

HMC35A Mechanical Parts Manual

12-21-04
Rev 1
Updated 1-31-11

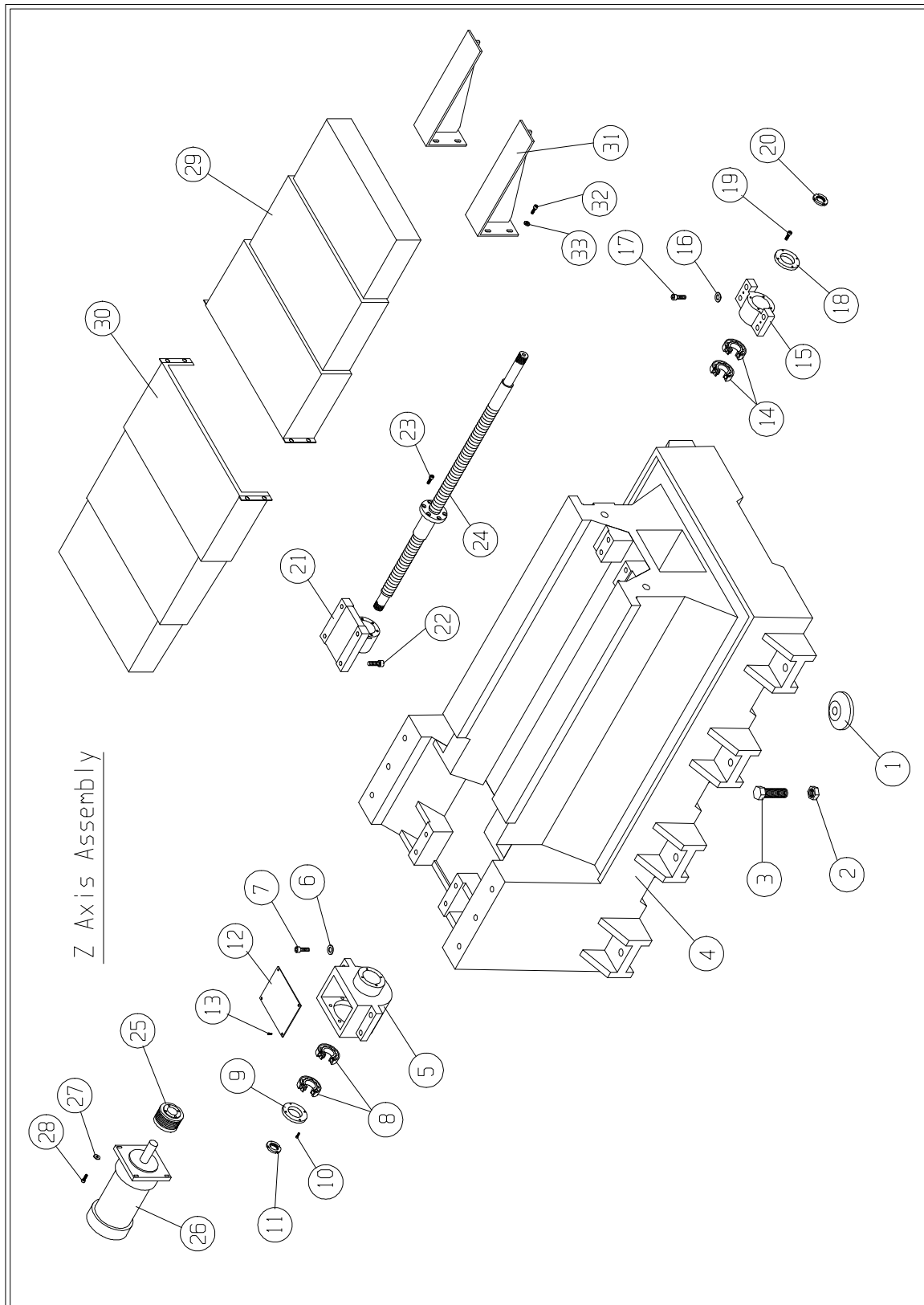
Table Of Contents

Table Of Contents	iii
Manual Discrepancy Sheet	1
Machine Base (Z-Axis) Assembly	2
Machine Table/Saddle (X-Axis) Assembly	4
Machine Column (Y-Axis) Assembly	6
Machine Head Assembly.....	8
Spindle Assembly.....	10
Pneumatic Schematic.....	12
Air Filter / Regulator / Lubricator Assembly	13
Enclosure Assembly.....	14
Flood Coolant Valve Handle Assembly	20
Lubrication Specifications.....	21
Retention Knob Chart.....	22
Maintenance Section.....	24
Adjusting Table Gib.....	24
Adjustment of Saddle Gib.....	24
Adjustment of head Bolster gib.	25
Checking and Adjusting Backlash	26
RH Machine Lubrication (MA-212):	27
Procedure to adjust CESD (MA-219) Lubrication Unit.....	28

Manual Discrepancy Sheet

1-31-11 added spindle belt #s.

Machine Base (Z-Axis) Assembly

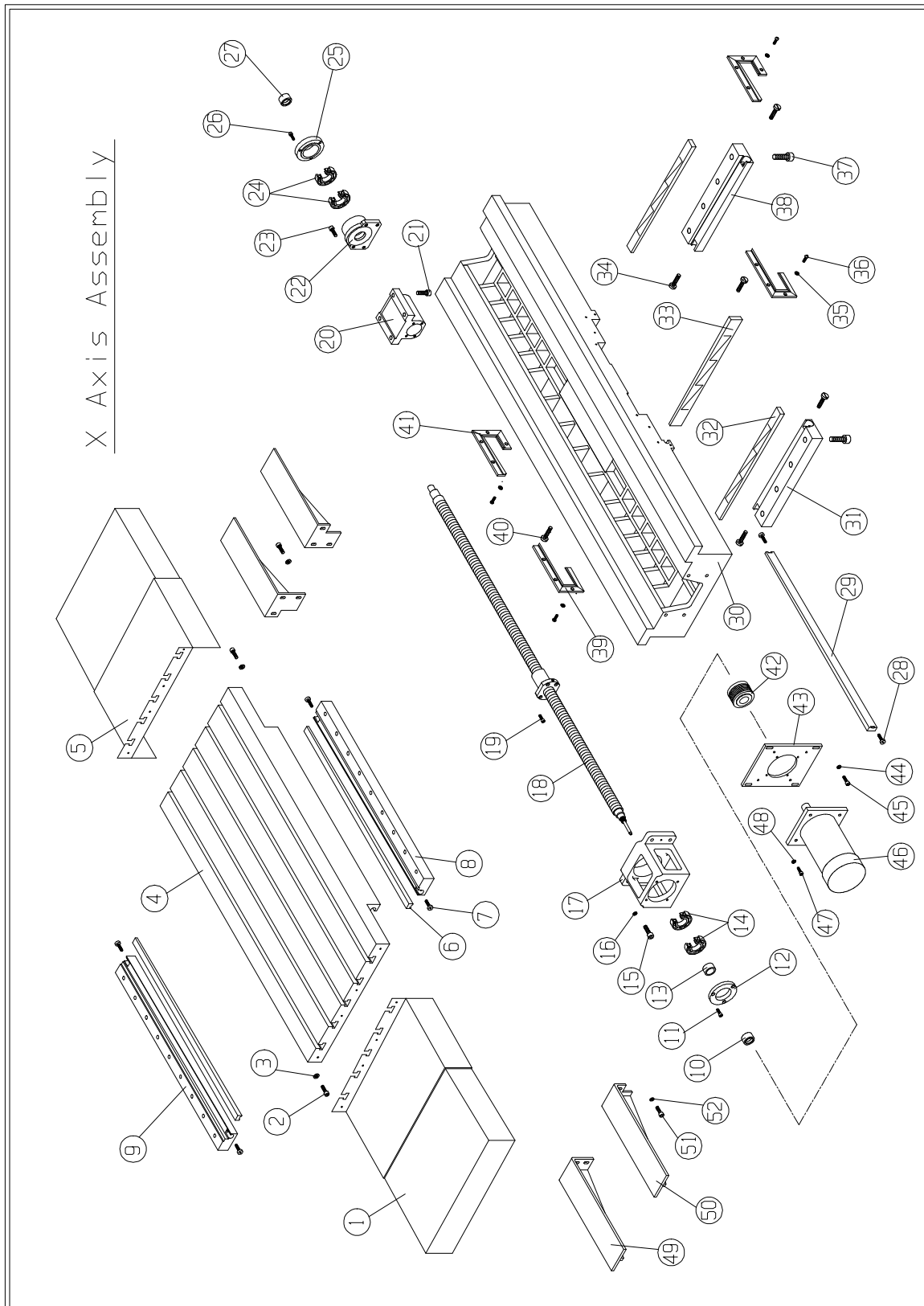


Z-axis assembly

Item	Part No.	Description	Q'ty	Specification
1	MP-888	Leveling Pad	6	
2	MP-889	Nut	6	
3		Screw	6	3/4"x3"
4		Base	1	
5		Nut Bracket	1	
6		Washer	4	
7		Screw	4	
8	BG-150	Bearing	2	
9		Bearing Cover	1	
10		Screw	4	M6x20
11		Nut	1	
12		Cover	1	
13		Screw	4	
14		Bearing	2	
15		Nut Bracket	1	
16		Washer	4	
17		Screw	4	
18		Bearing Cover	1	
19		Screw	4	M6x20
20		Nut	1	
21		Nut Bracket	1	
22		Screw	4	
23		Screw	6	M8x25
24		Ballscrew	1	
25		Coupling	1	
26		Motor	1	
27		Washer	4	
28		Screw	4	
29		Front Way Cover	1	
30		Rear Way Cover	1	
31		Way cover bracket	2	
32		Screw	4	
33		Washer	4	
	MPH-18	Z axis cabletrack		

SW-259 Z axis limit
switch
9800-63
Counterweight
sprocket upgrade

Machine Table/Saddle (X-Axis) Assembly

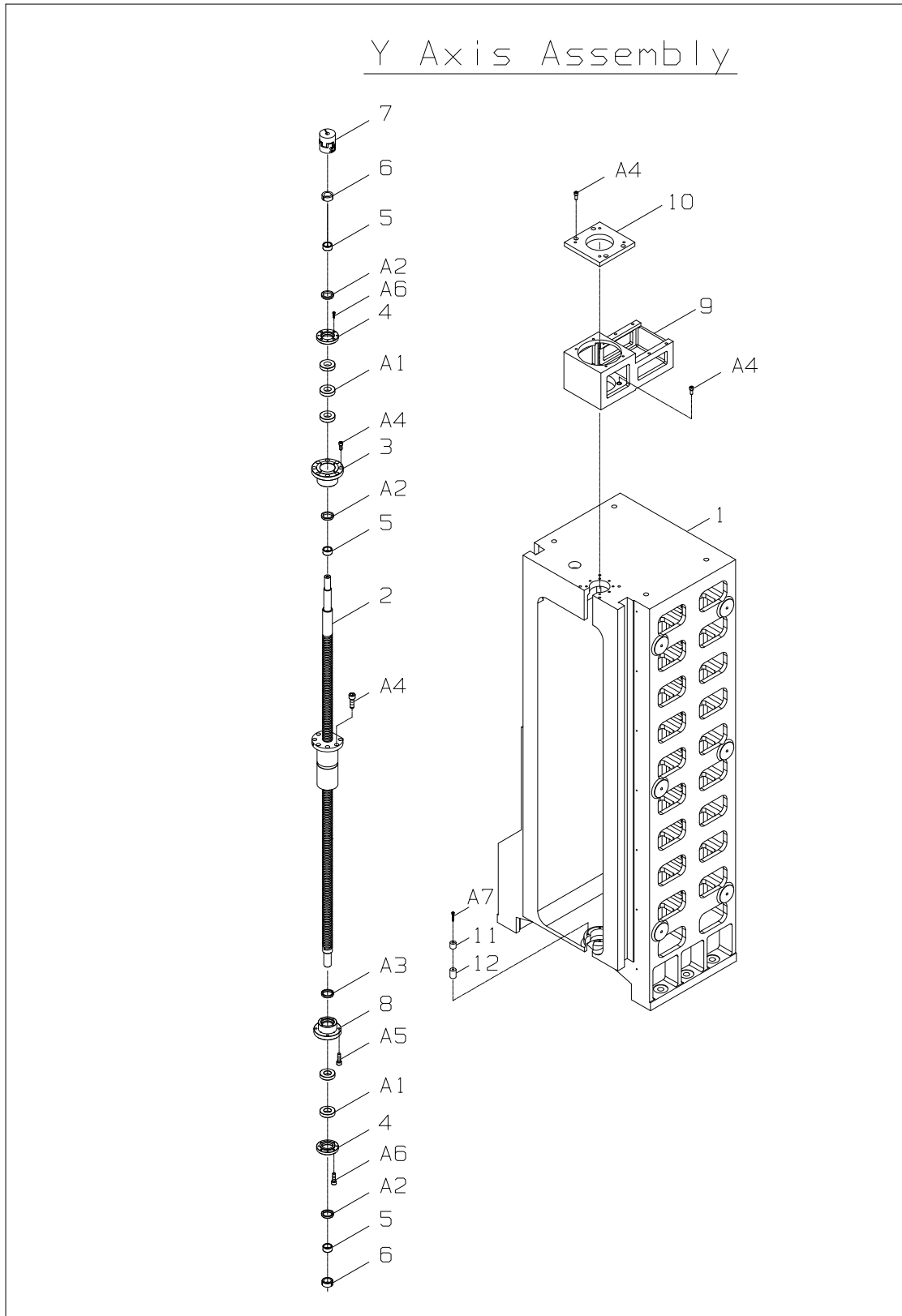


X-axis assembly

Item	Part No.	Description	Q'ty	Specification
1		Left Way Cover	1	
2		Screw	4	M10x25
3		Washer	4	
4		Table	1	
5		Right Way Cover	1	
6		Gib	2	
7	HD-87	Gib Screw	4	
8		Bracket	1	
9		Bracket	1	
10		Bearing	1	
11		Screw	3	
12		Bearing Cover	1	
13		Nut	1	
14	BG-150	Bearing	2	
15		Screw	4	
16		Washer	4	
17		Bracket	1	
18		Ballscrew	1	
19		Screw	6	M6x20
20		Nut Bracket	1	
21		Screw	4	M8x30
22		Bearing Bracket	1	
23		Screw	4	M8x30
24	BG-24	Bearing	2	# 6205
25		Bearing Cover	1	
26		Screw	3	M6x20
27		Nut	1	
28	HD-87	Gib screw	2	
29		Gib	1	
30		Saddle	1	
31		Bracket	1	
32		Gib	2	
33		Gib	1	
34		Gib Screw	4	
35		Washer	12	
36		Screw	12	M5x10
37		Screw	10	M12x40
38		Bracket	1	
39		Wiper	2	
40		Wiper	2	
41		Gib Screw	2	
42		Coupling	1	
43		Motor mounting plate	1	
44		Washer	4	
45		Screw	4	M12x40
46		Motor	1	
47		Screw	4	M10x40
48		Washer	4	
49		Bracket-waycover	2	
50		Bracket-waycover	2	
51		Screw	12	
52		Washer	12	

X axis limit switch SW-259

Machine Column (Y-Axis) Assembly

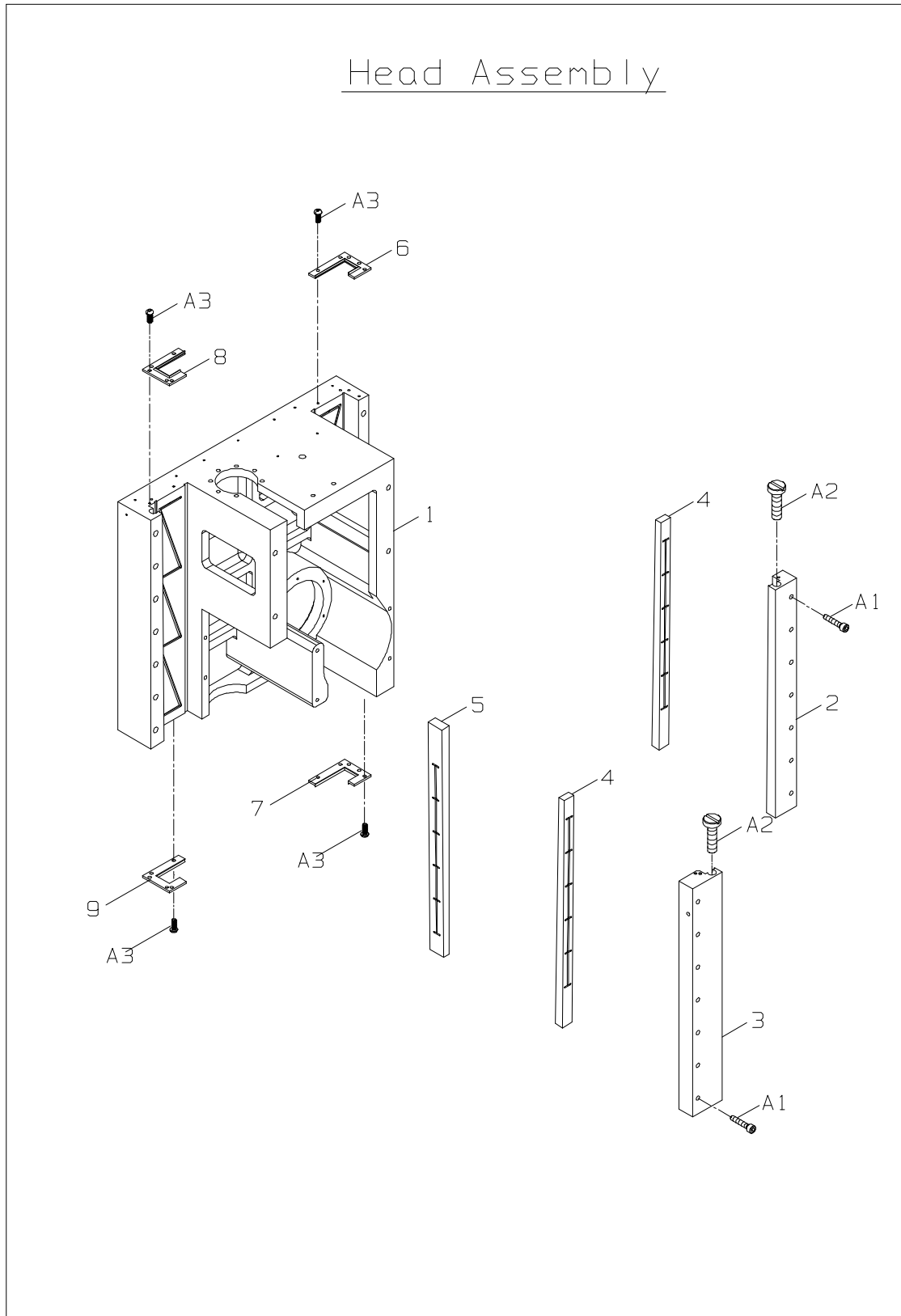


Y-axis assembly

Item	Parts no.	Description	Q'ty	Specification
1	43130-10001	Column	1	
2	43130-52001	Ballscrew MPH-121	1	Dia.40mm P12
3	43130-52002	Bearing housing MPH-137	1	
4	43130-52004	Bearing cap MPH-138	2	
5	43130-52005	Spacer MPH-140	3	
6	43116-51005	Nut MPH-139	2	YSF 30XP1.5
7	43130-52011	Coupling MA-238	1	
8	43130-52010	Bearing housing	1	
9	43130-52007	Motor housing	1	
10	43130-52008	Motor mounting plate	1	
11	43061-51006	Hard stop MPS-368	1	
12	43130-52006	Bracket	1	
A1		Bearing BG-47	5	30TAC 62B
A2		Oil seal MPH-135	3	38x50x8
A3		Oil seal	1	40x50x8
A4		Hex. Socket screw MPH-136	23	M10x25L
A5		Hex. Socket screw	4	M8x25L
A6		Hex. Socket screw MPH-134	8	M6x20L
A7		Hex. Socket screw	1	M6x50L

Y axis lower
waycover MPH-69
Y axis limit switch
SW-259

Machine Head Assembly

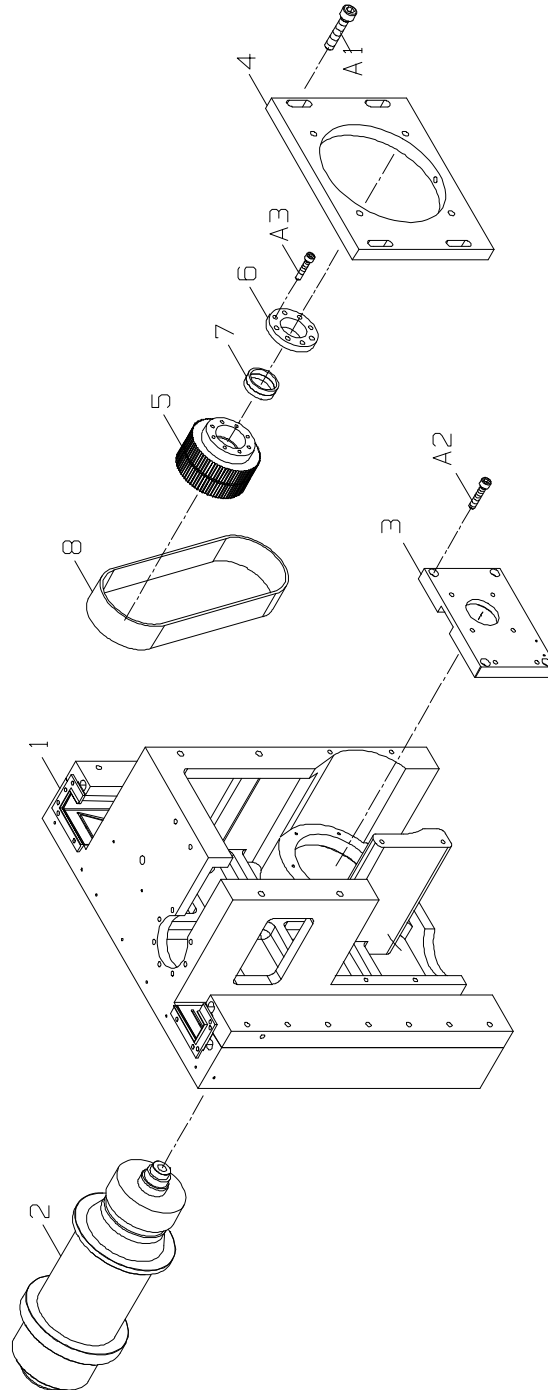


Head assembly

Item	Parts no.	Description	Q'ty	Specification
1	43130-00001	Head	1	
2	43130-00011	Clamping plate - left	1	
3	43130-00013	Clamping plate - right	1	
4	43130-00012	Gib	2	
5	43130-00014	Gib	1	
6	43130-00015	Wiper MPH-186	1	
7	43130-00016	Wiper MPH-187	1	
8	43130-00017	Wiper MPH-188	1	
9	43130-00018	Wiper MPH-189	1	
A1		Hex. Socket screw	14	M12x75L
A2		Gib screw	6	M8
A3		Screw	20	M6x16L

Spindle Assembly

Spindle Assembly



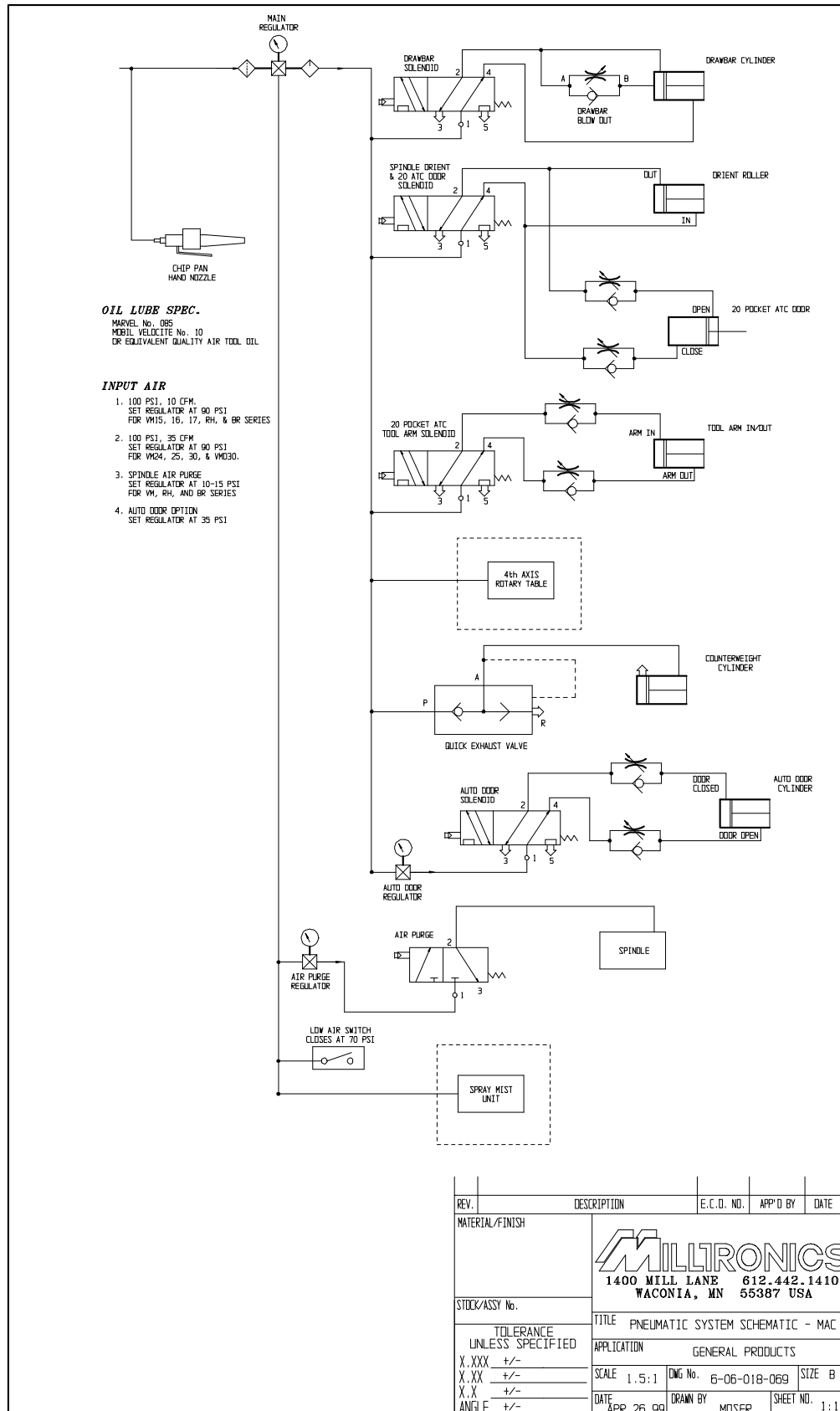
Spindle Assembly

Item	Parts no.	Description	Q'ty	Specification
1	43130-00001	Head	1	
2	43130-03001	Spindle	MP-975/5799-2/MP-618/MP-677	
3	43130-03010	Cylinder mounting plate	1	
4	43130-05001	Spindle motor mounting plate	1	
5	43130-05002	Spindle motor pulley	1	See below
6	43130-05003	Clamping ring	1	
7	43130-05004	Clamping ring	2	
8		Spindle belt, W-896	Or	BT-62
		Spindle belt, W-1000		BT-97
A1		Hex. Socket screw	4	M14x35L
A2		Hex. Socket screw	4	M10x35L
A3		Hex. Socket screw	8	M8x25L

HM / HMC35 Spindle Belt and Pulleys		
	Item	Part number
6-8K RPM	Belt	BT-97
	Spindle motor pulley	PY-192
	Spindle pulley, 70mm	PY-191
	Spindle Pulley, 60mm	PY-197
12-15K RPM	Belt	BT-97
	Spindle motor pulley	PY-188
	Spindle pulley, 70mm	PY-190
	Spindle Pulley, 60mm	PY-189

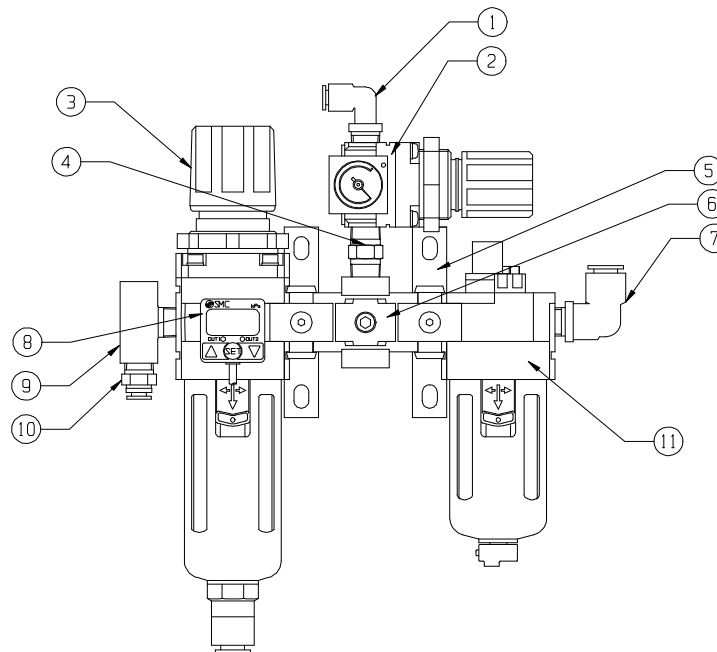
*Pulley bushings to be selected based on motor size.

Pneumatic Schematic



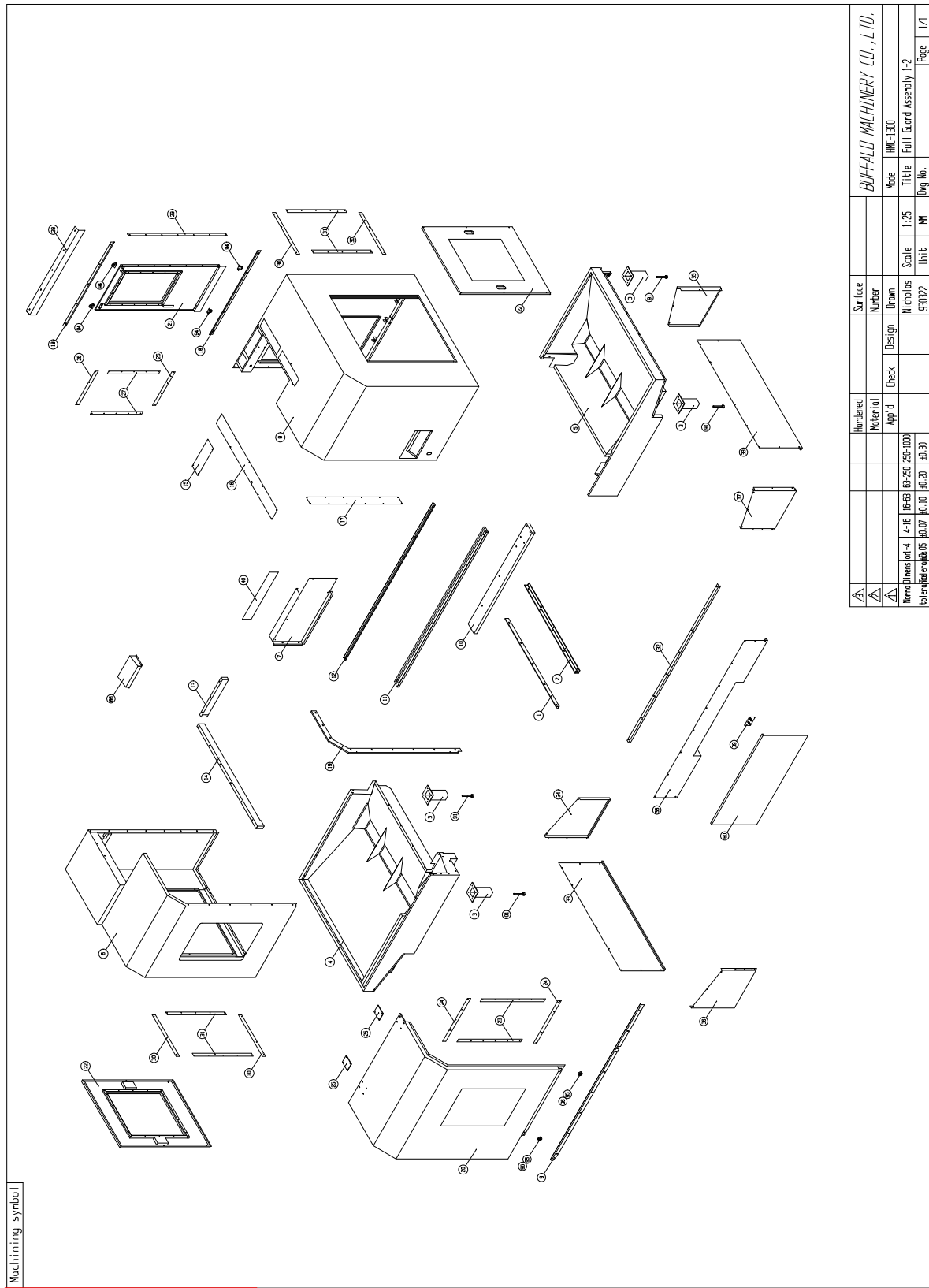
Air Filter / Regulator / Lubricator Assembly

PARTS LIST			
ITEM	QTY	STOCK No.	DESCRIPTION
1	1	NU-186	1/4 NPT 1/4 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-259	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

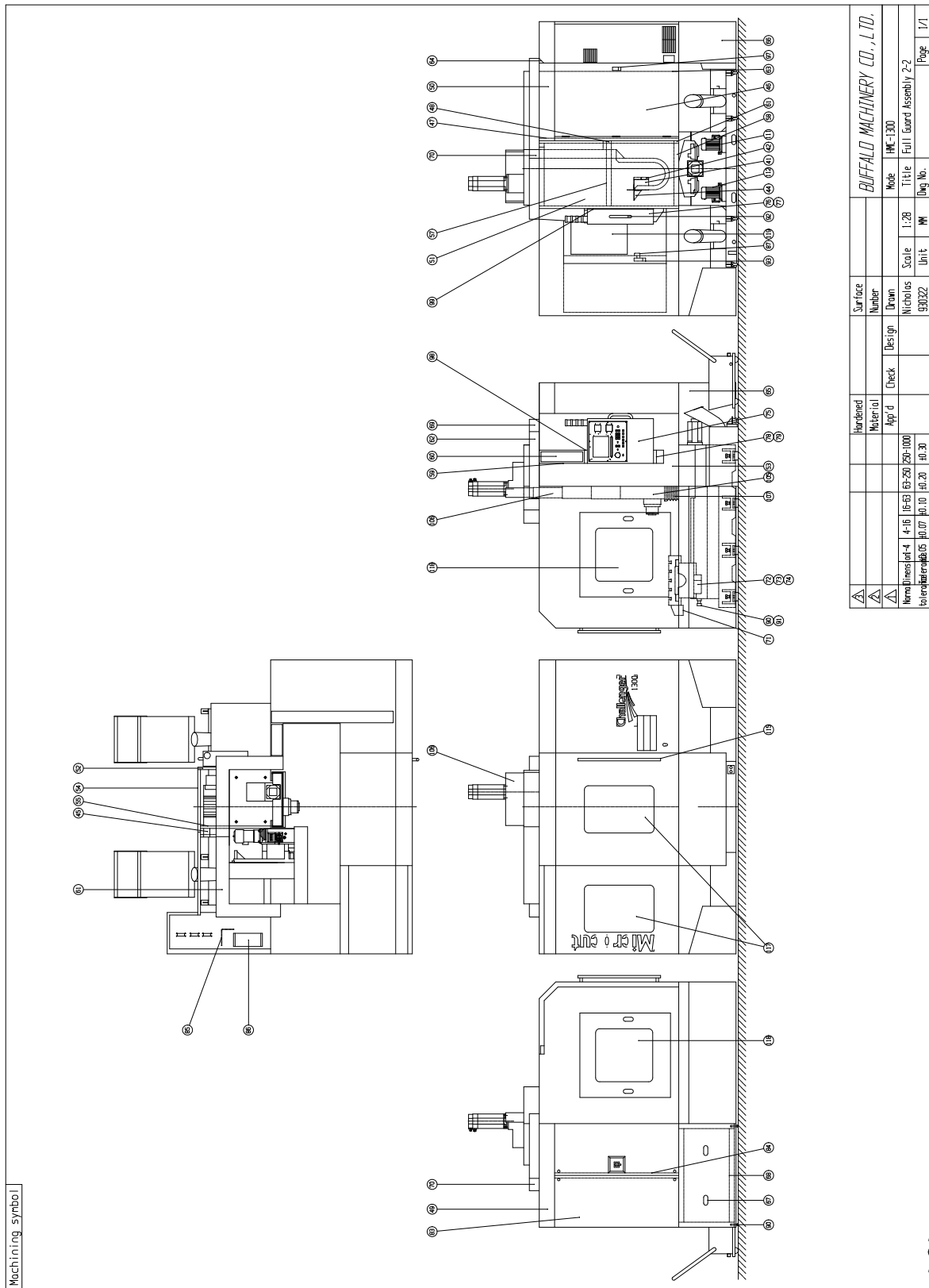


B	ADD DIGITAL GAGE	4860		12/00
A	CHANGE STOCK NUMBER	4813	N. M.	12/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE NU-232 FRL ASSEMBLY		
TOLERANCE UNLESS SPECIFIED		APPLICATION GENERAL PRODUCTS		
X. XXX +/-		SCALE 3:1	DWG No. 6-10-018-085	SIZE B
X. XX +/-		DATE 14 JAN 00	DRAWN BY DAHLKE	SHEET NO. 1:1
X. X +/-				
ANGLE +/-				

Enclosure Assembly



BUFFALO MACHINERY CO., LTD.									
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Δ	Δ	Δ	Δ	Δ	Δ	Δ			



HMC-35 enclosure parts list

No.	Part no.	Description	Q'ty	Material
1	E001	Mounting bar - left	1	SS41
2	E002	Mounting bar - right	1	SS41
3	E003	Foot	4	SS41
4	E004	Chip pan - left	1	SS41
5	E005	Chip pan - right	1	SS41
6	E006	Side guard - left	1	SS41
7	E007	Side column cover - left	1	SS41
8	E008	Side guard - right	1	SS41
9	E009	Bottom rail	1	HGCC
10	E010	Mounting plate	1	SS41
11	E011	Up rail bracket	1	SS41
12	E012	Up rail	1	HGCC
13	E013	Cable duct cover - rear left	1	SS41
14	E014	Cable duct cover - left	1	SS41
15	E015	Cover - rear right	1	SS41
16	E016	Cover - top	1	SS41
17	E017	Cover - inner	1	SS41
18	E018	Door rail MPH-219	2	HGCC
19	E019	Fix plate - prevent coolant	1	SS41
20	E020	Front door	1	SS41
21	E021	Front door - panel	1	SS41
22	E022	Side window - left & right	2	SS41
23	E023	Clamping plate 1	4	SS41
24	E024	Clamping plate 2	4	SS41
25	E025	Bearing seat - up rail	2	SS41
26	E026	Door clamping plate 1	2	SS41
27	E027	Door clamping plate 2	2	SS41
28	E028	Top cover - door w/panel	1	SS41
29	E029	Fix plate - prevent coolant	1	SS41
30	E030	Fix plate 1 - side window (left/right)	2	SS41
31	E031	Fix plate 2 - side window (left/right)	2	SS41
32	E032	Support bracket - bottom chip pan	1	SS41
33	E033	Skirt - chip pan (left/right)	2	SS41
34	E034	Skirt - chip pan (rear left)	1	SS41
35	E035	Skirt - chip pan (rear right)	1	SS41
36	E036	Skirt - chip pan (front left)	1	SS41
37	E037	Skirt - chip pan (front right)	1	SS41
38	E038	Front cover - chip pan (bottom)	1	SS41
39	E039	Plate	1	SS41
40	E040	Side column cover - left	1	SS41
41	E041	Head support bracket 2	1	SS41
42	E042	Head support bracket 1	1	SS41
43	E043	Y-limit switch bracket	1	SS41
44	E044	Cylinder bracket MPH-10	1	SS41
45	E045	Cable carrier bracket	1	SS41
46	E046	Rear door	1	SS41
47	E047	Bracket - column (rear/left)	1	SS41
48	E048	Bracket - column (middle)	1	SS41
49	E049	Cover - top elec. Box	1	SS41

HMC-35 enclosure parts list

No.	Part no.	Description	Q'ty	Material
50	E050	Cover - rear door	1	SS41
51	E051	Rear cover	1	SS41
52	E052	Right bracket - column	1	SS41
53	E053	Rear right cover	1	SS41
54	E054	Top rear bracket	1	SS41
55	E055	Bracket - column (top left)	1	SS41
56	E056	Bracket - column (bottom left)	1	SS41
57	E057	Rear middle bracket	1	SS41
58	E058	Bottom rear bracket	1	SS41
59	E059	Fix bracket - top control box	1	SS41
60	E060	Plate	1	SS41
61	E061	Cover - duct 1	1	SS41
62	E062	Duct 1	1	SS41
63	E063	Cover - rear elec. box duct	1	SS41
64	E064	Duct - rear elec. box	1	SS41
65-1	E065-A	Cover 3A - rear brkt of elec. box	1	SS41
65-2	E065-B	Cover 3B - rear brkt of elec. box	1	SS41
65-3	E065-C	Cover 3C - rear brkt of elec. box	1	SS41
66	E066	Cover 2 - rear brkt of elec. box	1	SS41
67	E067	Cover 1 - rear brkt of elec. box	1	SS41
68	E068	Bracket	1	SS41
69	E069	Cover - duct 2	1	SS41
70	E070	Duct 2	1	SS41
71	E-BLJC-30011-01	Guard - front table	1	SUS304
72	E-BLJC-20013-01	Cover 1 - oil lines/wire box	1	SS41
73	E-BLJC-20011-01	Oil lines/wire box	1	SS41
74	E-BLJC-20013-01	Cover 2 - oil lines/wire box	1	SS41
75	E071	Front panel	1	SS41
76	E072	Control box	1	SS41
77	E073	Cover - control box	1	SS41
78	E074	Swivel station - control box	1	SS41
79	E075	Cover - rear control box	1	SS41
80	E076	Front cosmetic cover	1	SUS304
81	E077	Elec. panel - top	1	SPI
82	E078	Elec. panel - bottom	1	SPI
83	E079	Elec. box	1	SS41
84	E080	Middle stiffener - elec. box	1	SS41
85	E081	Bracket - disconnect switch	1	SS41
86	E082	Fan cover	1	SS41
87	E083	Latch fork	1	SS41
88	E084	Hex. head bolt	2	
89	E085	Nut	2	
90	E086	Hex. head bolt	4	
91	E087	Hex. head bolt	4	
92	E088	Handle	1	
93	E089	Door latch	1	
94	E090	Roller w/seat - door w/control panel	4	
95	E091	Roller - door	6	
96	E092	Shaft - roller	6	
97	E093	Door latch	1	

HMC-35 enclosure parts list

No.	Part no.	Description	Q'ty	Material
98	E094	Pivot	1	
99	E095		2	
100	E096	Z-way cover (front)	1	STCC
101	E097	Z-way cover (rear)	1	STCC
102	E098	Z-way cover bracket	1	SS41
103	E099	X-way cover (front)	1	STCC
104	E100	X-way cover bracket	1	SS41
105	E101	Head cover	1	STCC
106	E102	Y-way cover (up)	1	STCC
107	E103	Y-way cover (bottom)	1	MPH-69
108	E104	Air cylinder	1	MPH-11
109	E105	Cylinder bracket	1	MPH-10
110	E106	Air gun	1	
111	Q-0041-00307	Coolant pump	1	MA-331
112	E107	Coolant pump	1	
113	E108	Fittings	1	
114	L-0801-00001	Oiler	1	MA-219
115	L-5901-00006	Handle	1	MPS-553
116	L-0702-00002	nozzle	6	
117	E-BLJC-70011-01	Glass 1 - front door window	MPH-124	2
118	E-BLJC-70012-01	Glass - side window	MPH-125	2
119	E-BLDH-70071-01	Glass 2 - front door window	MPS-397	1
120	E109	Coolant tank	1	
121	E110	Tool box	1	
122	E111	Door latch - elec. Box	4	
123	E-BLAA-73022-01	Power supply bracket	1	HGCC
124	43130-05001	Spindle motor plate	1	SS41
125	43130-05002	Spindle motor pulley	1	AL
126	43130-05004	Clamping ring	2	
127	43130-03012	Air cylinder	1	
128	43130-52011	Coupling	MA-238	1
129	51010-142000500A	Hex. socket screw	4	
130	51062-000140300A	Flat spacer	4	
131	43210-10035	Dog bracket	2	AL
132	43210-10036	Dog	1	
133	43210-10037	Dog	2	
134	43210-52004	Adjusting bracket	1	
135	55111-000030020	Straight fitting	1	
136	55551-000100010	90 deg. quick connector	1	
137	55551-000100030	90 deg. quick connector	1	
138	55901-020001100	oil line	1	
139		Adjusting ring	2	

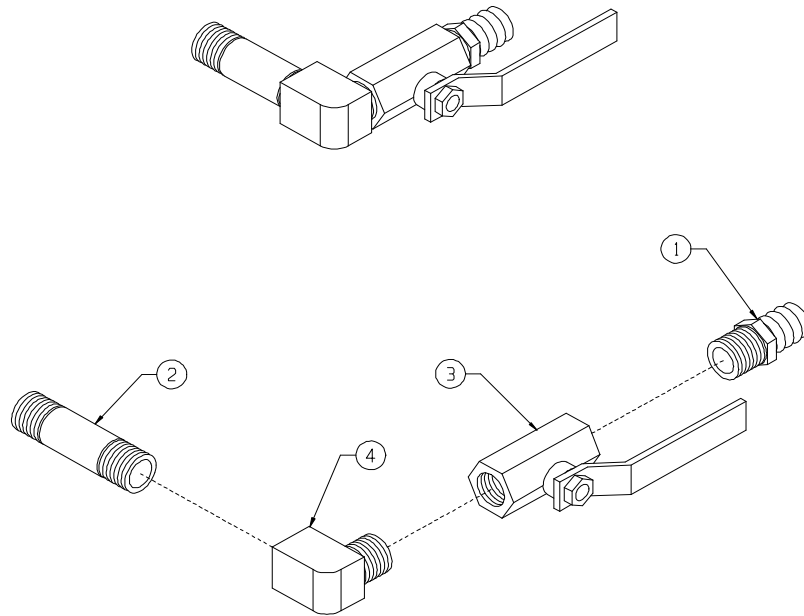
MPS-379 worklight
MA-331
Washdown pump
MPH-24 Door
cylinder prox clamp

Autolube oiler
MA-346
FRL Assy NU-232

This page intentionally left blank

Flood Coolant Valve Handle Assembly

THIS ASSEMBLY USED ON VM16, VM17, VM24, VM30, VMD30, & MC20



PARTS LIST				
No.	QTY	STOCK No.	DESCRIPTION	
1	1	NU-66	3/4" BARB FITTING	
2	1	NU-257	3 IN. PIPE NIPPLE	
3	1	NU-64	1/2" BRASS BALL VALVE	
4	1	NU-125	STREET ELBOW	

B	CHANGE PIPE NIPPLE	4778		11/00
A	CHANGE PIPE NIPPLE	3851	N. M.	2/99
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 VM17 FLOOD HANDLE SUB-ASSEMBLY		
X. XXX ±		APPLICATION PARTNER I		
X. XX ±		SCALE 2:1 DWG No 6-10-008-039 SIZE B		
X. X ±		DATE 29 APR 97 DRAWN BY THOMPSON SHEET NO. 1 OF 1		
ANGLE ±				

Lubrication Specifications

USE MOBILITH AW SERIES MULTIPURPOSE EP GREASE OR OTHER EQUIVALENT FOR ALL LUBE POINTS.

MOBILITH AW SERIES, MULTIPURPOSE EP GREASE	
PRODUCT NUMBER	64352-8
NLGI GRADE	1
COLOR	GREEN
STRUCTURE	SMOOTH/TACKY
SOAP TYPE	LITHIUM COMPLEX
MINERAL OIL VISCOSITY	
cST AT 40°C	150
cST AT 100°C	13
SUS AT 100°F	750
SUS AT 210°F	70
ISO VISCOSITY GRADE	150
PENETRATION AT 23°C (77°F), WORKED	325
DROPPING POINT, ASTM D 2265, °F	475
TIMKEN OK LOAD, ASTM D 2509, lb	40
FOUR-BALL EP TEST, ASTM D 2596,	
WELD LOAD, kg	250
LOAD WEAR INDEX	40
FOUR-BALL WEAR TEST, ASTM D 2266,	
SCAR DIAMETER, mm, MAX	0.5
CORROSION PREVENTION, ASTM D 1743	PASS
WHEEL BEARING TEST, ASTM D 4290	
MODIFIED, LEAKAGE, GRAM	5

MACHINES WITH 15,000 RPM AIR/OIL OPTION
USE MOBIL OIL DTE 24, OR EQUIVALENT
QUALITY SPINDLE OIL.

MOBIL DTE 24	
PRODUCT NUMBER	60262-3
98 CMCS CODE (ORLM)	98020E
SPECIFIC GRAVITY	0.871
POUR POINT, °C (°F), max	-18 (0)
FLASH POINT, °C (°F), min	200 (392)
VISCOSITY	
cST AT 40°C	32
cST AT 100°C	5.3
SUS AT 100°F	165
SUS AT 210°F	44
ISO VISCOSITY GRADE	32
VISCOSITY INDEX	95
RUST PROTECTION,	PASS
ASTM D 665, A & B	
COLOR, ASTM D1500, max	3.5
FZG GEAR TEST STAGES	12
PASSED DIN 51534	

MACHINES WITH AUTOLUBE OPTION USE MOBIL OIL
VACTRA 2, AMOCO WAYTAC No. 68, SUNDOL SUNWAY
LUBE No. 1180, OR EQUIVALENT QUALITY WAY OIL.

MOBIL VACTRA OIL No. 2	
PRODUCT NUMBER	60049-4
SPECIFIC GRAVITY, 60/60F	0.88
POUR POINT, °C (°F), max.	-9 (16)
FLASH POINT, °C (°F), min.	244 (472)
VISCOSITY	
cST AT 40°C	68
cST AT 100°C	8.6
SUS AT 100°F	356
SUS AT 210°F	55
VISCOSITY INDEX	97
ISO VG	68
COLOR, ASTM D 1500	4
FZG, PASS STAGES	11
4 BALL WELD, kg, ASTM D 2783	160
4 BALL WEAR, mm, ASTM D 4172	0.22
COPPER CORROSION, ASTM D 130	1B
RUST, D665A	PASS
VICKERS V-104C, mg D 2882 (MOD)	-
CMCD, P-SPEC, APPROVAL	P-47
BIJUR PT 37-1 APPROVAL	PASS
OKUMA APPROVAL	PASS

CLEAN AND FILL AIR FILTER / REGULATOR / OILER EVERY
WEEK FOR PROPER OPERATION OF ALL PNEUMATIC PARTS
FILL WITH MOBIL VELOCITE No. 10 OR OTHER EQUIVALENT
QUALITY AIR TOOL OIL.

MOBIL VELOCITE OIL No. 10	
PRODUCT NUMBER	60068-4
GRAVITY, API	32.0
POUR, °C (°F), max.	-4 (25)
FLASH, °C (°F), min.	182 (360)
VISCOSITY	
cST AT 40° C	22.0
cST AT 100° C	4.0
SUS AT 100° F	115
SUS AT 210° F	40
ISO VG	22
VISCOSITY INDEX	95
COLOR, ASTM D 1500	2.0
RUST PROTECTION, ASTM D 665	PASS
CINCINNATI MILACRON SPECIFICATION	P-45

REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
1	MB/RH LUBRICATION DRAWING	SCALE 15:1	DWG No. 6-10-032-016	SIZE B
	APPLICATION SOLID WAYS BED MILL	DATE 20 SEP 00	DRAWN BY DAHLKE	SHEET NO. 1 OF 1

Retention Knob Chart

ANSI RETENTION KNOBS STYLE V-FLANGE 50 TAPER									
RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLTRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
N/A	1.14	.83	1.00	45°	RW30B	RC6E-0001	DWG RK11144	N/A	C50-STD

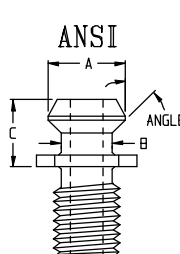
ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER									
RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLTRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
N/A	1.14	.83	1.00	45°	RW30B	RS6M-0105	DWG RK11144A	N/A	N/A

ANSI RETENTION KNOBS STYLE V-FLANGE 40 TAPER									
RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLTRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4836	.74	.49	.64	45°	RH20F, RH25D, RH30D, BR50C, BR60C, BR80C VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RC4E-0001	RK11122	PT-475C	C40-STD

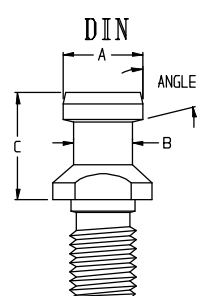
ANSI RETENTION KNOBS STYLE BT-FLANGE 40 TAPER									
RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLTRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4837	.74	.49	.75	45°	RH20F, RH25D, RH30D, BR50C, BR60C, BR80C VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RS4M-0115	RK11126A	N/A	B40-FADAL

DIN 69872 RETENTION KNOBS STYLE V-FLANGE 40 TAPER									
RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLTRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4838	.75	.55	1.02	75°	RH20F, RH25D, RH30D, BR50C, BR60C, BR80C VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RS4E-0114-C	DWG RK71125	N/A	C40-1500

DIN 69872 RETENTION KNOBS STYLE DIN-FLANGE 40 TAPER									
RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLTRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4839	.75	.55	1.02	75°	RH20F, RH25D, RH30D, BR50C, BR60C, BR80C VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RS4M-0114-C	DWG RK71124	N/A	B40-1500



ANSI



DIN

↑

ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR BT-FLANGE

↑

ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR DIN-FLANGE

D	ADD RH/RW12 & RH19	5146		09/01
C	ADD RETENTION KNOBS TO CHART	4859	N. M.	12/00
B	CHANGE 70mm BT-FLANGE CHART	4730	N. M.	10/00
A	ADD LYNDEX CORP. IN CHART	4351	N. M.	1/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MILLTRONICS 1400 STEEL LANE MADISON, WI 53703-1000 608-245-1400 FAX 608-245-1410		TITLE RETENTION KNOB CHART		
APPLICATION GENERAL PRODUCTS		SCALE 1:1	DWG No. 6-11-01B-054	SIZE B
DATE 30 APR 99		DRAWN BY DAHLKE	SHEET NO. 1	OF 2

MAS RETENTION KNOBS STYLE V-FLANGE 40 TAPER

RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLIRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4831	.59	.39	1.27	45°	RH20F, RH25D, RH30D, BR50C, BR60C, BR80C, RW20A* VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RB4E-0001	RK31114	PT-532-45	C40-4500

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLIRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4832	.59	.39	1.38	45°	RH20F, RH25D, RH30D, BR50C, BR60C, BR80C, RW20A* VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RB4M-0001	RK31113	PT-444-45	B40-4500

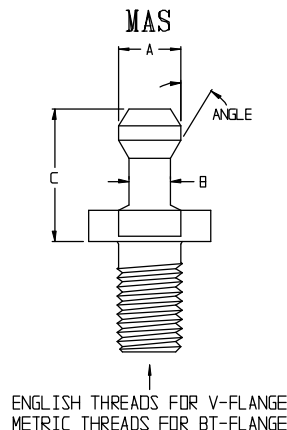
MAS RETENTION KNOBS STYLE V-FLANGE 40 TAPER

RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLIRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4833	.59	.39	1.27	60°	RH12, RH19, RH20F, RH25D, RH30D, RW12, BR50C, BR60C, BR80C VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RB4E-0002	RK31114A	PT-532-60	C40-6000

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

RET. KNOB ASSEMBLY SELECTION	DIMENSIONS				MILLIRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
4834	.59	.39	1.38	60°	RH12, RH19, RH20F, RH25D, RH30D, RW12, BR50C, BR60C, BR80C VM16G, VM17E, VMG17D, VM24E, VMG24B, VM25C, VM30F, VMD30E	RB4M-0002	RK31113A	PT-444-60	B40-6000

NOTES:



1. FOR SPINDLES OF 8000 RPM AND GREATER YOU MUST USE BALANCED TOOLING TO A G2.5 SPEC. OR IT WILL VOID THE SPINDLE WARRANTY.
 2. CHART IS GOOD FOR ALL MACHINE VERSIONS LISTED AND ALL FUTURE VERSIONS.
 3. COMMAND CORPORATION
TEL: 1-800-328-2197
FAX: 1-763-576-6911
 4. KENAMETAL
TEL: 1-800-446-7738
FAX: 1-800-962-4910
 5. VALENITE
TEL: 1-800-544-3336
FAX: 1-800-488-0695
 6. LYNDEX CORPORATION
TEL: 1-800-543-6237
FAX: 1-847-509-2909
- * RW20 ONLY COMES WITH ONE RETENTION KNOB. NO RETENTION KNOB ASSEMBLY SELECTION IS USED.

D	ADD RH/RW12 & RH19	5146		09/01
C	ADD RETENTION KNOBS TO CHART	4859	N.M.	12/00
B	CHANGE 70mm BT-FLANGE CHART	4730	N.M.	10/00
A	ADD LYNDEX CORP. IN CHART	4351	N.M.	1/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
	MILLIRONICS RETENTION KNOB CHART	SCALE 1:1	DATE 6-11-01B-054	SHEET 8
	APPLICATION GENERAL PRODUCTS	DATE 30 APR 99	DRAWN BY DAHLKE	SHEET NO. 2 OF 2

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)

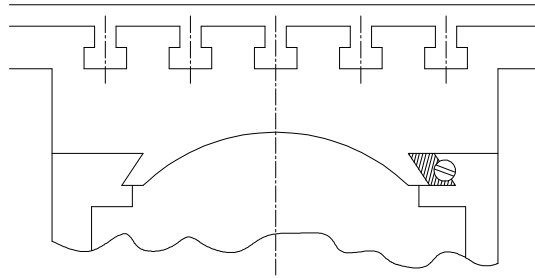


Fig. 1

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)

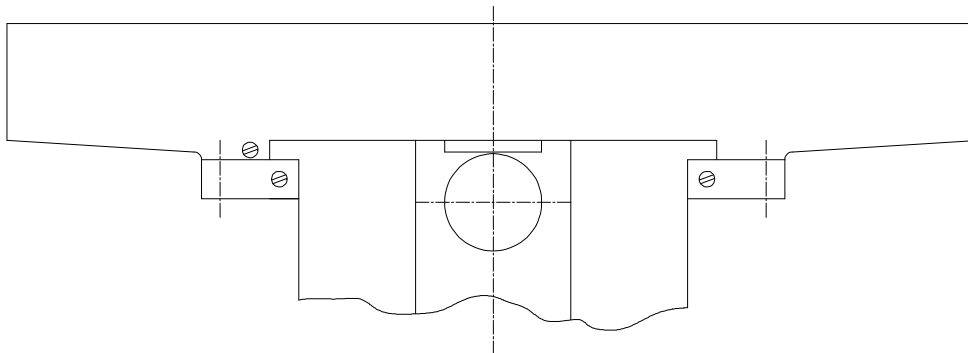


Fig. 2

Saddle-Base Gib

Adjustment of head Bolster gib.

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

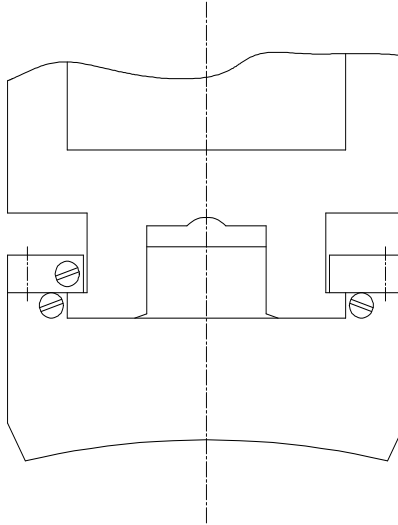


Fig. 3
Bolster Gib

Checking and Adjusting Backlash

Use a good solid magnetic base and a .0005 Inch indicator. Install the magnetic base on the machine table in close proximity to the spindle. Clean the area that the indicator will be in contact with.

Go into PARAMETERS/AXIS arrow down to BACKLASH press F1 EDIT and set X, Y and Z to zero. *(Before setting them to zero note original settings)*

Find the high spot on the spindle by moving the indicator back and forth and set indicator to zero. *(See point a on Fig. 4)*

The next step is easiest if done in jog mode. *(Select distance and 1 inch increments)*

You may have to press the jog key several times for the desired direction to clear the spindle.

Press the jog key for the desired direction for **A** to move towards **D** (see Fig. 4) and then back to **A**, the indicator may have moved, adjust it back to zero and repeat this step until it stays at zero.

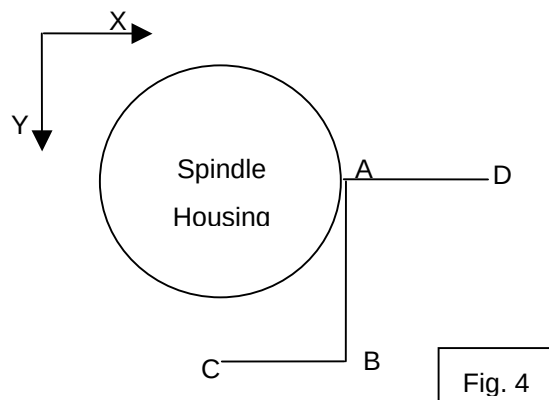
Jog the desired axis or tool (see Fig. 4) from point **A** to **B** to **C** back to **B** then back to the start point **A**. The reading on the indicator is backlash and should be put into the backlash parameter under PARAMS-SETUP-AXIS.

After putting the backlash into the table, repeat the procedure to ensure the numbers took affect. If the indicated error seems to increase this is addlash, and you may have to subtract the indicated number from the backlash chart.

The X axis procedure is shown, repeat procedure for Y and Z.

Remember to save these new changes to your parameter disk.

(The diagram below is an example of checking your backlash in the X-axis.)



RH Machine Lubrication (MA-212):

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

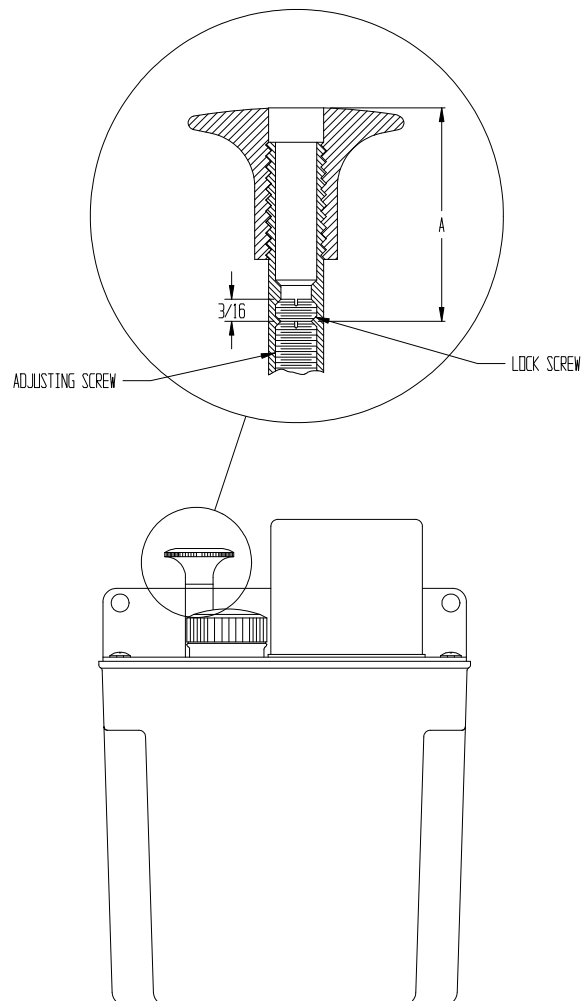


Fig. 5

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**)

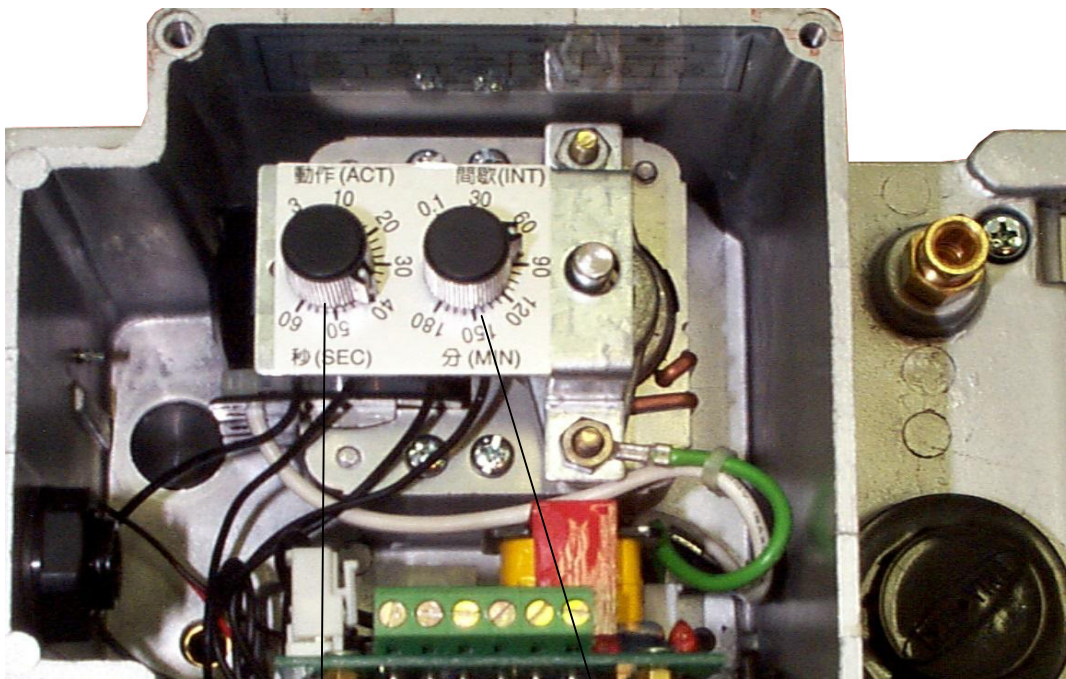
The **MA-219** has the ability to set the time between each pump cycle. It will pump the same amount of way lube (**.13 Liters/Min**) each pump cycle. We are not varying the amount of oil but the interval between each pump cycle. A new machine shipped from Milltronics will have the oiler pumping Aprox. 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

Turn this dial to vary the minutes between each

Spindle Start up Procedure (Excludes MB models)

04-12-02

Daily Run in procedure

- 1. Start the flood pump or chiller unit (if equipped) and run coolant throughout coolant passages until the temperature stabilizes.**
- 2. Verify that all auxiliary systems are operating properly.**
 - a. If equipped with a Spindle air purge system, the system should have approx. 15 PSI.
 - b. If equipped with the optional Vogel Air Oiler System, verify the reservoir tank has adequate oil supply and proper air pressure.
- 3. Run-in the spindle at 50% of the maximum RPM for 10 minutes.**

Measure temperature at various locations on the front of the spindle cartridge.

Be careful as the spindle is running! If at any time during the spindle run-in procedure the temperature reaches 140 degrees Fahrenheit or 60 degrees Celsius, stop the spindle and allow it to cool to room temperature. Resume the procedure at the point of the procedure it was halted.

The temperature can be measured with a pyrometer. If a pyrometer is not available, a good indication of excessive temperature is if you cannot hold your hand on the spindle for more than 5 seconds.

4. If the temperature is within normal operation parameters, the machine is ready for operation.

Abbreviated Run-in Procedure for Spindle with ½ -2 hours Idle time

1. Follow Steps 1. and 2. listed under the Daily Run-in Procedure.
2. Run-in the spindle at 50% of the maximum RPM for 3 to 5 minutes.
3. Monitor the temperature at various locations on the front of the spindle cartridge. If at any time during the spindle run-in procedure the temperature reaches 140 degrees Fahrenheit or 60 degrees Celsius, stop the spindle and allow it to cool to room temperature. Resume the procedure at the point of the procedure it was halted.
4. If the temperature is within normal operation parameters, the machine is ready for operation.

Ref: Setco Publication No. R-0007

June 12, 2001

