)				
	1	2	3	4	5
50	117	234	351	468	585
63	186	372	558	744	930
80	300	600	900	1200	1500

Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Pressure fluid - temperature range	℃	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

Weight

Size	50	63	80
Kg.	16	27	50

CMD
EXP/12.23

Replaces : EXP/11.11

Exhaust & Prefill Valve
Type : EXP

Size : 100 to 125

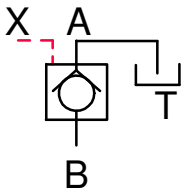
up to 315 bar

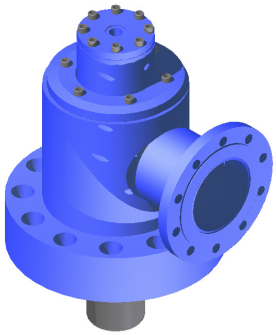
A9 VALVES

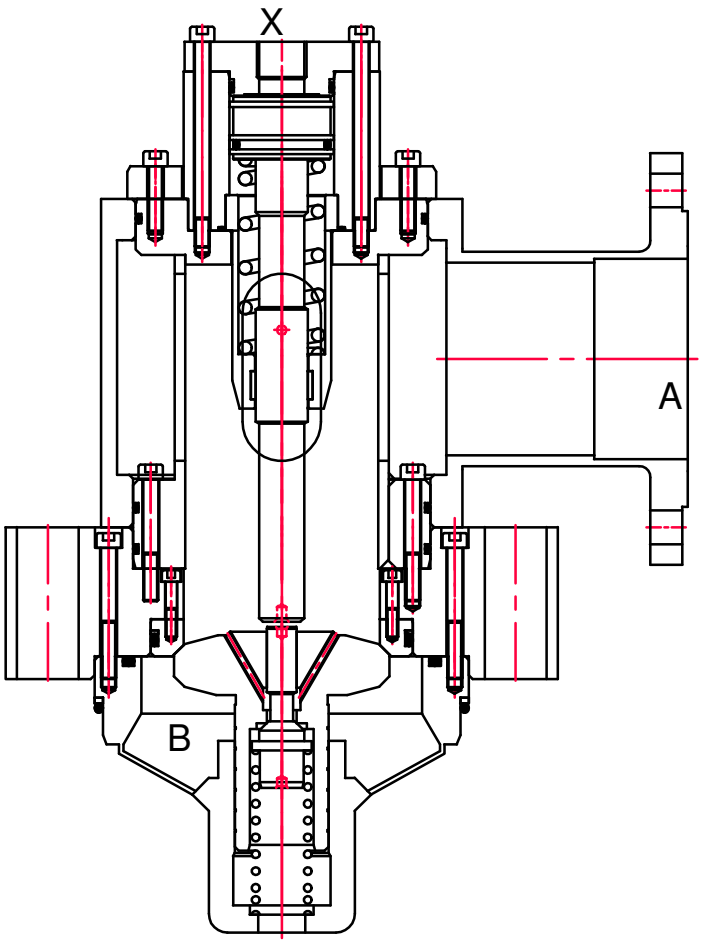
Fetaures :

- A to B free flow
- B to A Pilot Operated
- Available with decompression
- Directly Mounted to Hydraulic Cylinder or Tank mounted

Symbols :







Ordering code :

EXP					*

Nominal size 100 = 100
Nominal size 125 = 125

Mounting
Flange Mounting = 01
Inside Tank Mounting = 02

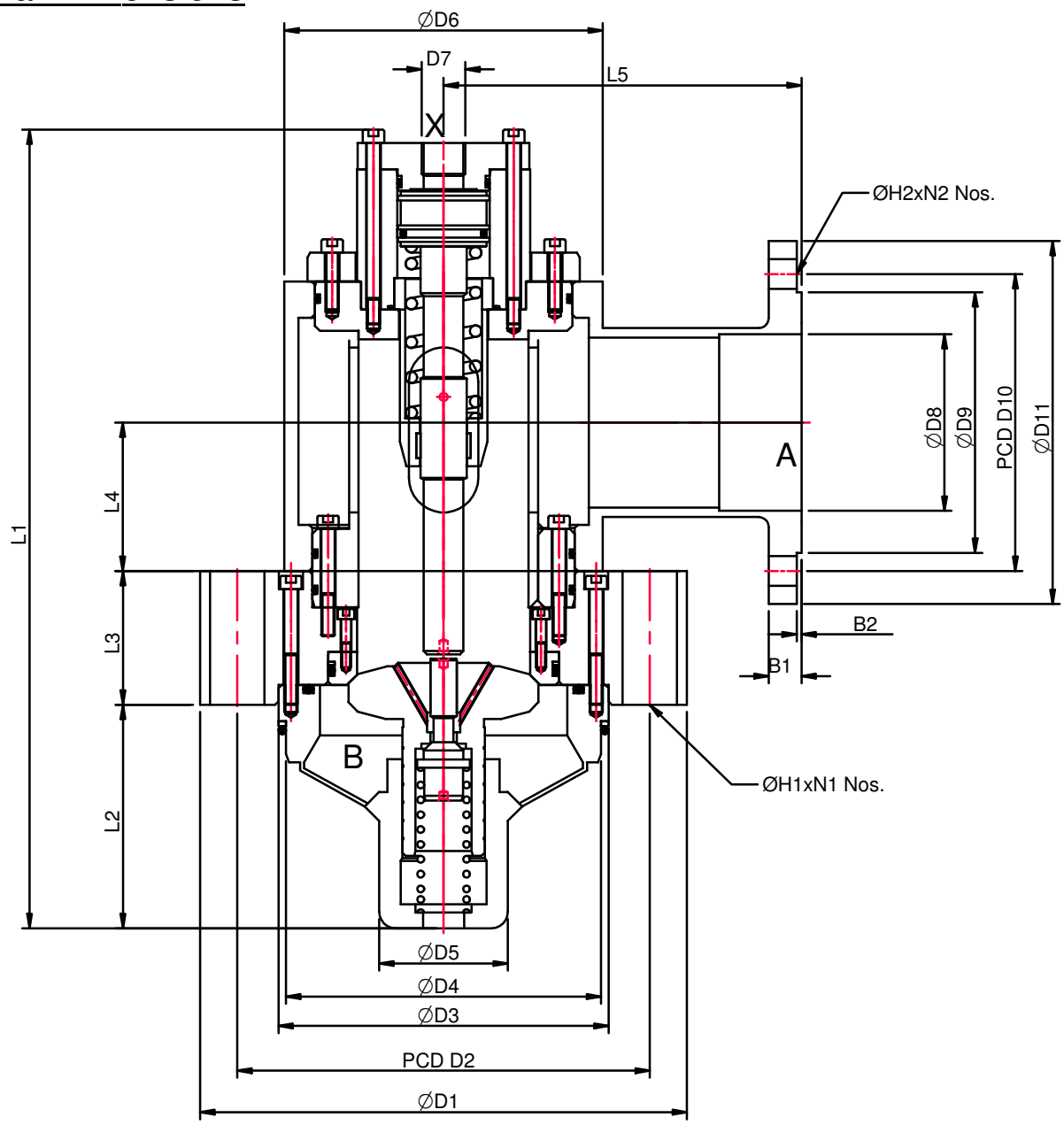
1 = With Decompression

Revision status index

Further details to specify

CMD EXP/12.23	Exhaust & Prefill Valve Type : EXP	
Replaces : EXP/11.11	Size : 100 to 125	up to 315 bar

Overall Dimensions

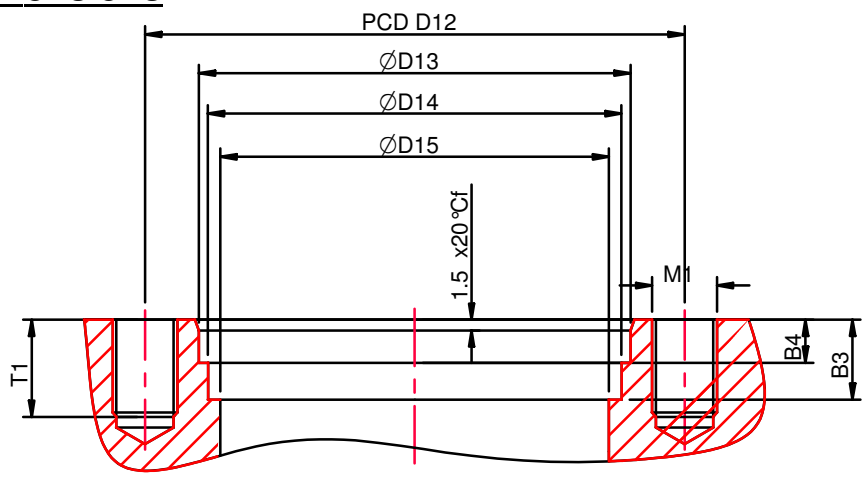


Size	L1	L2	L3	L4	L5	ØD1	D2	ØD3	ØD4	ØD5	ØD6	ØD7	ØD8	ØD9	D10	ØD11
100	484	136	81	90	217	295	250	200	191	78	193	3/4" BSP	107	158	180	220
125	589	160	90	120	247.5	370	310	250	242	98	245	3/4" BSP	131	188	210	250

Size	B1	B2	H1	N1	H2	N2
100	20	3	Ø33	12	Ø18	10
125	20	3	Ø40	12	Ø18	10

CMD EXP/12.23	Exhaust & Prefill Valve Type : EXP	
Replaces : EXP/11.11	Size : 100 to 125	up to 315 bar

Mounting dimensions



Size	D12	ØD13	ØD14	ØD15	B3	B4	M1	T1	Bolts Required
100	250	200	191.6	180	37	20	M30 x 12 Nos.	45	SCH M30 x 120 Lg.
125	310	250	241.6	230	25	20	M36 x 12 Nos.	65	SCH M36 x 150 Lg.

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmium operating pressure	bar	315 Bar
Mounting Type		Flange Mounting Inside Tank Mounting

Maxmium flow (LPM)

Size	Velocity (m/sec)				
	1	2	3	4	5
100	470	940	1410	1880	2350
125	735	1470	2205	2940	3675

Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Pressure fluid - temperature range	°C	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

Weight

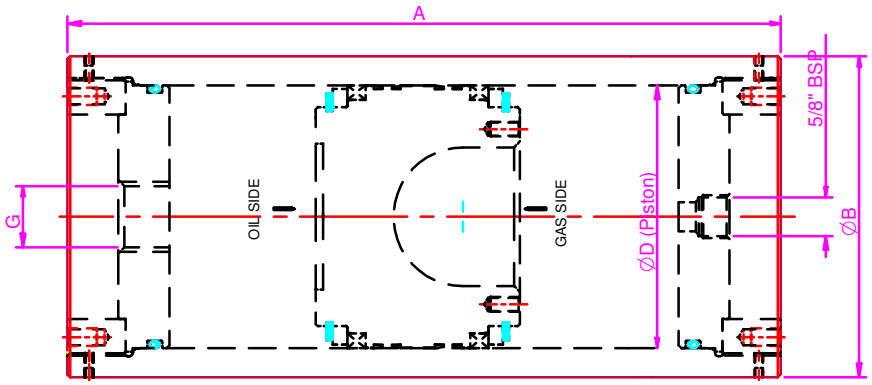
Size	100	125
Kg.	70	120

CMD HCD/12.23	PISTON ACCUMULATOR	
Replaces : HCD/11.11	Size :100 to 300	up to 375bar

Description

Unlike gases, which are compressible and can be stored for a period of time, Hydraulic Fluids are usually incompressible. Accumulators provide a way to store these fluids under pressure. Hydraulic Fluid enters the accumulator chamber and acts on piston to compress gas. Any tendency for pressure drop at the accumulator inlet, forces fluid back out in to the system. Accumulator pressure various in proportion to the compre--ssion of the gas, increasing as fluid is pumped in and decreasing as it is expelled. Available Oil can be vary between 1/4 and 3/4 of total capacity, depending on opera--ting conditions.

Unit Dimensions



Model Code	Piston ØD (mm)	Max. Working Pressure (Bar)	Oil Capacity (Ltrs)	A (mm)	ØB (mm)	Fluid Conn. G (BSP)	Weight (Kg)
CMPA-05-180-220	180	220	5	480	217	G 1 1/2"	83
CMPA-06-180-220	180	220	6	520	217	G 1 1/2"	87
CMPA-08-180-220	180	220	8	600	217	G 1 1/2"	94
CMPA-10-180-220	180	220	10	680	217	G 1 1/2"	101
CMPA-15-180-220	180	220	15	880	217	G 1 1/2"	119
CMPA-20-180-220	180	220	20	1080	217	G 1 1/2"	137
CMPA-25-180-220	180	220	25	1280	217	G 1 1/2"	155
CMPA-30-180-220	180	220	30	1480	217	G 1 1/2"	174
CMPA-35-180-220	180	220	35	1680	217	G 1 1/2"	192
CMPA-40-180-220	180	220	40	1880	217	G 1 1/2"	210
CMPA-45-180-220	180	220	45	2080	217	G 1 1/2"	228
CMPA-50-180-220	180	220	50	2280	217	G 1 1/2"	246
CMPA-60-180-220	180	220	60	2680	217	G 1 1/2"	282
CMPA-70-180-220	180	220	70	3080	217	G 1 1/2"	318
CMPA-80-180-220	180	220	80	3480	217	G 1 1/2"	355
CMPA-05-180-375	180	375	5	480	217	G 1 1/2"	83
CMPA-06-180-375	180	375	6	520	217	G 1 1/2"	87
CMPA-08-180-375	180	375	8	600	217	G 1 1/2"	94
CMPA-10-180-375	180	375	10	680	217	G 1 1/2"	101
CMPA-15-180-375	180	375	15	880	217	G 1 1/2"	119
CMPA-20-180-375	180	375	20	1080	217	G 1 1/2"	137
CMPA-25-180-375	180	375	25	1280	217	G 1 1/2"	155

*Other Sizes on Request

CMD
HCD/12.23

Replaces : HCD/11.11

PISTON ACCUMULATOR

Size :100 to 300 | up to 375bar

A9 VALVES

Model Code	Piston ØD (mm)	Max. Working Pressure (Bar)	Oil Capacity (Ltrs)	A (mm)	ØB (mm)	Fluid Conn. G (BSP)	Weight (Kg)
CMPA-30-180-375	180	375	30	1480	217	G 1 1/2"	174
CMPA-35-180-375	180	375	35	1680	217	G 1 1/2"	192
CMPA-40-180-375	180	375	40	1880	217	G 1 1/2"	210
CMPA-45-180-375	180	375	45	2080	217	G 1 1/2"	228
CMPA-50-180-375	180	375	50	2280	217	G 1 1/2"	246
CMPA-60-180-375	180	375	60	2680	217	G 1 1/2"	282
CMPA-70-180-375	180	375	70	3080	217	G 1 1/2"	318
CMPA-80-180-375	180	375	80	3480	217	G 1 1/2"	355
CMPA-10-250-220	250	220	10	574	310	G 1 1/2"	221
CMPA-20-250-220	250	220	20	778	310	G 1 1/2"	263
CMPA-30-250-220	250	220	30	982	310	G 1 1/2"	305
CMPA-40-250-220	250	220	40	1185	310	G 1 1/2"	347
CMPA-50-250-375	250	220	50	1390	310	G 1 1/2"	390
CMPA-60-250-375	250	220	60	1592	310	G 1 1/2"	432
CMPA-70-250-375	250	220	70	1796	310	G 1 1/2"	474
CMPA-80-250-375	250	220	80	2000	310	G 1 1/2"	516
CMPA-90-250-375	250	220	90	2204	310	G 1 1/2"	559
CMPA-100-250-375	250	220	100	2407	310	G 1 1/2"	601
CMPA-120-250-375	250	220	120	2815	310	G 2"	685
CMPA-140-250-375	250	220	140	3222	310	G 2"	769
CMPA-160-250-375	250	220	160	3630	310	G 2"	854
CMPA-180-250-375	250	220	180	4037	310	G 2"	938
CMPA-10-250-375	250	350	10	574	310	G 1 1/2"	221
CMPA-20-250-375	250	350	20	778	310	G 1 1/2"	263
CMPA-30-250-375	250	350	30	982	310	G 1 1/2"	305
CMPA-40-250-375	250	350	40	1185	310	G 1 1/2"	347
CMPA-50-250-375	250	350	50	1390	310	G 1 1/2"	390
CMPA-60-250-375	250	350	60	1592	310	G 1 1/2"	432
CMPA-70-250-375	250	350	70	1796	310	G 1 1/2"	474
CMPA-80-250-375	250	350	80	2000	310	G 1 1/2"	516
CMPA-90-250-375	250	350	90	2204	310	G 1 1/2"	559
CMPA-100-250-375	250	350	100	2407	310	G 1 1/2"	601
CMPA-120-250-375	250	350	120	2815	310	G 2"	685
CMPA-140-250-375	250	350	140	3222	310	G 2"	769
CMPA-160-250-375	250	350	160	3630	310	G 2"	854
CMPA-180-250-375	250	350	180	4037	310	G 2"	938

Technical Features

Maximum Working Pressures	: Ø180 - 220 Bar, 375 Bar & Ø250 - 220 Bar, 350 Bar and Other sizes and pressures on request.
Test Pressure	: 1.3 x Max. Working Pressure
Temperature Range	: -10° to 100° C
Piston Speed	: < 2 m/s
Gas Fill Valve Connection	: 1/4"BSP-5/8 UNF Standard and Others on request.

Construction Features

The Main Features are

* Shell in Carbon Steel St 52.4
* Piston of SG Iron
* Bore Honed & Hard Chrome Plated
* Seals of Polyurethane, PTFE & Nitrile Rubber.

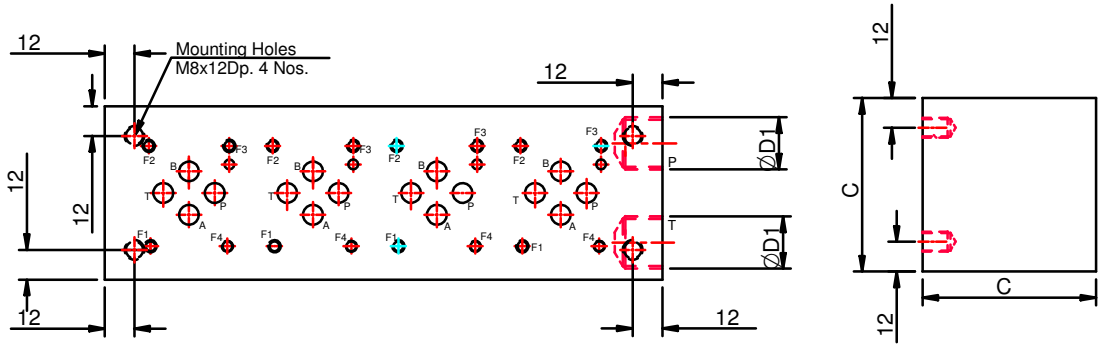
*Other Sizes on Request

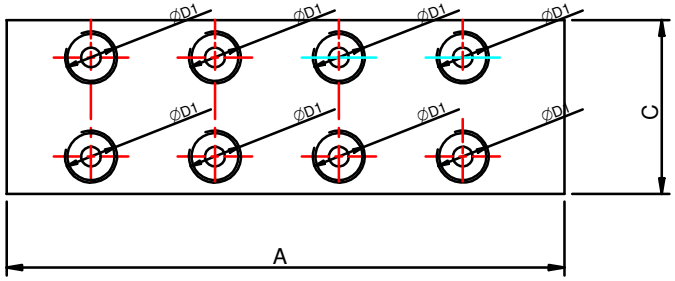
CMD MFD/12.23	Manifold Block for DC Valve 06 Size type MFD	A9 VALVES
Replaces : MFD/11.11		

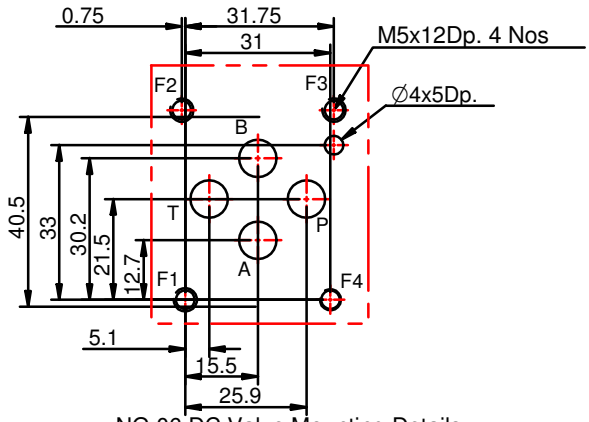
Features :

- Compact Design
- Ground & Blackened Surface
- Available in 1 to 4 stations (As required by Customer)

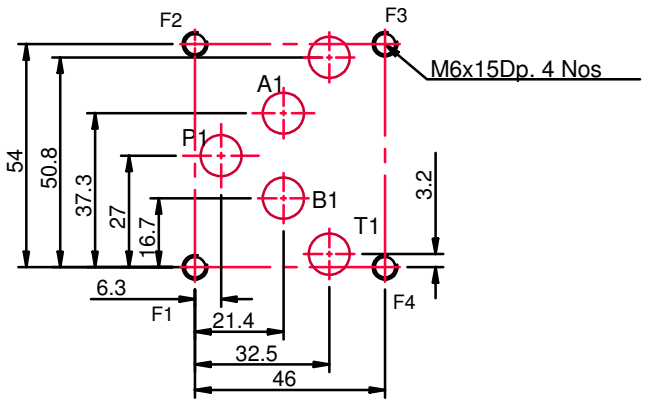
Technical data (for other specifications, please contact mktg@cmhydraulics.com)







NG 06 DC Valve Mounting Details



NG 10 DC Valve Mounting Details

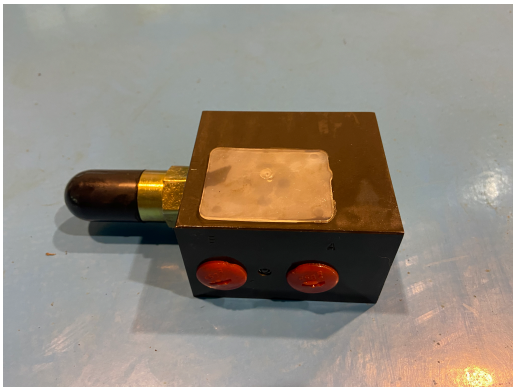
No. of Stations	01	02	03	04
A	70	125	175	225
C	70	70	70	70
ØD1	1/2" BSP			

NG 06 Manifold Block Details

No. of Stations	01	02	03
A	125	225	325
C	110	110	110
ØD1	3/4" BSP		

NG 10 Manifold Block Details

CMD MFD/12.23 Replaces : MFD/11.11	Manifold Block for DC Valve 06 Size type MFD	A9 VALVES



Ordering Code

CMH	MFD	1	06	01	*

Manifold for DC Valve =MFD

1 No. Station =1
2 Nos. Station =2
3 Nos. Station =3
4 Nos. Station =4

06 = NG 06 Size
10 = NG 10 Size

01 = Steel
02 = Cast Iron

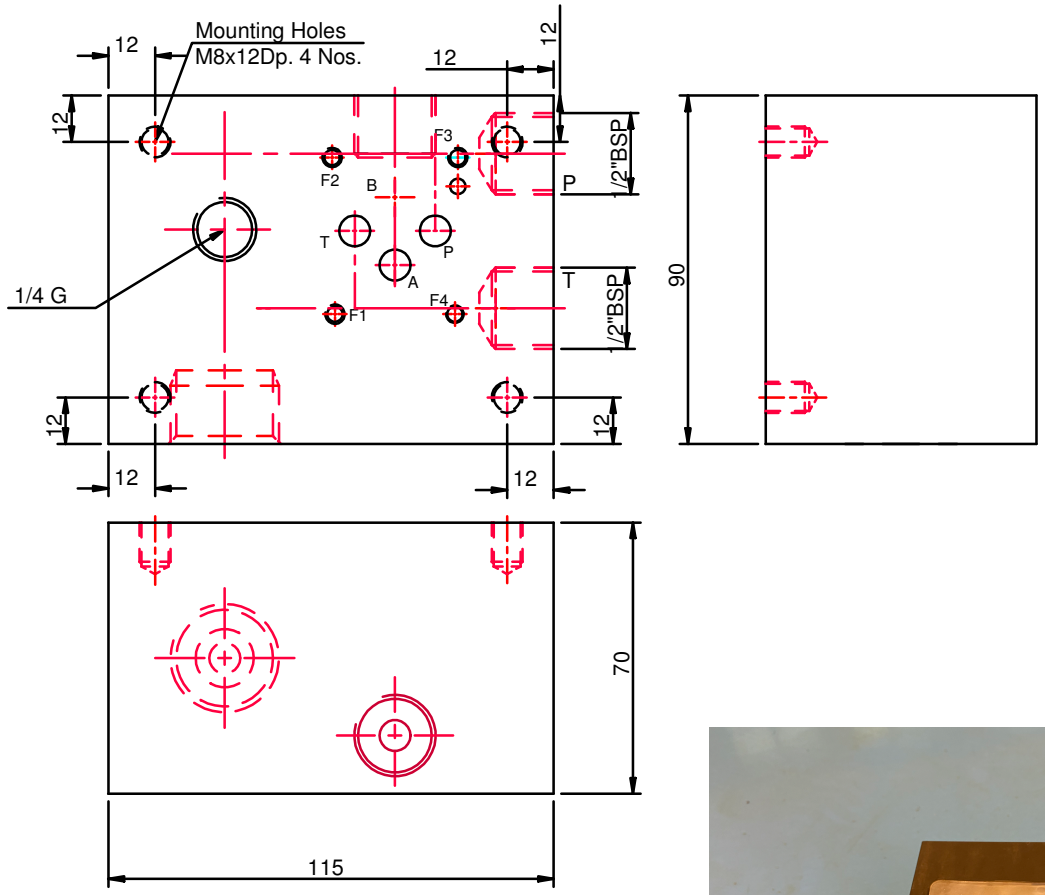
Further details to specify

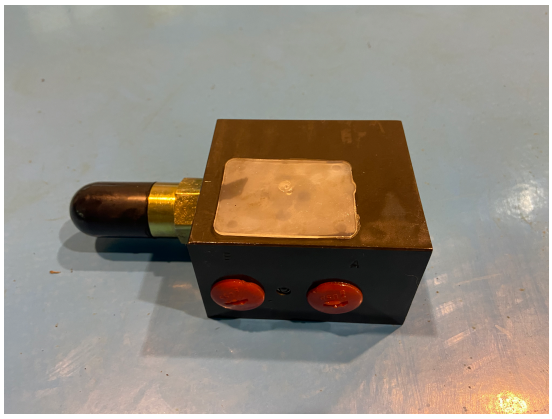
CMD MFU/11.11 Replaces : MFU/10.09	Manifold Block for Unloading type MFU	A9 VALVES

Features :

- Compact Design
- Ground & Blackened Surface
- Available in 6 & 10 Sizes.

Technical data (for other specifications, please contact mktg@cmhydraulics.com)





Ordering Code

CMH	MFU	06	1	*

Manifold for Unloading =MFU

NG 06 Size =06
NG 10 Size =10

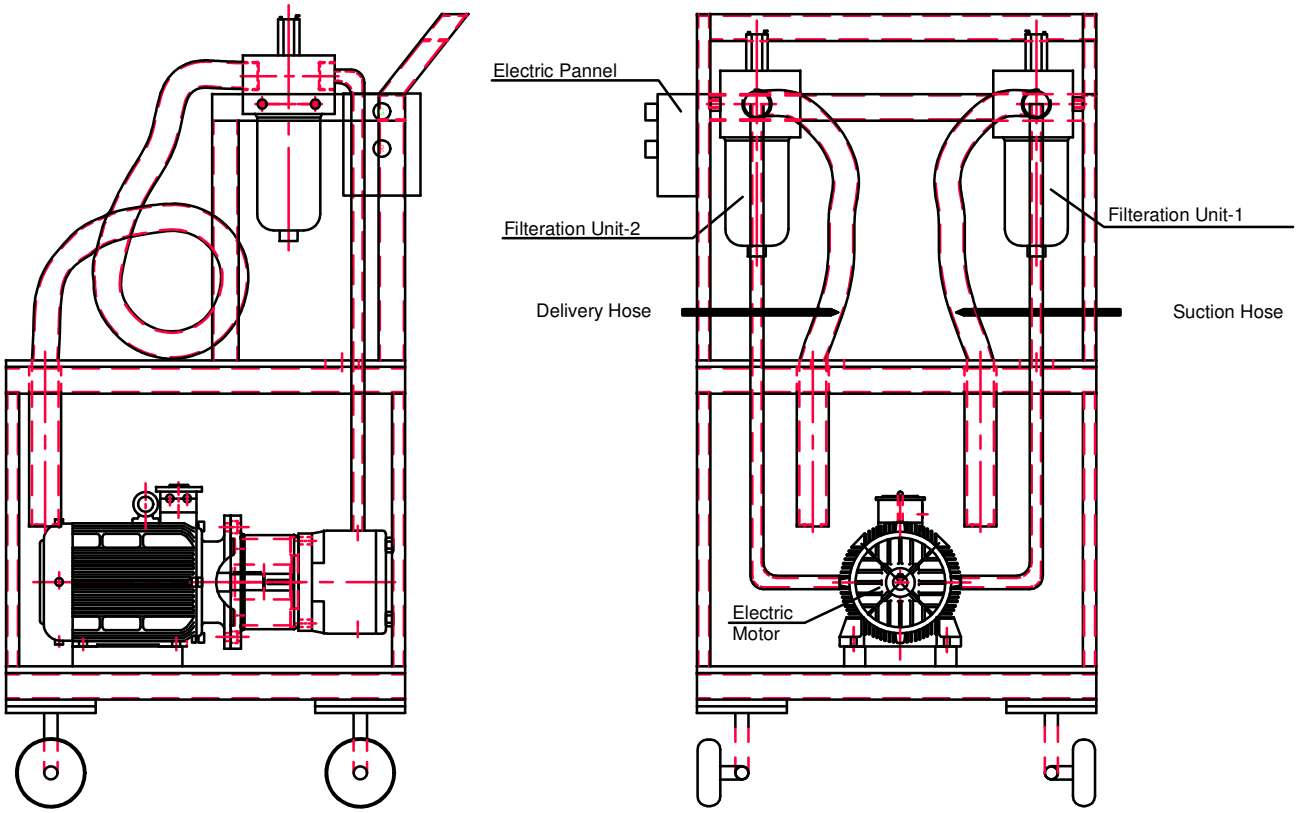
Further details to specify

0 = With out DC Valve
1 = With DC Valve

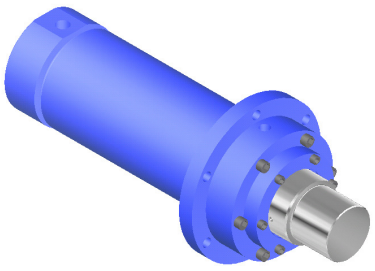
CMD OFU/11.11	Oil Filtration Unit Type : OFU	CM Hydro Systems Pvt Ltd
Replaces : OFU/02.10		

Fetaures :

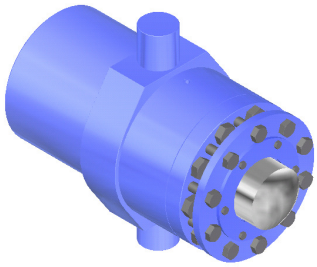
- Specialy designed for maintenance purpose of hydraulic systems
- Hydraulic gear pump of 40 LPM & 2 HP Motor
- Intake filter of capacity 125 Microns
- Delivery filter of capacity 10 Microns
- Flexible hoses with rigid end connections
- Trolley with drip pan



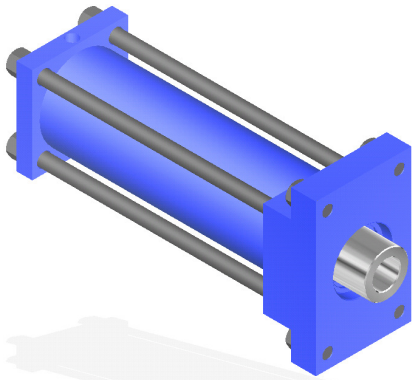
CMD CMC/12.23	Hydraulic Cylinder Type CMC			A9 VALVES
Replaces : CMC/11.11	Size :40 to 300	up to 250bar	up to 3000 St	



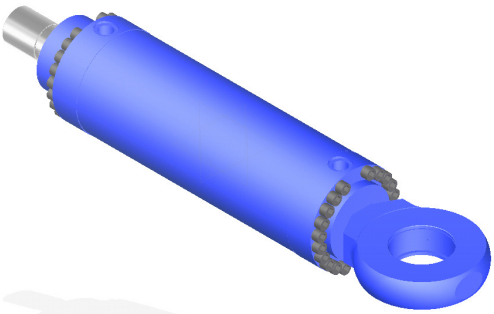
PRESS CYLINDERS



MILL TYPE CYLINDERS



TIE ROD TYPE CYLINDERS



CUSTOM BUILT CYLINDERS

- Available in Single Acting / Double Acting.
- Available in different mounting styles as required.

FEATURES

- Seamless steel tube inside diameter honed and Cr. Plated
- Alloy Steel Rod Toughned ground and Cr. Plated.
- Carbon Steel Cylinder Head.
- Seals as per the pressure and performance requirement.
- Piston made of Cast Iron grade IS210 Gr.25 / Carbon Steel.
- Inlet & outlet ports are provided with BSP taps.
- Bronze filled guide rings.

CMD
CMC/12.23

Replaces : CMC/11.11

Hydraulic Cylinder Type CMC

Size :40 to 300 | up to 250bar | up to 3000 St

A9 VALVES

CMC	Ø63	Ø45	100	M	A	C	1	2	-	*

Bore Ø in mm
Ø40, Ø50, Ø63, Ø80, Ø100, Ø125, Ø150
Ø160, Ø180, Ø200, Ø250, Ø300

Piston Rod Ø in mm
Ø16, Ø25, Ø35, Ø38, Ø45, Ø56, Ø63, Ø70, Ø80
Ø90, Ø100, Ø110, Ø125, Ø140, Ø200, Ø250

Stroke in mm.

Construction
Tie Rod Construction =T
Mill Type Construction =M

Mounting Styles
Refer Mounting Styles
Customised mounting =C

Rod End Attachment
Refer Rod end attachment
C= Customised attachment

Cushioning
1= Non Cushioning.
2= Head End Side Self Regulating.
3= Rod End Side Self Regulating.
4= Both End Side Self Regulating.
5= Both End Adjustment.

Seal
1= NBR.
2= Viton / Ecopur.

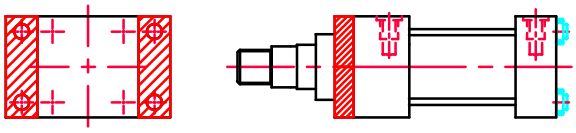
Omit if not Require Position Sensor

Futher Details to specify

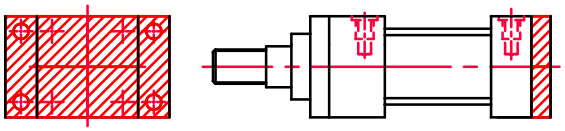
MOUNTING STYLES

Different mounting styles are given as below. Each mounting style has its code as below and has to be reffered . The mounting styles other than specified below will be supplied on request.

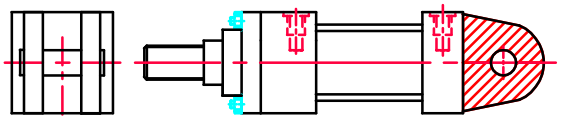
1.Front Flange Attachment: Style 1



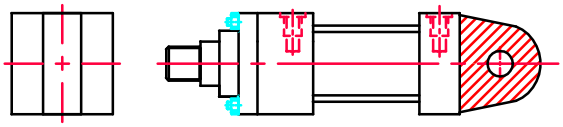
2. Rear Flange Attachment: Style 2



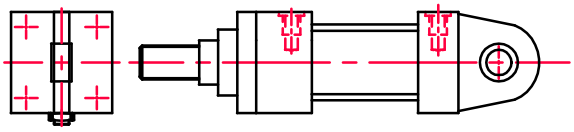
3. Clevis Attachment (Female): Style 3



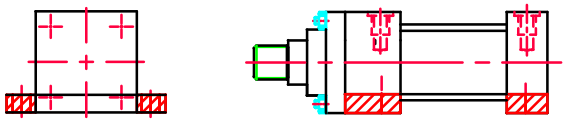
4. Clevis Attachment (Male): Style 4



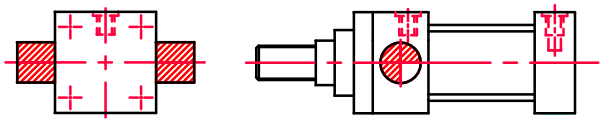
5. Swivel Attachment with Eye : Style 5



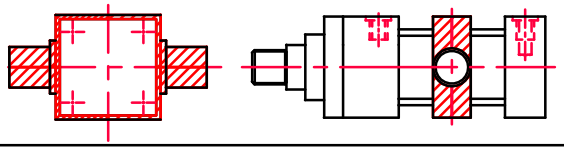
6. Foot Attachment: Style 6



7.Front Body Trunnion Attachment: Style 7

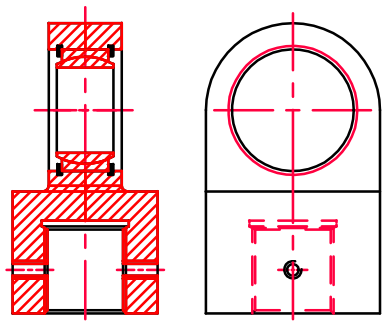


8. Mid Body Trunnion Attachment : Style 8

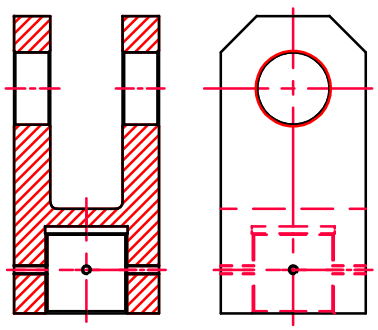


CMD CMC/12.23	Hydraulic Cylinder Type CMC		
Replaces : CMC/11.11	Size :40 to 300	up to 250bar	up to 3000 St

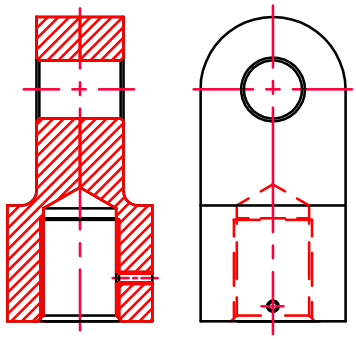
Rod End Attachment.



1. Self Aligning Bearing:Style 1



2. Clevis Attachment(Female): Style 2



3. Clevis Attachment(Male):Style 3

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

Maxmimum pressure	bar	250 bar
Testing pressure	bar	1.5 x Maximum working pressure.
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Pressure fluid - temperature range	℃	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

CMD
HPU/12.23

Replaces : HPU/11.11

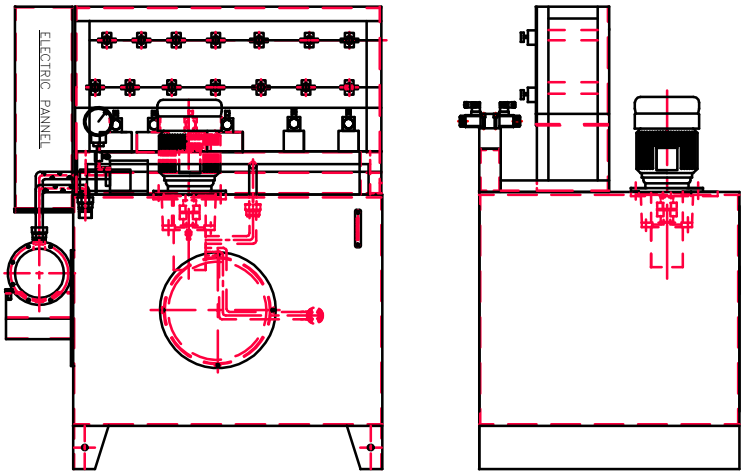
Hydraulic Power Units type HPU

A9 VALVES

Fetaures :

- Options of float switch, temperature controller, Accumulator, etc
- Customized as per requirement
- Easy maintenance

Space for 3-D view



Ordering code

HPU | | | | | | | | | | *

Further details to specify

No. of DC Valve Stations in Manifold block

1= Single station
2= Double station
3= Triple station

Unloading DC Valves (NG6 or NG10 based on requirement)

0= Solenoid Operated 24V DC (Std)
1= Solenoid Operated 110V AC
2= Solenoid Operated 220V AC
3= Hand Operated

Heat Exchangers/Oil coolers

1= With Oil Cooler
2= With out Oil Cooler

Return Line filters (25 Microns)

1= Without clog indicator
2= With Clog indicator

Electrical/Electronics

1= With Electrical/Electronics
2= Without Electrical/Electronics

Oil Reservoir

150 Lts	=150
250 Lts	=250
500 Lts	=500
800 Lts	=800
1000 Lts	=1000

Reservoir Material

Carbon Steel =0 (Std)
(Other materials on request)

Electric Motors in HP (As per requirement)
(Refer table for selection criteria)
5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60, 75

Pump

Gear Pump	=1
Vane Pump	=2
Axial Piston Pump	=3

CMD HPU/12.23 Replaces : HPU/11.11	Hydraulic Power Units type HPU	A9 VALVES

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

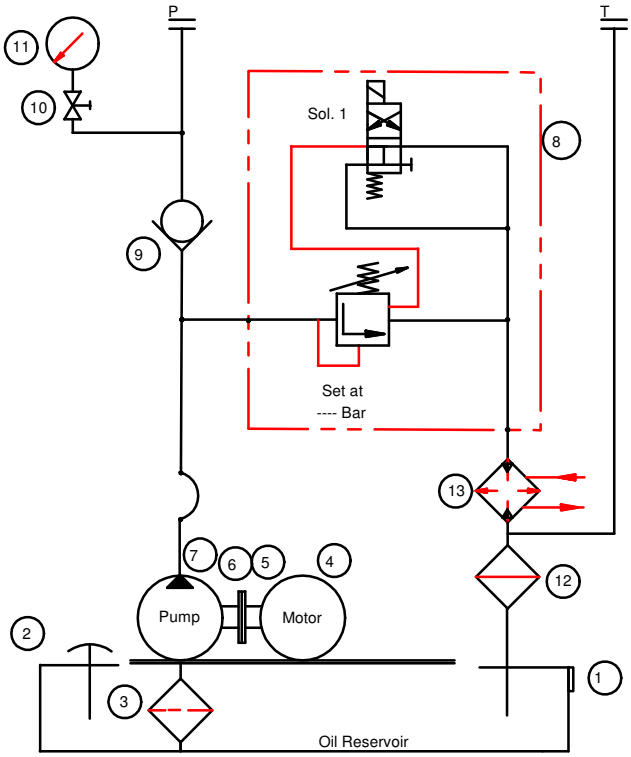
Maxmium operating pressure	bar	250 Bar
Reservoir	Ltrs	100, 150, 250, 400, 600,800,1000
Power Supply		415±10 V 50 Hz AC No. of Poles 4 IP 55 Protection
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Return line Filters capacity (3~5 Times of flow capacity)	Microns	25 (Std) (higher microns on request)
Heat Exchangers (25% of Motor capacity)	Type	Shell & Tube (Std) (Air blast & Plate type on request)
Pressure fluid - temperature range	℃	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

Motor Selection table (in HP)

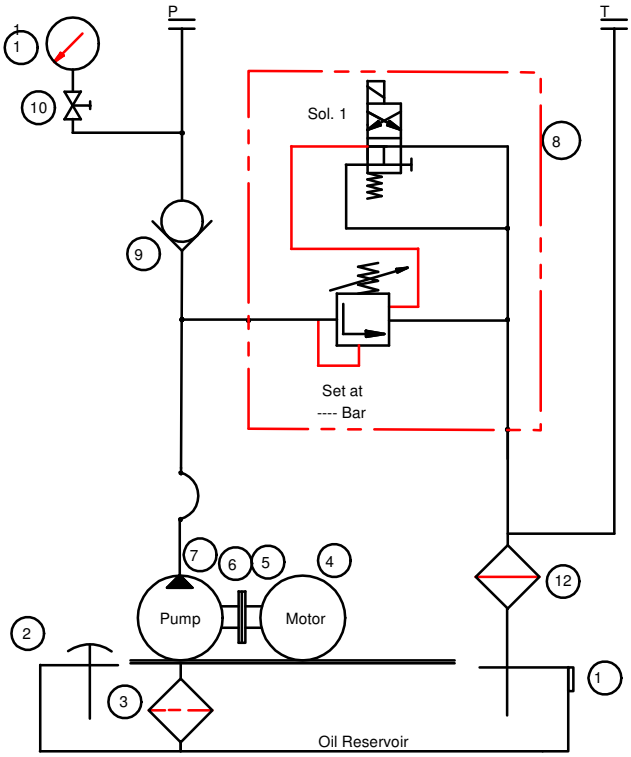
Pr. Range (Bar) / Flow (CC)/Rev	100	150	250
12	5	7.5	12.5
16	7.5	10	15
23	10	15	25
28	12.5	20	30
32	12.5	20	30
45	20	30	50
56	25	40	60
63	25	40	60
80	35	50	75
90	40	60	-

CMD HPU/12.23	Hydraulic Power Units type HPU	A9 VALVES
Replaces : HPU/11.11		

Typical Circuit :



With Heat Exchanger



With out Heat Exchanger

1. Oil Level Indicator
2. Filler Breather
3. Suction Strainer
4. Electrical Motor
5. Bell Housing
6. Coupling
7. Hydraulic Pump
8. Unloading block with DC Valve
9. Non Return valve
10. Gauge Isolator
11. Pressure Gauge
12. Return Line Filter
13. Heat Exchanger

CMD
HPUM/12.23

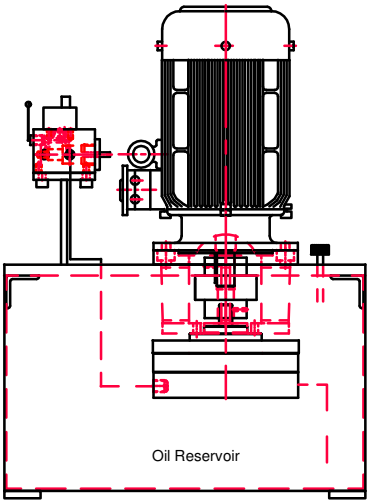
Replaces : HPUM/11.11

Hydraulic Power Units-Mini type HPU-M

A9 VALVES

Fetaures :

- Compact Design
- Customized as per requirement
- Portable with trolley (Option)
- Easy maintenance



Ordering code

HPU-M | | | | | | | *

Oil Reservoir

20 Lts	=20
40 Lts	=40
60 Lts	=60

Reservoir Material

Carbon Steel	=1
Stainless Steel	=2
Aluminium	=3

Electric Motors (Refer table for selection criteria)

0.5 HP	=0.5
1 HP	=1
2 HP	=2
3 HP	=3
5 HP	=5

Heat Exchangers/Oil coolers

1=	With Oil Cooler (> 9 LPM)
2=	With out Oil Cooler

Unloading DC Valves (NG 6 Size)

0=	Solenoid Operated 24V DC (Std)
1=	Solenoid Operated 110V AC
2=	Solenoid Operated 220V AC
3=	Hand Operated

No. of DC Valve Stations in Manifold block

1=	Single station
2=	Double station
3=	Triple station

Further details to specify

CMD HPUM/12.23 Replaces : HPUM/11.11	Hydraulic Power Units-Mini type HPU-M	A9 VALVES

Technical data (for other sizes and special application,please contact mktg@cmhydraulics.com)

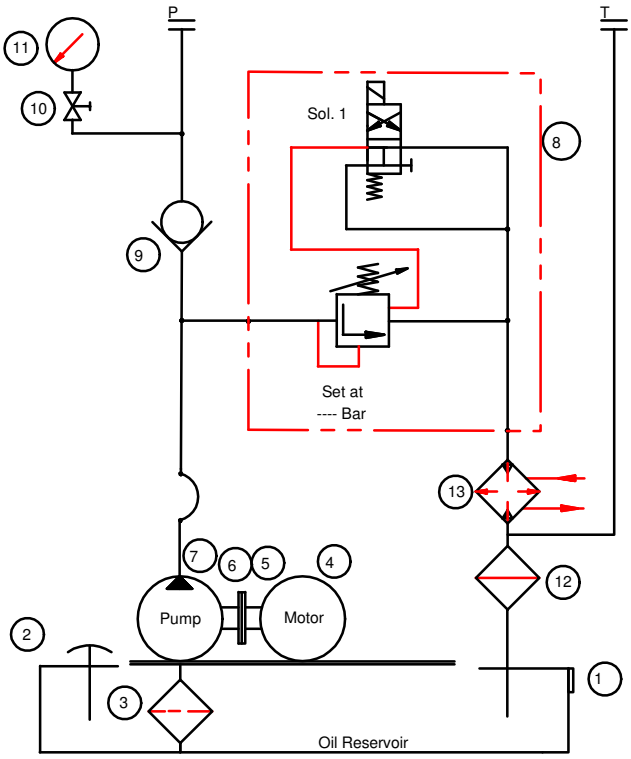
Maxmium operating pressure	bar	700 Bar (Refer Table)
Reservoir	Ltrs	20, 40, 60
Power Supply		415±10 V 50 Hz AC No. of Poles 4 IP 55 Protection
Pressure fluid		Mineral oil (HL,HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568;HTEG (rape seed oil); HEPG (polyglycol); HEES (synthetic ester); other fluids on request
Return line Filters capacity	Microns	25
Pressure fluid - temperature range	℃	- 30 to + 80
Viscosity range	mm^2/s	2.8 to 500
Degree of contamination		Maxmium premissible degree of contamination of the fluid is to NAS 1638 class 9.

Motor Selection table (in HP)

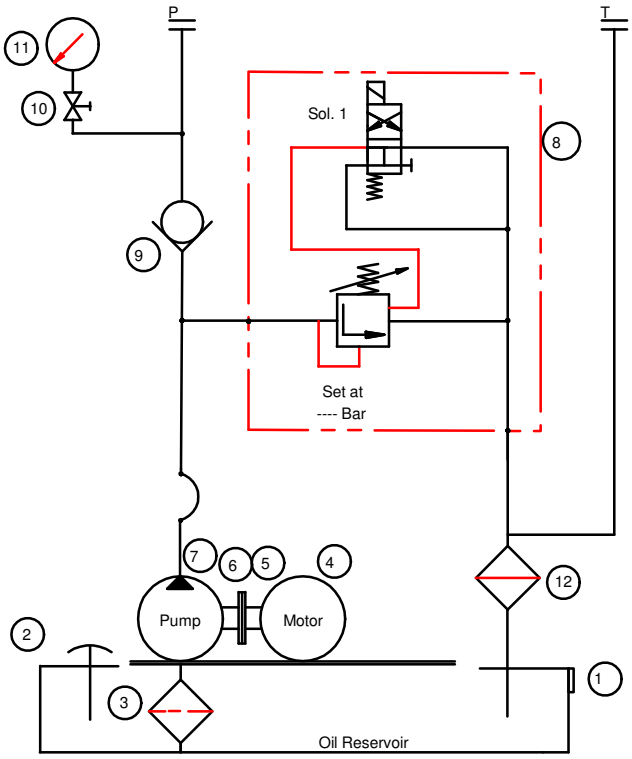
Pr. Range (Bar) / Flow (CC)/Rev	Upto 60	60 ~ 150	150 ~ 300	300 ~ 500	500 ~ 700
1.5	0.5	1	2	3	5
2.0	0.5	2	3	5	-
2.5	1	2	3	5	-
3.0	1	2	5	-	-
3.5	1	3	5	-	-
4.0	1	3	5	-	-
4.5	1.5	3	5	-	-
5.0	1.5	3	5	-	-
5.5	1.5	5	-	-	-
7.0	2	5	-	-	-
8.0	2	5	-	-	-
8.5	2	5	-	-	-

CMD HPUM/12.23	Hydraulic Power Units-Mini type HPU-M	A9 VALVES
Replaces : HPUM/11.11		

Typical Circuit :



With Heat Exchanger



With out Heat Exchanger

1. Oil Level Indicator
2. Filler Breather
3. Suction Strainer
4. Electrical Motor
5. Bell Housing
6. Coupling
7. Hydraulic Pump
8. Unloading block with DC Valve
9. Non Return valve
10. Gauge Isolator
11. Pressure Gauge
12. Return Line Filter
13. Heat Exchanger