

MONGO HIGH FORCE FRAME CLAMP ASSEMBLY INSTRUCTIONS

PHD, Inc. makes no warranty as to the fitness of its products or as to the length of service life after being repaired or parts replaced by anyone other than authorized employees of PHD, Inc. In no event shall PHD, Inc. be liable for loss of profits, indirect, consequential, or incidental damages arising out of the use of PHD Products.

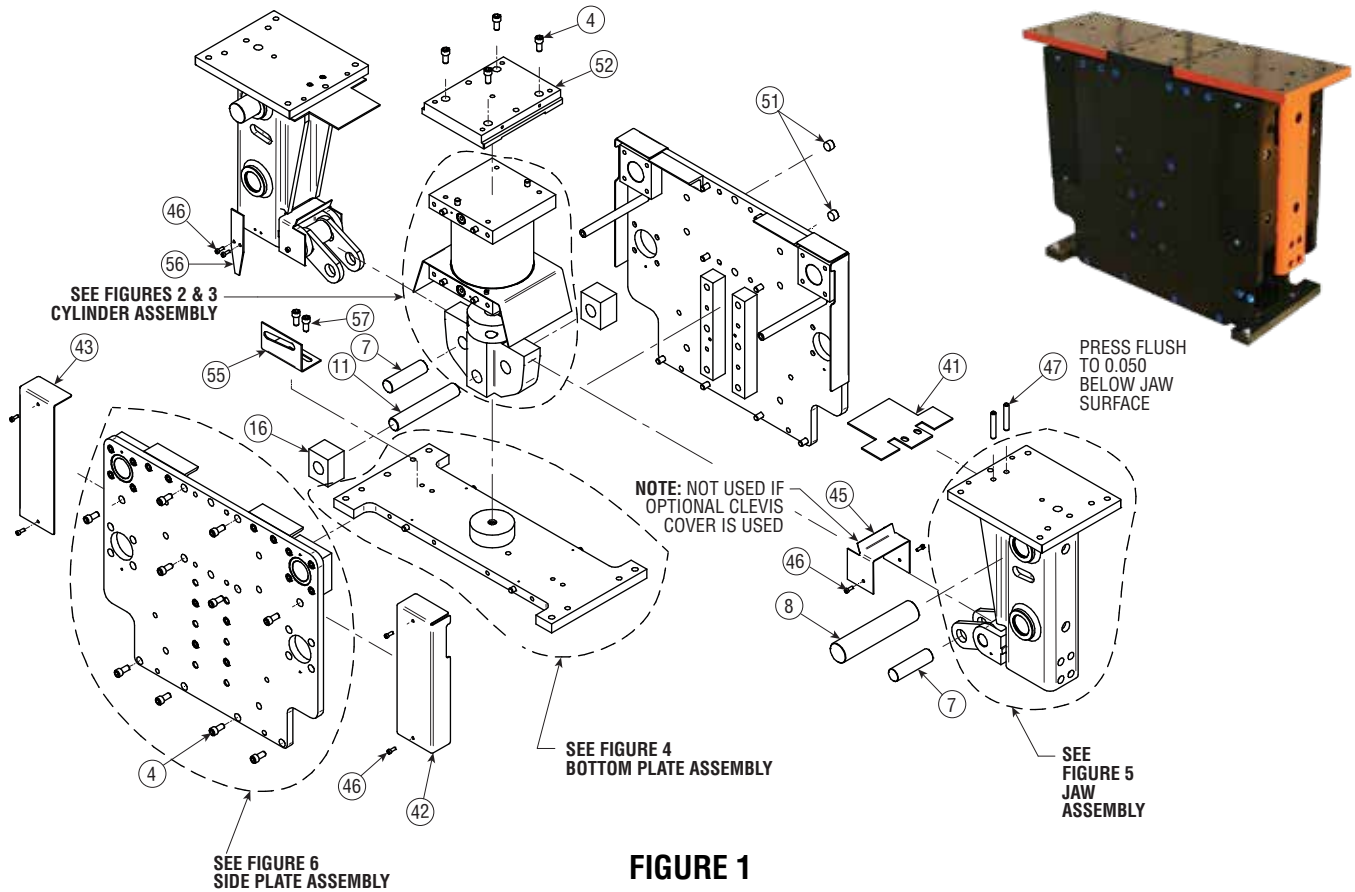


FIGURE 1

Minimum Cycle Pressure = 30 PSIG
Seal Blow-by = 70-85 PSIG

PARTS LIST

ITEM NO.	QTY	DESCRIPTION	PART NUMBER	TORQUE in-lb
4	22	SHCS	59104-193	1200
7	2	Clevis/Cam Pin	78159	
8	2	Pivot Pin	78160	
11	1	Cam Driver Pin	78163	
16	1	Slider Bushing	78167-01	
41	2	Top Weld Cover	78175	
42	2	Left Jaw Weld Cover	78176-01	
43	2	Right Jaw Weld Cover	78176-02	
45	2	Clevis Cover	78187	
46	14	SHCS Cover	59104-033	125
47	4	Spring Pin Weld Cover	78194-001	
51	2	Port Plug	1992-005	HAND TIGHTEN
52	1	Center Plate	78174	
55	1	Proximity Switch Bracket	78188	
56	1	Proximity Switch Target	78189	
57	2	Proximity Bracket SHCS	59104-193	600

LUBRICATION GUIDELINES

ITEM NO.	DESCRIPTION	LOCATION	LUBRICATION
7	Clevis/Cam Pin	All Surfaces	MOBILGREASE SPECIAL
8	Pivot Pin		
11	Cam Driver Pin		
16	Slider Bushing		



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5. Assemble clamp – Figure 1

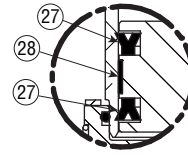
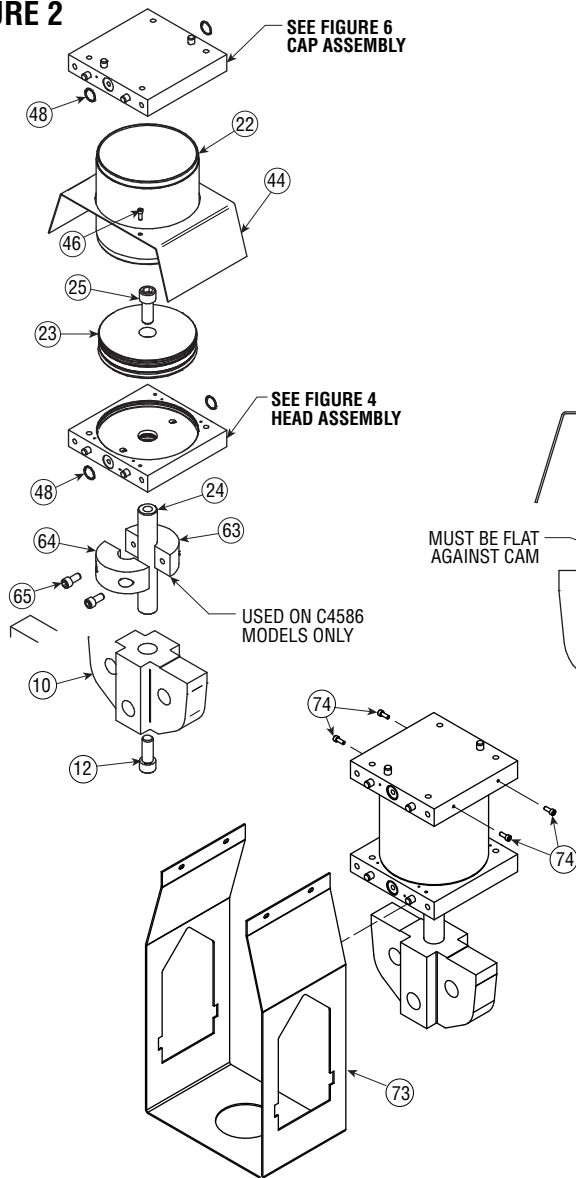
- A. Place bottom plate onto side plate with frame tierods and torque screws (1,4,17) as specified
- B. Lay side plate/bottom assembly down with frame tierods facing upward (1,9,17)
- C. Place cylinder assembly into side plate/bottom assembly
- D. Lube and place slider bushing between slider rails on side plate/bottom assembly (14,16)
- E. Position cam above slider bushing and insert cam driver pin (10,11,16)
- F. Place remaining slider bushing onto cam driver pin (11,16)
- G. Lube and push cam assembly of cylinder against head of cylinder
- H. Lube and place pivot pin into bushing blocks of side plate/bottom assembly (3,8)
- I. Place jaw assembly onto pivot pins and lay against side plate/bottom assembly (2,8)
- J. Orient links onto cam and install cam pin (7,10,13)
- K. Install switch mounting bracket(s) onto bottom plate (55,57) as specified
- L. Install prox target onto left jaw and torque screws (2,46,56)
Tighten and remaining "hand tighten" screws to specified torque
- M. Install stroke reduction collar on required units and torque screws (63,64,65)
- N. Make sure port O-Ring seal is still installed and place remaining side plate assembly onto pivot pins and dowel pins. (1,8,30)
[Make sure slider bushing is aligned to slider rails]
- O. Final torque all remaining side plate screws and tierod screws (4)
- P. Stand up clamp assembly on the bottom plate (17)
- Q. Place top weld cover in jaw and install spring pins (2,41,47)
- R. Place center plate onto cap and torque screws (4,21,52)
- S. Place side weld covers onto side plate and torque screws (42,43,46)
- T. Install port plugs into back side plate (1,51)
- U. Grease pivot pins using grease zerks (32)

1. Assemble cylinder – Figure 2

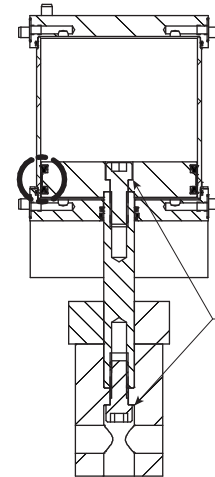
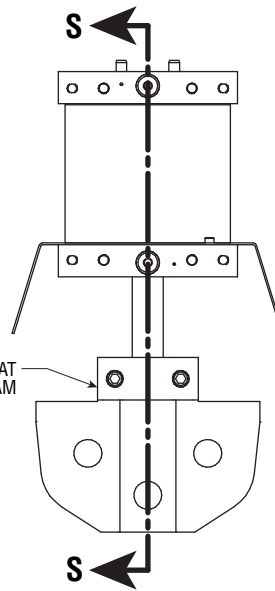
- A. Press dowel pins into head and cap to dimension shown (20,21,30,53) See Figure 3
- B. Install seals into head and cap (20,21,26,29,60)
Note orientation of seals (26 & 60) See Figure 3
- C. Press cylinder tube into head (20,22) This is not a press fit
- D. Hand tighten piston rod to piston (23,24,25)
- E. Install seals and wear ring onto piston (23,27,28)
Note seal orientation (Detail F)
- F. Insert piston assembly into cylinder tube using a piston seal stuffer
- G. Place cam onto piston rod and torque assembly together (10,23,24,25)
- H. Install debris diverter onto cylinder tube and torque screws (22,44,46)
- I. Press cap onto cylinder tube (21,22) This is not a press fit
- J. Install port O-Ring seals (20,21,48)
- K. Place unit into a fixture and test cylinder for leakage

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FIGURE 2

DETAIL F

Minimum Cycle Pressure = 30 PSIG
Seal Blow-by = 70-85 PSIG


SECTION S-S
PARTS LIST

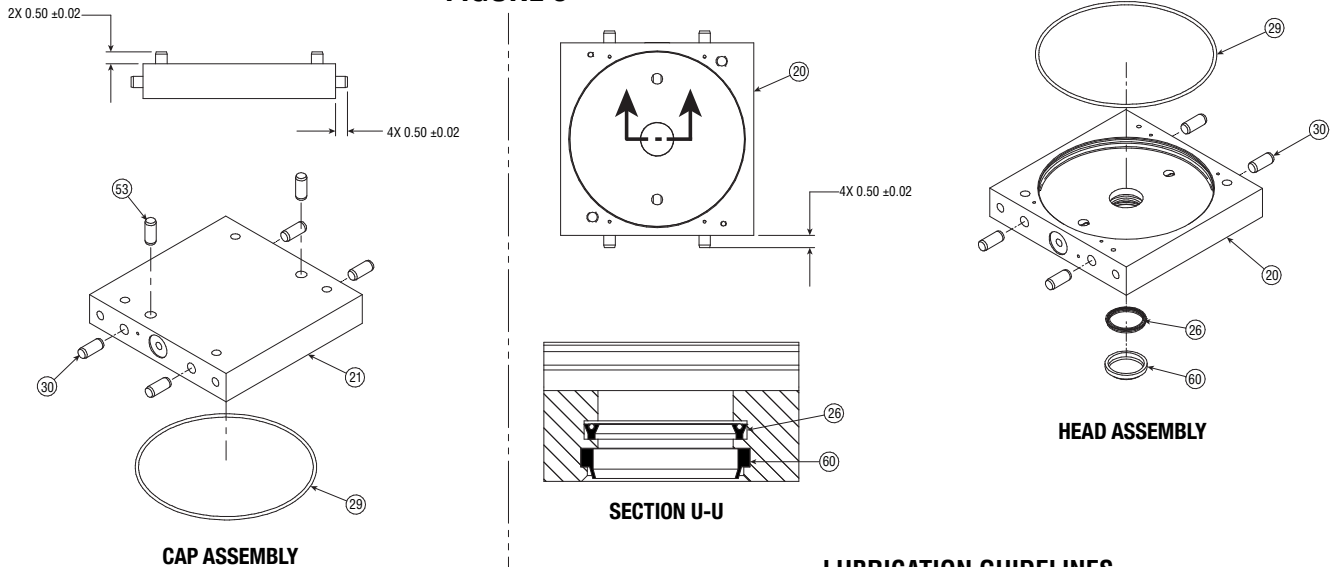
ITEM NO.	QTY	DESCRIPTION	PART NUMBER	TORQUE in-lb
10	1	Cam	78162-01	
22	1	Tube	78171	
23	1	Piston	78172	
24	1	Piston Rod	78173	
25	2	Piston Rod SHCS	59104-287	240
27	2	Piston Seal	78193-001-9	
28	1	Wear Ring	78195	
44	1	Debris Diverter	78179	
46	2	Debris Diverter SHCS	59104-033	125
48	4	Port Oring Seal	3642-103-1	
63	1	Threaded Stroke Spacer	78203-01	
64	1	Counterbore Stroke Spacer	78203-02	
65	2	Spacer SHCS	59104-193	1200
73	1	Debris Diverter	78179-01	
74	4	SHCS	59104-033	125

LUBRICATION GUIDELINES

ITEM NO.	DESCRIPTION	LOCATION	LUBRICATION
10	Cam	Inside Pin Holes and Cam Surface	MOBILGREASE SPECIAL
22	Tube	ID and Seal Chamfers	
23	Piston	Seal Grooves	
24	Piston Rod	OD	
27	Piston Seal	All Surfaces	
28	Wear Ring	All Surfaces	
48	Port Oring Seal	All Surfaces	

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FIGURE 3

LUBRICATION GUIDELINES

ITEM NO.	DESCRIPTION	LOCATION	LUBRICATION
21	Cap	Seal Grooves	MOBILGREASE SPECIAL
29	Tube O-Ring Seal	All Surfaces	

LUBRICATION GUIDELINES

ITEM NO.	DESCRIPTION	LOCATION	LUBE PER
20	Head	Seal Grooves	15973-03
26	Rod Seal	All Surfaces	
29	Tube O-Ring Seal	All Surfaces	
60	Rod Wiper	All Surfaces	

PARTS LIST

ITEM NO.	QTY	DESCRIPTION	PART NUMBER
21	1	Cap	78170 78170-01 With Alternate Weld Cover
29	1	Tube O-Ring Seal	1950-263-1
30	4	Side Dowel Pin	17831-127

PARTS LIST

ITEM NO.	QTY	DESCRIPTION	PART NUMBER
20	1	Head	78169
26	1	Rod Seal	1978-015-1
29	1	Tube O-Ring Seal	1950-263-1
30	4	Side Dowel Pin	17831-127
60	1	Rod Wiper	78198-01375-1

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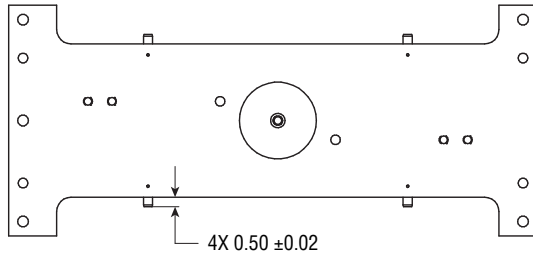
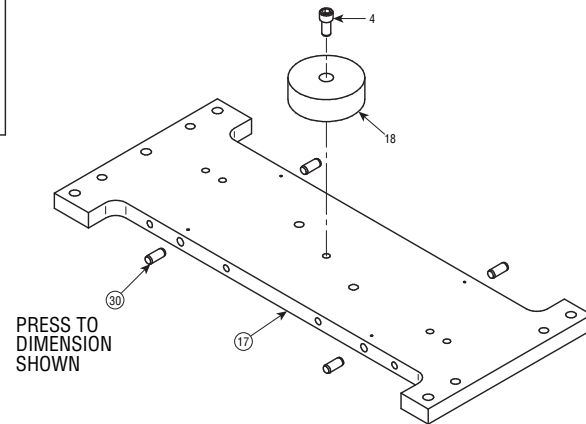


FIGURE 4



PARTS LIST

ITEM NO.	QTY	DESCRIPTION	PART NUMBER	TORQUE in-lb
4	1	SHCS	59104-193	1200
17	1	Bottom Plate	78168	
18	1	Cam Impact Plate	78178	
30	4	Side Dowel Pins	17831-127	

2. Assemble base plate – Figure 3

- A. Press dowel pins into base plate to dimension shown (17,30)
- B. Install impact plate onto base plate and torque screw (4,17,18)

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5. Assemble jaws – Figure 5

- A. Install pivot O-Ring seal into jaw upper pivot hole o-ring groove (2 per jaw) (2,49)
- B. Lube and install grease zerk into jaw (2,32) Torque as specified
- C. Lube and install clevis onto jaw and torque screws (2,4,5) [orientation of clevis is important. If only one thread is present, the threaded hole on side of clevis must be closest to bottom of jaw]
- D. Lube and install seals into cam roller (12,50)
- E. Lube clevis pin, link, cam roller bearing, and slide clevis pin thru clevis, slotted side link, roller, slotted side link and clevis (5,7,12,13)
- F. Install clevis cover onto clevis (5,45,46)
See page 1

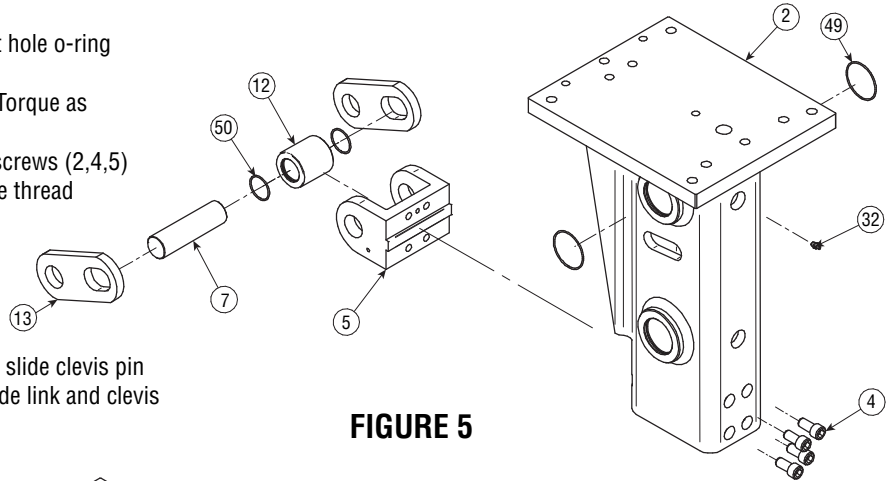
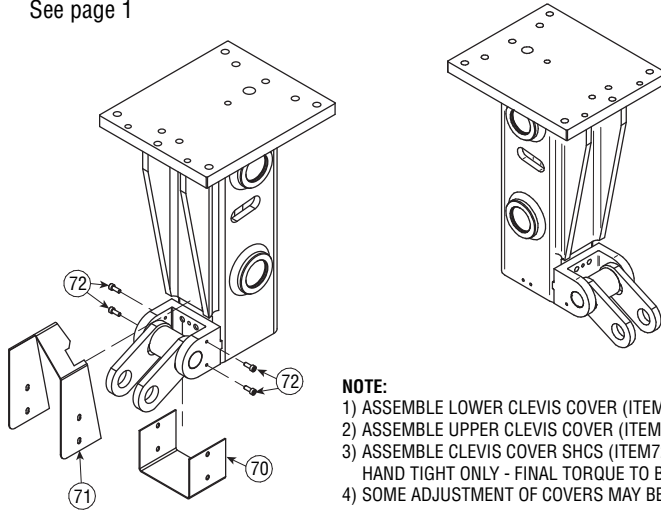


FIGURE 5



NOTE:
 1) ASSEMBLE LOWER CLEVIS COVER (ITEM70) FIRST
 2) ASSEMBLE UPPER CLEVIS COVER (ITEM71)
 3) ASSEMBLE CLEVIS COVER SHCS (ITEM72) -
 HAND TIGHT ONLY - FINAL TORQUE TO BE DONE AT FINAL ASSEMBLY
 4) SOME ADJUSTMENT OF COVERS MAY BE REQUIRED AT FINAL ASSEMBLY

LUBRICATION GUIDELINES

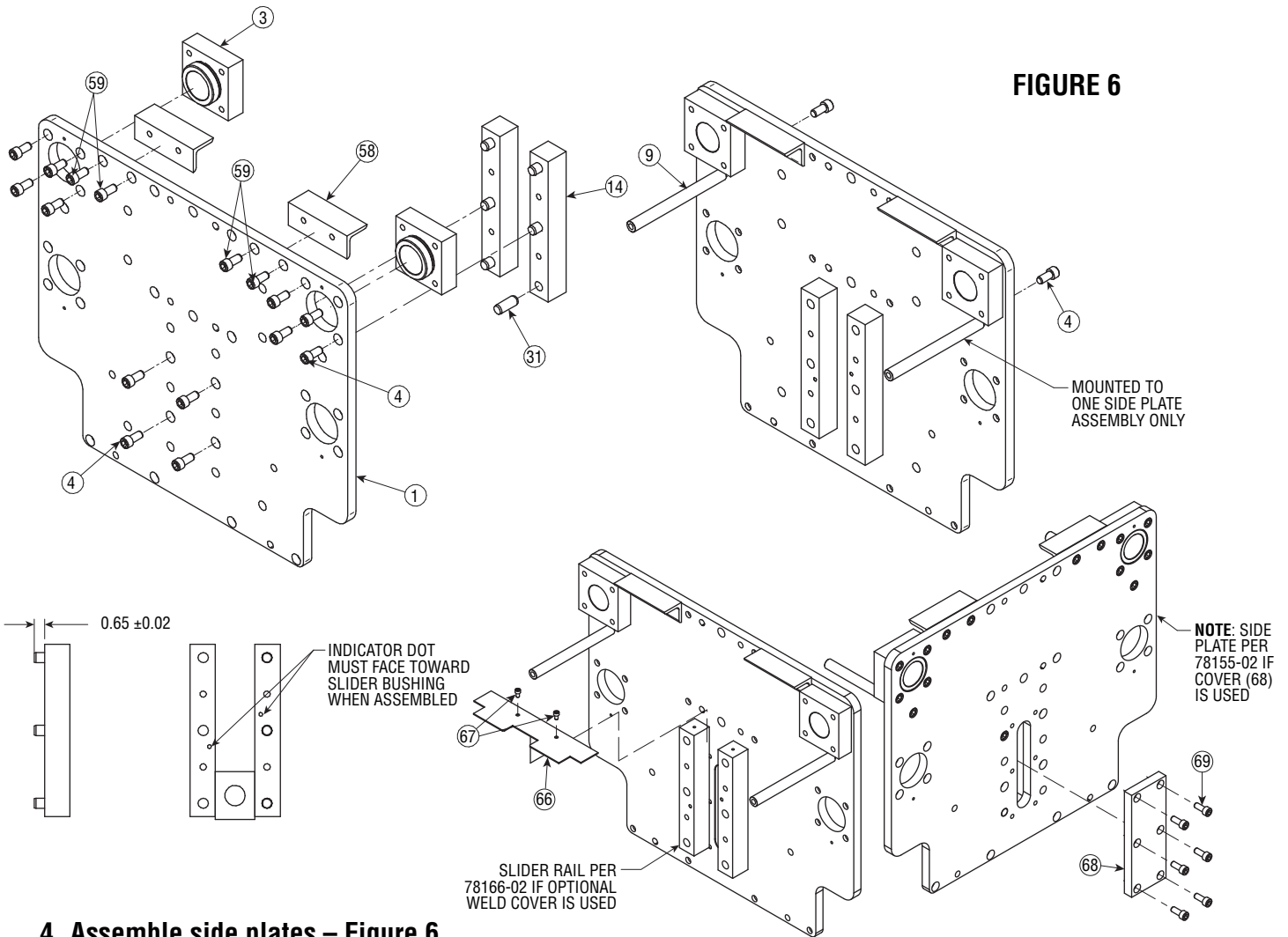
ITEM NO.	DESCRIPTION	LOCATION	LUBRICATION
2	Finished Jaw	Inside Pivot Pin Bore	MOBILGREASE SPECIAL
5	Clevis	Inside Clevis Pin Bore	
7	Clevis/Cam Pin	All Surfaces	
12	Cam Roller Bearing	All Surfaces	
13	Cam Link	All Surfaces	
49	Pivot Seal O-Ring	All Surfaces	
50	Roller Seal O-Ring	All Surfaces	

PARTS LIST

ITEM NO.	QTY	DESCRIPTION	PART NUMBER	TORQUE in-lb
2	2	Finished Jaw	78156-01	
4	8	SHCS	59104-193	1200
5	2	Clevis	78158	
7	2	Clevis/Cam Pin	78159	
12	2	Cam Roller Bearing	78164	
13	4	Cam Link	78165	
32	2	Grease Zerk	63086	125
49	4	Pivot Seal O-Ring	1950-033-1	
50	4	Roller Seal O-Ring	1950-026-1	
70	2	Lower Clevis Cover	78187-02	
71	2	Upper Clevis Cover	78187-01	
72	8	SHCS	59104-033	125

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4. Assemble side plates – Figure 6

- Lube and install bushing blocks into side plates and torque screws (1,3,4) Note upper hole locations for high force units, lower hole for “shoe horn” units
- Press dowel pins into rail slider to dimension shown (14,31)
- Slide rails into side plates and torque screws as specified (4,14) [orientation on assembly drawing]
- Install weld cover supports onto side plates and torque screws as specified (1,58,59)
- Install frame tierods onto one side plate and hand tighten screws (1,4,9)

LUBRICATION GUIDELINES

ITEM NO.	DESCRIPTION	LOCATION	LUBRICATION
3	Pivot Pin Bushing Block	Inside Pivot Pin Bore	MOBILGREASE
14	Slider Rail	Surfaces Facing Slider	SPECIAL

PARTS LIST

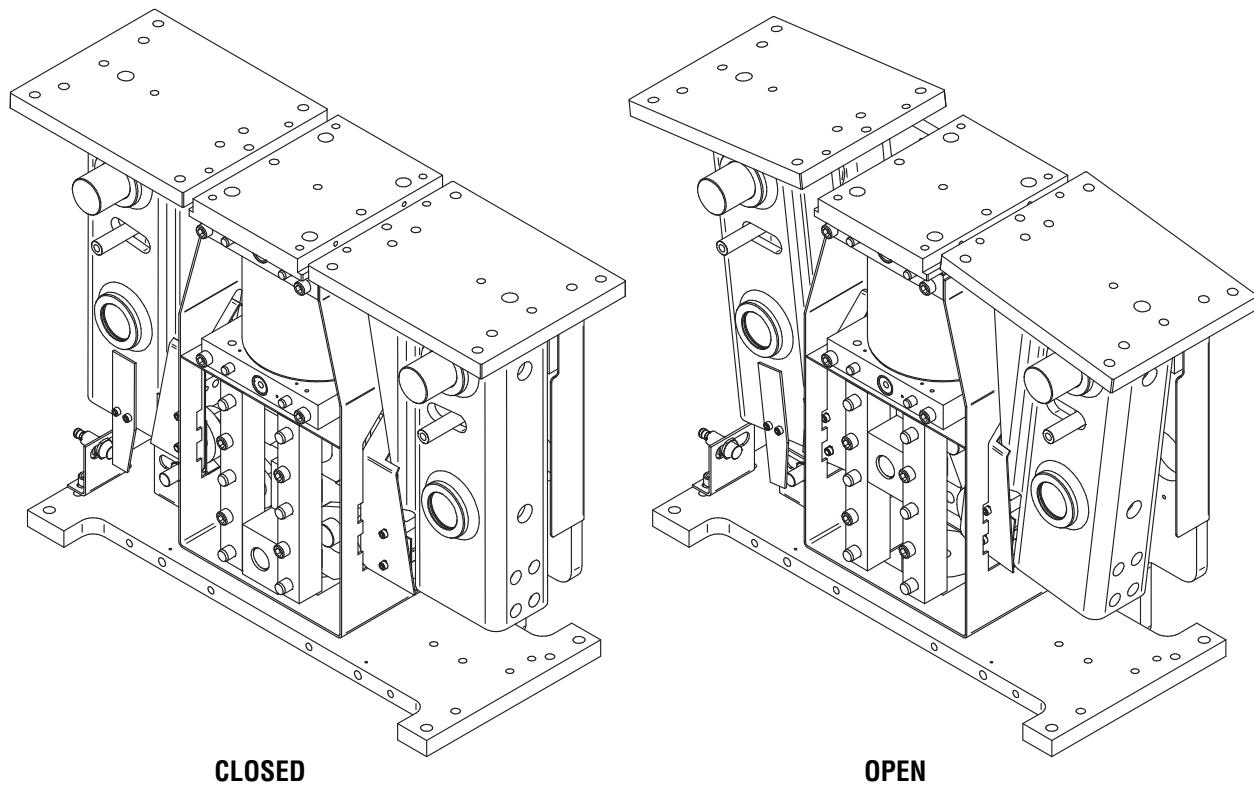
ITEM NO.	QTY	DESCRIPTION	PART NUMBER	TORQUE in-lb
1	2	Side Plate	78155-01	
3	4	Pivot Pin Bushing Block	78157	
4	26	SHCS	59104-193	1200
9	2	Frame Tierod	78161	
14	4	Slider Rail	78166-01	
31	12	Slider Rail Dowel Pin	17831-144	
58	4	Top Weld Cover Support	78191	
59	8	Roller Seal O-Ring	59104-193	600
66	2	Slider Rail Cover	78933-01	
67	4	SHCS	14308-114	
69	2	Access Slot Cover Plate	78943-01	
69	12	SHCS	59104-166	



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6. Test assembly.

**CLOSED****OPEN**

Mongo High Force Frame Clamp Maintenance Instructions

1. Jaws may be lubricated using grease zerks (32). See 3. Assemble jaws section.
2. To lubricate internal parts, place unit on its side.
3. Remove screws (46) and remove weld covers (42)
4. Remove screws (4) from the side plate (1).
5. Lift side plate off from the dowel pins (30) to gain access to internal parts.
6. Review unit for contamination and clean parts as necessary.
7. Re-lubricate parts using Mobilgrease Special.
8. If replacing parts, refer to the assembly instructions and remove in reverse order.