



## Multiple Valves

**Cross Relief**

**Dual-Relief and Make-Up**

**Selector**

**Regenerative**

**Rectifier**

**Accumulator Dump**

**Hi-Low**

**Grapple Rotation**

**Pump**

**Hydrostatic Transmission**

**Thumb**



## Cross-Relief Manifold

### SAE ORB Ports

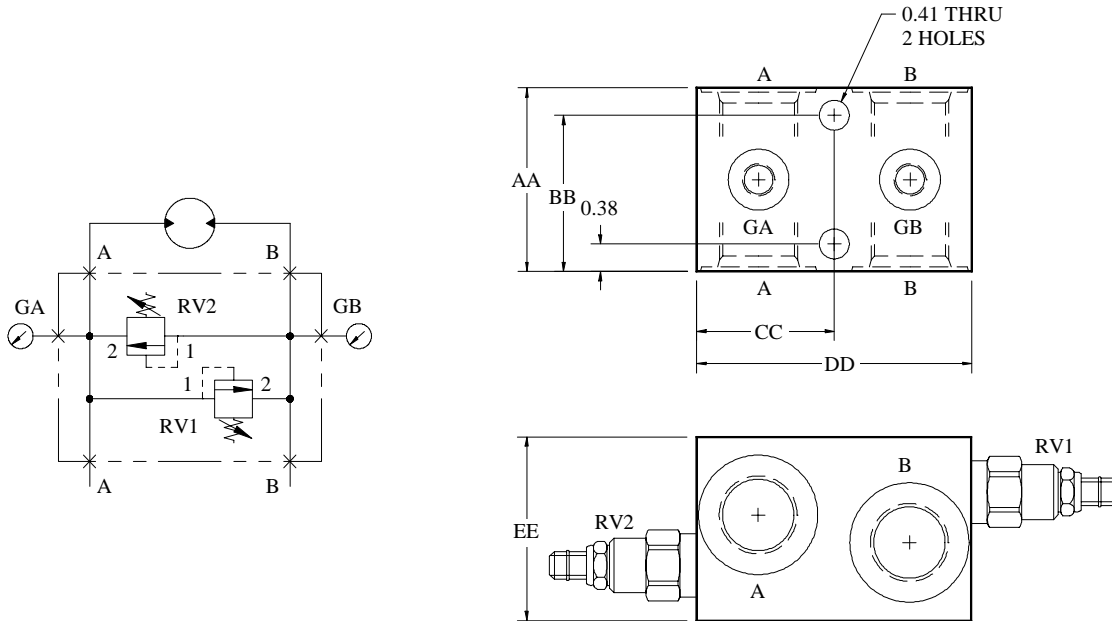
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, OILGEAR, PARKER, STERLING, SUN, AND VICKERS  
CAVITY (OR EQUIVALENT)  
‘1’ IS NOSE OF CARTRIDGE

GA GB (GAGE): #4 SAE ORB

NOTE: COMPACT CP12-2 CAVITY IS EQUIVALENT TO HYDRAFORCE VC12-2 CAVITY.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	RV Relief Cavity	Flow (GPM)	A, B Ports SAE ORB	AA	BB	CC	DD	EE
MB2069S	COMPACT CP12-2	30	#12 (1 1/16-12)	3.00	0.38	2.13	4.25	3.00
MB2071S	VICKERS C-12-2	30	#12 (1 1/16-12)	3.00	0.38	2.13	4.25	3.00
MB2070S	PARKER C12-2	30	#12 (1 1/16-12)	3.00	2.63	2.13	4.25	3.00
MB1094S	STANDARD C-10-2	30	#12 (1 1/16-12)	2.50	2.13	1.88	3.75	2.50
MB1095S	STANDARD C-16-2	80	#20 (1 5/8-12)	3.50	3.13	2.63	5.25	3.50
MB1089S	SUN T-10A	25	#12 (1 1/16-12)	2.50	2.13	1.88	3.75	2.50
MB1090S	SUN T-3A	50	#16 (1 5/16-12)	3.00	2.62	2.25	4.50	3.00
MB1091S	SUN T-16A	100	#20 (1 5/8-12)	3.50	3.13	2.75	5.50	3.50

## Cross-Relief Manifold

### SAE 4-Bolt Flange Ports

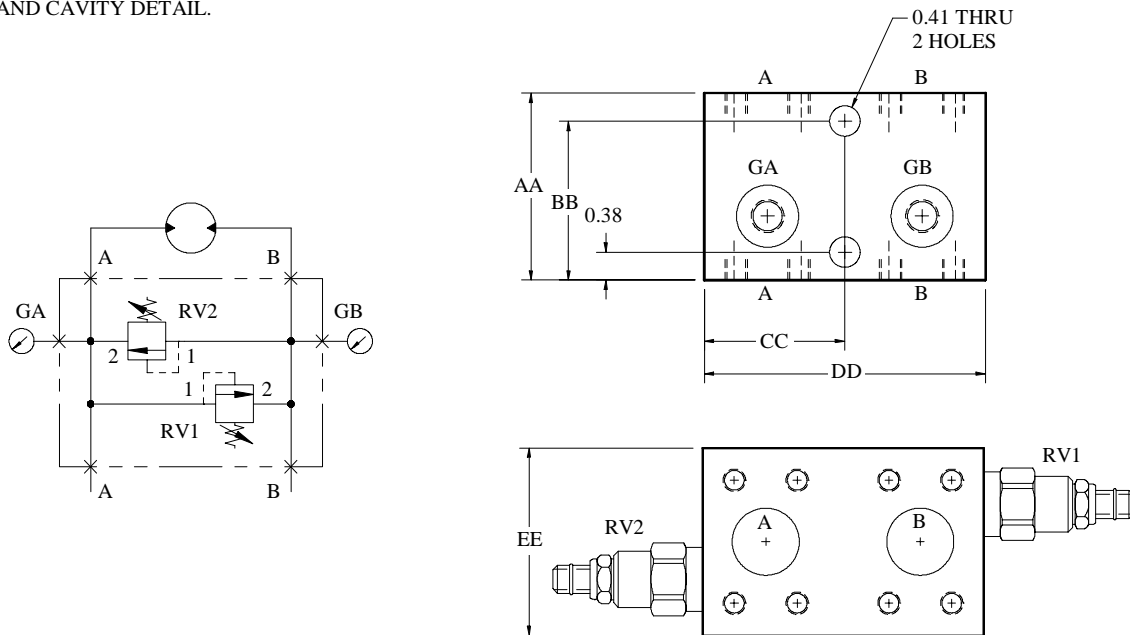
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, SUN AND VICKERS CAVITY (OR EQUIVALENT)  
\*1\* IS NOSE OF CARTRIDGE

GA, GB (GAGE): #4 SAE ORB

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.  
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE,  
FLOW RATE AND CAVITY DETAIL.



Part No.	RV Relief Cavity	Flow (GPM)	A, B Ports SAE 4-Bolt	AA	BB	CC	DD	EE
MB1096S	STANDARD C-16-2	80	1 1/4 C61	3.50	3.13	2.75	5.50	3.50
MB2127S	STANDARD C-16-2	80	1 1/2 C61	4.00	3.63	3.19	6.38	4.50
MB2128S	STANDARD C-16-2	80	1 1/4 C62	4.00	3.63	3.00	6.00	4.50
MB1092S	SUN T-16A	100	1 1/4 C61	3.50	3.13	2.75	5.50	3.50
MB2125S	SUN T-3A	50	1 1/4 C61	3.50	3.13	2.75	5.50	3.50
MB1093S	SUN T-18A	200	1 1/2 C61	5.50	5.13	3.63	7.25	4.00
MB2129S	SUN T-16A	100	1 1/2 C61	4.00	3.63	3.19	6.38	4.00
MB2130S	SUN T-18A	200	2 C61	5.00	4.63	4.00	8.00	5.00
MB2132S	SUN T-16A	100	1 C62	3.50	3.13	2.88	5.75	3.50
MB2126S	SUN T-3A	50	1 1/4 C62	3.50	3.13	3.00	6.00	4.00
MB2131S	SUN T-16A	100	1 1/4 C62	4.00	3.63	3.00	6.00	4.00
MB2134S	SUN T-18A	200	1 1/4 C62	4.50	4.13	3.50	7.00	4.50
MB2133S	SUN T-18A	200	1 1/2 C62	5.00	4.63	4.00	8.00	5.00

## Dual-Relief and Make-Up Manifold

### SAE ORB Ports

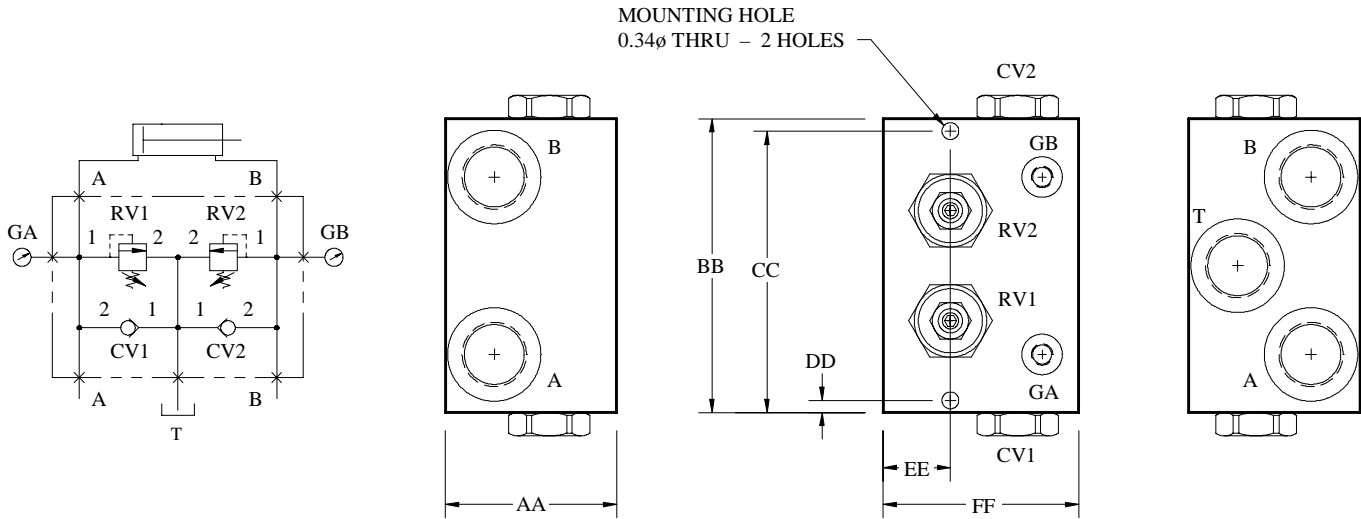
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, OILGEAR, PARKER, STERLING, SUN AND VICKERS  
CAVITY (OR EQUIVALENT)  
'1' IS NOSE OF CARTRIDGE

GA, GB (GAGE): #4 SAE ORB

NOTE: COMPACT CP12-2 CAVITY IS EQUIVALENT TO HYDRAFORCE VC12-2 CAVITY  
AND PARKER C12-2 CAVITY IS EQUIVALENT TO OILGEAR HS800-2 CAVITY.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check Cavity	Flow (GPM)	RV Relief Cavity	Flow (GPM)	A, B, T SAE ORB Ports	AA	BB	CC	DD	EE	FF
MC1419S	STANDARD C-10-2	42	STANDARD C-10-2	35	#12 (1 1/16-12)	3.00	4.50	4.25	0.25	1.00	3.00
MC1412S	COMPACT CP12-2	37	COMPACT CP12-2	50	#12 (1 1/16-12)	3.50	4.88	4.63	0.25	1.13	3.50
MC1413S	VICKERS C-12-2	30	VICKERS C-12-2	30	#12 (1 1/16-12)	3.50	4.88	4.63	0.25	1.13	3.50
MC1410S	PARKER C12-2	32	PARKER C12-2	50	#12 (1 1/16-12)	3.50	4.88	4.63	0.25	1.19	3.50
MC1417S	STANDARD C-16-2	132	STANDARD C-16-2	106	#16 (1 5/16-12)	3.50	6.00	5.75	0.25	1.06	4.00
MC1420S	SUN T-13A	20	SUN T-10A	25	#12 (1 1/16-12)	3.00	4.63	4.38	0.25	1.00	3.00
MC1421S	SUN T-5A	40	SUN T-3A	50	#12 (1 1/16-12)	3.50	5.00	4.63	0.38	1.19	3.50
MC1422S	SUN T-16A	80	SUN T-3A	50	#16 (1 5/16-12)	4.00	6.25	5.88	0.38	1.13	4.00
MC1450S	SUN T-16A	80	SUN T-16A	100	#20 (1 5/8-12)	4.50	6.88	6.38	0.38	1.13	4.00

## Dual-Relief and Make-Up Manifold

### SAE 4-Bolt Flange Ports

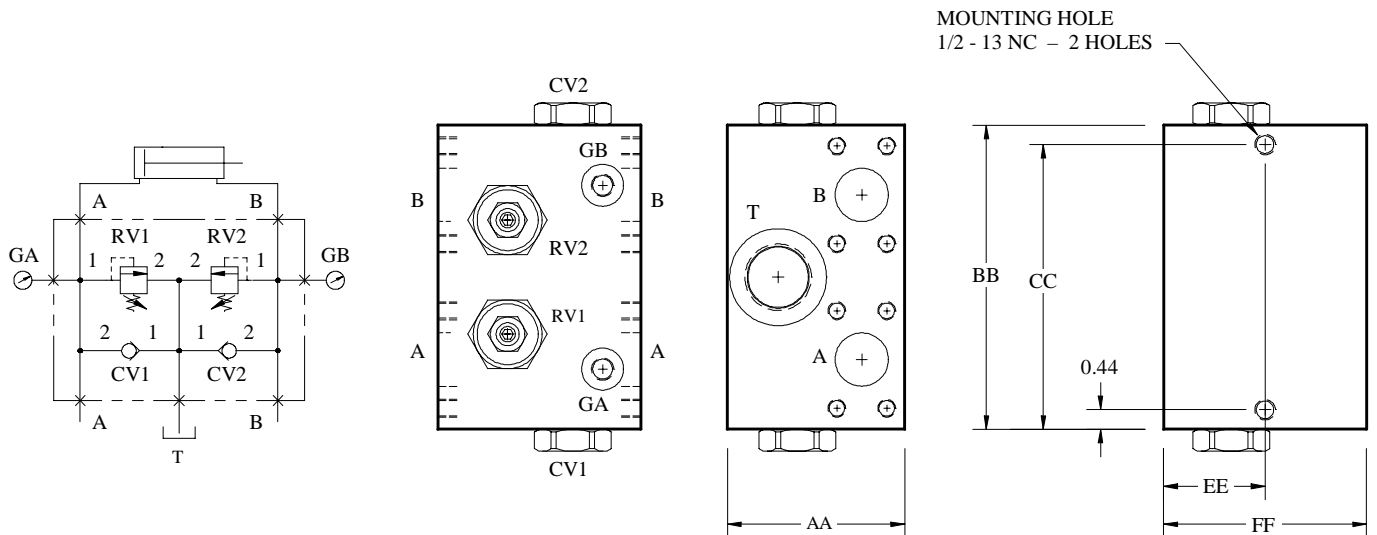
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, OILGEAR, PARKER, STERLING, SUN AND VICKERS CAVITY (OR EQUIVALENT)  
‘1’ IS NOSE OF CARTRIDGE

GA, GB (GAGE): #4 SAE ORB

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-22.  
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check Cavity	Flow (GPM)	RV Relief Cavity	Flow (GPM)	A, B Ports	T Port SAE ORB	AA	BB	CC	EE	FF
MC1418	STANDARD C-16-2	132	STANDARD C-16-2	106	1 1/4 C61	#20 (1 5/8-12)	4.50	7.00	6.56	2.25	4.50
MC1437	STANDARD C-20-2	80	STANDARD C-16-2	106	1 1/2 C61	#24 (1 7/8-12)	5.00	8.75	8.31	2.50	5.00
MC1443	STANDARD C-20-2	80	STANDARD C-16-2	106	1 1/2 C62	#24 (1 7/8-12)	5.00	11.00	10.56	2.75	5.50
MC1442	STANDARD C-16-2	132	STANDARD C-16-2	106	1 1/4 C62	#20 (1 5/8-12)	4.00	10.00	9.56	2.25	4.50
MC1438	SUN T-16A	80	SUN T-3A	50	1 1/4 C61	#20 (1 5/8-12)	4.00	8.25	7.81	2.00	4.00
MC1439	SUN T-16A	80	SUN T-16A	100	1 1/2 C61	#24 (1 7/8-12)	5.00	8.75	8.31	2.50	5.00
MC1440	SUN T-18A	160	SUN T-16A	100	1 1/2 C61	#24 (1 7/8-12)	5.00	8.75	8.31	2.50	5.00
MC1441	SUN T-18A	160	SUN T-18A	200	2 C61	#24 (1 7/8-12)	6.00	9.50	9.06	3.00	6.00
MC1444	SUN T-16A	80	SUN T-16A	100	1 1/2 C62	#24 (1 7/8-12)	5.00	11.00	10.56	2.50	5.00
MC1445	SUN T-18A	160	SUN T-18A	200	2 C62	#24 (1 7/8-12)	6.00	12.25	11.81	3.00	6.00

## Single Selector Manifold

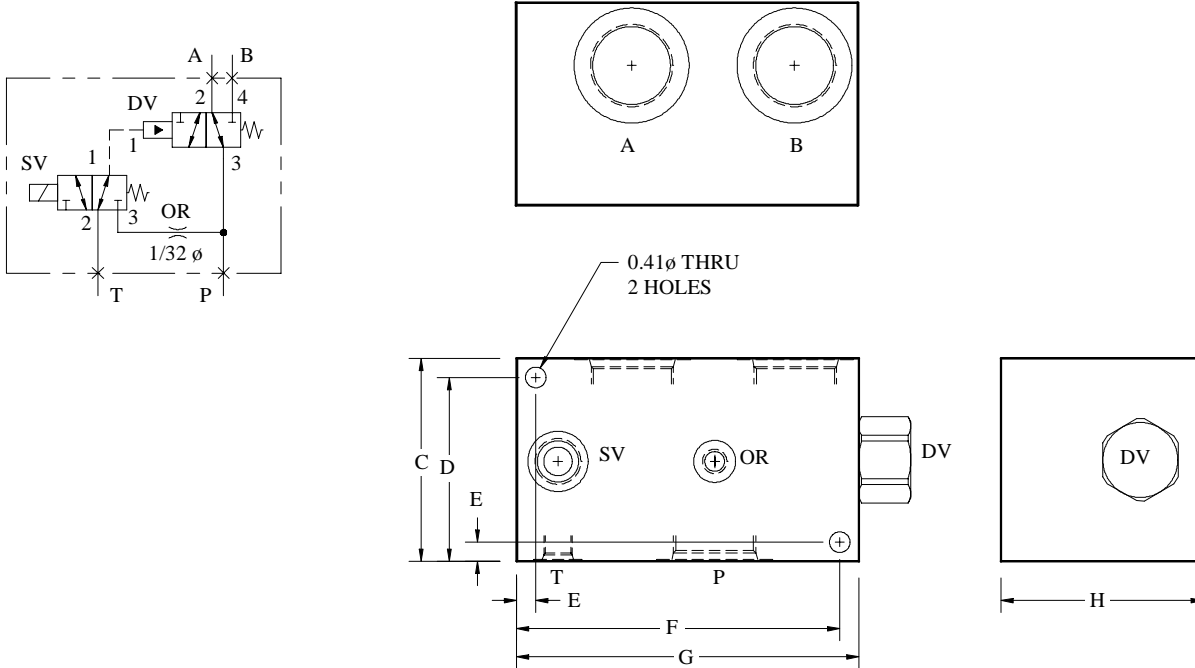
### SAE ORB Ports

MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)  
 '1' IS NOSE OF CARTRIDGE  
 VC12-4 CAVITY FOR HYDRAFORCE ONLY

'OR': #4 SAE ORB PLUG ACCESS TO 1/32 DIA. ORIFICE PLUG

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV Cavity	DV Flow	SV Cavity	P, A, B SAE ORB	T SAE ORB	C	D	E	F	G	H
MB1626S	C-10-4	8 GPM	C-10-3	#8 (3/4-16)	#6 (9/16-18)	3.00	2.63	0.38	3.13	3.50	3.00
MB2072S	VC12-4	30 GPM	C-10-3	#12 (1 1/16-12)	#6 (9/16-18)	3.50	3.13	0.38	4.63	5.00	3.50
MB604S	C-16-4	35 GPM	C-10-3	#16 (1 5/16-12)	#6 (9/16-18)	3.50	3.13	0.38	4.88	5.25	3.50
MB491S	C-20-4	70 GPM	C-10-3	#20 (1 5/8-12)	#6 (9/16-18)	4.00	3.63	0.38	6.38	6.75	4.00

## Dual Selector Manifold

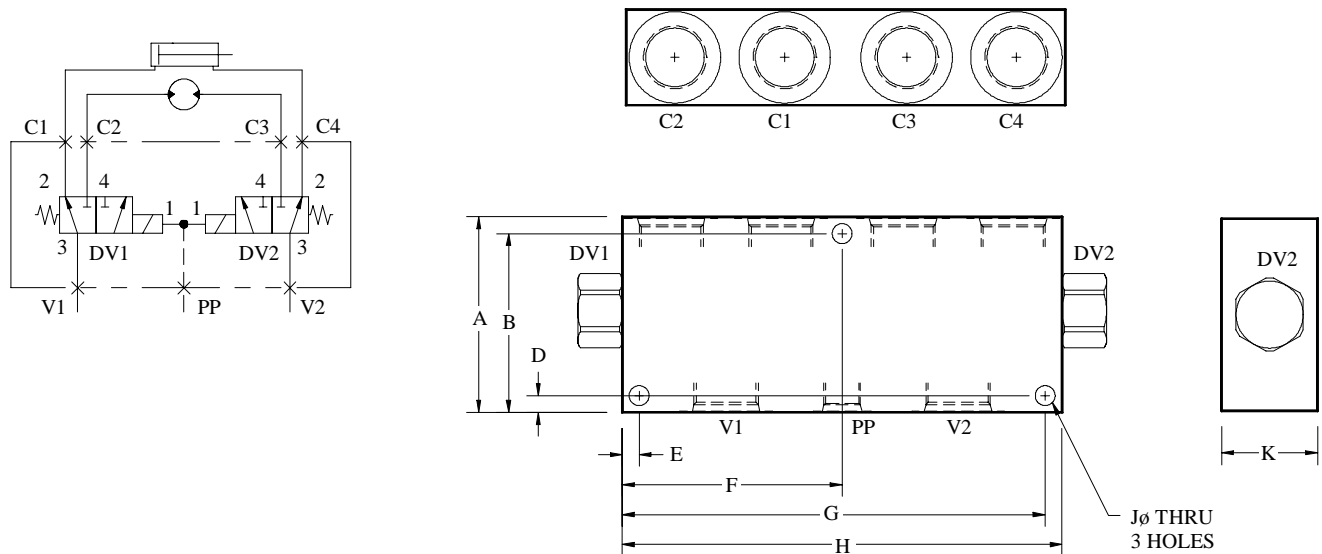
### External Pilot, SAE ORB & SAE 4-Bolt Flange Ports

MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)  
 '1' IS NOSE OF CARTRIDGE  
 VC12-4 CAVITY FOR HYDRAFORCE ONLY

FOR DIMENSION OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.  
 FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV1, DV2		C, V SAE ORB or SAE 4-Bolt	PP SAE ORB	A	B	D	E	F	G	H	J	K
	Cavity	Flow											
MC709S	C-10-4	8 GPM	#8 (3/4-16)	#4 (7/16-20)	3.00	2.69	0.31	0.31	2.75	5.19	5.50	0.34	1.50
MC1409S	VC12-4	30 GPM	#12 (1 1/16-12)	#6 (9/16-18)	3.50	3.16	0.34	0.34	4.13	7.91	8.25	0.41	2.00
MC688S	C-16-4	35 GPM	#16 (1 5/16-12)	#8 (3/4-16)	4.00	3.66	0.34	0.34	4.50	8.66	9.00	0.41	2.00
MC716S	C-20-4	70 GPM	1 1/4 C61	#8 (3/4-16)	3.50	3.13	0.38	0.38	6.00	11.63	12.00	0.41	3.50
MC1154S	C-20-4	70 GPM	1 1/4 C62	#8 (3/4-16)	4.00	3.63	0.38	0.38	6.13	11.88	12.25	0.41	4.00

## Dual Selector Manifold

### Internal Pilot, SAE ORB Ports

MATL: STEEL

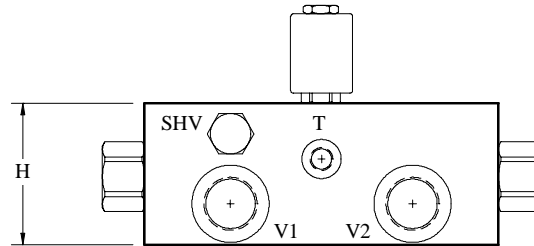
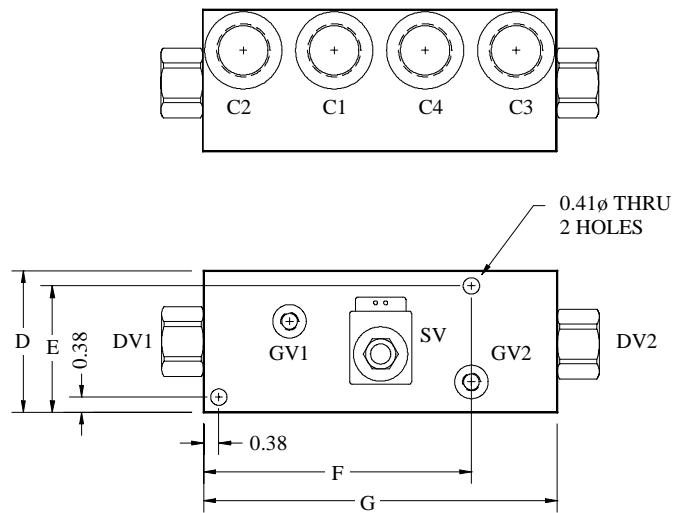
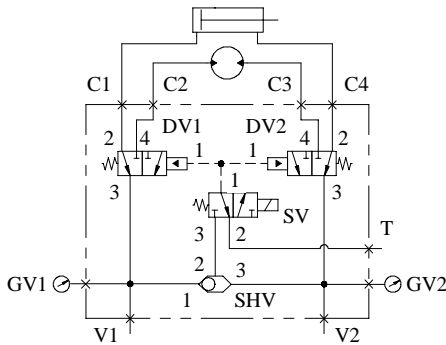
CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)

'1' IS NOSE OF CARTRIDGE

VC12-4 CAVITY FOR HYDRAFORCE ONLY

'GV1', 'GV2' (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV1, DV2		SV, SHV Cavity	C, V SAE ORB	T SAE ORB	D	E	F	G	H
	Cavity	Flow								
MB1630S	C-10-4	8 GPM	C-10-3	#8 (3/4-16)	#6 (9/16-18)	3.00	2.63	2.88	5.75	3.00
MC1407S	VC12-4	30 GPM	C-10-3	#12 (1 1/16-12)	#6 (9/16-18)	3.00	2.63	6.13	8.25	3.50
MC616S	C-16-4	35 GPM	C-10-3	#16 (1 5/16-12)	#6 (9/16-18)	3.50	3.13	6.63	8.75	3.50

## Dual Selector Manifold

### Internal Pilot, SAE 4-Bolt Flange Ports

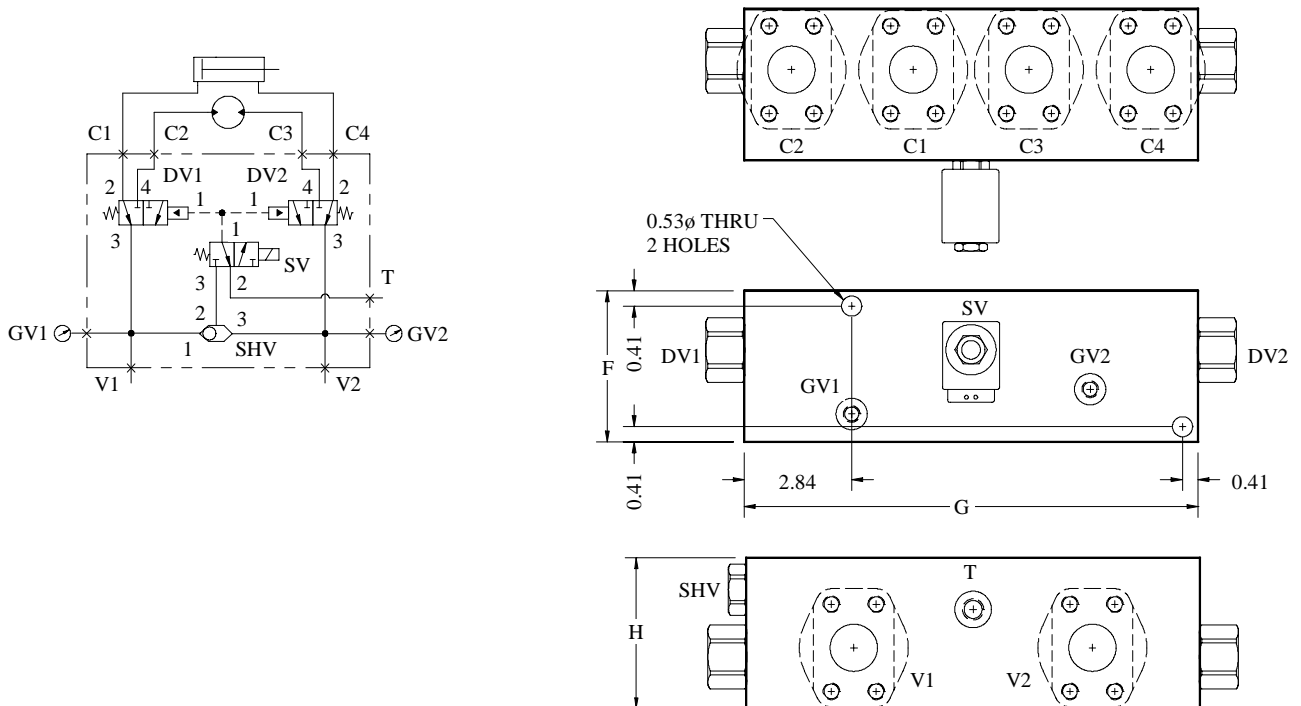
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)  
'1' IS NOSE OF CARTRIDGE

'GV1', 'GV2' (GAGE): #4 SAE ORB

FOR DIMENSION OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.  
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV1, DV2		SV, SHV Cavity	C, V SAE 4-Bolt	T SAE ORB	F	G	H
	Cavity	Flow						
MC607S	C-20-4	70 GPM	C-10-3	1 1/4 C61	#8 (3/4-16)	4.00	12.00	4.00
MC1157S	C-20-4	70 GPM	C-10-3	1 1/4 C62	#8 (3/4-16)	4.50	12.25	4.50

## Regenerative Manifold

### D03 – SAE ORB Ports

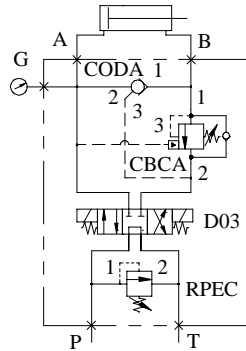
PART NO: MC1001S

MATL: STEEL  
PRESSURE: 5000 PSI  
FLOW RATE: 15 GPM  
CARTRIDGES: SUN CBCA C'BALANCE  
SUN CODA PILOT CHECK  
SUN RPEC RELIEF  
(OR EQUIVALENT)

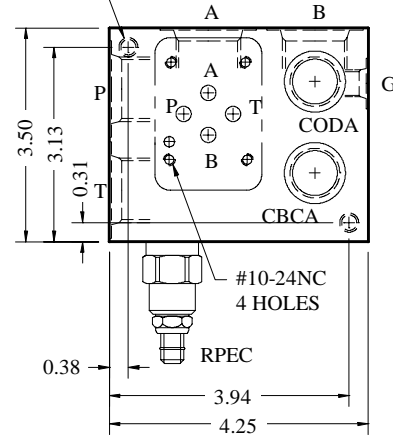
PORTS: #12 SAE ORB  
G (GAGE): #4 SAE ORB

3 1/2" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



5/16-18NC 2 HOLES  
FAR SIDE



### D05 – SAE ORB Ports

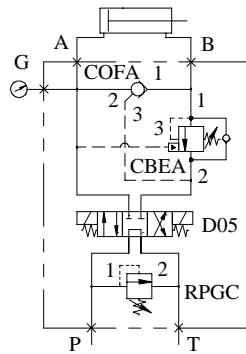
PART NO: MC1002S

MATL: STEEL  
PRESSURE: 5000 PSI  
FLOW RATE: 30 GPM  
CARTRIDGES: SUN CBEA C'BALANCE  
SUN COFA PILOT CHECK  
SUN RPGC RELIEF  
(OR EQUIVALENT)

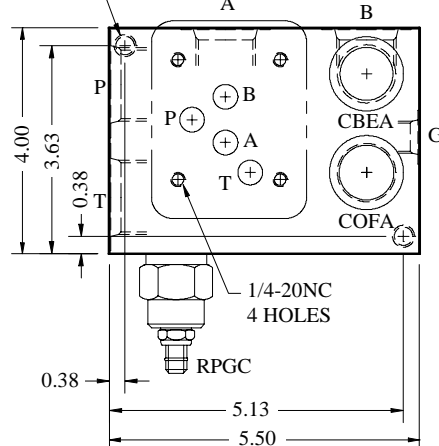
PORTS: #16 SAE ORB  
G (GAGE): #6 SAE ORB

4" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



3/8-16NC 2 HOLES  
FAR SIDE



### D08 – SAE ORB Ports

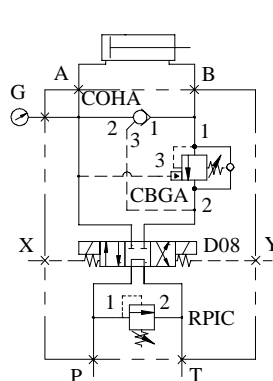
PART NO: MC1003S

MATL: STEEL  
PRESSURE: 5000 PSI  
FLOW RATE: 60 GPM  
CARTRIDGES: SUN CBGA C'BALANCE  
SUN COHA PILOT CHECK  
SUN RPIC RELIEF  
(OR EQUIVALENT)

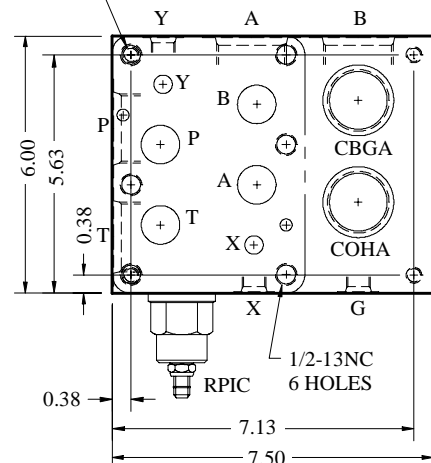
PORTS: #20 SAE ORB  
X, Y, G (GAGE): #6 SAE ORB

5" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



3/8-16NC 4 HOLES  
FAR SIDE



## Regenerative Manifold

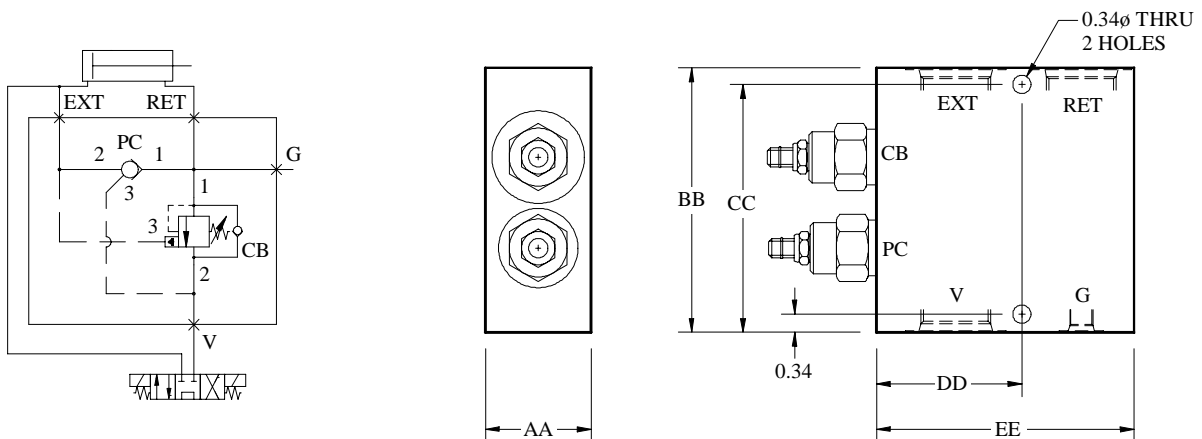
### Without Directional Valve, SAE ORB Ports

MATL: STEEL

CARTRIDGES: COMPACT AND SUN CAVITY (OR EQUIVALENT)  
'1' IS NOSE OF CARTRIDGE

G (GAGE): # 4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CB Cavity	PC Cavity	EXT, RET, V SAE ORB	AA	BB	CC	DD	EE
MC1506S	SUN T-11A	SUN T-11A	#8 (3/4-16)	1.25	3.50	3.19	2.13	3.50
MC1507S	SUN T-2A	SUN T-2A	#12 (1 1/16-12)	1.50	4.75	4.44	2.50	4.50
MC1508S	COMPACT CP12-3S	COMPACT CP16-3S	#16 (1 5/8-12)	2.00	5.00	4.69	2.75	4.88
MC1509S	SUN T-17A	SUN T-17A	#20 (1 5/8-12)	2.50	6.00	5.69	3.25	5.75
MC1510S	SUN T-19A	SUN T-19A	#24 (1 7/8-12)	3.00	7.50	7.19	4.00	6.88

## Rectifier Manifold

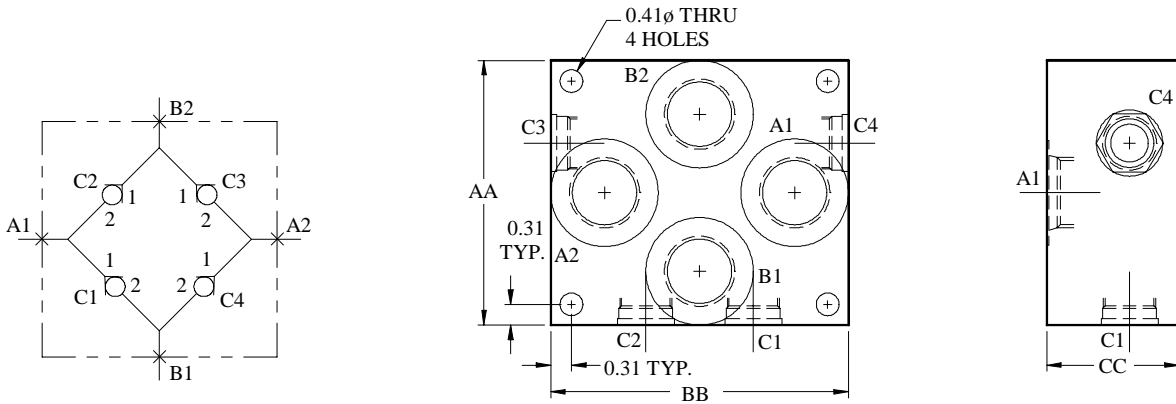
### SAE ORB Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD), COMPACT, PARKER, SUN, AND VICKERS (OR EQUIVALENT)  
\*1\* IS NOSE OF CARTRIDGE

NOTE: COMPACT CP12-2 CAVITY EQUIVALENT TO HYDRAFORCE VC12-2 CAVITY  
AND PARKER C12-2 CAVITY IS EQUIVALENT TO OILGEAR HS800-2 CAVITY

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	C Cavity	A1, A2, B1, B2 SAE ORB	AA	BB	CC
MB2274S	STD C-10-2	#12 (1 1/16-12)	4.00	4.50	2.00
MB2275S	COMPACT CP12-2	#16 (1 5/16-12)	5.00	5.00	2.00
MB2276S	VICKERS C-12-2	#16 (1 5/16-12)	5.00	5.00	2.00
MB2277S	PARKER C12-2	#16 (1 5/16-12)	5.00	5.00	2.00
MB2278S	STD C-16-2	#20 (1 5/8-12)	6.00	6.00	2.50
MB2279S	STD C-20-2	#24 (1 7/8-12)	7.25	7.75	3.00
MB2280S	SUN T-13A	#12 (1 1/16-12)	4.00	4.50	2.00
MB2281S	SUN T-5A	#16 (1 5/16-12)	5.00	5.00	2.00
MB2282S	SUN T-16A	#20 (1 5/8-12)	6.00	6.75	2.50
MB2283S	SUN T-18A	#24 (1 7/8-12)	8.25	8.50	3.00

## Rectifier Manifold

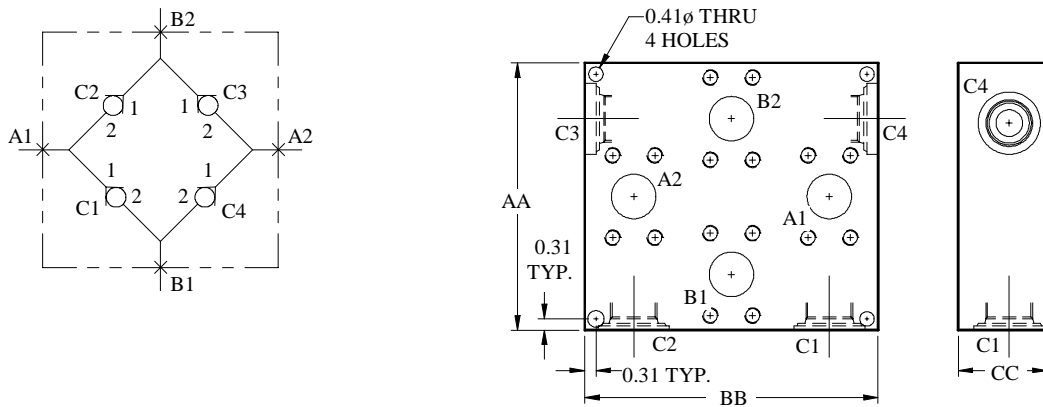
### SAE 4-Bolt Flange Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD), AND SUN CAVITY (OR EQUIVALENT)  
‘1’ IS NOSE OF CARTRIDGE

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.  
FLANGE MOUNTING HOLES ARE IN INCHES.



Part No.	C Cavity	A1, A2, B1, B2 SAE 4-BOLT	AA	BB	CC
MB2284S	STD C-16-2	1 1/4 C61	7.50	8.25	2.50
MB2285S	STD C-16-2	1 1/4 C62	9.00	9.25	3.00
MB2286S	STD C-20-2	1 1/2 C61	9.00	9.75	3.50
MB2287S	STD C-20-2	1 1/2 C62	11.00	11.00	3.50
MB2288S	SUN T-16A	1 1/4 C61	8.00	8.25	3.00
MB2289S	SUN T-16A	1 1/4 C62	9.25	9.25	3.00
MB2290S	SUN T-18A	1 1/2 C61	9.75	9.75	3.50
MB2291S	SUN T-18A	1 1/2 C62	11.00	10.75	4.00

## Accumulator Dump Manifold

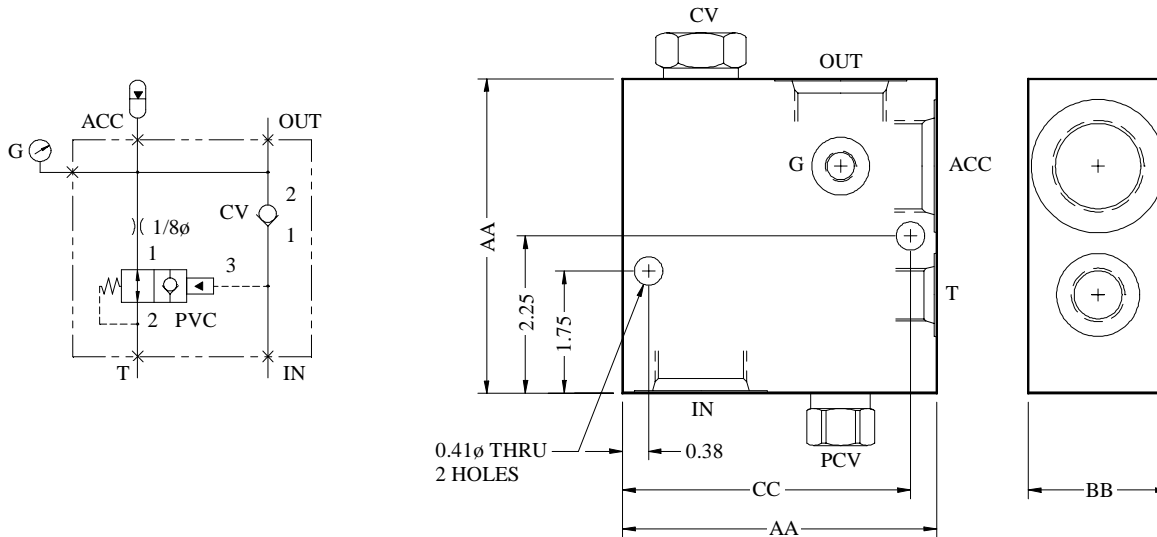
### SAE ORB Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD) AND SUN CAVITY (OR EQUIVALENT)  
\*1\* IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check Cavity	Check Flow Rate	PCV Pilot Check Cavity	IN, OUT, ACC SAE ORB	T SAE ORB	AA	BB	CC
MB1102S	SUN T-5A	40 GPM	SUN T-11A	#16 (1 5/16-12)	#8 (3/4-16)	4.50	2.00	4.13
MB1104S	STD C-16-2	40 GPM	STD C-10-3	#16 (1 5/16-12)	#8 (3/4-16)	4.50	2.00	4.13
MB1103S	SUN T-16A	80 GPM	SUN T-11A	#20 (1 5/8-12)	#8 (3/4-16)	5.00	2.50	4.63
MB1105S	STD C-20-2	60 GPM	STD C-10-3	#20 (1 5/8-12)	#8 (3/4-16)	5.00	2.50	4.63

## Hi-Low Manifold

### D05 – SAE ORB Ports

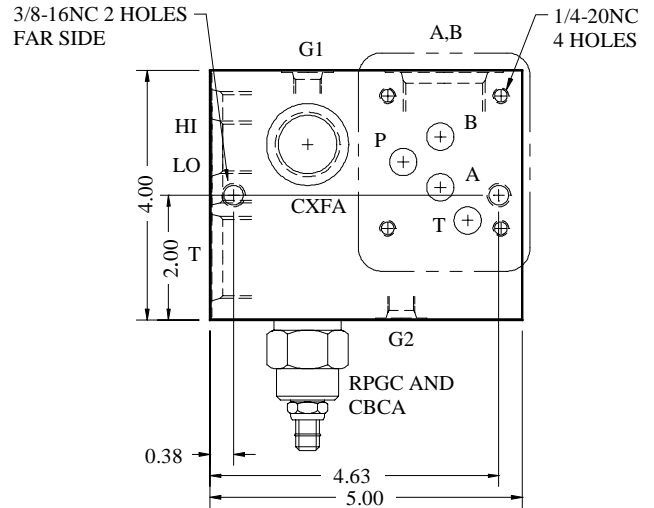
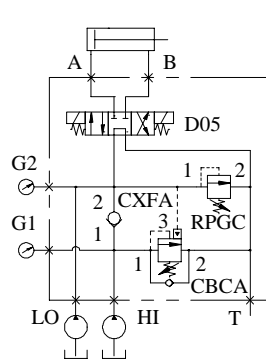
PART NO: MC1006S

MATL: STEEL  
PRESSURE: 5000 PSI  
FLOW RATE: 20 GPM  
CARTRIDGES: SUN CBCA C' BALANCE  
SUN CXFA CHECK  
SUN RPGC RELIEF  
(OR EQUIVALENT)

PORTS: #16 SAE ORB  
G (GAGE): #4 SAE ORB

4" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



### D08 – SAE ORB Ports

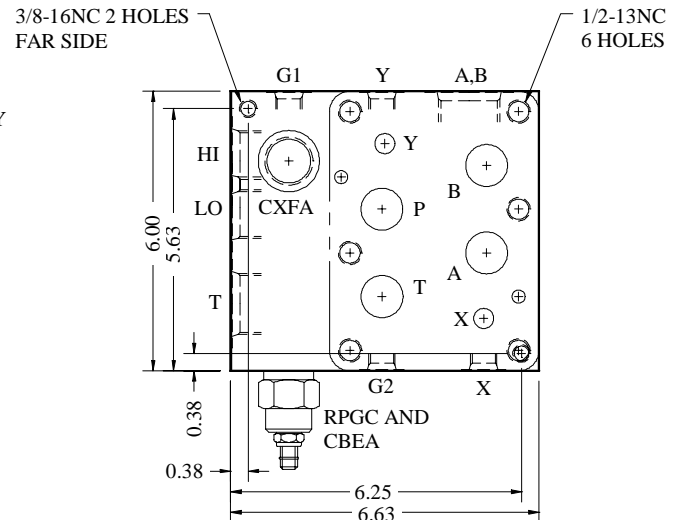
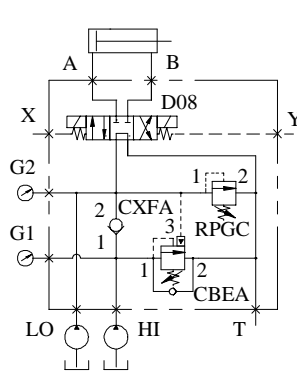
PART NO: MC1007S

MATL: STEEL  
PRESSURE: 5000 PSI  
FLOW RATE: 40 GPM  
CARTRIDGES: SUN CBEA C' BALANCE  
SUN CXFA CHECK  
SUN RPGC RELIEF  
(OR EQUIVALENT)

PORTS: #16 SAE ORB  
X, Y, G (GAGE): #6 SAE ORB

4" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



### D08 – SAE ORB Ports

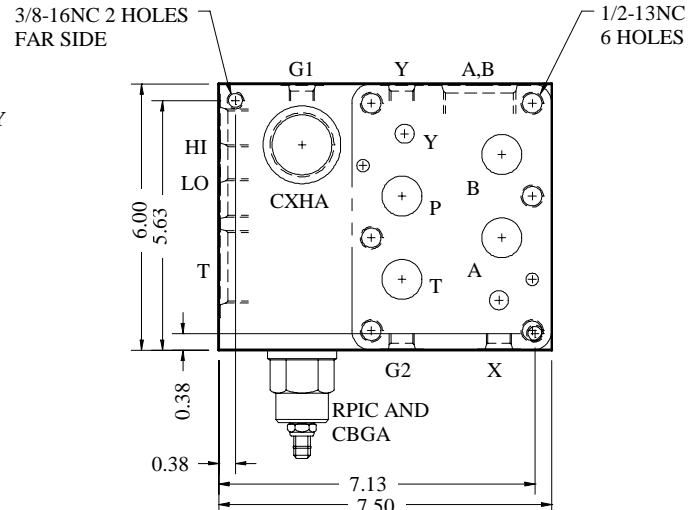
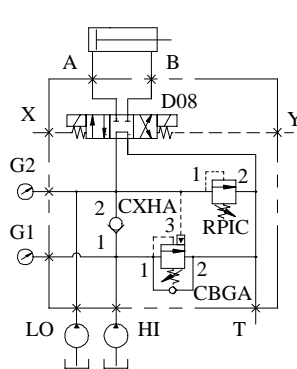
PART NO: MC1008S

MATL: STEEL  
PRESSURE: 5000 PSI  
FLOW RATE: 80 GPM  
CARTRIDGES: SUN CBGA C' BALANCE  
SUN CXHA CHECK  
SUN RPIC RELIEF  
(OR EQUIVALENT)

PORTS: #20 SAE ORB  
X, Y, G (GAGE): #6 SAE ORB

5" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



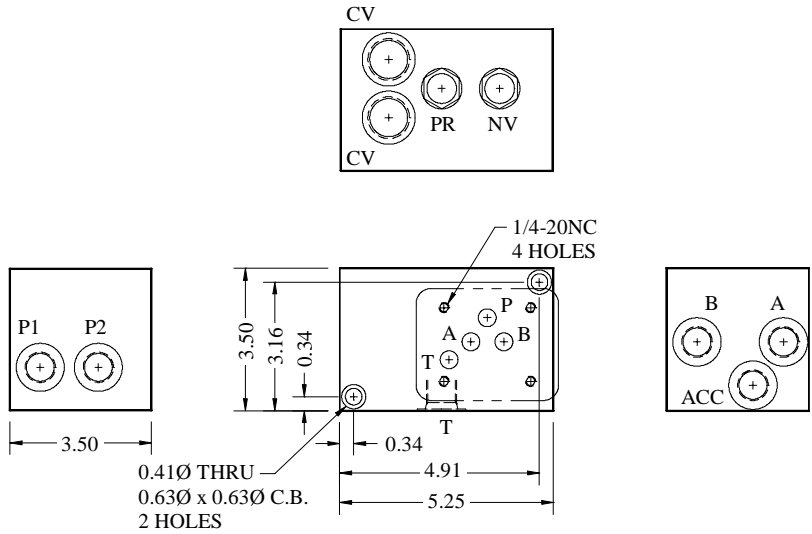
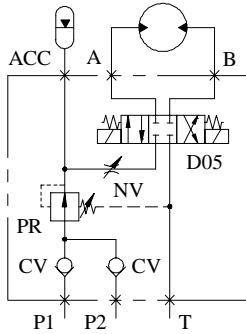
## Grapple Rotation Manifold

### Without Relief – SAE ORB Ports

PART NO: MC663S

MATL: STEEL  
 PRESSURE: 5000 PSI  
 DIRECTIONAL VALVE: (D05) YUKEN DSG-03-3C2-D24-5090  
 (OR EQUIVALENT)  
 CARTRIDGES: SUN CXFA-XCN CHECK  
 SUN PBDB-LAN PRESSURE REDUCING  
 SUN NFCC-LAN NEEDLE  
 (OR EQUIVALENT)  
 PORTS: #8 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR  
 RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

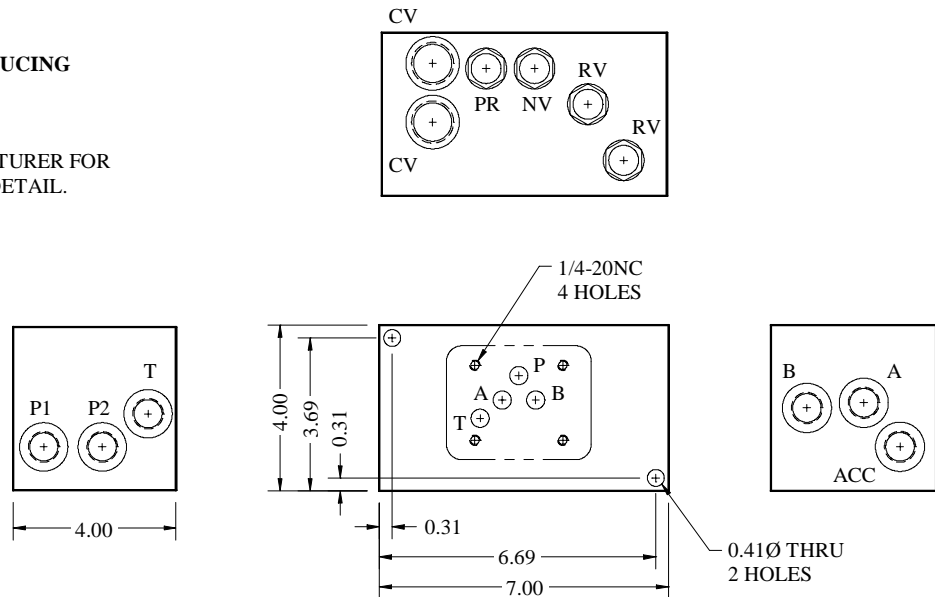
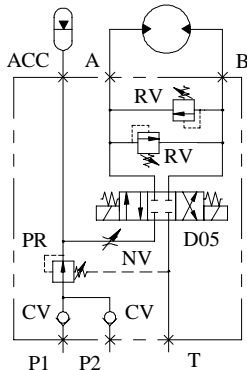


### With Relief – SAE ORB Ports

PART NO: MC429S

MATL: STEEL  
 PRESSURE: 5000 PSI  
 DIRECTIONAL VALVE: (D05) YUKEN DSG-03-3C2-D24-5090  
 (OR EQUIVALENT)  
 CARTRIDGES: SUN CXFA-XCN CHECK  
 SUN RPEC-LAN RELIEF  
 SUN NFCC-LAN NEEDLE  
 SUN PBDB-LAN PRESSURE REDUCING  
 (OR EQUIVALENT)  
 PORTS: #8 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR  
 RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



## Pump Manifold

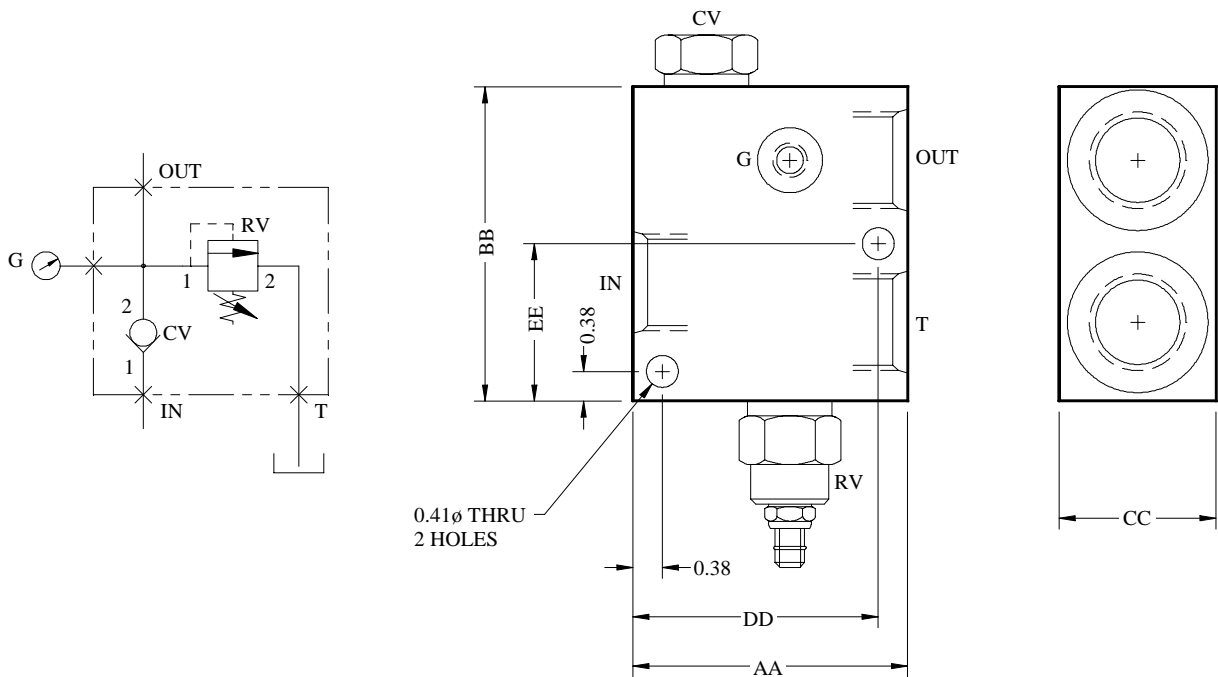
### SAE ORB Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD) AND SUN CAVITY (OR EQUIVALENT)  
\*1\* IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Cavity	Check Flow Rate	RV Cavity	Relief Flow Rate	IN, OUT, T SAE ORB	AA	BB	CC	DD	EE
MB1020S	SUN T-13A	20 GPM	SUN T-10A	25 GPM	#12 (1 1/16-12)	3.00	3.50	2.00	2.63	1.75
MB1022S	SUN T-5A	40 GPM	SUN T-3A	50 GPM	#16 (1 5/16-12)	3.50	4.00	2.00	3.13	2.00
MB1024S	SUN T-16A	80 GPM	SUN T-3A	50 GPM	#20 (1 5/8-12)	4.00	5.00	2.50	3.63	2.50
MB1026S	SUN T-16A	80 GPM	SUN T-16A	100 GPM	#20 (1 5/8-12)	5.00	5.25	2.50	4.63	2.75
MB1021S	STD C-10-2	20 GPM	STD C-10-2	30 GPM	#12 (1 1/16-12)	3.00	3.50	2.00	2.63	1.75
MB1023S	STD C-16-2	40 GPM	STD C-16-2	80 GPM	#16 (1 5/16-12)	4.00	4.00	2.00	3.63	2.00
MB1025S	STD C-20-2	60 GPM	STD C-16-2	80 GPM	#20 (1 5/8-12)	4.75	5.00	2.50	4.38	2.50

## Hydrostatic Transmission Manifold

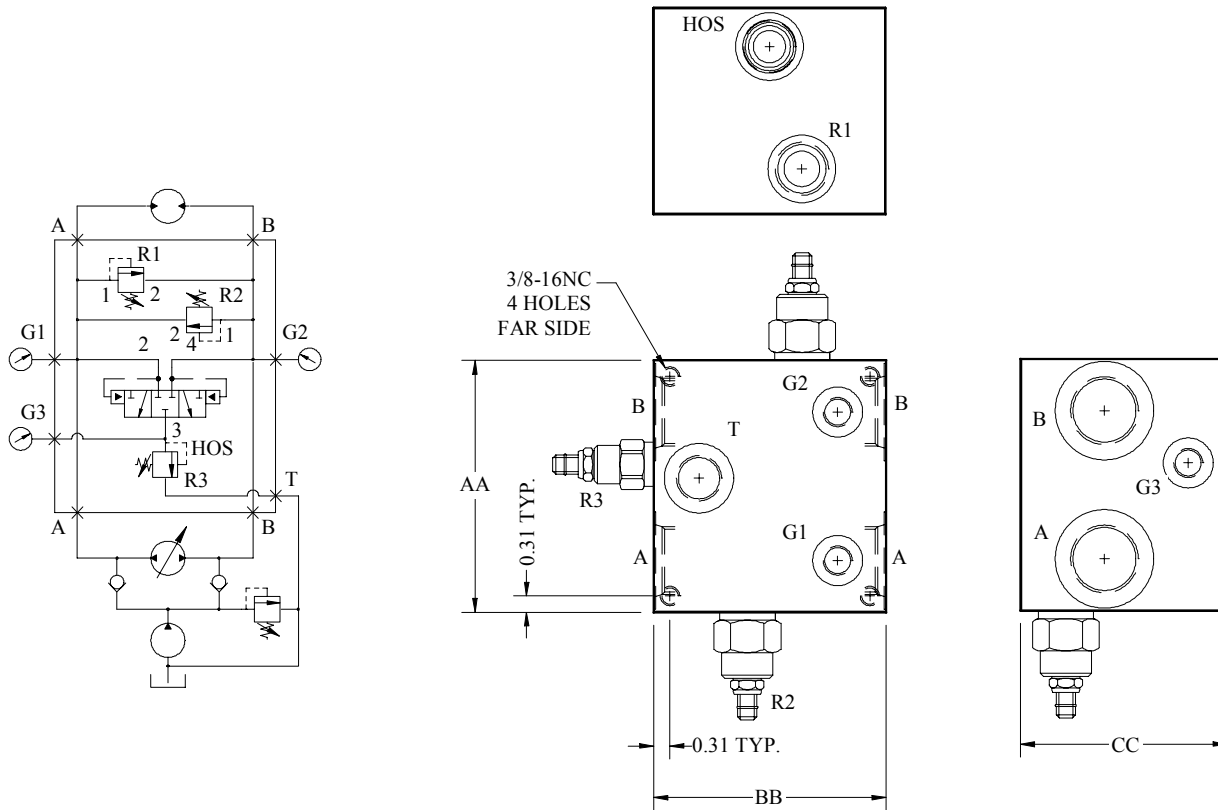
### SAE ORB Ports

MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)  
 '1' IS NOSE OF CARTIGDE

G1, G2, G3 (GAGE): #6 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	Hot Oil Shuttle	Cross Relief	Shuttle Relief	A, B SAE ORB	T SAE ORB	AA	BB	CC
MB2303S	SUN T-31A	SUN T-10A	SUN T-10A	#12 (1 1/16-12)	#8 (3/4-16)	4.50	4.00	3.00
MB2304S	SUN T-32A	SUN T-3A	SUN T-10A	#16 (1 5/16-12)	#10 (7/8-14)	4.88	4.50	4.00
MB2329S	SUN T-33A	SUN T-16A	SUN T-3A	#24 (1 7/8-12)	#12 (1 1/16-12)	6.19	6.00	4.50

## Hydrostatic Transmission Manifold

### SAE 4-Bolt Flange Ports

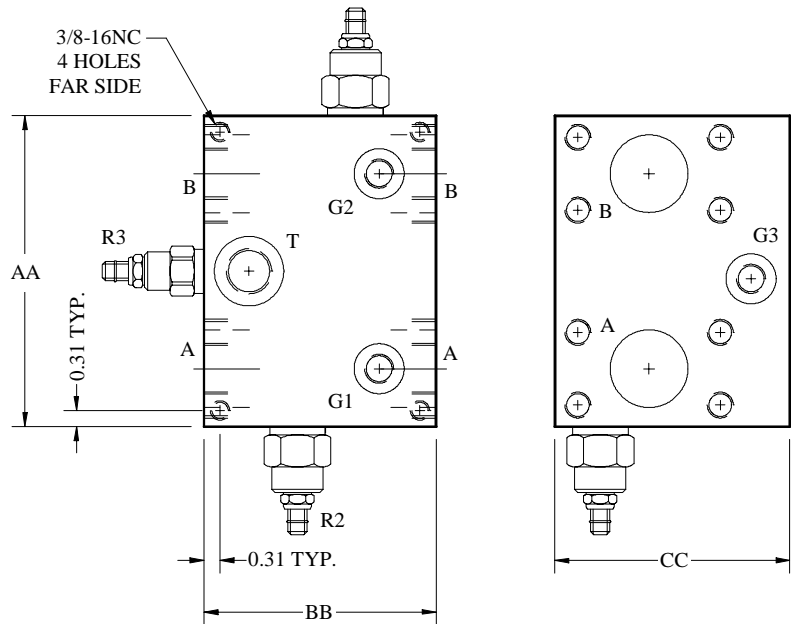
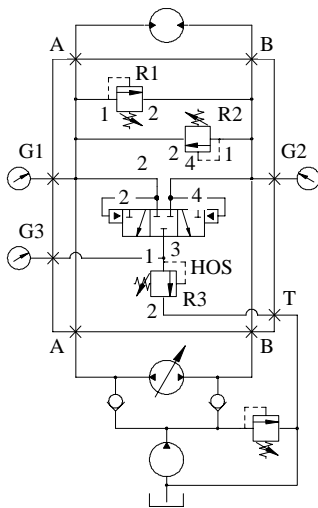
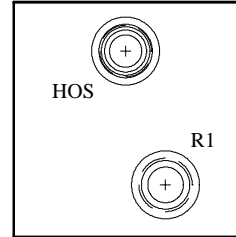
MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)  
'1' IS NOSE OF CARTRIDGE

G1, G2, G3 (GAGE): #6 SAE ORB

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.  
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	Hot Oil Shuttle	Cross Relief	Shuttle Relief	A, B SAE 4-BOLT	T SAE ORB	AA	BB	CC
MC1492S	SUN T-33A	SUN T-16A	SUN T-3A	1 1/2 C61	#12 (1 1/16-12)	6.75	5.50	5.00
MC1493S	SUN T-33A	SUN T-16A	SUN T-3A	1 1/2 C62	#12 (1 1/16-12)	7.25	6.00	5.50
MC1494S	SUN T-34A	SUN T-18A	SUN T-16A	1 1/2 C61	#16 (1 5/16-12)	8.25	6.75	6.00
MC1495S	SUN T-34A	SUN T-18A	SUN T-16A	1 1/2 C62	#16 (1 5/16-12)	8.50	7.00	6.00
MC1496S	SUN T-34A	SUN T-18A	SUN T-16A	2 C61	#16 (1 5/16-12)	8.50	6.75	6.00
MC1497S	SUN T-34A	SUN T-18A	SUN T-16A	2 C62	#16 (1 5/16-12)	9.13	7.00	6.00

## Thumb Manifold

### D05 – SAE ORB Ports

MATL: STEEL

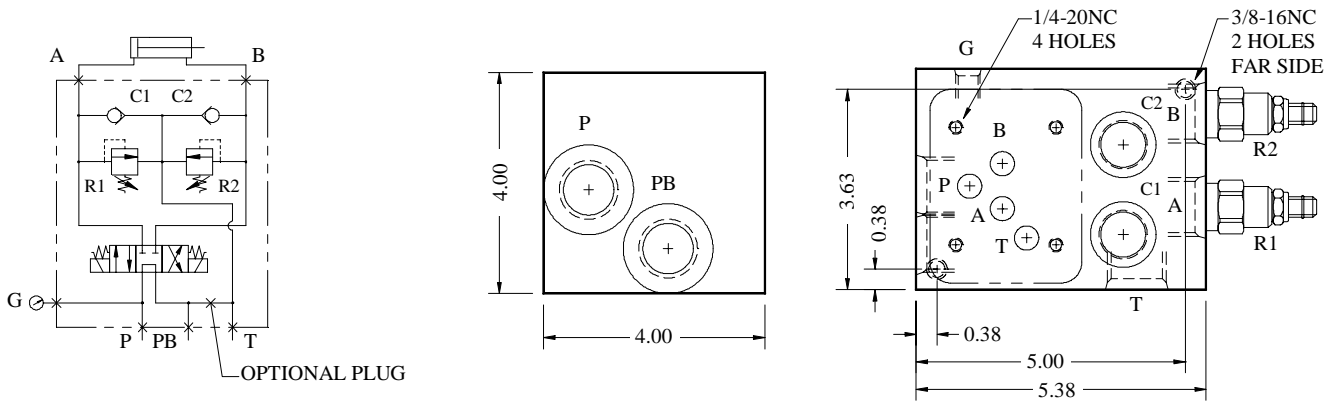
PRESSURE: 5000 PSI

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)  
PRESSURE IN FROM NOSE, OUT TO SIDE

PORTS: #12 SAE ORB

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED  
PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	C1, C2 Check Cavity	Check Flow Rate	R1, R2 Relief Cavity	Relief Flow Rate
MB1074S	SUN T-5A	40 GPM	SUN T-10A	50 GPM
MB1078S	STANDARD C-10-2	20 GPM	STANDARD C-10-2	30 GPM

THIS MANIFOLD IS TO ALLOW AN EXCAVATION THUMB CYLINDER TO BE PUSHED BACK BY THE BUCKET CYLINDER. THE RELIEF VALVE SHOULD BE SET AT THE MINIMUM VALUE REQUIRED TO HOLD THE LOAD. THERE ARE TWO WAYS TO PLUMB THIS MANIFOLD, AS A STRAIGHT VALVE OR POWER BEYOND FUNCTION.

## Thumb Manifold

### D08 – SAE ORB Ports

MATL: STEEL

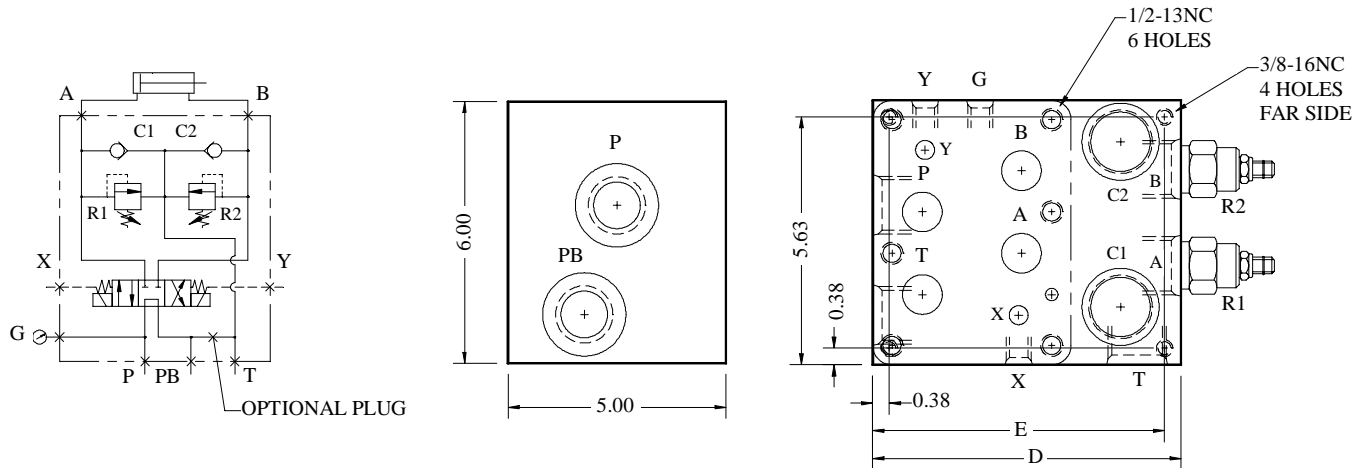
PRESSURE: 5000 PSI

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)  
PRESSURE IN FROM NOSE, OUT TO SIDE

PORTS: #16 SAE ORB

X, Y, G (GAGE): #6 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED  
PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	C1, C2 Check Cavity	Check Flow Rate	R1, R2 Relief Cavity	Relief Flow Rate	D	E
MC825S	SUN T-16A	80 GPM	SUN T-3A	50 GPM	7.00	6.63
MC999S	STANDARD C-20-2	60 GPM	STANDARD C-16-2	80 GPM	7.63	7.25

THIS MANIFOLD IS TO ALLOW AN EXCAVATION THUMB CYLINDER TO BE PUSHED BACK BY THE BUCKET CYLINDER. THE RELIEF VALVE SHOULD BE SET AT THE MINIMUM VALUE REQUIRED TO HOLD THE LOAD. THERE ARE TWO WAYS TO PLUMB THIS MANIFOLD, AS A STRAIGHT VALVE OR POWER BEYOND FUNCTION.

## Two Cavity Manifold

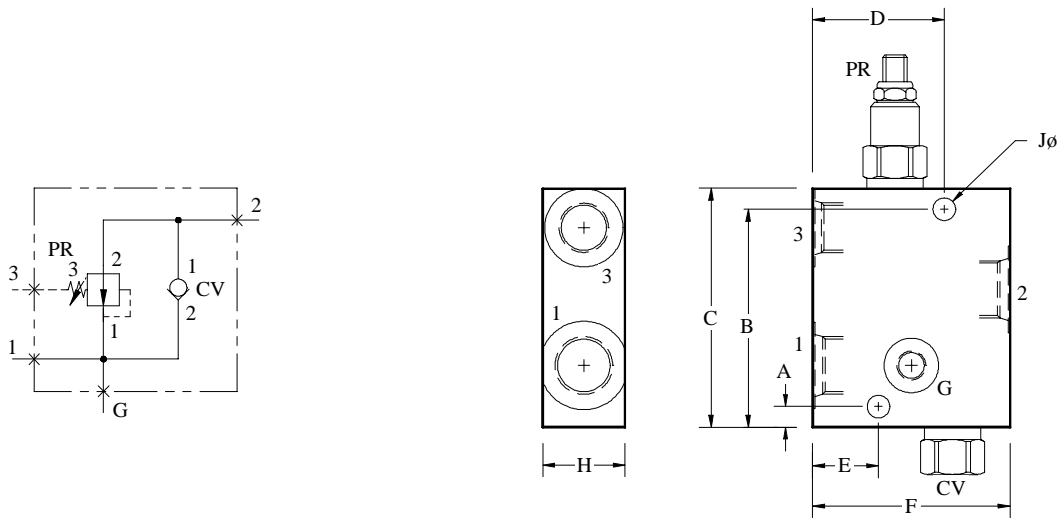
### Pressure Reducing and Reducing Relieving with Reverse Free Flow Check SAE ORB Ports

MATL: STEEL

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)  
'1' IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	PR Cavity	CV Cavity	Ports 1, 2 SAE ORB	Port 3 SAE ORB	A	B	C	D	E	F	H	J
MB2495S	STANDARD C-10-3	STANDARD C-10-2	#8 (3/4-16)	#6 (9/16-18)	1.50	2.81	3.13	2.69	0.31	3.00	1.25	0.34
MB2499S	STANDARD C-16-3	STANDARD C-16-2	#20 (1 5/8-12)	#12 (1 1/16-12)	2.50	4.63	5.00	3.75	0.38	4.13	2.50	0.41

Part No.	PR Cavity	CV Cavity	SUN No.	Ports 1, 2 SAE ORB	Port 3 SAE ORB	A	B	C	D	E	F	H	J
MB2498S	SUN T-11A	SUN T-13A	E4K	#10 (7/8-14)	#8 (3/4-16)	0.31	3.31	3.63	2.00	1.00	3.00	1.25	0.34
MB2502S	SUN T-2A	SUN T-5A	B4L	#12 (1 1/16-12)	#10 (7/8-14)	0.38	3.63	4.00	2.38	1.25	3.50	1.50	0.41
MB2506S	SUN T-17A	SUN T-16A	H4N	#20 (1 5/8-12)	#12 (1 1/16-12)	0.38	5.13	5.50	3.50	1.50	4.50	2.50	0.41
MB2510S	SUN T-19A	SUN T-18A	—	#24 (1 7/8-12)	#12 (1 1/16-12)	0.44	6.44	6.88	4.50	2.00	6.00	3.00	0.41