



MILLTRONICS
C N C M A C H I N E S

MB20A-L Mechanical Parts Manual

1-27-2012
Rev 1

Worklight for version H is MA-215

Power Supply PS-49

X and Y handwheels MPL-224
(see comments)

Flexible spring oil
line cover
MPB-247

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Miscellaneous parts

V

Machine Base Assembly

MB/RH20 Base

[MB-20-1]

Item	Description	Q'ty	Remarks	Mill Part #
1	Base	1		
2				
	Gear Box	1		
4&5	Y Ballscrew & Nut	See listing of options below		
	Y Ballscrew & Nut			
6	Key	1		
7	Key	1	4x4x45l	
8	Key	1	4x4x20l	
9	Bearing, thrust	2	7205DB	BG-67 32m
10	Spacer	1		BG-89 40m
11	Spacer	1		
12	Spacer	1		
13	Nut	1		MBC-47
14	Bearing Cap	1		
15	Pulley, Ball screw	1		PY-***
16	Cover	1		
17	Bearing	2	6004Z	BG-115
18	Bearing Seat	1		
19	Sleeve	1		
20	Graduated Ring	1		
21	Nut	1		
22	Handwheel	1		
23	Nut	1		
24	Pulley, Motor	1		PY-***
25	Belt	1		BT-***
26	Motor Plate	1		
27	Servo Motor	1		MO-***
28	Leveling Block	6		MBB-57
29	Leveling Screw	6		MBB-58
30	Radial Bearing	1		BG-24 32
	Home & Limit Switch	1		SW-**

[illegible]

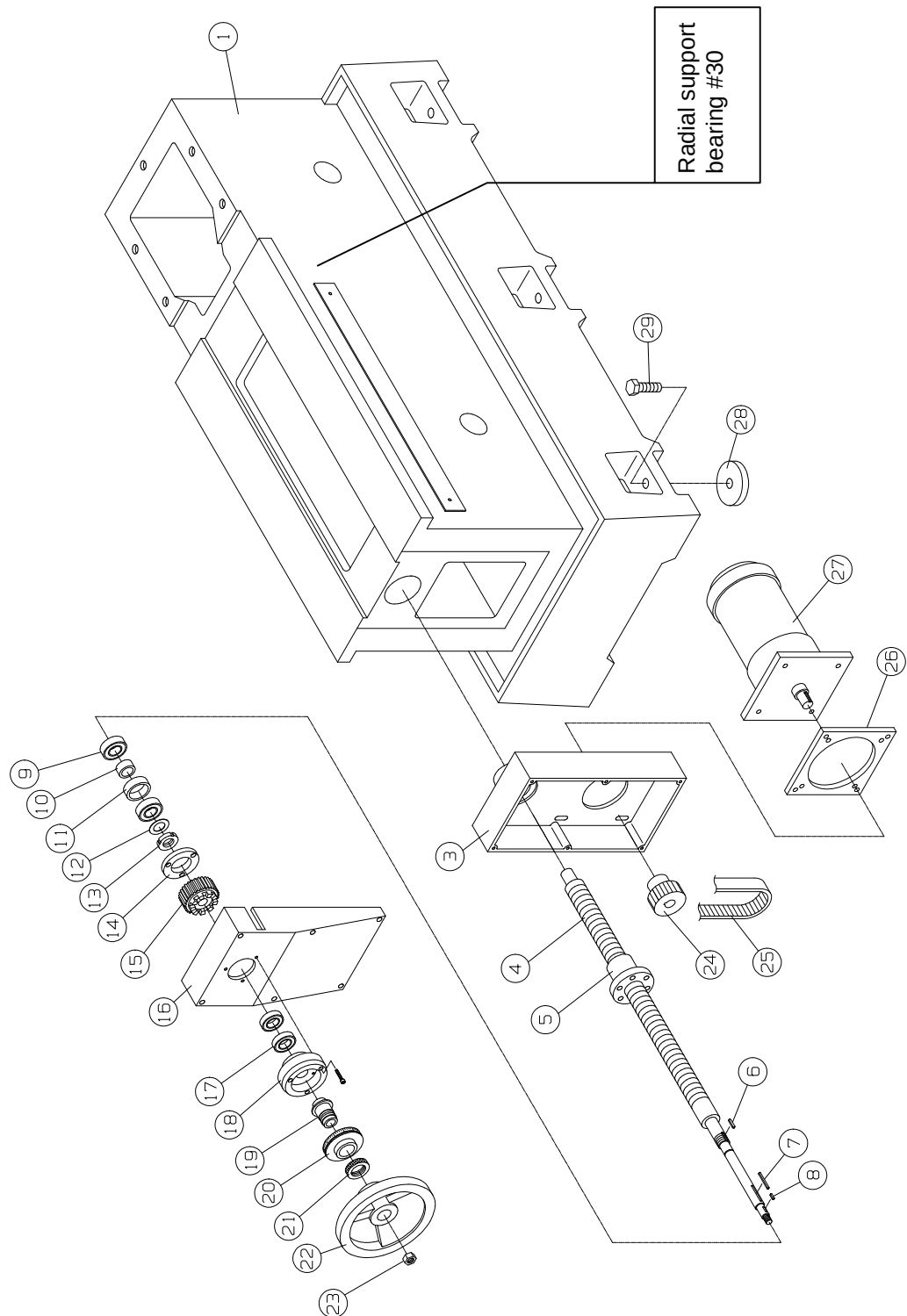
**** Use the table below to match the machine series with the correct part.**

Series	Home and Limit Switch
MB20A-E	SW-259 & WX-306
MB20F-M	SW-203

*** Use the table below to match the machine series with the correct part.

Series	#15 pulley	#24 pulley	#25 belt	#27 Motor	Drive Amp
MB20A-D	PY-31/106	PY-21	BT-11	MO-02	AM-25
MB20E-H	PY-135/110	PY-135/95	BT-15	MO-94	AM-43
MB20I-L	PY-135/110	PY-135/95	BT-15	MO-125	AM-58
MB20M	PY-135/110	PY-135/95	BT-15	MO-125	AM-90

Machine Base



MB20 1/4

Machine Table and Saddle Assembly

MB/RH20 Table-
[MB-20-2]

Item	Description	Q'ty	Remarks	Mill Part #
1	Table	1		
2	Tool Tray	2		MPS-59
3	Gib	1		MPS-609
4	Gib	1		MPS-610
5	Nut Bracket, X-axis	1		MBT-57
6 & 7	X Ballscrew & Nut	1	38" travel V A-F	MPS-38
	X Ballscrew & Nut	1	40" travel V G +	MBT-59
8	Saddle	1		
9	Key	1		
10	Screw	2		
11	Fixed Plate	2		
12	Gear Box	1		MPS-619
13	Bearing, thrust	2		BG-67
14	Nut M25-1.5 P	2		MBC-47
15	C-Snap	1	R42	
16	Nut	1		
17	Cover	1		MPS-619
18	Clamp Plate	1		
19	Screw	4	Gib screw	HD-87
20	Gib	1		MPS-611
21	Gib	1		MPS-612
22	Clamp Plate	1		
23	Screw	12		
24	Nut Bracket, Y-axis	1		MBT-76
25	Pin	2		
26	Screw	2		
27	Ball screw key	1		
28	Bracket	1		
29	Bearing, radial	2	6205Z	BG-24 or BG-
30	Bearing cap	1		
31	Pulley - motor	1		PY-***
32	Belt	1		BT-***
33	Motor plate	1		
34	Servo motor	1		MO-***
35	Pulley - ballscrew	1		PY-***
36	Belt	1		#32
	Home and Limit Switch	1		SW-

Note: Some machines (listed below) require a 20mm spacer on the MBT-59 ballscrew. See MPS-686 or MBT-59 for details.

Require spacer:
 #11378
 #11406
 #11433
 #11471

BG-13 bearing for #17

Bevel gear MPS-72

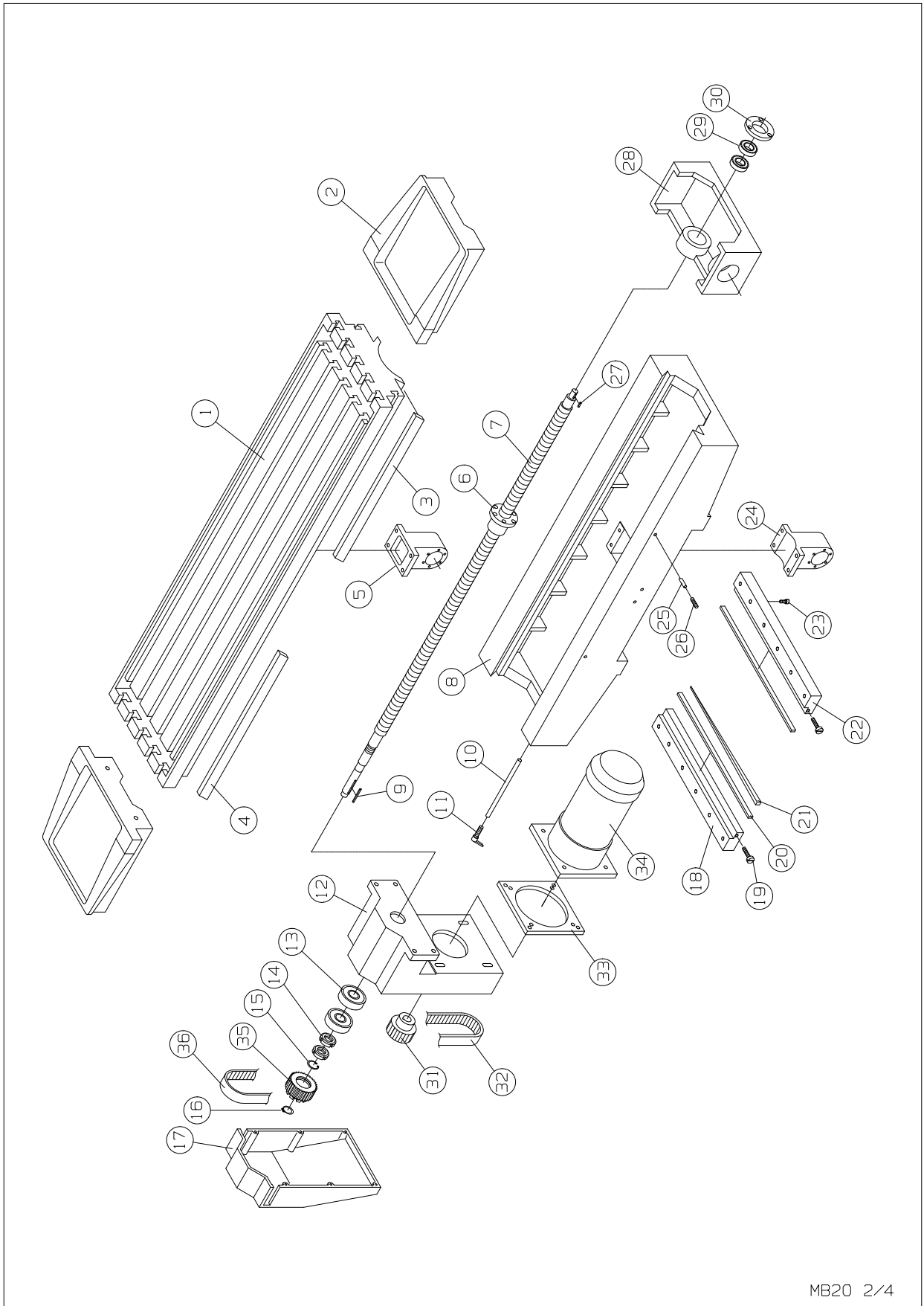
** Use the table below to match the machine series with the correct part.

Series	Home and Limit Switch
MB20A-E	SW-259 & WX-306
MB20F-L	SW-203

*** Use the table below to match the machine series with the correct part.

Series	#35 pulley	#31 pulley	#32 belt	#34 Motor	Drive Amp
MB20A-D	PY-31/106	PY-21	BT-11	MO-02	AM-25
MB20E-H	PY-135/110	PY-135/95	BT-13	MO-94	AM-43
MB20I-L	PY-135/110	PY-135/95	BT-13	MO-125	AM-58
MB20M	PY-135/110	PY-135/95	BT-13	MO-125	AM-90

Machine Table and Saddle



MB20 2/4

Machine Column Assembly

MB/RH20 Column
[MB-20-3a]

Item	Description	Q'ty	Remarks	Mill Part #
1	Nut	1		MBC-145 or MP1-89
2	Spacer	1		
3	Screw	4		
4	Pulley	1		
5	Screw	4		
6	Bearing Cap	1		
7	Spacer	1		
8	Bearing, thrust	2		BG-89 or BG00067
9	Bearing Seat	1		MBC-89
10	Screw	4		
11	Key	1	5x5x20l	
12	Z Ballscrew & nut		32mm Ver A-C	MPS-40
	Z Ballscrew & nut	1	40mm Ver D +	MBC-58
13	Key	1	5x5x20l	MPS-752
14	Servo Motor	1		MO-***
15	Motor Plate	1		
16	Screw	4		
17	Belt	1		BT-***
18	Set Screw	1		
19	Pulley	1		PY-***
20	Bracket	1		
21	Chain Wheel Shaft	4		MBC-67
22	C-Snap	4		
23	Chain Wheel Shaft	X	Use #21	MBC-69
24	Bearing	4		BG-24
25	C-Snap	4		
26	Chain Wheel	4		MBC-72
27	Clamp Plate	1		MPS-645
28	Screw	12		
29	Bolt	4		MBC-75
30	Counter Balance Block	1		
31	Column	1		
32	Screw	5		
33	Screw	4		
34	Cover	1		
35	Bolster	1		
36	Nut Bracket	1		MBC-01
37	Chain	2		MP6-27
37a	Connecting Link for #37	4		MP6-29
38	Clamp Plate	1		MPS-644
39	Screw	4		MPS-608
40	Gib	1		MPS-642
41	Gib	1		MPS-643
42	Bearing, radial	2		BG-24
43	Bracket - ball screw	1		
44	Screw	4		
	Home and Limit Switch	1	See below	SW-**

Continued on next page...

** Use the table below to match the machine series with the correct part.

Series	Home and Limit Switch
MB20A-E	SW-259 & WX-306
MB20F-L	SW-203

*** Use the table below to match the machine series with the correct part.

Series	#19 pulley	#17 belt	#14 Motor	Drive Amp
MB20A-D	PY135/34	BT-44	MO-70	AM-25
MB20E-H	PY-135/95	BT-02	MO-95	AM-43
MB20I-L	PY-135/95	BT-02 *	MO-126	AM-58
* MB20J M-revs 2 & 3		BT-44	MO-126	AM-58
MB20M	PY-135/95	BT-02 *	MO-126	AM-90

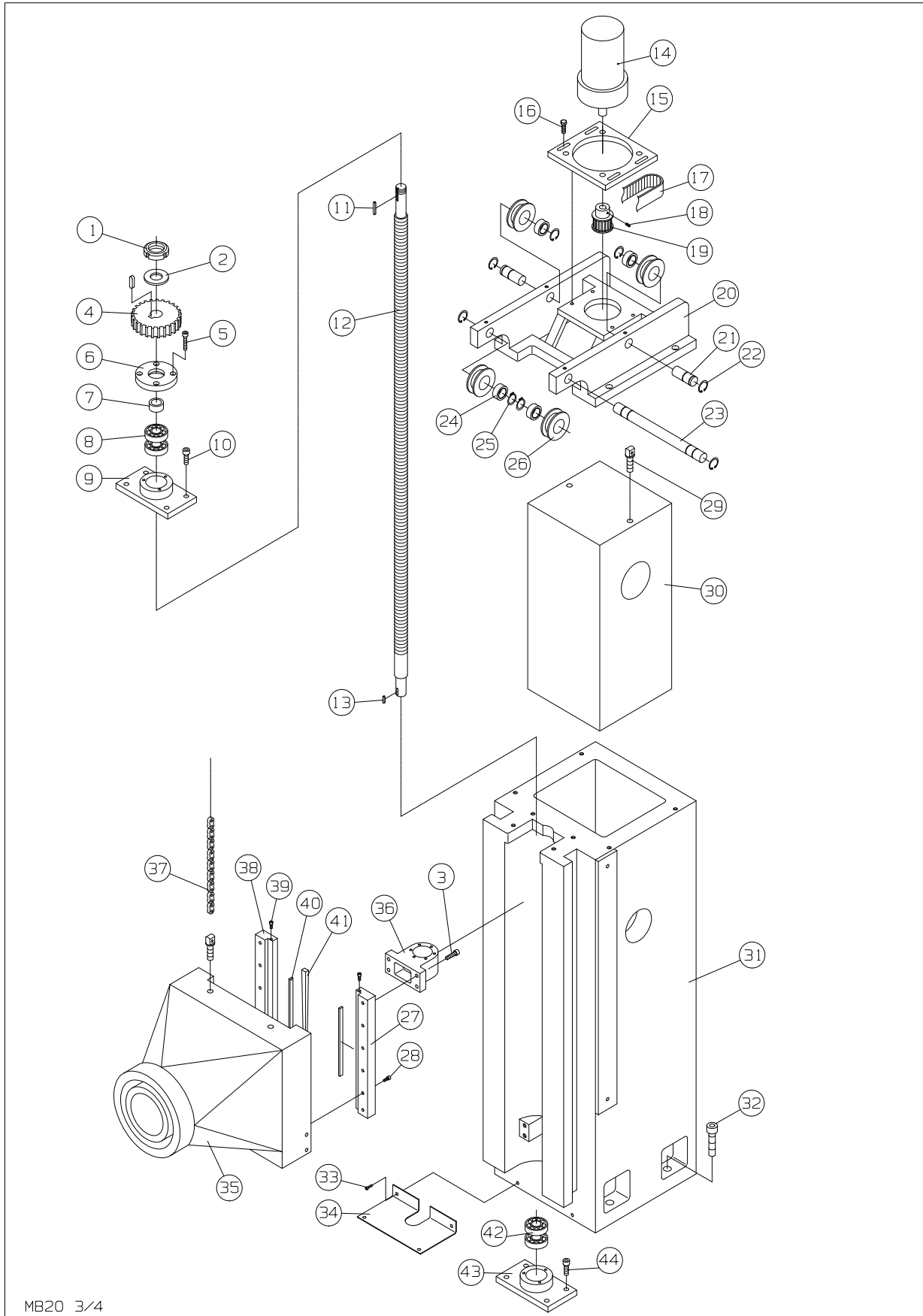
Z axis waycover
MPS-58 or MPS-71

Z axis manifold 98
outlets) MPS-748

Z axis wiper set MPS-771

Z axis ballscrew
spring cover
MPS-721

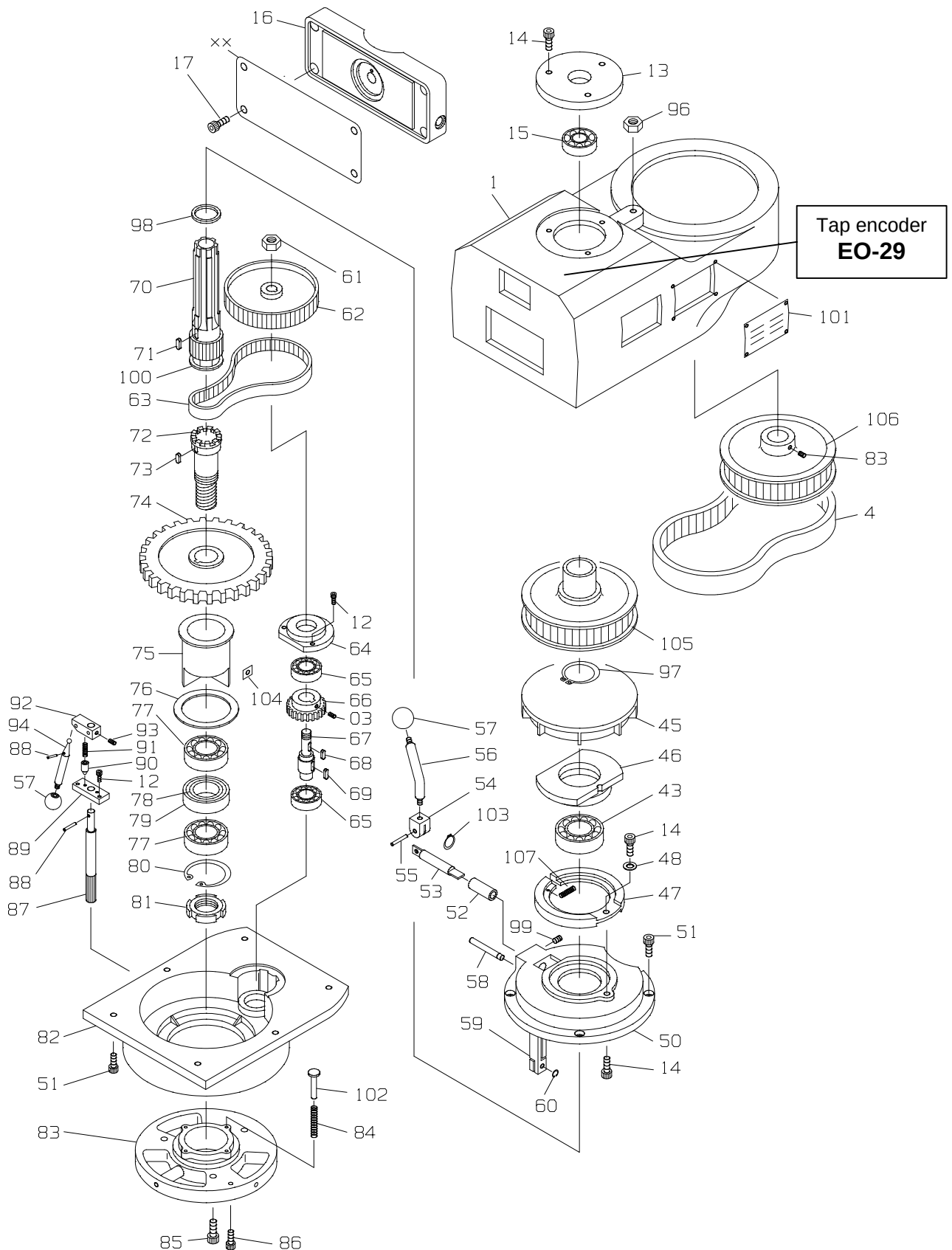
Machine Column



MB20 3/4

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Machine Head Drawing – Upper Head Assembly (UH)



Machine Head Part List – Upper Head Assembly (UH)

Complete Head assembly VM-141

Item	Description	Part #
4	Belt	BT-77 or 100
12	Screw	
13	Bearing Cap (top radial)	MPM-99
14	Screw	
15	Bearing - 6009	BG-05 75/115
43*	Bearing (spindle pulley shaft)	BG-68 95/60
45	Stationary varidisc	MHVS-63
46	Bearing Cap	MPM-87
47*	Brake Unit, includes #107	MPM-38
48	Washer	
49	N/A	
50	Brake Housing Base	
51	Screw	
52	Brake Lock Cam	
53	Link	
54	Block	
55	Pin	MPM-66
56	Brake Lever	
57	Knob	MHVS-56
58	Handle	
59	Bracket	
60	Ring	
61 *66	Nut (5/8-18)	MHVS-722
62 *66	Pulley	MPM-49
63	Belt	See below
64	Bearing Cap (in assy)	MHVS-723
65	Bearing	BG-13
66	Gear	MPM-42
67	Shaft	MPM-43
68	Key (MHVS-448?)	
69	Key	
70 *50	Spindle Pulley Shaft	MHVS-26

#45-60, 1ea. #43, and #70 inc in assy 9950-4

9950-3

#70-
 MHVS-26-40 TAPER SHAFT
 MHVS-778-30 TAPER SHAFT

Rigid tapping parts		
	Encoder (assy #9538-1)	EO-29
	Belt	BT-59
	Pulley, encoder	PY-47
	Pulley, spindle	PY-149

Item	Description	Part #
71	Key	
72	Spindle Gear Hub	MPM-61
73	Key	MPS-687
74	Gear	MPM-48
75	Bearing Housing	MHVS-291
76	Sleeve	MPM-95
77	Bearing	BG-08 72/50
78	Spacer-inside	
79	Spacer-outside	
80	C-Snap	
81	Nut	
84	Spring, see #102 (3 req)	MPM-96
85	Screw	
86	Screw	
87	High – Low Shaft Pinion	MPM-83
88	Pin	MPS-692
89	Hi-Low Plate	
90	Pin	MPS-689
91	Spring	MPS-688
92	Block	MPS-690
93	Set Screw	
94	Lever	MPS-691
95	Nut	
97	C-Snap	
98	Ring	
99	Set Screw	
100	Clutch Sleeve	MHVS-64
102	Pin see #84 (3 req)	#84
103	C-Snap	
104	Key	
105	Spindle Pulley (DD)	MHVS-67
106	Motor Pulley (DD)	MHVS-66
107	Brake Spring (see #47)	MHVS-325

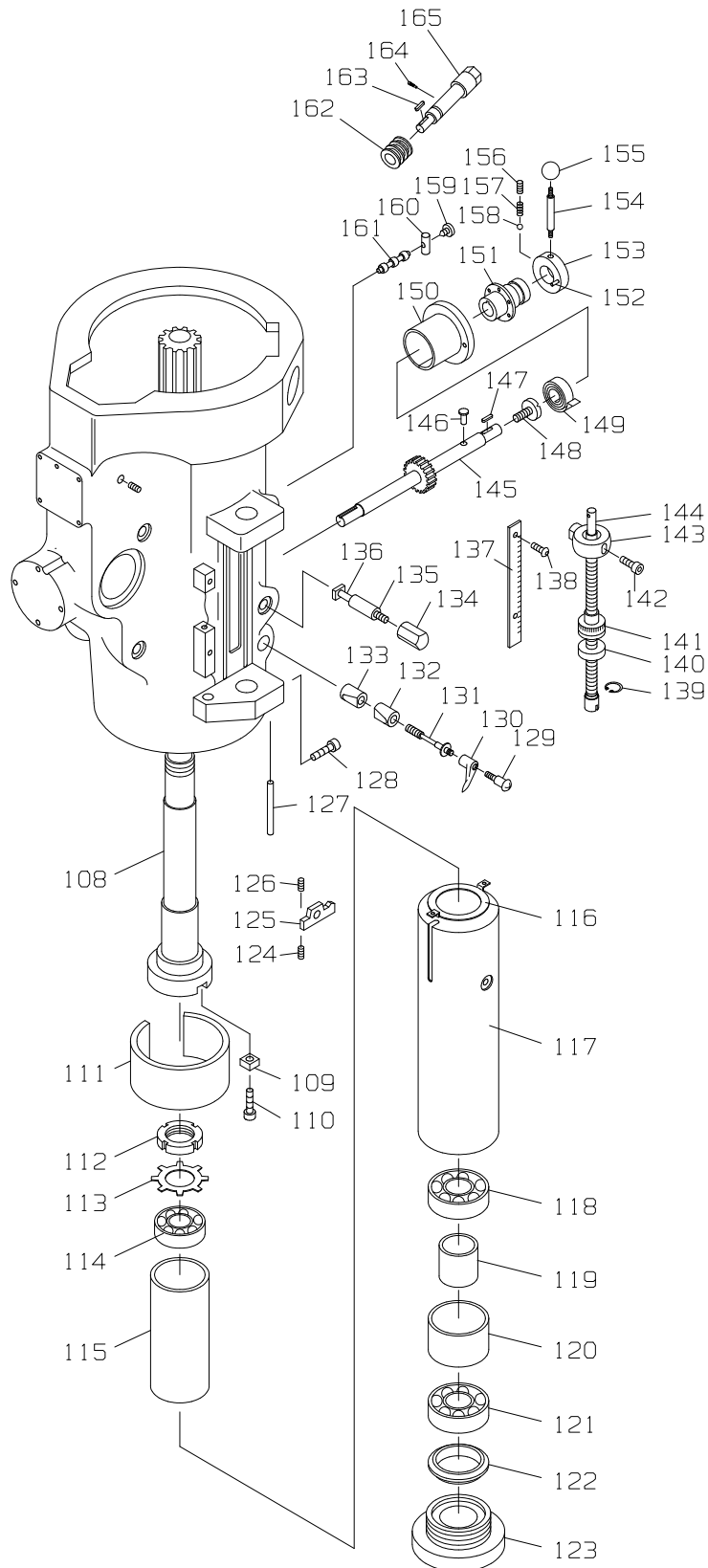
9950-5

MPS-516

Tilting head bolts
 MBC-75 (4)

#63 can be
 BT-111, BT-47,
 BT-18, or BT-21
 (verify)

Machine Head Drawing – Lower Head Assembly (LH)



Machine Head Part List – Lower Head Assembly (LH)

Item	Description	Part #	Assy
108	Spindle		
109	Driver key		
110	Screw		
111	Sleeve (skirt)	MHVS-727	
112	Nut		
113	Washer		
114	Bearing	BG-12	
115	~~Sleeve - SPACER~~		
116	Cover		
117	Quill		
118	Bearing set	BG-22	
119	Spacer		
120	Spacer		
121	Bearing		
122	Spacer		
123	Bearing cap (Quill nut)		
124	Screw		
125	Plate		
126	Screw		
127	Rod		
128	Screw		
129	Screw		MPM-73
130	Handle (assy)		
131	Bolt		
132	Clamp block (through)		
133	Clamp block (threaded)		
134	Nut		
135	Bolt		
136	Nut		
137	Scale		
138	Screw		
139	C-snap	MHVS-745	
140	Micro-stop nut	With #144	
141	Micrometer nut		
142	Screw		
143	Quill stop knob	MPS-590	
144	Leadscrew with #140,141	Inch	MHVS-718
	Leadscrew with #140,141	Metric	MHVS-732
145	Pinion shaft	MHVS-729	
146	Pin		MPS-704
147	Key	MPS-684	
148	Screw	MHVS-582	
149	Clock spring with #150		MPM-78
150	Spring cap		
151	Pinion shaft hub	MHVS-112	
152	Pin		MPM-67
153	Block		
154	Lever		
155	Knob		
156	Set screw		
157	Set screw		
158	Steel ball		
159	Screw		
160	Stud (rev trip plunger)		
161	Shaft (rev trip lever)		
162	Worm gear (only)	MHVS-707	MHVS-716
163	Key		
164	Set screw		
165	Shaft (only)	MHVS-705	

#115 eliminated
per Buffalo

MPS-698 only on CT30 (CT40 does not have one)

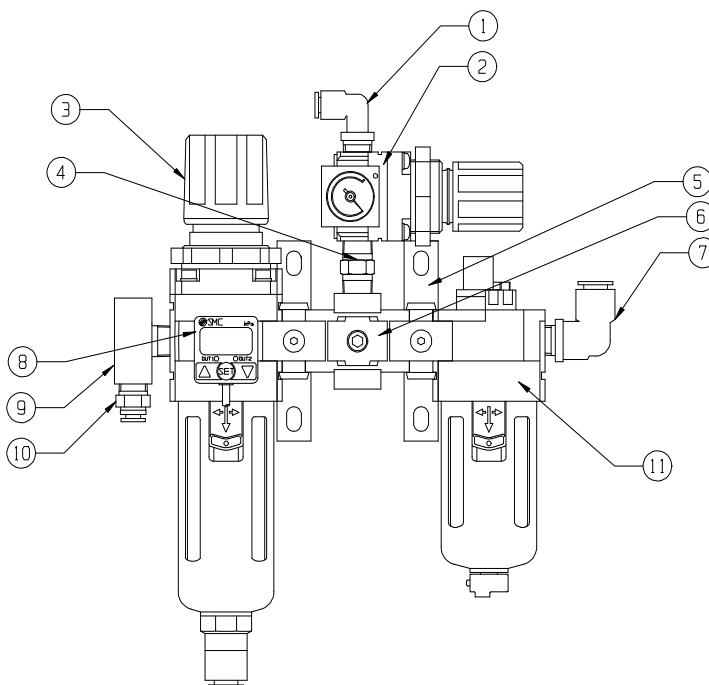
Spindles:
CT40 MPZ-163
CT30 MPZ-162
R8 MPZ-07

Spindle key/dog
MP-877

Air Filter/Regulator/Lubricator Assembly – Sourcing I/O Systems

PARTS LIST			
ITEM	QTY	STOCK No.	DESCRIPTION
1	1	NU-199	1/4 NPT 3/8 TUBE SWIVEL ELBOW
2	1	NU-262	LOW PRESSURE REGULATOR W/GAGE
3	1	NU-212	LARGE FILTER/HIGH PRESSURE REGULATOR
4	1	NU-30	1/4 NPT PIPE NIPPLE
5	2	NU-210	LARGE MOUNTING SPACER
6	1	NU-211	LARGE MANIFOLD SPACER
7	1	NU-199	1/4 NPT 3/8 TUBE SWIVEL ELBOW
8	1	NU-430	DIGITAL AIR GAUGE WITH PRESSURE SWITCH
9	1	NU-219	1/4 NPT BRANCH TEE
10	1	NU-32	1/4 NPT 1/4 TUBE MALE STRAIGHT
11	1	NU-209	LARGE LUBRICATOR

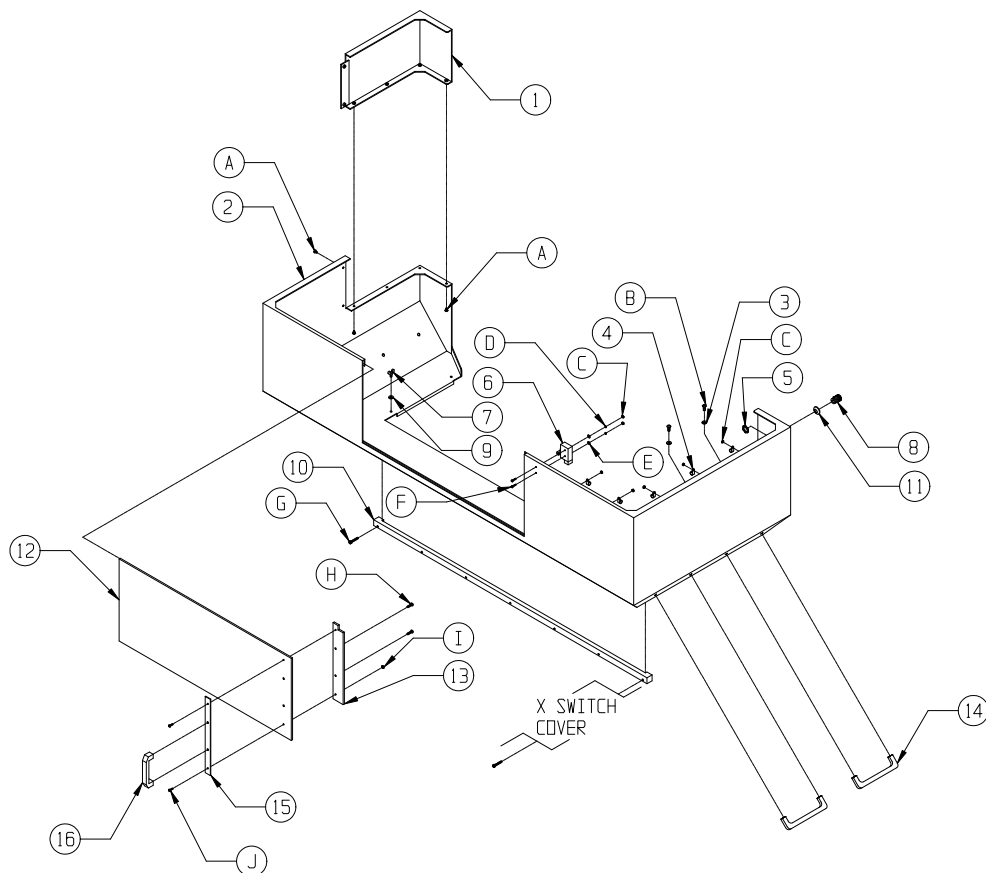
NU-218 is air
regulator



REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE NU-417 FRL ASSEMBLY		
X. XXX +/-		APPLICATION GENERAL PRODUCTS		
X. XX +/-		SCALE 3:1		
X. X +/-		DATE 14 APR 08		
ANGLE +/-		DRAWN BY DAHLKE		
		SHEET NO. 1:1		

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Table Guard Assembly



HARDWARE LIST

No.	QTY	DESCRIPTION
A	6	1/4-20 x 1 1/2 BHCS
B	8	M8-1.25 x 20mm BHCS
C	7	8-32 HEX NUT
D	2	#8 LOCK WASHER
E	2	#8 FLAT WASHER
F	2	8-32 x 1 1/4 BHCS
G	7	M6-1 x 50mm SHCS
H	2	1/4-20 x 1 BHCS
I	2	10-32 HEX NUT
J	2	10-32 x 5/8 BHCS

TABLE GUARD LIST

No.	QTY	MB/RH19	MB/RH20	MB/RH25	MB/RH30
1	1	N/A	MPS-179	MPS-220	MPS-217
2	1	MPS-222	MPS-177	MPS-219	MPS-216
10	1	MPS-223	MPS-178	MPS-221	MPS-218

PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	TABLE GUARD CORNER
2	1	SEE TABLE	TABLE GUARD
3	8	HD-80	M8 BONDED WASHER
4	5	WX-82	TIE DOWN
5	1	WX-96	1/2" LOCKING NUT
6	1	SW-194	LIMIT SWITCH
7	4	WX-284	WINGED THUMB SCREW
8	1	WX-23	1/2" CORD GRIP
9	4	HD-12	M6 BONDED WASHER
10	1	SEE TABLE	MOUNTING BAR
11	1	WX-38	1/2" O-RING
12	1	MPS-212	LEXAN DOOR
13	1	MPS-211	BACK DOOR PLATE
14	4	WX-230	DOOR HANDLE 8"
15	1	MPS-210	FRONT DOOR PLATE
16	1	WX-142	HANDLE

REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE: TABLE GUARD 2000		
TOLERANCE UNLESS SPECIFIED		APPLICATION: SOLID WAYS BED MILL		
X .XXX	+/-	SCALE: 15:1		
X .XX	+/-	DWG No. 6-10-032-015		
X .X	+/-	SIZE: B		
ANGLE	+/-	DATE: 30 MAY 00		
		DRAWN BY: DAHLKE		
		SHEET No. 1 OF 1		

Maintenance Section

Adjusting Table Gib

The table gibs adjusting screw is on the left side. To take up the gib, tighten the large screw slightly until a slight drag is felt when moving the table by hand. (Fig. 1)

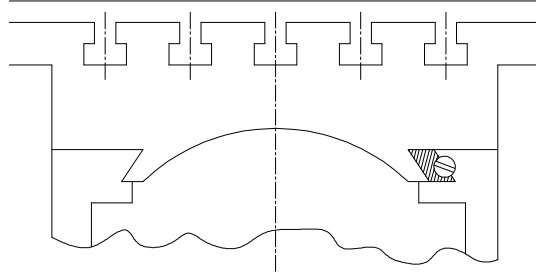


Fig. 1
Table-saddle gib

Adjustment of Saddle Gib

Tighten gib using the same method as above however, the chip wiper must be removed first. (Fig. 2)

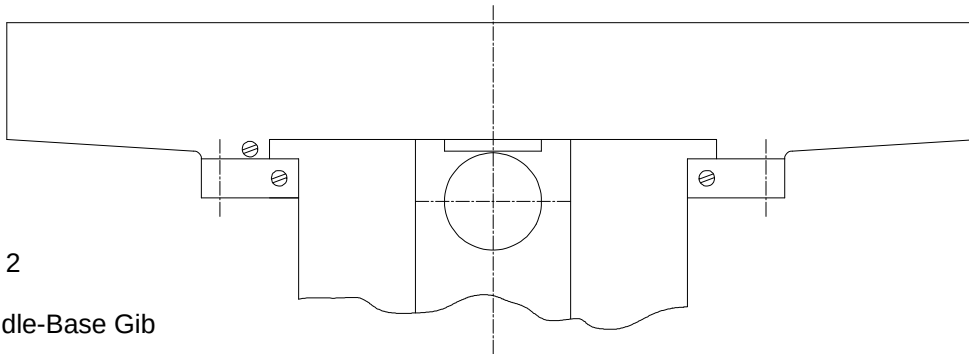


Fig. 2
Saddle-Base Gib

Adjustment of head Bolster gib.

Remove Chip wiper and adjust screw until smooth movement is attained. (Fig. 3)

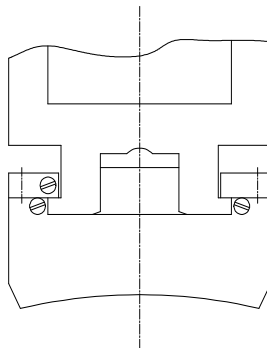
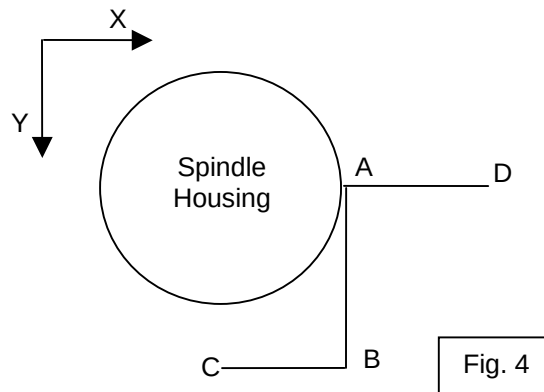


Fig. 3

Bolster Gib



MB Machine Lubrication:

AUTO LUBRICATOR:

The auto oiler should be checked weekly. Make sure the oiler is filled and is working properly.

DISCHARGE VOLUME PER CYCLE:

Adjustable from 2.5 CC minimum to 5.0 CC maximum. To reduce oil delivery remove the lock screw, measure A (Fig. 5), turn Adjusting screw clockwise increasing dimension A in the increment (corresponding to the desired discharge) as shown. (Table 1)

IN.	DISCHARGE	NOTES:
.400	2.5 c.c.	
.320	3.0 c.c.	
.240	3.5 c.c.	
.160	4.0 c.c.	
.080	4.5 c.c.	
0.00	5.0 c.c.	Break in setting

Table 1

DISCHARGE PRESSURE: 60 psi Maximum.

Peak system Pressure will decrease when:

- (a) discharge volume decreases,
- (b) number of Meter-Units in system increases,
- (c) oil viscosity decreases.

OIL VISCOSITY RANGE: See specification sheet

RECOMMENDED OIL: Mobil Vactra Oil No. 2

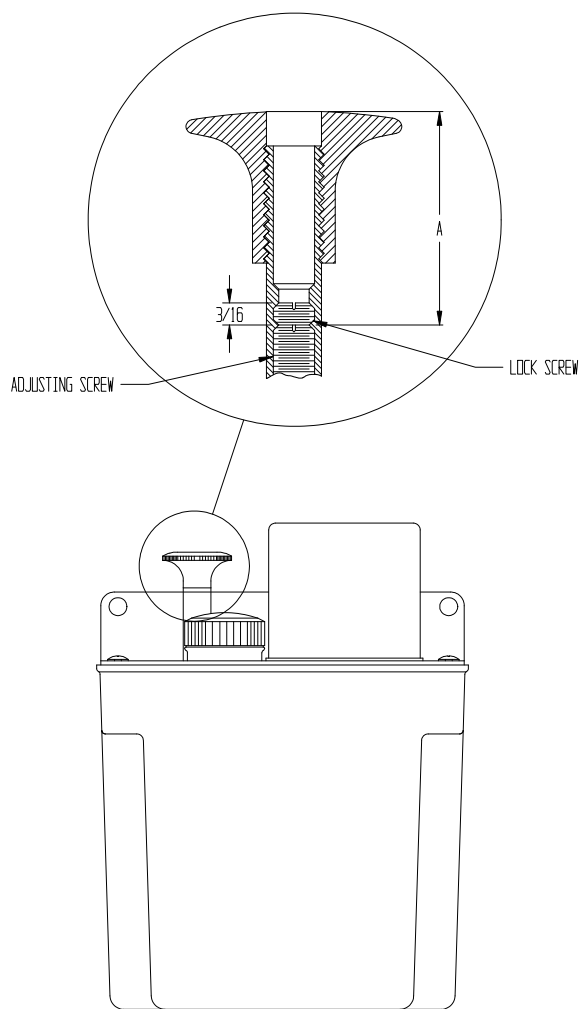


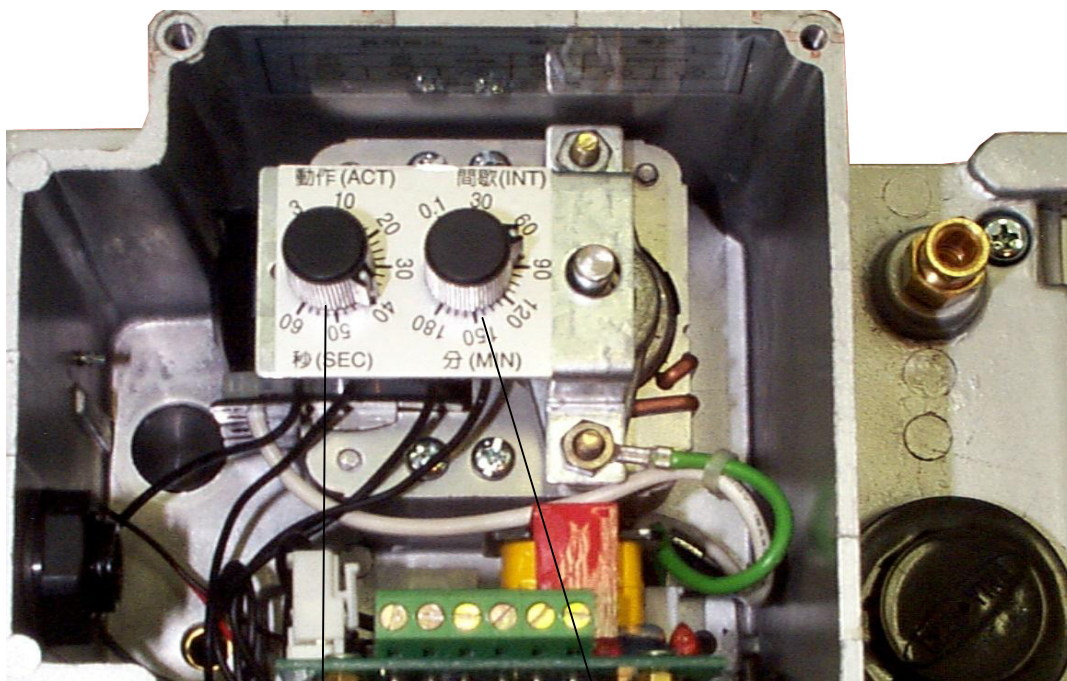
Fig. 5

Procedure to adjust CESD (MA-219) Lubrication Unit

As long as the machine is “reset”, the oiler will be pumping. In the event that the tank falls below the **MIN** line on the tank an audible alarm will sound. The machine will not let a program start with a low lube alarm (**451 Low Lube Fault**)

The **MA-219** has the ability to set the time between each pump cycle. It will pump the same amount of way lube (**.13 Liters/Min**) each pump cycle. We are not varying the amount of oil but the interval between each pump cycle. A new machine shipped from Milltronics will have the oiler pumping Aprox. 5 seconds every 25 to 30 minutes. Adjusting the Seconds knob (left) will change the length of time in seconds the pump cycle for (.13 Liters/Min). Adjusting the Minute knob (right) will change the time between each pump interval. It will always pump the same amount

To adjust the intervals between each cycle of the pump:
 Remove the 4 screws holding the top cover.
 Adjust the two knobs shown below.
 The dials are very sensitive. Turn them very slowly.



Turn this dial to vary the seconds that it pumps for each minute interval.

Turn this dial to vary the minutes between each pump cycle.

