

WGB Benjey *Cylinders* INC.

H60 HYDRAULIC MILL A50 AIR MILL CYLINDERS

**250 PSI AIR
2,000 PSI HYDRAULIC**

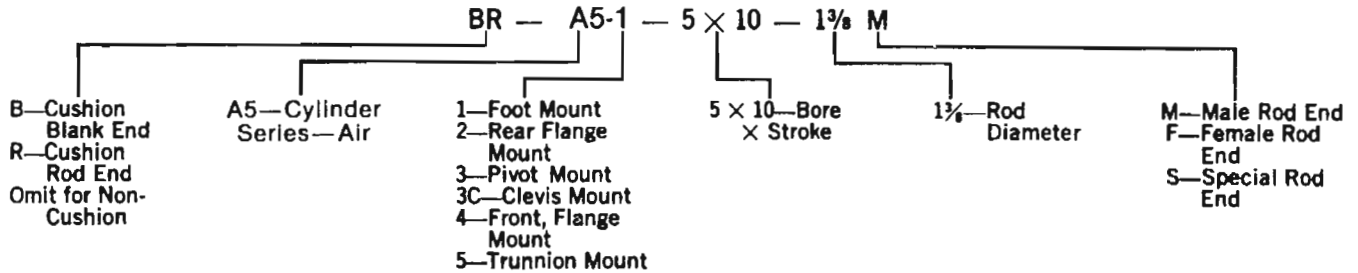
2293 Werth Road, Alpena, MI 49707

Phone: 800-942-2957 (WGB-CYLS) Fax: 866-942-3297 (WGB-FAXS)

E-Mail: wgbcylinders@benjey.com

A50 ORDERING INFORMATION

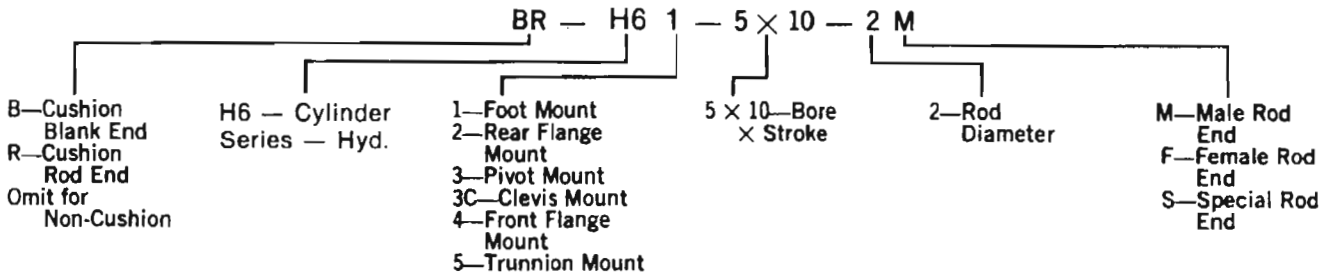
ORDERING CODE EXAMPLE:



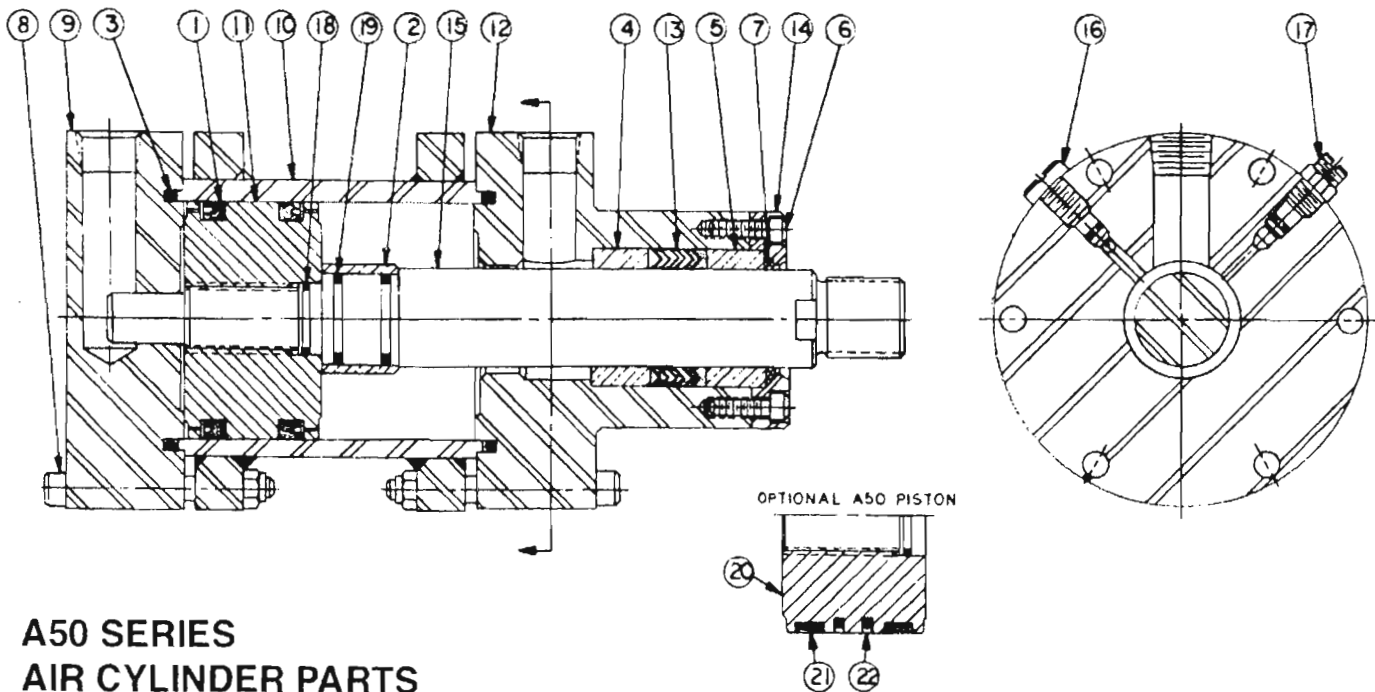
Please specify operating pressure, operating medium, and operating temperature when ordering.

H60 ORDERING INFORMATION

ORDERING CODE EXAMPLE:



Please specify operating pressure, operating medium, and operating temperature when ordering.



A50 SERIES AIR CYLINDER PARTS

Number	Part Number	Part	Number	Part Number	Part
1	A1	PISTON SEAL	12	A12	FRONT HEAD
2	A2	CUSHION BUSHING	13	A13	ROD SEAL
3	A3	HEAD O-RING	14	A14	BEARING PLATE
4	A4	REAR ROD BEARING	15	A15	PISTON ROD
5	A5	FRONT ROD BEARING	16	A16	BALL CHECK ASSEMBLY
6	A6	BEARING PLATE SCREW	17	A17	ADJUSTMENT SCREW ASSEMBLY
7	A7	ROD SCRAPER	18	A18	PISTON I.D. O-RING
8	A8	HEAD BOLT ASSEMBLY	19	A19	HEAD END CUSHION O-RING
9	A9	REAR HEAD	20	A20	A50 OPTIONAL PISTON
10	A10	TUBE ASSEMBLY	21	A21	WEAR BAND
11	A11	PISTON	22	A22	LOW DRAG SEAL

WHEN ORDERING PARTS PLEASE GIVE THE MODEL NUMBER AND THE SERIAL NUMBER.

DESIGN FEATURES

All steel welded construction.

"V" ring type rod packings can be replaced without dismantling cylinder.

360° rod scraper furnished as standard.

Maximum length bronze bearings provide excellent piston rod support and long life.

Piston rods ground, polished and hard chrome plated are provided with wrench flats.

One piece piston of close grain meehanite for maximum bearing surface.

"U" cup piston seals can be easily removed and replaced without dismantling piston from the rod.

Honed steel tubing hard chrome plated.

Keeper flanges are welded to cylinder tube for maximum strength.

O-ring static seals are leakproof.

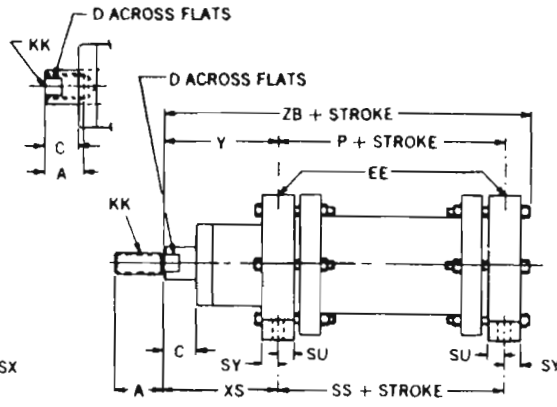
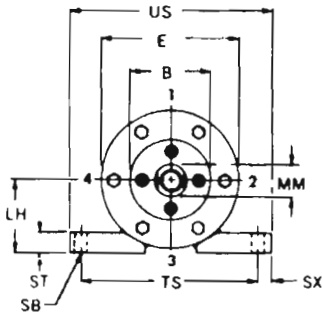
Stainless steel ball check & adjustment screws are interchangeable.

All mountings are either welded or an integral part of the cylinder for maximum strength.

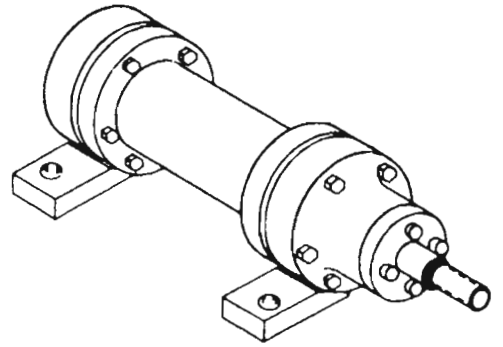
Full capacity ports for minimum pressure drop.

All bolts, nuts and socket head cap screws are high tensile strength alloy steel.

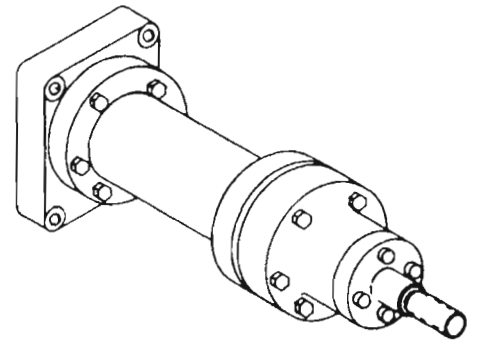
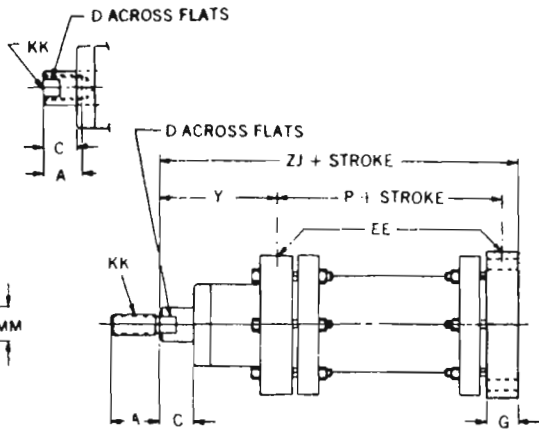
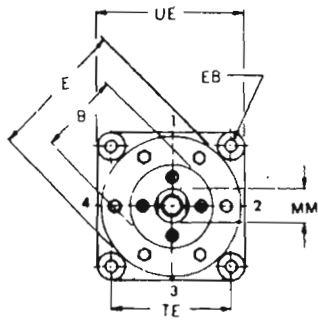
**MODEL A51
FOOT MOUNT**



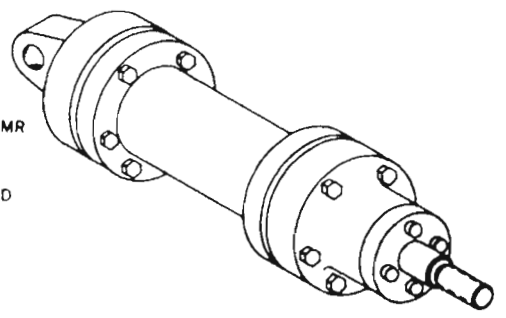
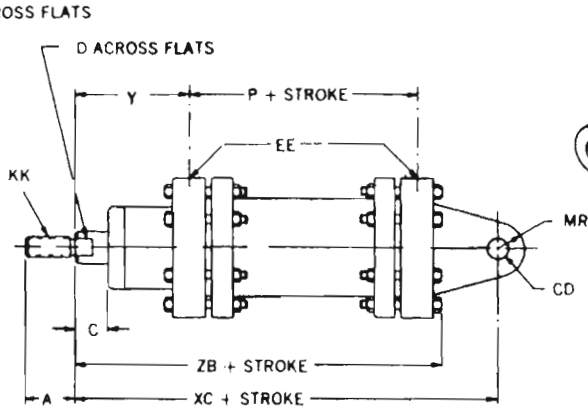
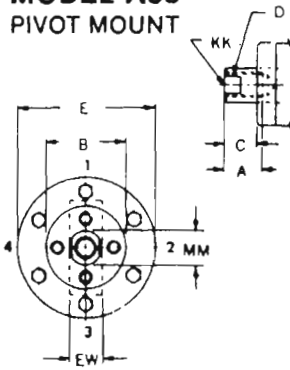
AIR CYLINDER



**MODEL A52
REAR FLANGE MOUNT**



**MODEL A53
PIVOT MOUNT**

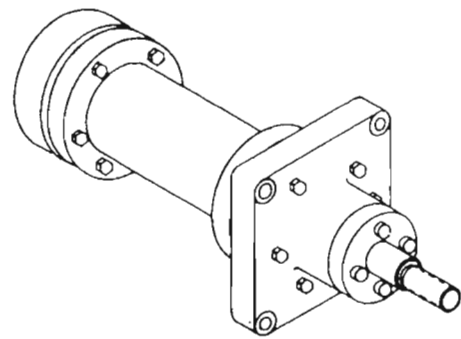
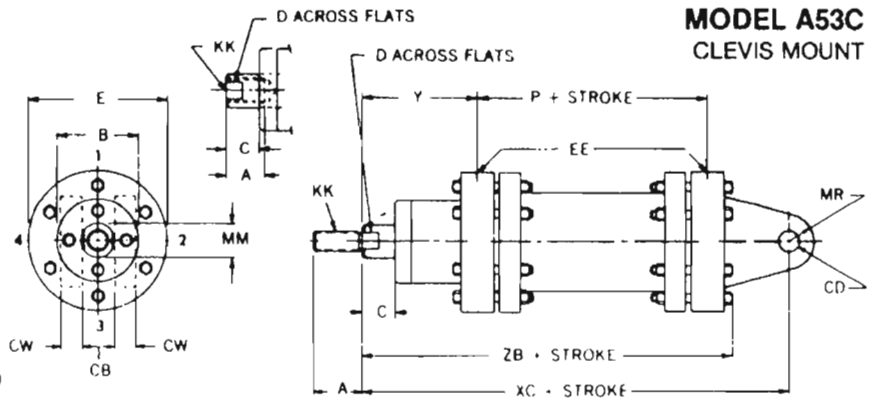
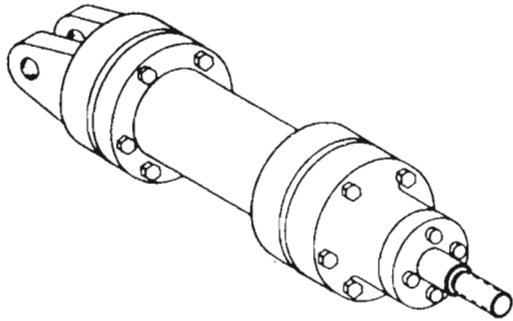


DIMENSIONS

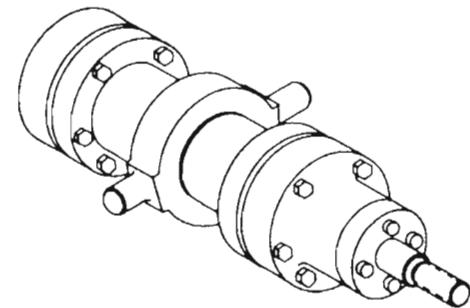
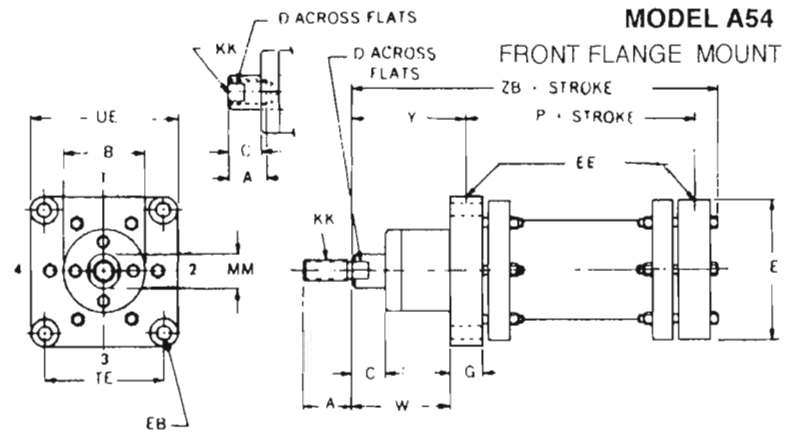
Bore	A	B	C	D	E	G	P	W	Y	CB	CD	CW	EB	EE	EW	KK	LH	MM	MR	SB	SS	ST	SU	SX
2	1 1/4	2 1/2	1	3/8	3 3/8	1	3	3	3 1/2	3/4	1/2	1/2	1 1/2	3/8	3/4	3/8-18	2	1	1/2	1 1/2	3	1/2	1/2	3/8
2 1/2	1 1/4	2 1/2	1	3/8	4 1/4	1	3	3	3 1/2	3/4	1/2	1/2	1 1/2	3/8	3/4	3/8-18	2 1/4	1	1/2	1 1/2	3	1/2	1/2	3/8
3	1 1/2	2 3/4	1	1 1/8	4 3/4	1 1/4	3 1/2	3	3 3/8	1	3/8	3/8	1 1/2	1/2	1	3/4-16	2 1/2	1 1/4	3/8	1 1/2	3 1/2	3/4	3/8	3/8
4	1 1/2	3	1	1 1/4	6	1 1/4	3 3/4	3 1/2	4 1/8	1	3/8	3/8	1 1/2	1/2	1	3/4-16	3 3/8	1 3/8	3/8	1 1/2	3 3/4	3/4	3/8	1/2
5	1 1/2	3	1	1 1/4	7	1 1/2	4	3 1/2	4 1/4	1	3/4	3/4	1 1/2	3/4	1 1/4	3/4-16	3 3/8	1 3/8	3/4	1 1/2	4	1	3/4	1/2
6	2	3 3/8	1	1 3/8	8 1/2	1 3/8	4 1/2	3 1/2	4 3/8	1 1/4	1	1	1 1/2	3/4	1 1/2	1 -14	4 3/8	1 3/4	1	1 1/2	4 1/2	1	1 3/8	1/2
7	2	3 3/8	1	1 3/8	9 1/2	1 3/8	4 3/4	3 1/2	4 3/8	1 1/4	1	1	1 1/2	3/4	1 1/2	1 -14	4 3/8	1 3/4	1	1 1/2	4 3/4	1	1 3/8	1/2
8	2 1/2	3 3/8	1	1 1/4	10 1/2	1 3/8	5	3 3/4	4 1/8	1 1/4	1 1/4	1 1/4	1 1/2	1	1 3/4	1 1/4-12	5 3/8	2	1 1/4	1 1/2	5	1 1/4	1 3/8	3/4
10	2 1/2	3 3/8	1	1 1/4	12 3/4	1 3/8	5 1/2	3 3/4	4 1/8	1 1/4	1 1/4	1 1/4	1 1/2	1	1 3/4	1 1/4-12	6 1/2	2	1 1/4	1 1/2	5 1/4	1 1/4	1 3/8	3/4
12	3	4 1/4	1	2 1/4	14 3/4	2 1/8	5 3/4	3 3/4	4 1/8	1 3/4	1 1/4	1 1/4	1 1/2	1 1/4	1 3/4	1 1/2-12	7 1/2	2 1/2	1 1/4	1 1/2	5 1/4	1 1/4	1 3/8	3/4

AIR CYLINDER

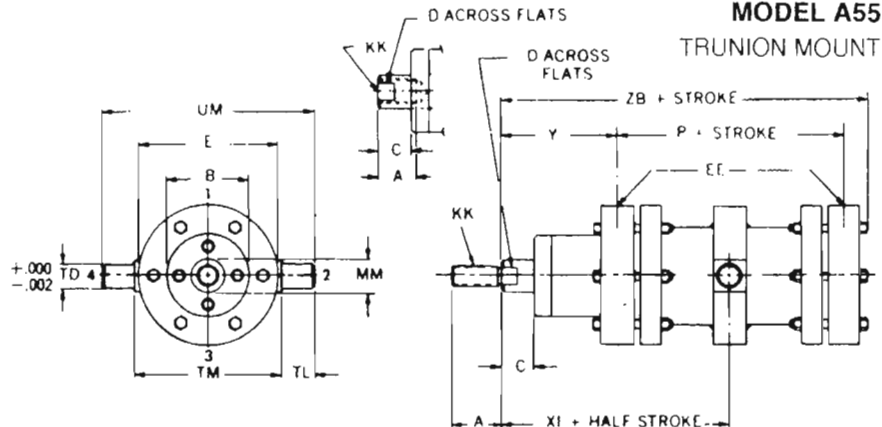
MODEL A53C CLEVIS MOUNT



MODEL A54 FRONT FLANGE MOUNT



MODEL A55 TRUNION MOUNT



DIMENSIONS (cont'd)

USE FOR OVERSIZE ROD

SY	TD	TE	TL	TM	TS	UE	UM	US	XC	XI	XS	ZB	ZJ	B	D	Y	W	MM	XC	XI	XS	ZB	ZJ
1/2	.750	3 3/4	7/8	4	4 3/8	4	5 3/4	5	8	5	3 1/2	7 3/8	7	2 3/4	1 3/8	3 1/2	3	1 1/4	8	5	3 1/2	7 3/8	7
1/2	.750	3 3/4	7/8	4 1/2	4 3/4	4 1/2	6 1/4	5 3/8	8	5	3 1/2	7 3/8	7	3	1 1/4	4	3 1/2	1 3/8	8 1/2	5 1/2	4	7 1/8	7 1/2
3/8	.750	4 1/4	1 1/8	5	5 3/8	5	7 1/4	6 1/8	8 3/8	5 3/8	3 3/8	8 3/8	7 3/4	3	1 1/4	4 1/4	3 1/2	1 3/8	9 3/8	5 3/8	4 1/8	8 3/8	8 3/4
3/8	1.000	5 1/4	1 1/8	6 1/4	6 3/4	6 3/4	8 1/2	7 3/4	9 3/8	6	4 1/8	8 3/8	8 1/2	3 3/8	1 1/4	4 3/8	3 3/4	2	9 3/8	6 3/4	4 3/8	8 3/8	8 3/4
3/8	1.000	6 1/4	1 1/8	7 1/4	7 3/4	7 1/4	9 1/2	8 3/4	10 3/4	6 1/4	4 1/4	9 3/8	9	4 1/4	2 1/4	4 3/8	3 3/8	2 1/2	10 3/8	6 3/8	4 3/8	9 3/8	9 3/4
1/4	1.250	7 3/4	1 1/8	8 3/4	9 3/4	8 3/4	11	10 1/4	11 1/4	6 3/8	4 3/8	10	9 3/8	4 1/4	2 1/4	4 1 1/8	3 3/8	2 1/2	11 3/8	6 1 1/8	4 1 1/8	10 3/8	10
1/4	1.250	8 3/4	1 1/8	9 3/4	10 3/4	9 3/4	12	11 1/4	11 1/2	6 1 1/8	4 3/8	10 1/4	9 3/8	4 1/4	2 1/4	4 1 1/8	3 3/8	3	11 3/8	7 3/8	4 1 1/8	10 3/8	10 1/4
1/4	1.500	8 3/4	1 1/4	10 3/4	11 3/4	10 3/4	13 1/4	13 3/4	12 3/4	7 3/8	4 1 1/8	11	10 3/8	4 1/4	2 3/4	4 1 1/8	3 3/8	3	12 3/4	7 3/8	4 1 1/8	11 3/8	10 3/4
1/4	2.000	10 1/2	1 1/2	13	13 3/4	12 3/4	16	15 3/4	12 3/4	7 3/8	4 1 1/8	11 3/8	10 3/8	6 1/4	3 3/4	5 3/8	4 3/8	4 1/4	13 3/4	7 1 1/8	5 3/8	12	11 1/2
1/4	2.000	12 1/4	1 1/2	15	15 3/4	14 3/4	18	17 3/4	13 3/4	7 1 1/8	4 1 1/8	12 1/4	11 3/4	8 1/2	5 1/4	6 3/8	5	5 1/4	14 3/4	8 1 1/8	6 3/8	13 3/8	12 3/4

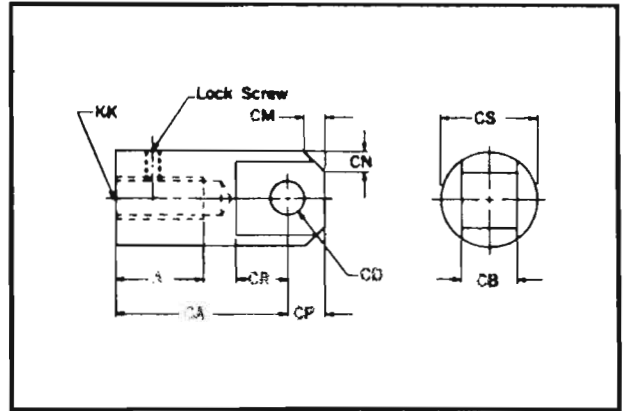
Mounting Accessories

WGBenjey Cylinders

2293 Werth Road, Alpena MI 49707
 Phone: 800-942-2957 Fax: 866-942-3297
 E-mail: wgbcylinders@benjey.com

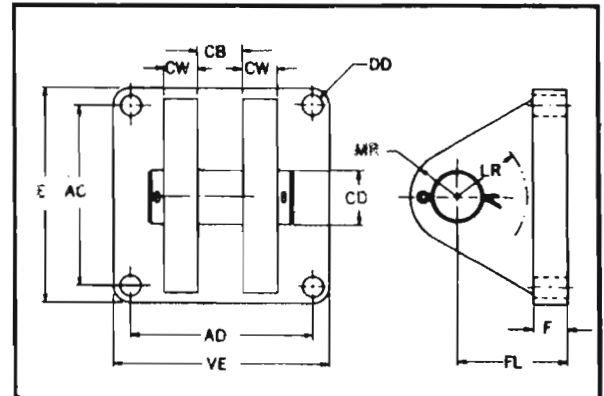
ROD EYE

Part No.	Bore		A	CA	CB	CD	CM	CN	CP	CR	CS	KK
	Air	Hyd.										
IE-100	2-2½		2	3½	¾	½	½	¾	¾	¾	1½	¾-18
IE-200	3-4.5	2	2	4	1	¾	¾	1½	1½	1	1½	¾-16
IE-250	6	2½	2½	4½	1¼	1	¾	¾	1	1¼	2	1-14
IE-300	7	3	2½	5½	1¼	1¼	¾	¾	1¼	1¼	2½	1-14
IE-400	8-10	4	3	6½	1¾	1¾	1	¾	1¾	1¾	2½	1¼-12
IE-500	12	5	3½	7½	2	1¼	¾	¾	1½	2	3	1¼-12
IE-600		6	4¼	8	2	1½	1½	1¾	1¾	2¼	3½	2-12
IE-700		7	5¼	8½	3	2	1¾	1¾	2¾	2½	4¾	2½-8
IE-800		8	5¼	8¾	3	2	1¾	1¾	2¾	2½	4¾	2½-8
IE-1000		10	6¼	9½	3½	2½	1¾	1¾	2¾	3	5½	3-8
IE-1200		12	8½	12½	4	3	2¾	2¼	3¼	3½	7	4-8



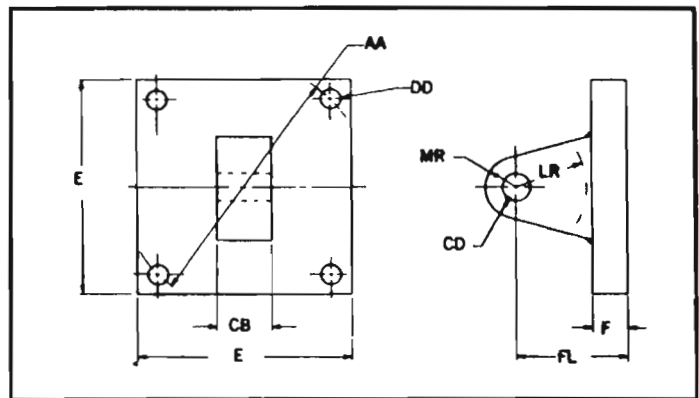
CLEVIS BRACKET

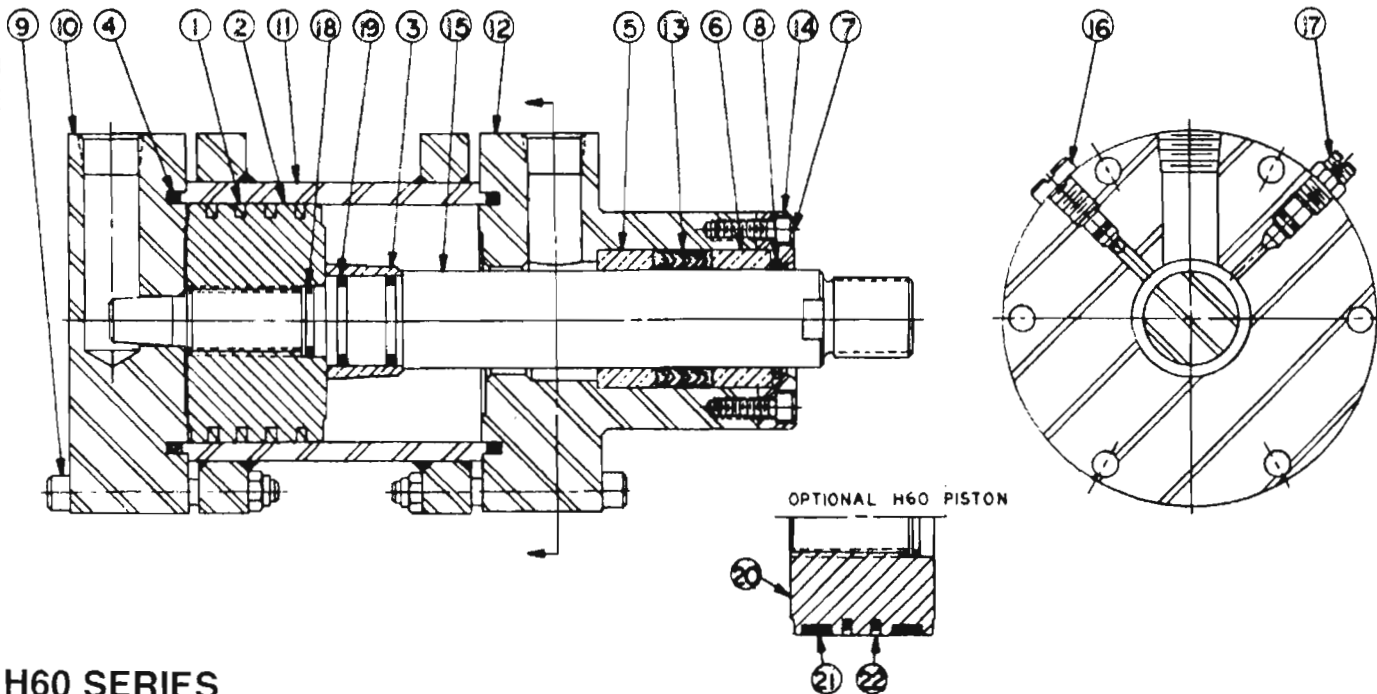
Part No.	Bore		E	F	AC	AD	CB	CD	CW	DD	FL	LR	MR	VE
	Air	Hyd.												
CB-100	2-2½		3	¾	2¼	3	¾	½	½	¾	1¾	¾	½	3¾
CB-150	3-4		3½	¾	2¾	3½	1	¾	¾	¾	1¾	¾	¾	4¼
CB-200	5	2	3½	¾	2¾	3½	1	¾	¾	¾	1¾	1	¾	4¼
CB-250	6-7	2½	4½	¾	3¾	4¾	1¼	1	1	¾	2¾	1¼	1	5¼
CB-300		3	5¼	1	4½	5¼	1¼	1¼	¾	1¾	3	1¼	1¼	6¼
CB-400	8-10-12	4	6	1¼	4½	6¾	1¾	1¾	1¼	1¾	3¼	1¼	1¾	8¼
CB-500		5-6	7	1½	5	8¼	2	1½	1¼	1¾	3¾	2	1½	10¼
CB-600		7-8	9	1¾	6½	11	3	2	1½	1¾	4¾	2½	2	13½
CB-700		10	11½	2	8½	11	3½	2½	2	1¾	5¼	3	2½	14
CB-800		12	12	2½	8¾	13¼	4	3	2¼	2¾	6¾	3¾	3	16½



PIVOT BRACKET

Part No.	Bore		E	F	AA	CB	CD	DD	FL	LR	MR
	Air	Hyd.									
PB-100	2-2½		3	¾	3.18	¾	½	¾	1¾	¾	½
PB-150	3-4		3¾	¾	3.53	1	¾	¾	1¾	¾	¾
PB-200	5	2	3¾	¾	3.53	1	¾	¾	1¾	1	¾
PB-250	6-7	2½	4¾	¾	4.94	1¼	1	¾	2¾	1¼	1
PB-300		3	4¾	1	4.94	1¼	1¼	¾	3	1¼	1¼
PB-400	8-10-12	4	5½	1¼	6.18	1¾	1¾	¾	3¼	1¾	1¾
PB-500		5-6	6¾	1½	6.71	2	1½	1¾	3¾	2	1½
PB-600		7-8	9	1¾	9.18	3	2	1¾	4¾	2½	2
PB-700		10	11	2	11.31	3½	2½	1¾	5¼	3	2½
PB-800		12	12½	2½	12.71	4	3	2¾	6¾	3¾	3





H60 SERIES HYDRAULIC CYLINDER

Number	Part Number	Part	Number	Part Number	Part
1	H1	— PISTON SEAL	12	H12	— FRONT HEAD
2	H2	— PISTON	13	H13	— ROD SEAL
3	H3	— CUSHION BUSHING	14	H14	— BEARING PLATE
4	H4	— HEAD O-RING ASSEMBLY	15	H15	— PISTON ROD
5	H5	— REAR ROD BEARING	16	H16	— BALL CHECK ASSEMBLY
6	H6	— FRONT ROD BEARING	17	H17	— ADJUSTMENT SCREW ASSEMBLY
7	H7	— BEARING PLATE SCREW	18	H18	— PISTON I.D. O-RING
8	H8	— ROD SCRAPER	19	H19	— HEAD END CUSHION O-RING
9	H9	— HEAD BOLT ASSEMBLY	20	H20	— H60 OPTIONAL PISTON
10	H10	— REAR HEAD	21	H21	— WEAR BAND
11	H11	— TUBE ASSEMBLY	22	H22	— LOW DRAG SEAL

WHEN ORDERING PARTS PLEASE GIVE THE MODEL NUMBER AND THE SERIAL NUMBER.

DESIGN FEATURES

All steel welded construction.

"V" ring type rod packings can be replaced without dismantling cylinder.

360° rod scraper furnished as standard.

Maximum length bronze bearings provide excellent piston rod support and long life.

Piston rods ground, polished and hard chrome plated are provided with wrench flats.

Shouldered male rod end thread for accurate positioning.

One piece piston of close grain meehanite for maximum bearing surface.

Step cut cast iron piston rings provide minimum leakage.

Honed steel tubing hard chrome plated.

Keeper flanges are welded to the cylinder tube for maximum strength.

Static O-ring head seals are leakproof.

Cylinder cushions are tapered for smooth deceleration.

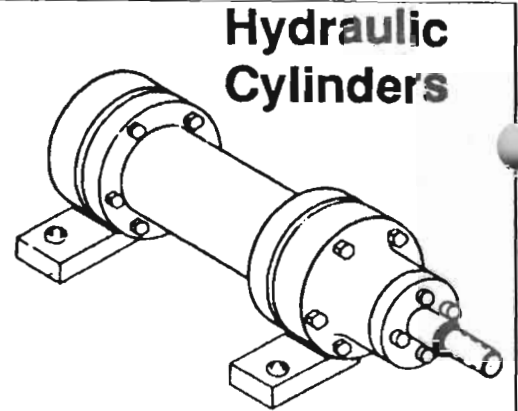
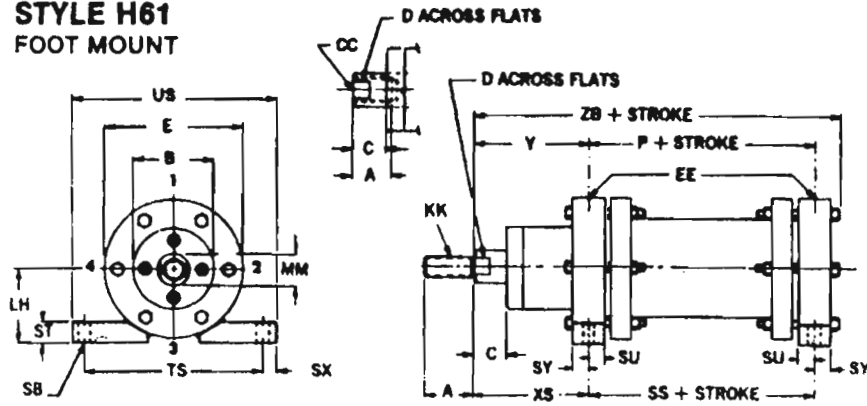
Stainless steel ball check & adjustment screws are interchangeable.

All mountings are either welded or an integral part of the cylinder for maximum strength.

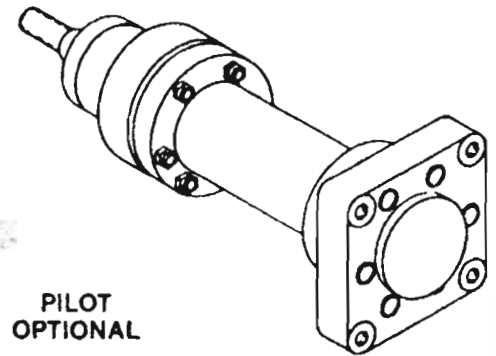
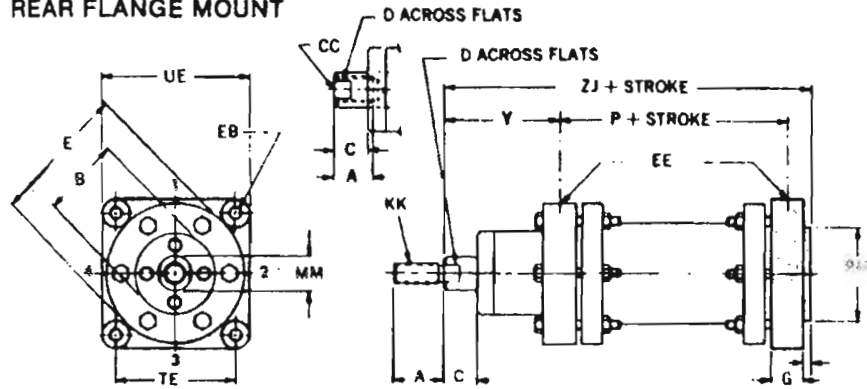
Full capacity ports for minimum pressure drop.

All bolts, nuts and socket head cap screws are high tensile strength alloy steel.

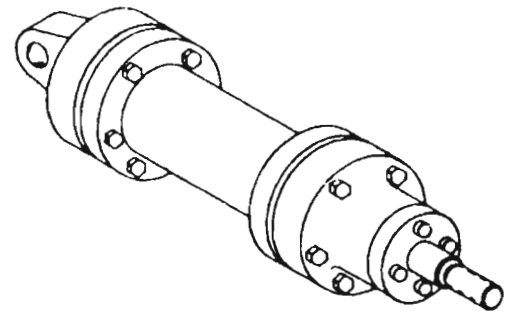
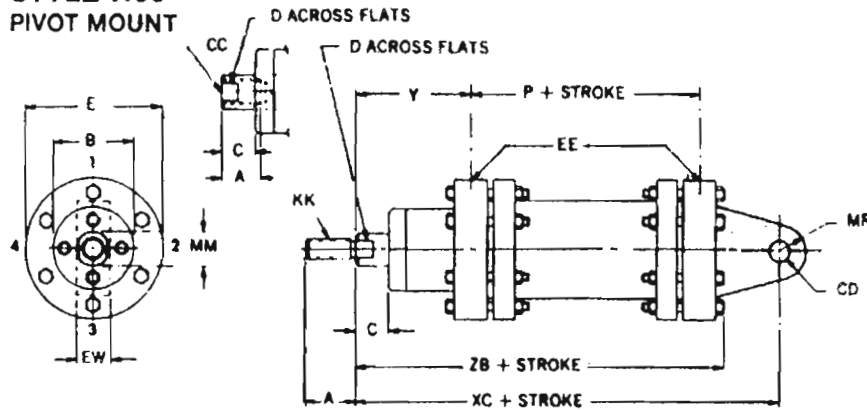
**STYLE H61
FOOT MOUNT**



**STYLE H62
REAR FLANGE MOUNT**



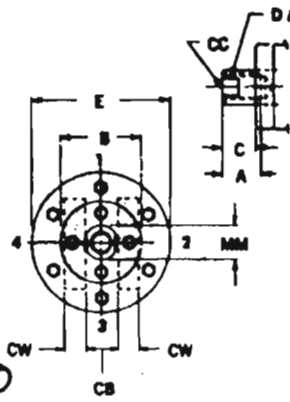
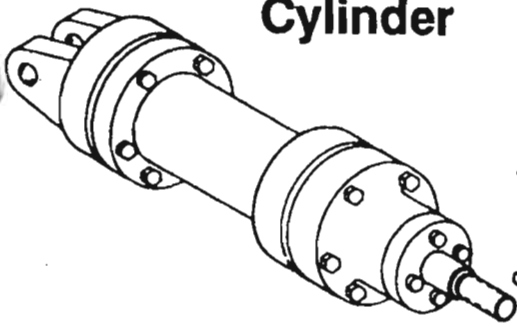
**STYLE H63
PIVOT MOUNT**



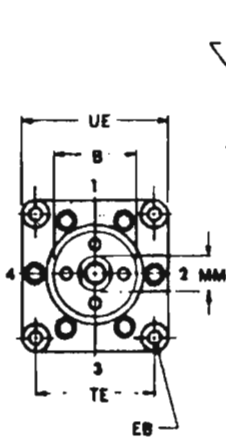
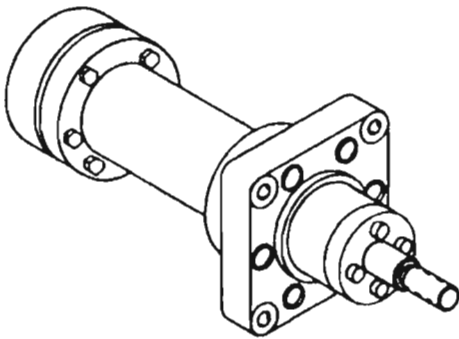
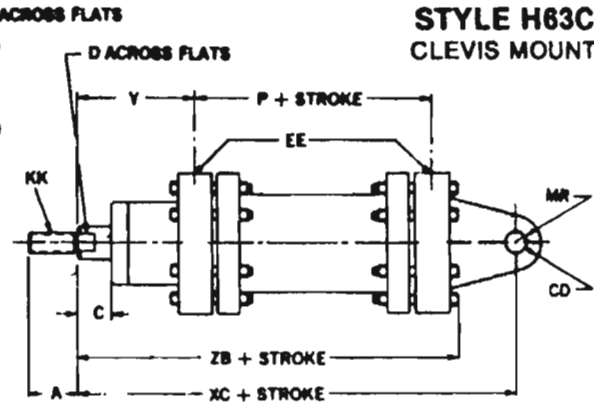
DIMENSIONS

Bore	A	B	C	D	E	G	P	W	Y	CB	CC	CD	CW	EB	EE	EW	KK	LH	MM	MR	RM	SB	SS	ST	SU	
2	1½	2½	1	¾	3¾	1¾	2¾	3	3¾	1	¾-16	¾	¾	¾	½	1	¾-16	2	1	¾	3.500	1½	2¾	¾	¾	
2½	2	2¾	1	1½	4½	1¾	3¾	3	3¾	1¼	¾-14	1	¾	¾	½	1¼	1	-14	2¾	1¼	1	3.875	1¾	3¾	¾	¾
3	2	3	1	1¼	5	1½	4¾	3½	4¼	1¼	1-14	1¼	¾	¾	¾	1¼	1	-14	2¾	1¾	1¼	4.375	¾	4¾	¾	¾
4	2½	3¾	1	1¾	6½	1¾	4¾	3½	4¾	1¾	1¼-12	1¾	1½	¾	¾	1¾	1¼	-12	3¾	1¾	1¾	5.375	¾	4¾	¾	1¾
5	3	3¾	1	1¾	7¾	1¾	6	3¾	4¾	2	1½-12	1½	1¼	1¾	1	2	1½-12	4	2	1½	6.562	1½	6	1	1¾	
6	4	4¾	1	2¼	9¼	1¾	6½	3¾	4¾	2	1¾-12	1½	1¼	1¾	1	2	2	-12	4¾	2½	1½	7.437	1¾	6½	1¼	1¾
7	5	4¾	1	2¾	10½	2¾	7¾	3¾	5¾	3	2	-12	2	1½	1¾	1	3	2½-8	5¾	3	2	8.500	1¾	7¾	1½	1¾
8	5	4¾	1	2¾	11¾	2¾	7¾	3¾	5¾	3	2	-12	2	1½	1¾	1¼	3	2½-8	6	3	2	9.375	1¾	7¾	1½	1¾
10	6	5¾	1	3¼	14½	2½	8¾	4¾	5¾	3½	2½-12	2½	2	1¾	1¾	3½	3	-8	7¾	3½	2½	11.500	1¾	8¾	2	1¼
12	8	8½	1	5¼	18½	2¾	8¾	5	6¾	4	4	-12	3	2¼	2¾	4	4	-8	9¾	5¾	3	13.500	2¾	8¾	2	1¾

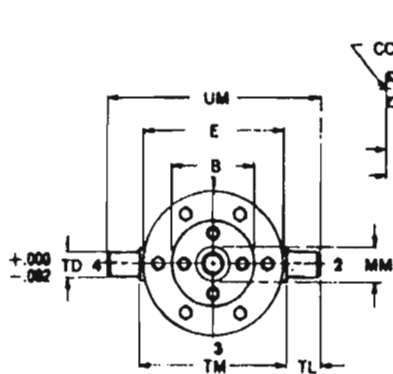
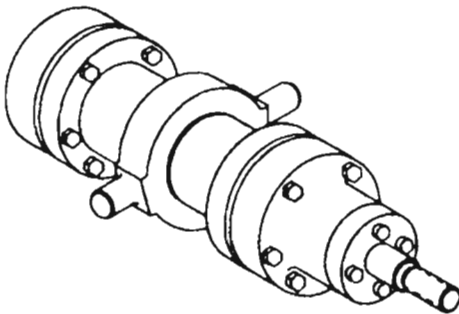
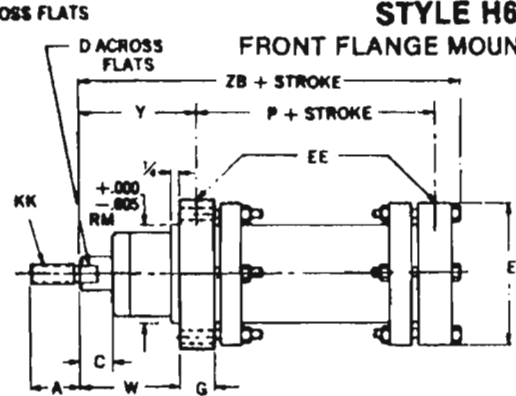
Hydraulic Cylinder



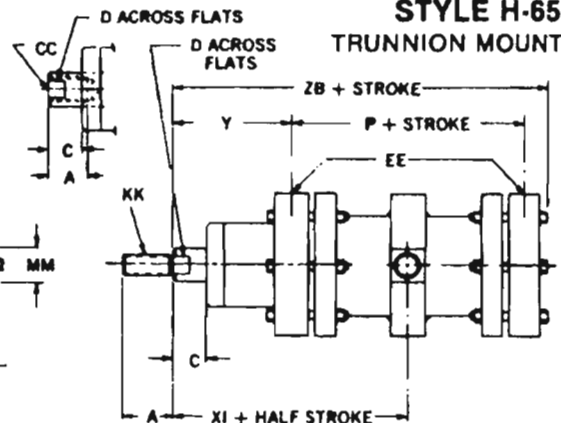
STYLE H63C CLEVIS MOUNT



STYLE H64 FRONT FLANGE MOUNT



STYLE H-65 TRUNNION MOUNT



DIMENSIONS (cont'd)

USE FOR OVERSIZE ROD

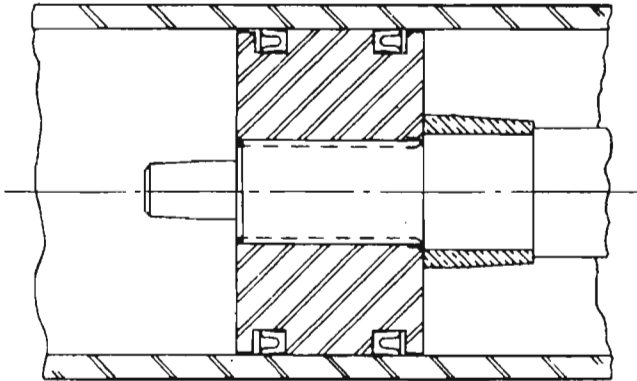
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1/2	3/8	1.000	3.22	1	4	4 1/4	4	6	5 1/4	8 1/2	5 1/2	3 3/8	7 1/8	7 1/2	2 1/4	1 1/4	4 1/2	3 1/2	1 3/8	9	5 1/8	4 1/2	8 1/8	8
3/8	1/2	1.250	3.84	1 1/4	4 1/2	5 1/8	4 1/4	7 1/8	7	9	5 1/2	3 3/8	7 1/8	7 1/4	3 3/8	1 3/8	4 3/4	3 1/2	1 3/4	9 1/2	5 1/4	4 3/4	8 1/8	8 1/4
1/2	3/4	1.500	4.37	1 1/2	5 1/8	6 3/8	5 1/2	8 1/8	8	10 1/8	6 1/4	4 1/4	9 1/2	9 1/4	3 3/8	1 7/8	4 1/2	3 3/4	2	11 1/8	6 1/4	4 1/2	9 1/4	9 1/4
3/4	1 1/8	1.500	5.75	1 1/2	6 3/8	8 1/8	7 3/8	9 1/8	10	11 1/8	6 3/4	4 1/2	10 1/4	10 1/4	4 1/4	2 1/4	4 1/4	3 3/8	2 1/2	12 1/4	7 1/8	4 1/4	10 1/4	10 1/4
1 1/8	1 1/4	1.750	6.89	1 3/4	7 3/8	9 1/8	8 3/4	11 1/8	12	13 1/8	7 1/4	4 1/4	12 1/8	11 3/4	5 1/8	3 1/4	5 1/8	4 1/8	3 1/4	14	8 1/8	5 1/8	12 1/2	12 1/4
1 1/4	1 1/2	1.750	8.22	1 3/4	9 1/8	11 1/8	10 1/2	12 1/8	14 1/4	14 1/4	8 1/8	4 1/4	12 1/4	12 1/2	6 1/8	3 3/4	5 1/8	4 3/8	4 1/4	14 1/4	8 1/8	5 1/8	13 1/4	13
1 3/8	1 3/4	2.000	9.28	2	10 3/8	13 1/8	11 3/8	14 1/8	16	16 1/2	8 1/8	5 1/8	14 1/8	14 1/4	6 1/8	3 3/4	5 1/8	4 3/8	4 1/4	17	9 1/8	5 1/8	15 1/8	14 1/4
1 1/2	1 3/4	2.000	10.34	2	11 3/8	14 1/8	13	15 1/8	17 1/4	16 1/2	8 1/8	5 1/8	14 1/8	14 1/4	8 1/2	5 1/2	6 1/8	5	5 1/2	17 1/4	10 1/8	6 1/8	15 1/8	15 1/8
1 3/4	1 3/4	2.500	14.50	2 1/4	14 1/8	18	17 1/2	19 1/8	21 1/2	17 1/4	9 1/8	5 1/8	15 1/8	15	9 1/2	6 1/4	6 1/8	5 1/2	7	19 1/4	10 1/8	6 1/8	17	16 1/8
2	1 3/4	3.000	19.25	3	18 1/8	22 1/8	22 1/2	24 1/8	26 1/2	19 1/4	10 1/8	6 1/8	17 1/8	16 1/4	11	8 1/4	7 1/8	6	8 1/2	20 1/4	11 1/8	7 1/8	18 1/8	17 1/8

Special Options

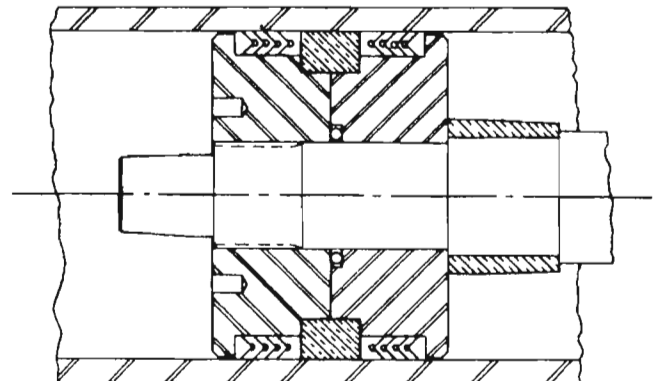
WGBenjiey Cylinders

2293 Werth Road, Alpena MI 49707
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E-mail: wgbicylinders@benjiey.com

***STYLE 1
FABRIC U CUP TYPE
OR URETHANE**



***STYLE 3
V RING TYPE**



*Shown above are 2 alternate piston designs which are available. There are some dimensional changes when using the alternate pistons, please consult our Engineering Dept.

We can furnish a cylinder to any specification. Some examples include special Rod ends, special Mountings, cylinders with Stop Tubes, Dual Mount-

ings on the cylinders, and cylinders with special Operating Media.

We also carry seals for high temperature operation and a complete line of Double Rod end cylinders.

We invite you to use our Engineering for your special applications.

GENERAL RECOMMENDATIONS

When you receive your cylinder it is advisable to leave the shipping enclosures in place in the port until the cylinder is ready to be piped. Use approved thread sealers sparingly. Make sure adequate preparation has been made to the mounting surface. Recheck the cylinder for alignment after mounting. Be sure the mounting surface is rigid enough. Use socket hydraulic cap screws where possible.

When using air as an operating medium, use clean, dry compressed air. Supply lines should be of adequate size to prevent too much pressure

drop in your system. A lubricator should be installed in the line.

When using hydraulic oil as an operating medium, provide a clean (filtered) good grade of hydraulic oil, with a high aniline point. Consult the factory when using low aniline point oils or non-flammable fluids.

Make sure all piping is clean and free of any harmful substances.

Adjust cushions as required. With careful installation and lubrication your Rantom cylinder will give outstanding, long lasting performance.

POLICY: IN ORDER TO ASSURE OUR CUSTOMERS THE BEST IN PRODUCTS THROUGH IMPROVEMENTS IN DESIGN AND MANUFACTURE, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Cylinder Thrust Force and Fluid Displacement Theoretical (Maximum) Values

Cyl. Bore (in.)	Piston Area (Sq. In.)	Cylinder Thrust Force (lbs.) at various Line Pressure (psi)										Fluid Displacement Per Inch of Stroke (U.S. Gallons)
		50	80	100	250	500	750	1000	1500	2000	3000	
1½	1.767	88	141	177	442	884	1,325	1,767	2,651	3,534	5,301	.0076
2	3.142	157	251	314	785	1,571	2,356	3,142	4,712	6,283	9,426	.0136
2½	4.909	245	393	491	1,227	2,454	3,682	4,909	7,363	9,817	14,727	.0213
3	7.069	353	565	707	1,767	3,534	5,301	7,069	10,600	14,140	21,210	.0306
4	12.57	628	1,005	1,257	3,142	6,283	9,425	12,570	18,850	25,130	37,710	.0544
5	19.63	982	1,571	1,963	4,909	9,817	14,730	19,630	29,450	39,270	58,920	.0850
6	28.27	1,414	2,262	2,827	7,069	14,140	21,210	28,270	42,410	56,550	84,810	.1224
7	38.48	1,924	3,079	3,848	9,621	19,240	28,860	38,480	57,730	76,970	115,470	.1666
8	50.27	2,513	4,021	5,027	12,570	25,130	37,700	50,270	75,400	100,500	150,780	.2176
10	78.54	3,927	6,283	7,854	19,630	39,270	58,900	78,540	117,800	157,100	235,620	.3400
12	113.1	5,655	9,048	11,310	28,270	56,550	84,820	113,100	169,600	226,200	339,300	.4896
14	153.9	7,697	12,320	15,390	38,480	76,970	115,500	153,900	230,900	307,900	461,700	.6662

Cylinder Return Forces and Fluid Displacement

To determine the cylinder return force or fluid displacement for the return stroke, deduct the value(s) listed in this table, for the rod size used, from the value(s) listed in the table above.

Rod Dia. (in.)	Rod Area (Sq. In.)	Deductible Return Force (lbs.) at various Line Pressures (psi)										Deductible Fluid Displacement Per Inch of Stroke (U.S. Gallons)
		50	80	100	250	500	750	1000	1500	2000	3000	
¾	.3068	15	25	31	77	153	230	307	460	614	920	.0013
1	.7854	39	63	79	196	393	589	785	1,178	1,571	2,356	.0034
1¾	1.485	74	119	148	371	742	1,114	1,485	2,227	2,970	4,455	.0064
1¾	2.405	120	192	241	601	1,203	1,804	2,405	3,608	4,811	7,216	.0104
2	3.142	157	251	314	785	1,571	2,356	3,142	4,712	6,283	9,425	.0136
2½	4.909	245	393	491	1,227	2,454	3,682	4,909	7,363	9,817	14,730	.0213
3	7.069	353	565	707	1,767	3,534	5,301	7,069	10,600	14,140	21,210	.0306
3½	9.621	481	770	962	2,405	4,811	7,216	9,621	14,430	19,240	28,860	.0416
4	12.57	628	1,005	1,257	3,142	6,283	9,425	12,570	18,850	25,130	37,700	.0544
4½	15.90	795	1,272	1,590	3,976	7,952	11,930	15,900	23,860	31,810	47,710	.0688
5	19.63	982	1,571	1,963	4,909	9,817	14,730	19,630	29,450	39,270	58,900	.0849
5½	23.75	1,188	1,901	2,376	5,940	11,880	17,820	23,760	35,640	47,520	71,270	.1028
7	38.48	1,924	3,079	3,848	9,621	19,240	28,860	38,480	57,730	76,970	115,500	.1665

LIMITED EXPRESS WARRANTY

W.G. BENJIEY CYLINDERS INC. HEREIN SUPPLIES ONLY A LIMITED EXPRESS WARRANTY FOR ALL PRODUCTS THE COMPANY MANUFACTURES OR ASSEMBLES FOR A PERIOD OF ONE YEAR FROM THE DATE OF MANUFACTURE AS FOLLOWS. IT WILL ONLY REPAIR OR REPLACE ANY PARTS WHICH ITS INSPECTION PROVES TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP OCCURRING WITHIN TWELVE (12) MONTHS FROM ITS DATE OF DELIVERY TO ITS ORIGINAL PURCHASER WHEN THE PRODUCT HAS BEEN USED UNDER CONDITIONS IN WHICH IT WAS DESIGNED TO OPERATE. WE WILL NOT ACCEPT ANY CHARGES FOR REMOVAL, INSTALLATION, ASSEMBLY OR ANY OTHER CHARGES IN CONNECTION WITH REPLACEMENT OR REPAIR OF THE PRODUCT (S). NO WARRANTY IS EXTENDED AGAINST CORROSION, EROSION OR CHEMICAL ATTACK, AND THE LIABILITY OF THE COMPANY UNDER THIS WARRANTY FOR LOSS OR DAMAGE OF ANY NATURE, WHETHER BASED ON CONTRACT OR TORT, SHALL NOT EXCEED THE PURCHASE PRICE OF THE EQUIPMENT MANUFACTURED BY THE COMPANY. THE COMPANY SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, CONTINGENT, PUNITIVE OR INCIDENTAL DAMAGES. AT OUR OPTION WE RETAIN THE RIGHT TO HAVE THE PRODUCT(S) REPAIRED ON SITE OR RETURNED TO OUR MANUFACTURING PLANT FOR OUR INSPECTION, REPAIR AND TESTING OF THE UNITS. ALL PRODUCT (S) UNDER WARRANTY WHICH ARE ALLEGED TO BE DEFECTIVE ARE TO BE RETURNED TO THE FACTORY FREIGHT PREPAID, TO OUR PLANT. A COMPLETE EXPLANATION IS REQUIRED OF THE ALLEGED DEFECTS AND CIRCUMSTANCES OF SUCH CLAIMED FAILURE.

THE ABOVE SUPPLIED LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE. THE COMPANY NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE PRODUCTS HEREBY PURCHASED.

****REPRESENTATIONS****

IF MANUFACTURER REPRESENTATIVES OR OTHER PERSONS OR ENTITIES IN SOLICITING A SALE OF OUR PRODUCT HAVE MADE ORAL OR WRITTEN STATEMENT ABOUT THE MERCHANDISE DESCRIBED IN THIS CONTRACT OR THE LITERATURE OF THE COMPANY OR ITS STATEMENTS, SUCH STATEMENTS DO NOT CONSTITUTE WARRANTIES, SHALL NOT BE RELIED ON BY THE BUYER, AND ARE NOT PART OF THIS CONTRACT OF SALE. THE ENTIRE CONTRACT IS EMBODIED IN THIS WRITING EXCEPT AS TO ENGINEERING DETAILS AND SPECIFICATIONS. THIS WRITING CONSTITUTES THE FINAL EXPRESSION OF THE PARTIES' AGREEMENT, AND IT IS A COMPLETE AND EXCLUSIVE STATEMENT OF THE TERMS OF THAT AGREEMENT.

****LIMITATION OF REMEDY****

THE PARTIES AGREE THAT THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AGAINST THE SELLER SHALL BE FOR THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS AS PROVIDED HEREIN. THE PURCHASER AGREES THAT NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, LOST PRODUCTION, INJURY TO PERSON OR PROPERTY OR FOR INDEMNIFICATION FOR LOSS OR EXPENSE THERE TO, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO PURCHASER. THE SOLE PURPOSE OF THE STIPULATED EXCLUSIVE REMEDY SHALL BE TO DELIMIT SELLER'S OBLIGATION TO PURCHASER. THIS EXCLUSIVE REMEDY SHALL NOT BE DEEMED TO HAVE FAILED OF ITS ESSENTIAL PURPOSE SO LONG AS THE SELLER IS WILLING AND ABLE TO REPAIR OR REPLACE DEFECTIVE PARTS IN THE PRESCRIBED MANNER.

****EXCLUSION OF WARRANTIES****

THE PARTIES AGREE THAT THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED FROM THIS TRANSACTION AND SHALL NOT APPLY TO THE GOODS SOLD.

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