

Cunningham
SINCE 1949

HYDRAULIC CYLINDERS



MODEL CM CONSTRUCTION – MARINE GRADE CYLINDERS 1½ THRU 16" BORES

3,500 p.s.i. Working Pressure

5,000 p.s.i. Non-Shock

MODEL CM SPECIFICATIONS

- HIGH TENSILE CHROME PLATED PISTON RODS
- PRECISION HONED STEEL TUBING
- URETHANE ROD AND PISTON SEALS
- HYTREL ROD WIPER

OPTIONS

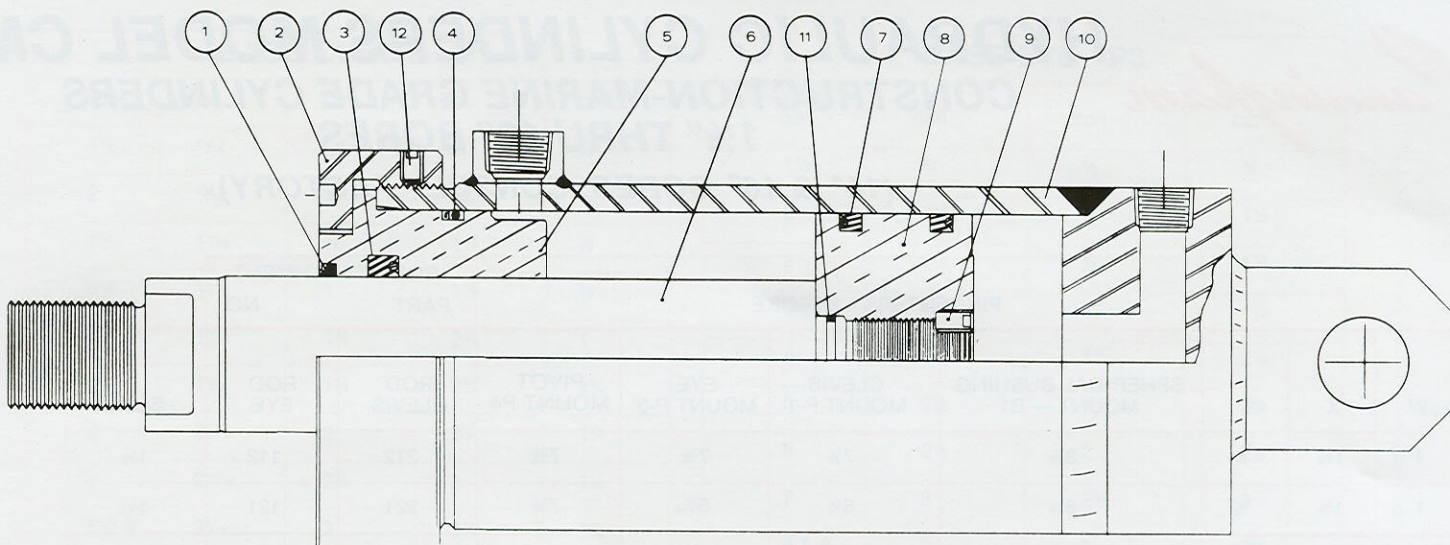
- CAST IRON PISTON RINGS
- STAINLESS STEEL HI TENSILE ROD
- SELF ALIGNING SPHERICAL BUSHINGS
- INTEGRAL COUNTERBALANCE VALVES
- INTEGRAL PILOT OPERATED CHECK VALVES
- S.A.E. STRAIGHT THREAD PORTS
- BRASS ROD SCRAPER
- CUSHIONS

CATALOG NO. 502 CM

Cunningham Manufacturing Co.

318 SOUTH WEBSTER STREET • SEATTLE, WASHINGTON 98108 • (206) 767-3713 • FAX (206) 762-3457

www.cunninghamcylinders.com

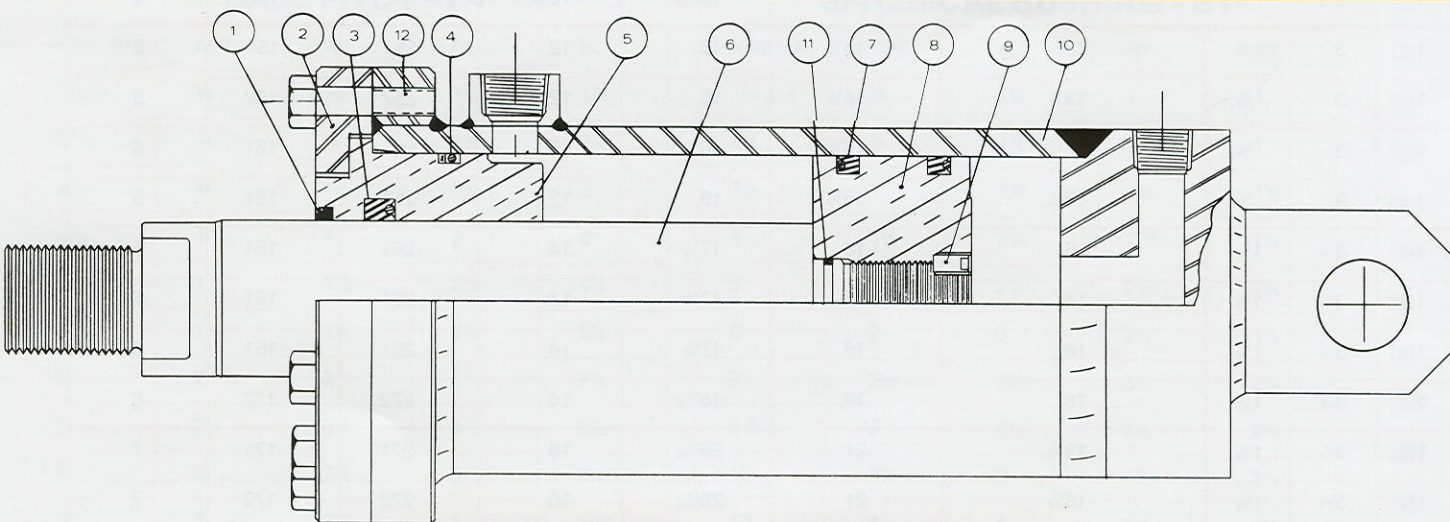


MODEL CM – PARTS LIST

1 1/2" BORE THRU 9" BORE

CM-1	Rod Wiper	CM-7	Piston Seal
CM-2	Lock Ring	CM-8	Piston
CM-3	Rod Seal	CM-9	Piston Lock Screw
CM-4	Head Seal	CM-10	Tube Assembly
CM-5	Rod Head	CM-11	Piston ID Seal
CM-6	Piston Rod	CM-12	Lock Ring Set Screw

IMPORTANT: When ordering parts please give complete nameplate data as to bore, stroke, rod diameter and serial number. Serial Numbers are also stamped on rear heads.



MODEL CM – PARTS LIST

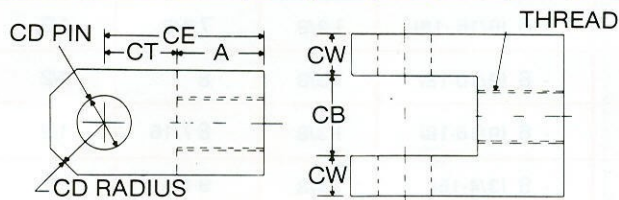
10" AND 12" BORE

CM-1	Rod Wiper	CM-7	Piston Seal
CM-2	Clamp Ring	CM-8	Piston
CM-3	Rod Seal	CM-9	Piston Lock Screw
CM-4	Head Seal	CM-10	Tube Assembly
CM-5	Rod Head	CM-11	Piston ID Seal
CM-6	Piston Rod	CM-12	Head Bolts

CMC does not authorize the approval of CMC cylinders in any of the following applications: aircraft, personnel lifts, aerial ladders, or amusement park devices.

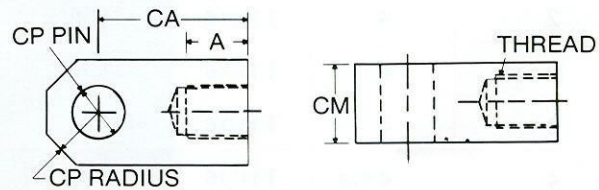
ROD CLEVIS - P1

CYLINDER BORE	CLEVIS NUMBER	THREAD	A	CB	CD PIN	CE	CT	CW
1½	212	½ - 20	¾	1³⁄₁₆	½	1½	¾	½
1½ 2, 2½	221	¾ - 16	1½	1⁵⁄₁₆	¾	2½	1	⅝
	223	1 - 14	1½	1⁵⁄₁₆	¾	2½	1	⅝
¾	231	1 - 14	1½	1⁹⁄₁₆	1	2¹⁵⁄₁₆	1⁵⁄₁₆	¾
¾ - 4	241	1¼ - 12	2	2¹⁄₁₆	1½	3¾	1¾	1
	242	1½ - 12	2	2¹⁄₁₆	1½	3¾	1¾	1
5	251	1½ - 12	2¼	2⁹⁄₁₆	1¾	4½	2¼	1¼
	252	1¾ - 12	2¼	2⁹⁄₁₆	1¾	4½	2¼	1¼
5, 6	261	1⅞ - 12	3	2⁹⁄₁₆	2	5½	2½	1¼
6, 7	271	2¼ - 12	3½	3¹⁄₁₆	2½	6½	3	1½
	272	2½ - 12	3½	3¹⁄₁₆	2½	6½	3	1½
7, 8	281	2½ - 12	3½	3¹⁄₁₆	3	6¾	3¼	1½
7, 8, 9	282	3 - 12	3½	3¹⁄₁₆	3	6¾	3¼	1½
10	2101	3¼ - 12	3½	4¹⁄₁₆	3½	7¾	4¼	2
12	2121	3½ - 12	4	4⁹⁄₁₆	4	8¹³⁄₁₆	4¹³⁄₁₆	2¼



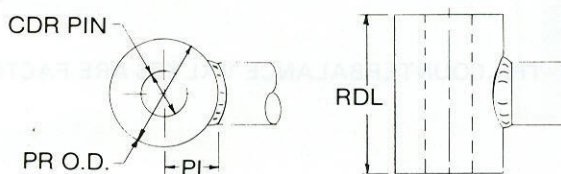
ROD EYE - P3

CYLINDER BORE	EYE NUMBER	THREAD	A	CA	CP PIN	CM
1½	112	½ - 20	¾	1½	½	¾
1½, 2, 2½	121	¾ - 16	1½	2¹⁄₁₆	¾	1¼
2, 2½	133	1 - 14	1½	2¹³⁄₁₆	1	1½
¾	133	1 - 14	1½	2¹³⁄₁₆	1	1½
¾ - 4	141	1¼ - 12	2	3⁷⁄₁₆	1½	2
	142	1½ - 12	2	3⁷⁄₁₆	1½	2
5	151	1½ - 12	2¼	4	1¾	2½
	152	1¾ - 12	2¼	4	1¾	2½
5, 6	161	1⅞ - 12	3	5	2	2½
6, 7	171	2¼ - 12	3½	5¹³⁄₁₆	2½	3
	172	2½ - 12	3½	5¹³⁄₁₆	2½	3
8	181	2½ - 12	3½	6⅞	3	3
7, 8, 9	192	3 - 12	3½	6½	3	3½
10	1101	3¼ - 12	3½	7⅞	3½	4
12	1121	3½ - 12	4	9⅞	4	4½



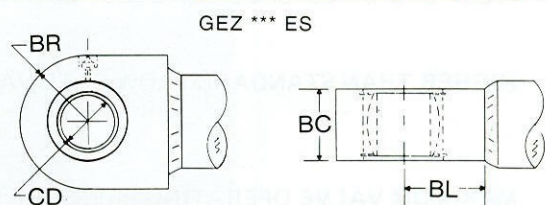
ROD PIVOT - P4

BORE DIA.	CDR	PL	PR	RDL
1½	¾	⅞	1¾	1⅞
2	¾	⅞	1¾	2½
2½	¾	⅞	1¾	2½
¾	1	1	2	3
4	1½	1¼	2½	4
5	1¾	1½	3¼	5
6	2	2	4	5
7	2½	2¼	4½	6
8	3	2½	5	6
9	3	2½	5	6
10	3½	2¾	5½	8
12	4	3	6	9



SPHERICAL BUSHING - B1*

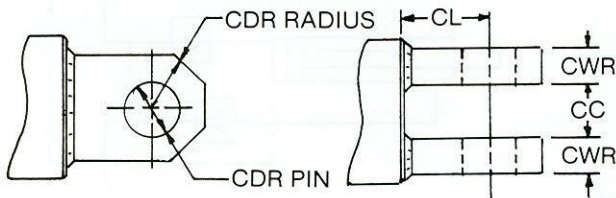
CYLINDER BORE	EYE NO.	BEARING (SKF)	BC	BL	BR	CD PIN
1½, 2	2B1W	012	1	1¼	1	¾
2½	2B1W	012	1	1¼	1	¾
¾	3B1W	100	1⅞	1½	1⅞	1
4	4B1W	106	1⅞	2¼	1¹³⁄₁₆	1⅞
5	5B1W	112	1¾	2½	2⁵⁄₁₆	1¾
6	6B1W	200	1⅞	3	2¾	2
7	7B1W	208	2¼	3½	3¼	2½
8, 9	8B1W	300	2¾	4¼	3⅞	3
10	10B1W	308	3⅞	5	4⅝	3½
12	12B1W	400	3½	6	5½	4



Snap rings, spherical bushings, grease fittings are supplied with the cylinder.

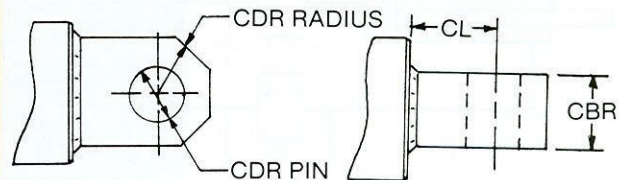
BASE CLEVIS - P1

BORE	CC	CDR	CL	CWR
1½	1 ¹ / ₁₆	½	¾	½
2	1 ⁹ / ₁₆	¾	1¼	5 ⁸ / ₁₆
2½	1 ³ / ₁₆	¾	1¼	5 ⁸ / ₁₆
3¼	1 ³ / ₁₆	1	1½	¾
4	1 ⁵ / ₁₆	1 ³ / ₈	2 ¹ / ₈	1
5	1 ⁹ / ₁₆	1¼	2¼	1¼
6	2 ⁵ / ₁₆	2	2½	1¼
7	2 ¹³ / ₁₆	2½	3	1½
8 & 9	3 ¹ / ₁₆	3	3¼	1½
10	4 ¹ / ₁₆	3½	4	2
12	4 ⁹ / ₁₆	4	4½	2¼



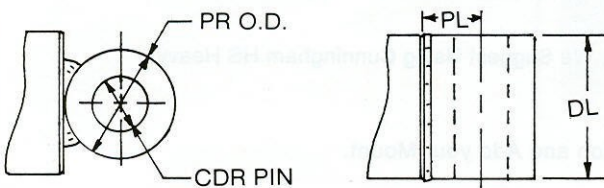
BASE EYE - P3

BORE DIA.	CBR	CDR	CL
1½	¾	½	¾
2	1¼	¾	1¼
2½	1¼	¾	1¼
3¼	1½	1	1½
4	2	1 ³ / ₈	2 ¹ / ₈
5	2½	1¾	2¼
6	2½	2	2½
7	3	2½	3
8 & 9	3	3	3¼
10	4	3½	4
12	4½	4	4½



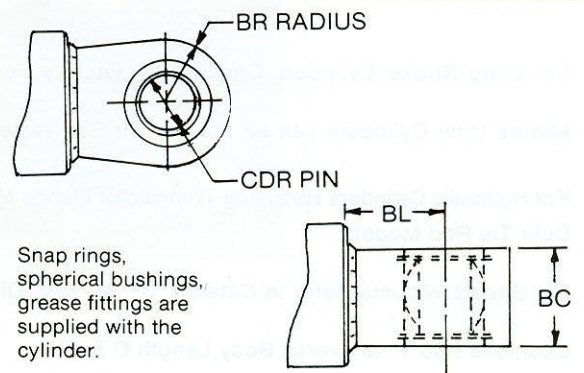
BASE PIVOT - P4

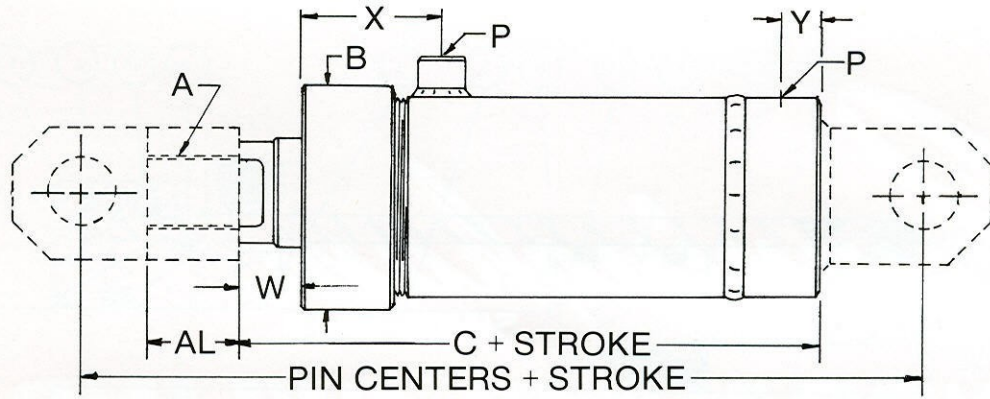
BORE DIA.	CDR	PL	PR	DL
1½	¾	7 ⁸ / ₁₆	1¼	1 ¹ / ₈
2	¾	7 ⁸ / ₁₆	1¼	2½
2½	¾	7 ⁸ / ₁₆	1¼	3
3¼	1	1	2	4
4	1 ³ / ₈	1¼	2½	4¾
5	1¾	1 ⁵ / ₈	3¼	5 ⁵ / ₈
6	2	2	4	7 ¹ / ₈
7	2½	2¼	4½	8 ⁵ / ₈
8	3	2½	5	9 ⁵ / ₈
9	3	2½	5	10 ⁵ / ₈
10	3½	2¾	5½	12
12	4	3	6	14¼



SPHERICAL BUSHING - B1

BORE DIA.	CDR	BL	BR	BC
1½ & 2	¾	1¼	1	1
2½	¾	1¼	1	1
3¼	1	1½	1 ³ / ₈	1 ¹ / ₈
4	1 ³ / ₈	2¼	1 ¹³ / ₁₆	1 ³ / ₈
5	1¾	2½	2 ⁵ / ₁₆	1¾
6	2	3	2¾	1 ⁷ / ₈
7	2½	3½	3¼	2¼
8 & 9	3	4¼	3 ⁷ / ₈	2¾
10	3½	5	4 ⁵ / ₈	3 ¹ / ₈
12	4	6	5½	3½





BORE	MODEL	ROD	A THD.	AL	B	C	P (NPT)	(OPT.) SAE ST. THD.
1½	CM	¾	½ - 20	¾	2¼	5⅝	¼	- 4 (7/16 - 20)
1½	CM	1	¾ - 16	1⅝	2¼	5⅝	¼	- 4 (7/16 - 20)
2	CM	1	¾ - 16	1⅝	2⅝	6¼	⅜	- 6 (9/16 - 18)
2	CM	1⅝	1 - 14	1⅝	2⅝	6¼	⅜	- 6 (9/16 - 18)
2½	CM	1	¾ - 16	1⅝	3½	6⅝	½	- 8 (¾ - 16)
2½	CM	1⅝	1 - 14	1⅝	3½	6⅝	½	- 8 (¾ - 16)
2½	CM	1¾	1 - 14	1⅝	3½	6⅝	½	- 8 (¾ - 16)
¾	CM	1⅝	1 - 14	1⅝	4½	7⅞	½	- 8 (¾ - 16)
¾	CM	1¾	1¼ - 12	2	4½	7⅞	½	- 8 (¾ - 16)
¾	CM	2	1½ - 12	2	4½	7⅞	½	- 8 (¾ - 16)
4	CM	1¾	1¼ - 12	2	5¼	7⅞	¾	- 12 (1⅞ - 12)
4	CM	2	1½ - 12	2	5¼	7⅞	¾	- 12 (1⅞ - 12)
4	CM	2½	1½ - 12	2	5¼	7⅞	¾	- 12 (1⅞ - 12)
5	CM	2	1½ - 12	2¼	6½	8¾	¾	- 12 (1⅞ - 12)
5	CM	2½	1¾ - 12	2¼	6½	8¾	¾	- 12 (1⅞ - 12)
5	CM	3	1⅞ - 12	3	6½	8¾	¾	- 12 (1⅞ - 12)
5	CM	3½	1⅞ - 12	3	6½	8¾	¾	- 12 (1⅞ - 12)
6	CM	2½	1⅞ - 12	3	8	10	¾	- 12 (1⅞ - 12)
6	CM	3	1⅞ - 12	3	8	10	¾	- 12 (1⅞ - 12)
6	CM	3½	1⅞ - 12	3	8	10	¾	- 12 (1⅞ - 12)
6	CM	4	2½ - 12	3½	8	10	¾	- 12 (1⅞ - 12)
7	CM	3	2¼ - 12	3½	9	11½	1	- 16 (1⅞ - 12)
7	CM	3½	2½ - 12	3½	9	11½	1	- 16 (1⅞ - 12)
7	CM	4	2½ - 12	3½	9	11½	1	- 16 (1⅞ - 12)
7	CM	5	3 - 12	3½	9	11½	1	- 16 (1⅞ - 12)
8	CM	3½	2½ - 12	3½	10¼	12⅝	1	- 16 (1⅞ - 12)
8	CM	4	3 - 12	3½	10¼	12⅝	1	- 16 (1⅞ - 12)
8	CM	5	3 - 12	3½	10¼	12⅝	1	- 16 (1⅞ - 12)
8	CM	5½	3 - 12	3½	10¼	12⅝	1	- 16 (1⅞ - 12)
9	CM	4	3 - 12	3½	11¼	13	1	- 16 (1⅞ - 12)
10	CM	5	3¼ - 12	3½	15½	15	1¼	- 20 (1⅞ - 12)
12	CM	5½	3½ - 12	4	18½	17⅞	1½	- 20 (1⅞ - 12)



HYDRAULIC CYLINDERS MODEL CM

CONSTRUCTION-MARINE GRADE CYLINDERS

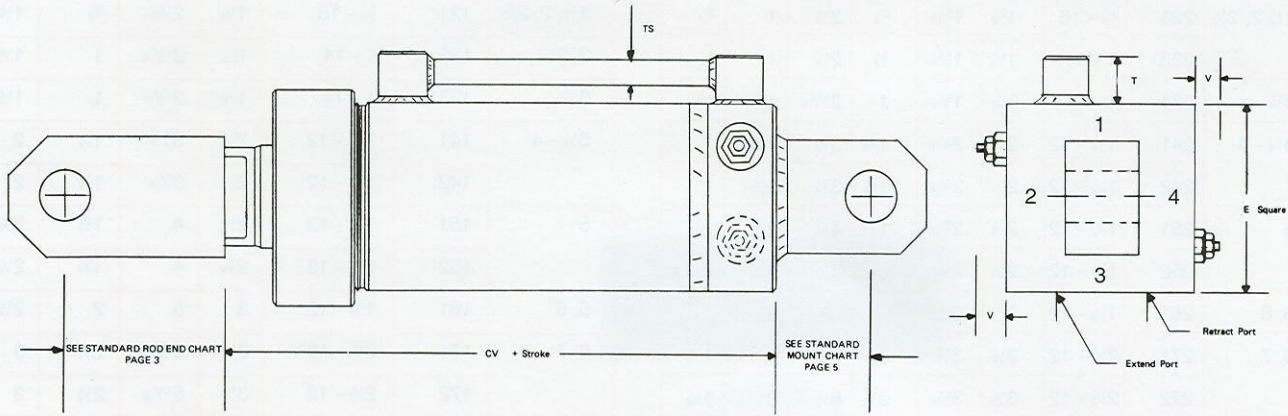
1½" THRU 12" BORES

(14" & 16" BORES, CONSULT FACTORY)

			PINCENTERS + STROKE					ROD ATTACHMENT PART NO.		
W	X	Y	SPHERICAL BUSHING MOUNT — B1	CLEVIS MOUNT P-1	EYE MOUNT P-3	PIVOT MOUNT P4	ROD CLEVIS	ROD EYE	BORE	
1	1¾	½	8⅞	7⅞	7⅞	7⅞	212	112	1½	
1	1¾	½	8⅞	8½	8⅞	7⅞	221	121	1½	
1	2⅛	⅝	8¾	9⅝	9⅞	8	221	121	2	
1	2⅛	⅝	8¾	9⅝	10⅝	8	223	133	2	
1	2⅛	⅝	8⅞	9¾	9⅞	8⅞	221	121	2½	
1	2⅛	⅝	8⅞	9¾	10⅞	8⅞	223	133	2½	
1	2⅛	⅝	8⅞	10⅞	10⅞	8⅞	231	133	2½	
1⅝	2¼	¾	10⅞	11½	11⅞	9⅞	231	133	3¼	
1⅝	2¼	¾	10⅞	12⅝	12	9⅞	241	141	3¼	
1⅝	2¼	¾	10⅞	12⅝	12	9⅞	242	142	3¼	
1	2⅝	¾	12⅞	13¾	13⅞	10⅞	241	141	4	
1	2⅝	¾	12⅞	13¾	13⅞	10⅞	242	142	4	
1	2⅝	¾	12⅞	13¾	13⅞	10⅞	242	142	4	
1	3	¾	13¾	15½	15	12	251	151	5	
1	3	¾	13¾	15½	15	12	252	152	5	
1	3	¾	13¾	16½	16	12	261	161	5	
1	3	¾	13¾	16½	16	12	261	161	5	
1½	3¼	1⅞	16	18	17½	14	261	161	6	
1½	3¼	1⅞	16	18	17½	14	261	161	6	
1½	3¼	1⅞	16	18	17½	14	261	161	6	
1½	3¼	1⅞	16	19	18⅝	14	272	172	6	
1¾	3⅝	1⅞	18½	21	20⅝	16	271	171	7	
1¾	3⅝	1⅞	18½	21	20⅝	16	272	172	7	
1¾	3⅝	1⅞	18½	21	20⅝	16	272	172	7	
1¾	3⅝	1⅞	18½	21¼	21	16	282	192	7	
1¾	4	1¾	21⅞	22⅝	22	17⅞	281	181	8	
1¾	4	1¾	21⅞	22⅝	22⅞	17⅞	282	192	8	
1¾	4	1¾	21⅞	22⅝	22⅞	17⅞	282	192	8	
1¾	4	1¾	21⅞	22⅝	22⅞	17⅞	282	192	8	
1⅞	4	1¾	21½	23	22¾	18	282	192	9	
1⅞	5¼	1¼	25	26¾	26⅞	20½	2101	1101	10	
2	5½	1⅞	29⅞	31⅞	31½	23⅞	2121	1121	12	

MODEL CMV

INTEGRAL COUNTER BALANCE OR PILOT OPERATED CHECK VALVES



CYLINDER BORE	E SQUARE	"V"		P NPT	OPTIONAL STRAIGHT THREAD S.A.E. PORT	"T"	CV PLUS STROKE	"TS" STD. TUBE O.D. SIZE
		C.B. VALVE	P.O. CHECK					
2	4	1 11/16	1 11/16	3/8	- 6 (9/16-18)	1 3/8	7 7/8	1/2
2 1/2	4	1 11/16	1 11/16	3/8	- 6 (9/16-18)	1 3/8	8	1/2
3 1/4	4	1 11/16	1 11/16	3/8	- 6 (9/16-18)	1 3/8	8 7/16	1/2
4	4 5/8	1 11/16	1 11/16	1/2	- 8 (3/4-16)	1 5/8	9 1/4	1/2
5	5 3/4	1 11/16	1 11/16	1/2	- 8 (3/4-16)	1 5/8	10	5/8
6	7	1 11/16	1 11/16	3/4	-12 (1 1/16-12)	1 3/4	10 7/8	5/8
7	8	1 11/16	1 11/16	3/4	-12 (1 1/16-12)	1 3/4	11 7/8	3/4 PIPE
8	9 1/4	1 11/16	1 11/16	3/4	-12 (1 1/16-12)	1 3/4	12 1/2	3/4 PIPE
10	12	1 11/16	1 11/16	3/4	-12 (1 1/16-12)	1 3/4	15	3/4 PIPE
12	14	1 11/16	1 11/16	3/4	-12 (1 1/16-12)	1 3/4	17 7/8	3/4 PIPE

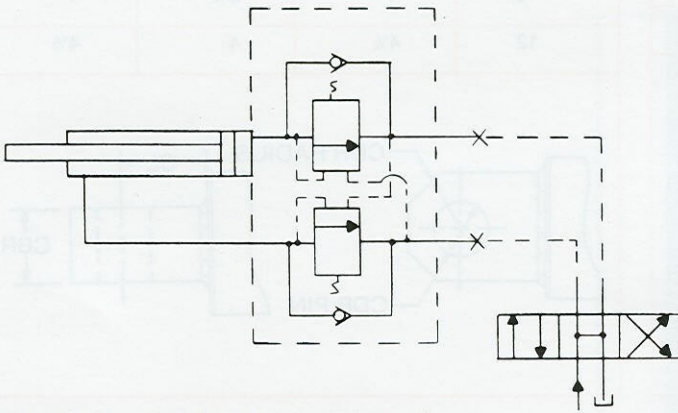
REFER TO PAGES 3, 4 AND 5 FOR ADDITIONAL DIMENSIONS.

- **NOTE:** COUNTERBALANCE VALVES HAVE A FLOW RATING OF 20 GPM WITH 120 PSI PRESSURE DROP. 30 GPM WITH 200 PSI PRESSURE DROP.
- PILOT OPERATED CHECK VALVES FLOW RATE IS 20 GPM WITH 80 PSI PRESSURE DROP. 30 GPM WITH 250 PSI PRESSURE DROP.
- HIGHER THAN STANDARD FLOW RATE VALVES ARE AVAILABLE ON SPECIAL ORDER.
- MAXIMUM VALVE OPERATING PRESSURE IS 3,000 PSI. THE COUNTERBALANCE VALVES ARE FACTORY SET AT 3,000 PSI UNLESS OTHERWISE ADVISED.
- STRAIGHT THREAD PORTS ARE A NO COST OPTION.

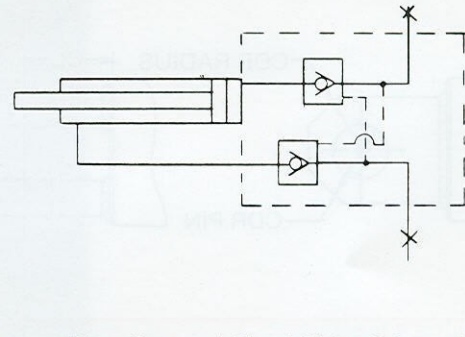
INTEGRAL COUNTERBALANCE VALVE OR PILOT OPERATED CHECK VALVES

USE COUNTERBALANCE VALVES TO RESTRAIN FLOW TO KEEP A LOAD FROM RUNNING AHEAD OF THE PUMP, PREVENTING CAVITATION. THEY SERVE AS SAFETY DEVICES IN CASE OF LINE BREAKAGE, PROVIDE THERMAL PROTECTION WITH OPEN CENTER VALVES AND CAN FUNCTION AS DECELERATION VALVES WITH CIRCUIT SHOWN.

PILOT TO OPEN CHECK VALVES WILL POSITIVELY LOCK THE LOAD IN POSITION, BUT WILL RELEASE THE LOAD UPON APPLICATION OF PRESSURE TO THE OPPOSITE PORT WHICH IS CROSS PILOTTED. DO NOT USE IF OVERHAULING CONDITION EXISTS.



Integral Counterbalance Valve Schematic



Integral Pilot Operated Check Valve Schematic

Ordering Data Required for Model CM

1. QUANTITY
2. BASE MOUNTING (Clevis, Eye or Spherical Bushing)
3. ROD END (Clevis, Eye, Threaded or Spherical Bushing)
4. BORE DIAMETER
5. STROKE
6. PORT LOCATION (As shown or in line with Pins)
7. OPTIONAL FEATURES:
 - Stainless Rod
 - Stop Tube
 - Rod Boots
 - Integral Valves

- For Long Stroke Cylinders Check With Factory For Recommended Rod Size and Stop Tube.
- Marine Duty Cylinders can be Painted for Salt Water Service. Stainless Rod is Recommended.
- For Hydraulic Cylinders Requiring Trunnion or Flange Mounts, We Suggest Using Cunningham HS Heavy Duty Tie Rod Models.
- For Special Mounts Refer to Catalog "C" or "CV" Dimension and Add your Mount.
- Cushions Add 1" to overall Body Length C & CV.