



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

*RW20E-H Mechanical
Parts and Operation Manual*

January 12, 2011
Updated July 7, 2011

Auger motor .25HP
MO-170

Table Of Contents

Manual Discrepancy Sheet	1
Head Bolster Assembly	2
Head Bolster Parts List.....	3
Z-Axis Guarding & Limit Switch Assembly	4
Z-Axis Guarding & Limit Switch Parts List	5
Z-Axis Oil Route Distribution Drawing	6
Z-Axis Oil Route Distribution Parts List	7
Head Stock Assembly Drawing	8
Head Stock Assembly Parts List	9
Oil Distribution Drawing	10
Oil Distribution Parts List	11
Saddle Assembly Drawing	12
Saddle Assembly Parts List.....	13
Y-Axis Guarding & Limit Switch Assembly	14
Y-Axis Guarding & Limit Switch Parts List.....	15
Y-Axis Oil Routing Assembly.....	16
Y-Axis Oil Routing Parts List	17
Table Assembly.....	18
Table Assembly Part List.....	19
X-Axis Guards Assembly.....	20
X-Axis Guards Parts List	21
X-Axis Oil Routing Assembly.....	22
X-Axis Oil Routing Parts List	23
Base Assembly	24
Base Assembly Part List	25
Base Guarding Assembly.....	26
Base Guarding Part List	27
X-Axis Assembly	28
X-Axis Part List.....	29
Y-Axis Assembly	30
Y-Axis Part List.....	31
Z-Axis Assembly	32
Z-Axis Part List	33
Enclosure Assembly.....	34
Enclosure Part List	35
Power Drawbar Cylinder Assembly	36
Miscellaneous Parts Around The Machine	38
Lubrication Specifications.....	39
Retention Knob Chart.....	40
Maintenance Section.....	41
Spindle Start up Procedure	44

Manual Discrepancy Sheet

Version and M-rev History

E rev1 VM-200 Frame

F rev1 1KW Motors on X & Y

F rev2 Mindman Q-0051-00312 air purge valve and 8mm air supply line.

G rev1 Sourcing I/O

G rev2 Base and chip pan alterations

G rev3 Paint color changes on flood tank, drawers, skirts, auger system, conveyor, etc.

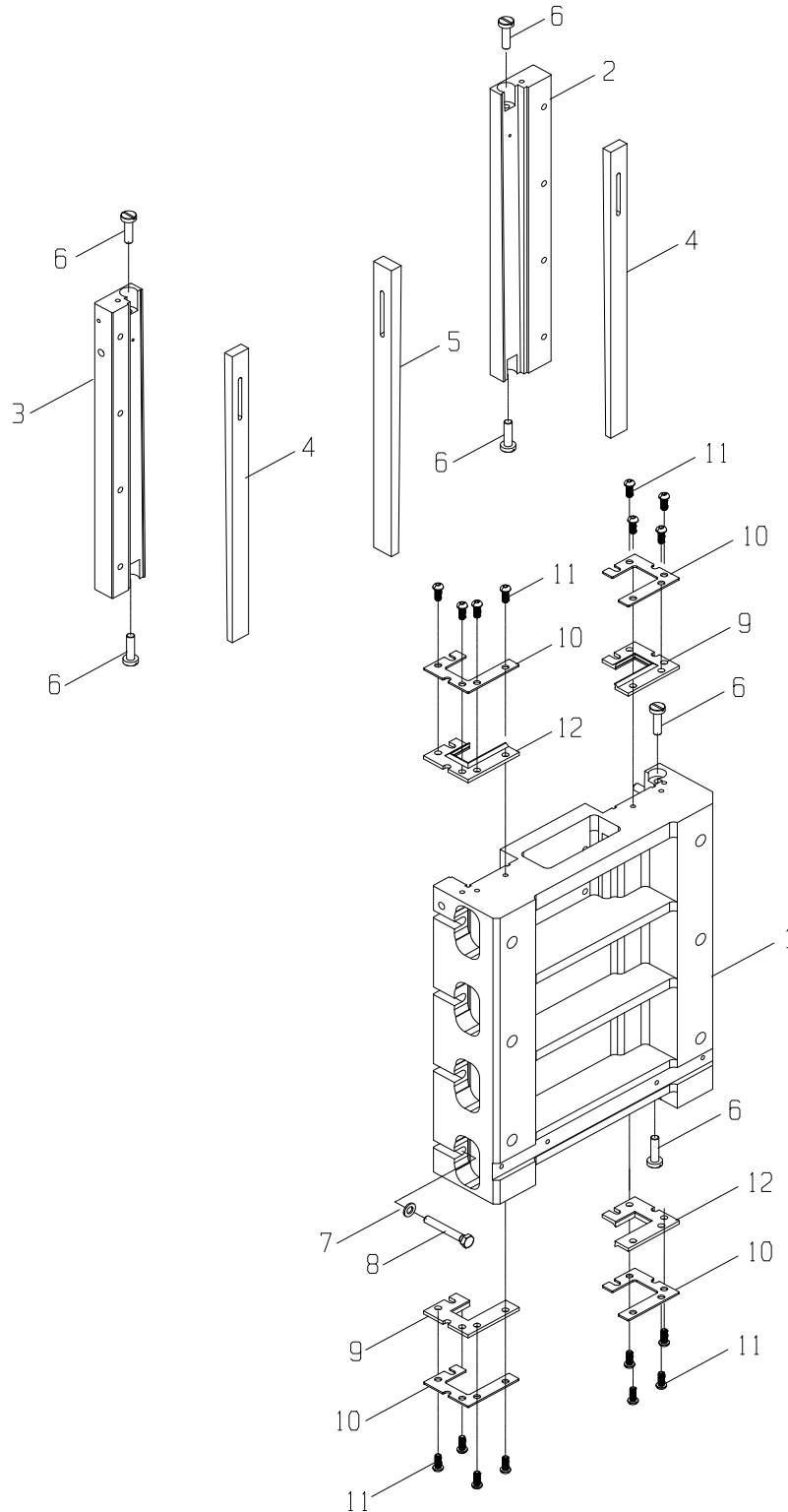
H rev1 8200 control option

Head Bolster Assembly

MILLTRONICS
1400 MILL LANE 952-442-1410
WACONIA, MN 55387 USA

Head Stock Bolster Assembly

43061-00-A-01



NO. 1

Head Bolster Parts List

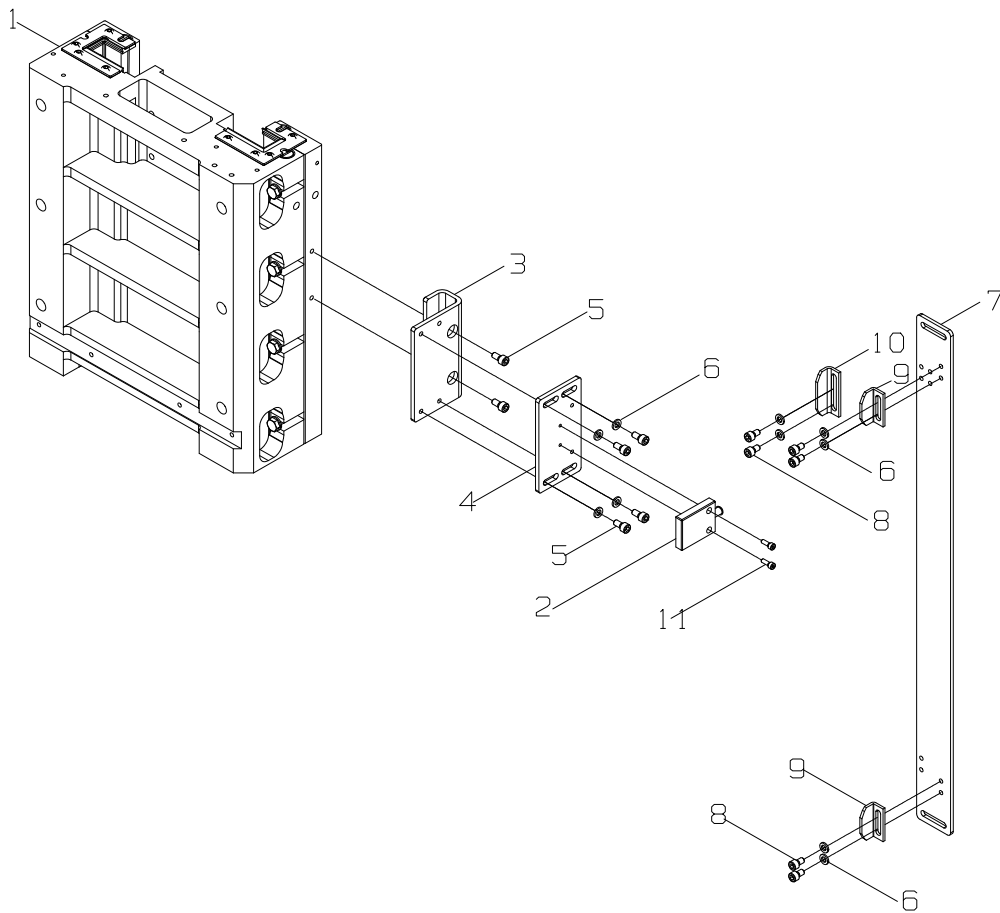
No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-00010	Shim Block	1		
2	43061-00011	Clamping Plate	1		
3	43061-00012	Clamping Plate	1		
4	43061-00014	Tapered Gib	2		MPS0603
5	43061-00018	Tapered Gib	1		MPS0662
6	43061-20010	Gib Screw	6		MPS0604
7		Washer	8	M8	
8		Hexagon Screw	8	M8x55L	
9	43061-30012	Wiper	2		MPS0448 Includes #'s 9,10,12
10	43061-30013	Wiper Clamping Plate	4		
12	43061-30014	Wiper	2		
11		Cap Screw	16	M6x16L	

Z-Axis Guarding & Limit Switch Assembly



Z-Axis Guarding & Limit Switch Bracket Drawing

43061-00-B-01

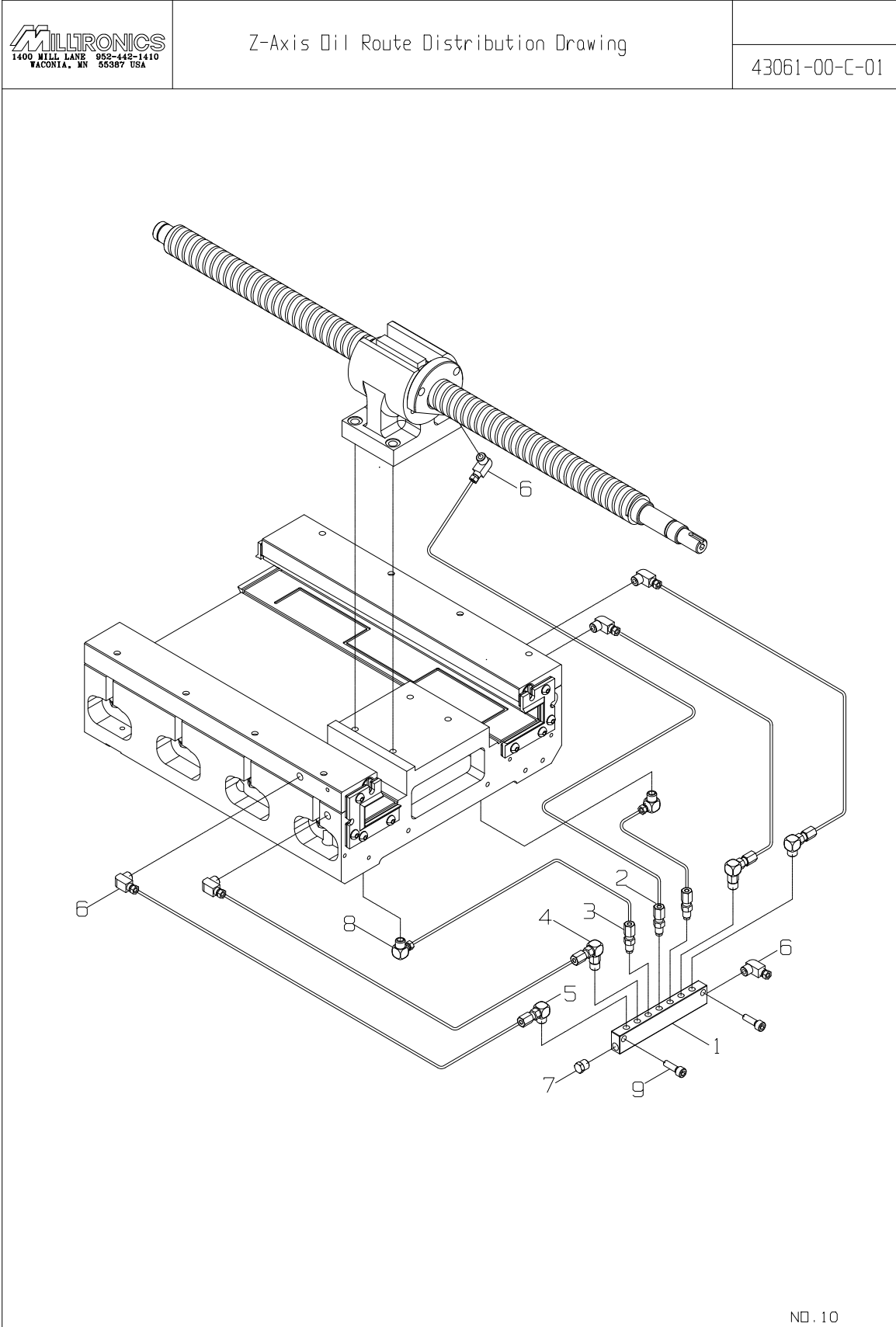


NO. 15

Z-Axis Guarding & Limit Switch Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-00010	Bolster	1		
2		Limit Switch	1		SW00193
3	43061-00016	Limit Switch Mounting Bracket	1		
4	43061-20014	Limit Switch Adjusting Plate	1		
5		Socket Screw	6	M6x12	
6		Washer	10	M6	
7	43061-10015	Switch Dog Shim Block	1		
8		Socket Screw	6	M6x10	
9	43061-10011	Switch Dog	2		MPS-735
10	43061-10012	Switch Dog	1		

Z-Axis Oil Route Distribution Drawing

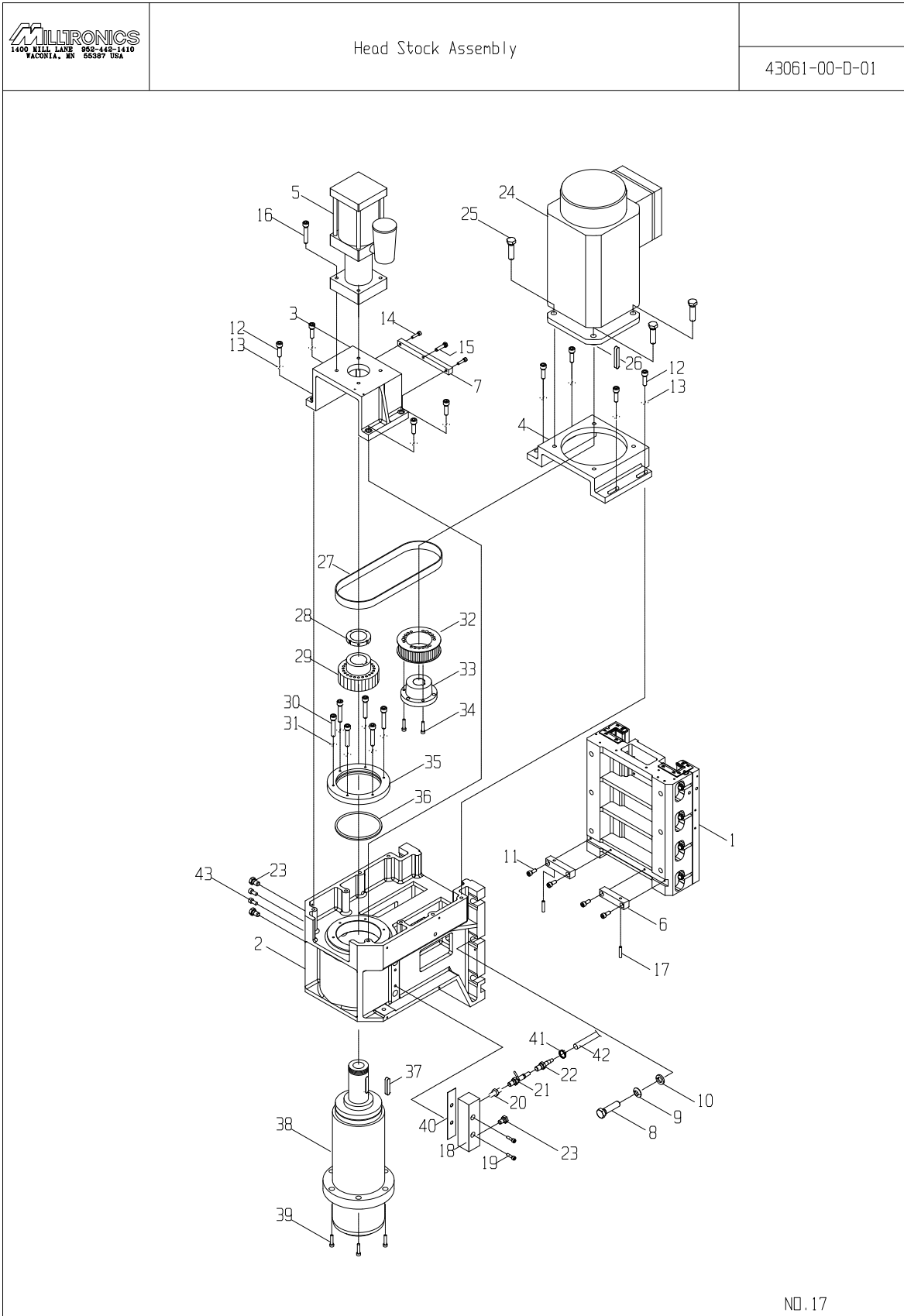




Z-Axis Oil Route Distribution Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1		Oil Manifold	1		NU-459
2		Meter	1	#4	NU00075
3		Meter	2	#3	NU00074
4		Meter & Elbow Connector & Straight Connector	2		
5		Meter & Elbow Connector	2		
6		Elbow Connector	6		
7		Plug	1		
8		Elbow Connector	2		
9		Socket Screw	2	M6x20	

Head Stock Assembly Drawing

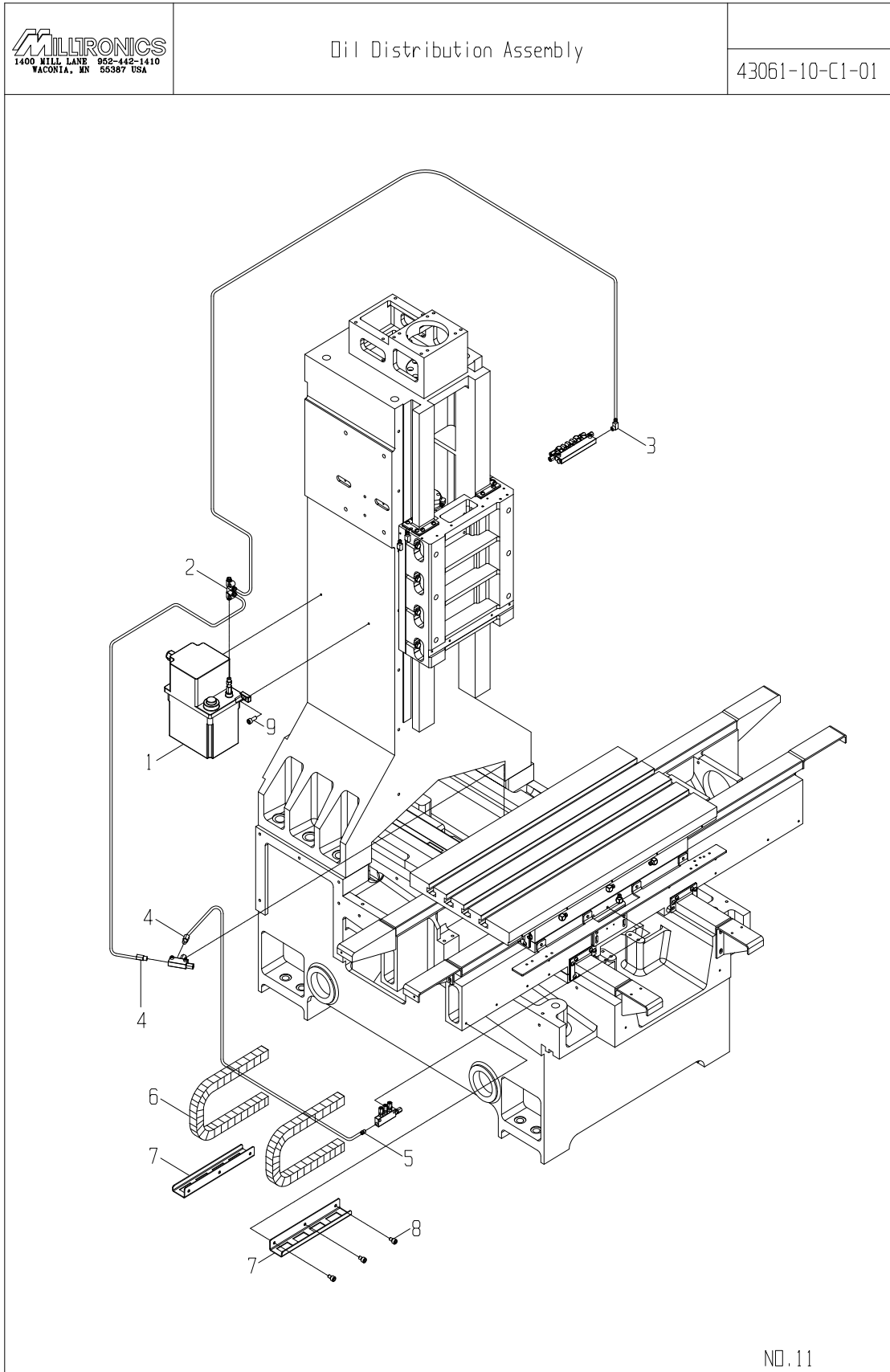


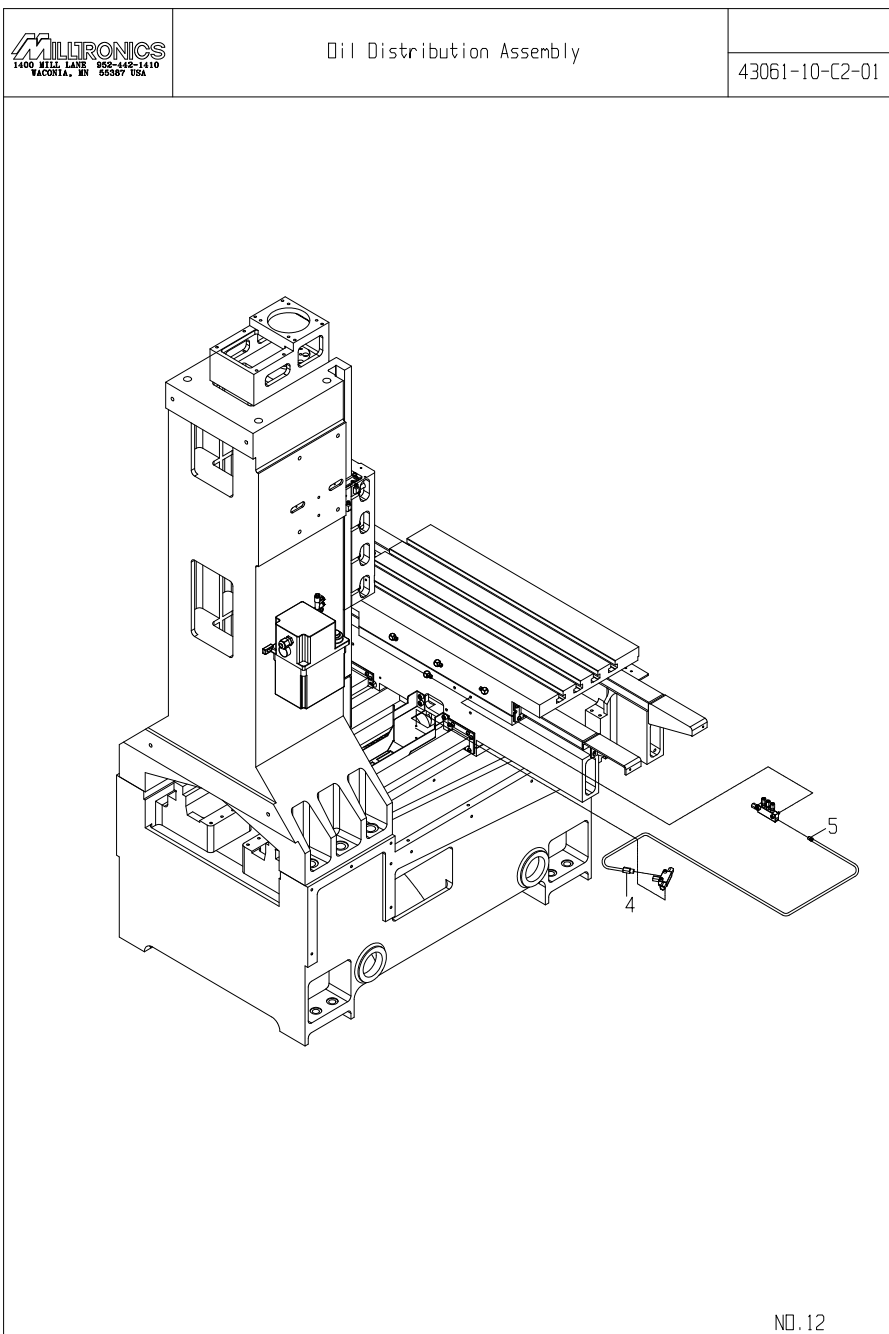
Head Stock Assembly Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-10010	Bolster	1		
2	E-BLDA-00001-01	Head Stock	1		
3	E-BLDA-02012-01	Drawbar Cylinder Seat	1		MPS0572
4	E-BLDA-02013-01	Motor Seat	1		MPS0476
5	M-0201-01-001	Drawbar Cylinder	1	See Pages 36 & 37	NU00330
6	E-BLDA-00006-01	Adjusting Block	2		
7	E-BLDA-02011-01	Adjusting Block	1		
8		Hex Screw	6	M16x60	
9		Washer	6	M16	
10		Washer	6	M16	
11		Socket Screw	4	M8x20	
12		Socket Screw	8	M10x35	
13		Washer	8	M10	
14		Socket Screw	2	M6x25	
15		Hex Screw	1	M8x25	
16		Socket Screw	4	M10x50	
17		Fixing Screw	2	M8x20	
18	E-BLDA-0003-01	Distributor	1		
19		Socket Screw	2	M8x25	
20		Connector	1	1/2PTx1/2PT	
21		Valve	1	1/2PTx1/2PT	
22		Connector	1	1/2PTx1/2L	
23	WX-165	Plug	3	1/2PT	
24	MO-114	Motor	1	Yaskawa 7.5/10HP	MO00114
25		Hex Screw	4	M12x40	
26		Key	1	10x8	
27	E-BLDA-01010-01	Belt	1	775-5GT-30	BT-79 Posa/ BT-72 Setco
28		Nut	1		
29	E-BLDA-01001-01	Pulley, 5GT-70T	1	For 6-8 k RPM	PY00202
30		Socket Screw	6	M6x25	
31		Washer	6	M6	
32	E-BLDA-07005-01	Pulley 5GT-70T	1	For 6-8 k RPM	PY00201
33	E-BLDA-07006-01	Motor Bushing - 32mm	1	(15k rpm only)	PY00184 or PY-222
34		Socket Screw	3	5/16-18UNCx35L	
35		Ring	1		With Spindle
36		O-Ring	1		WX00182
37		Key	1		MP00050
38		Spindle	1	POSA 60mm	MP00671 or Setco 5799
		Spindle Bearing		7010CP4	MPS0667
		Spindle Bearing		7012CP4	MPS0668
39		Socket Screw	6	M8x35	
40	E-BLDA-0004-01	Washer	1		
41	WX-241	Cord Grip	1	D:25	
42	NU-25	Hose	1	D:25 d:20	
43		Socket Screw	2	M8x20	
		Gripper, POSA			TL00118

#27 Spindle Belt Options
 BT-72 W-800 GOODYEAR
 BT-79 775-5GT-30MM

Oil Distribution Drawing

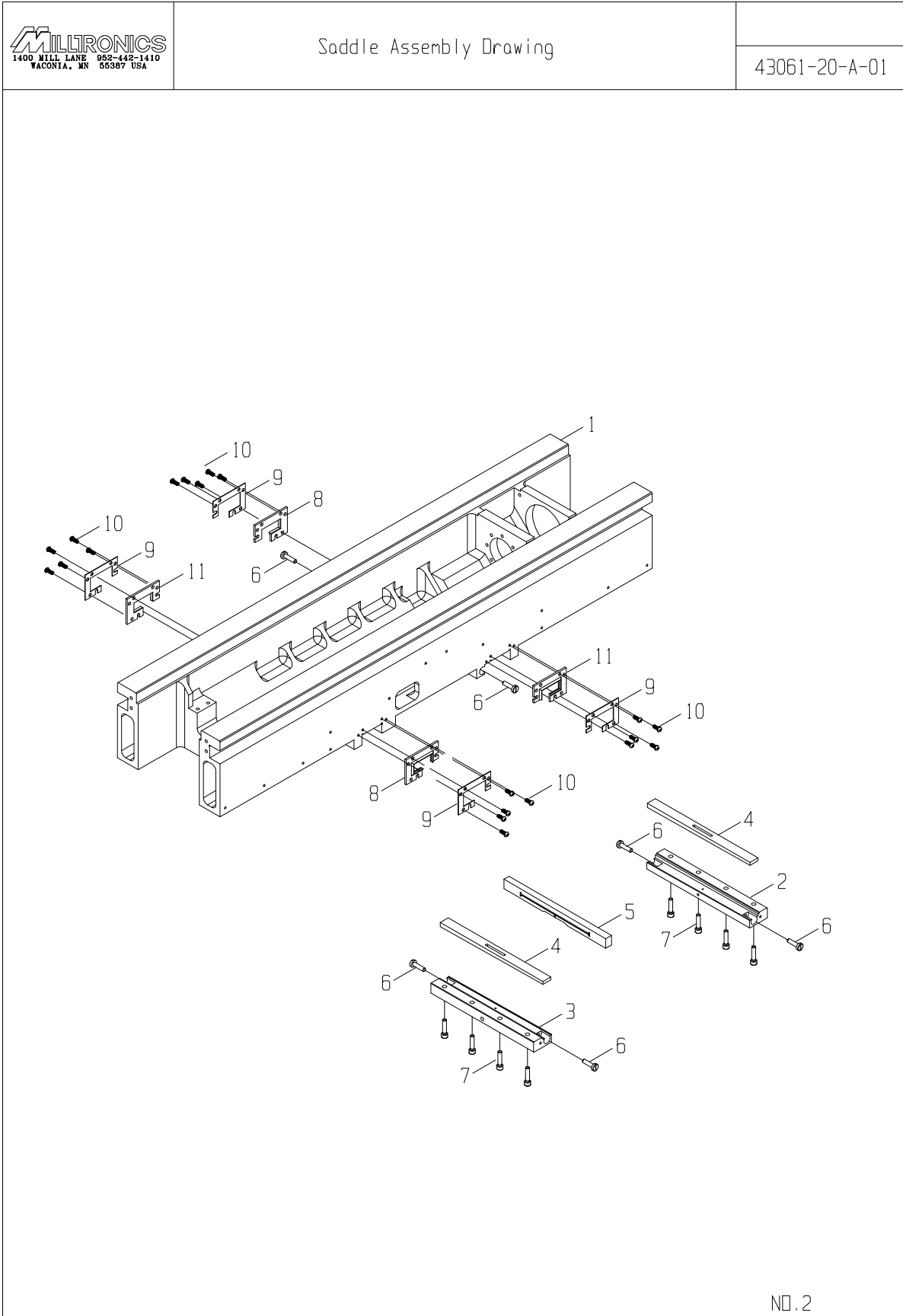




Oil Distribution Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1		Waylube Pump	1		MA00219
2		Oil "T"	1		NU-14
3		Elbow Connector	1		NU-171
4		Straight Connector	3		NU-108
5		Thimble Nut	2		NU-45
6		X-Axis Oil Track	2		MPS0364
7		Oil Track Support	2		
8		Socket Screw	6	M6x10	
9		Socket Screw	2	M6x20	

Saddle Assembly Drawing





Saddle Assembly Parts List

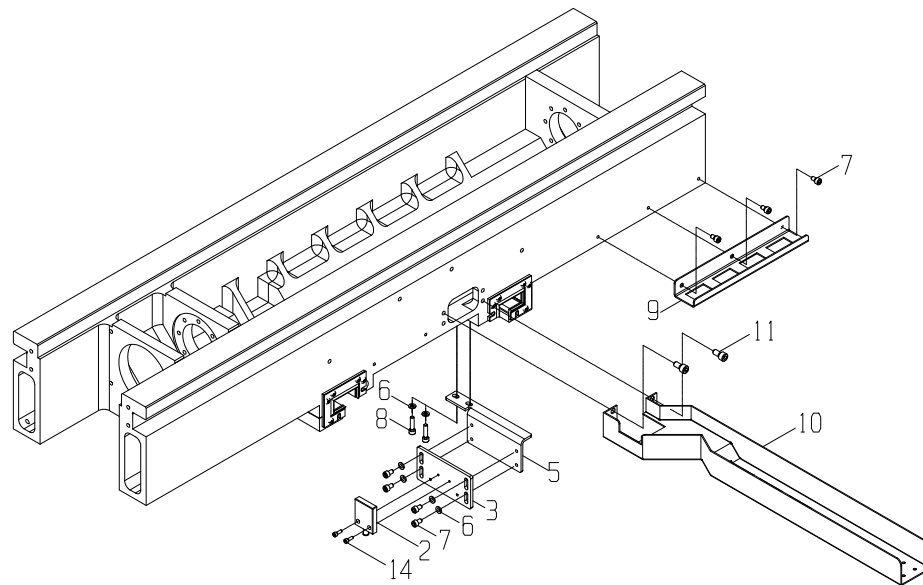
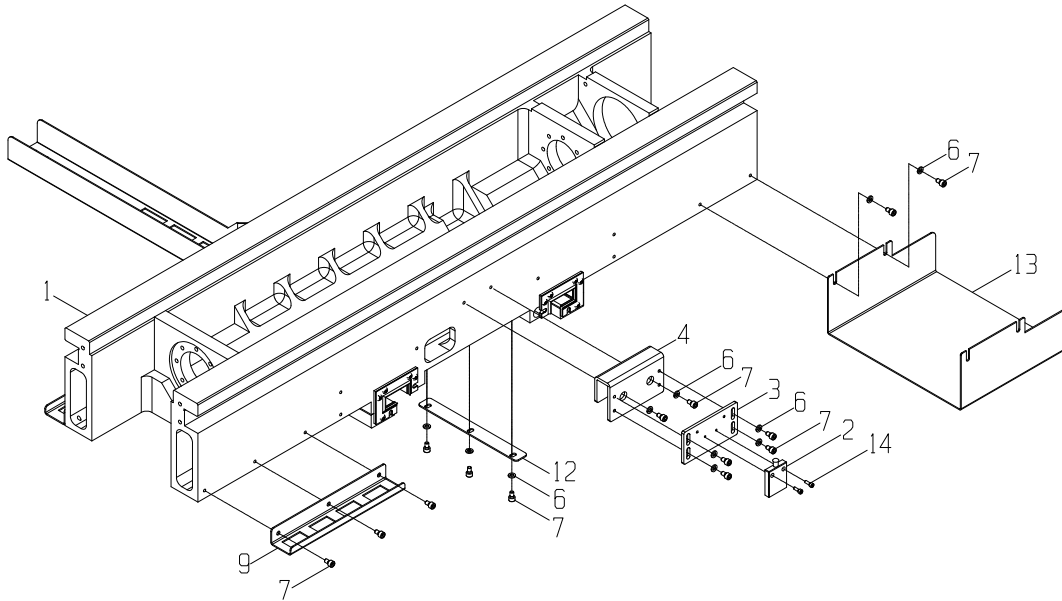
No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-20001	Saddle	1		
2	43061-20002	Right Clamping Plate	1		
3	43061-20003	Left Clamping Plate	1		
4	43061-20004	Tapered Gib	2		MPS0663
5	43061-20009	Tapered Gib	1		MPS0664
6	43061-20010	Gib Screw	6		MPS0604
7		Socket Screw	8	M8x35L	
8	43061-20021	Wiper	2		MPS0449 includes #'s 8,9,11
9	43061-20022	Wiper Clamping Plate	4		
11	43061-20023	Wiper	2		
10		Cap Screw	20	M6x16L	

Y-Axis Guarding & Limit Switch Assembly

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1400 HILL LANE 952-442-1410
WACONIA, MN 55387 USA

Y-Axis Guarding & Limit Switch Assembly

43061-20-B-01

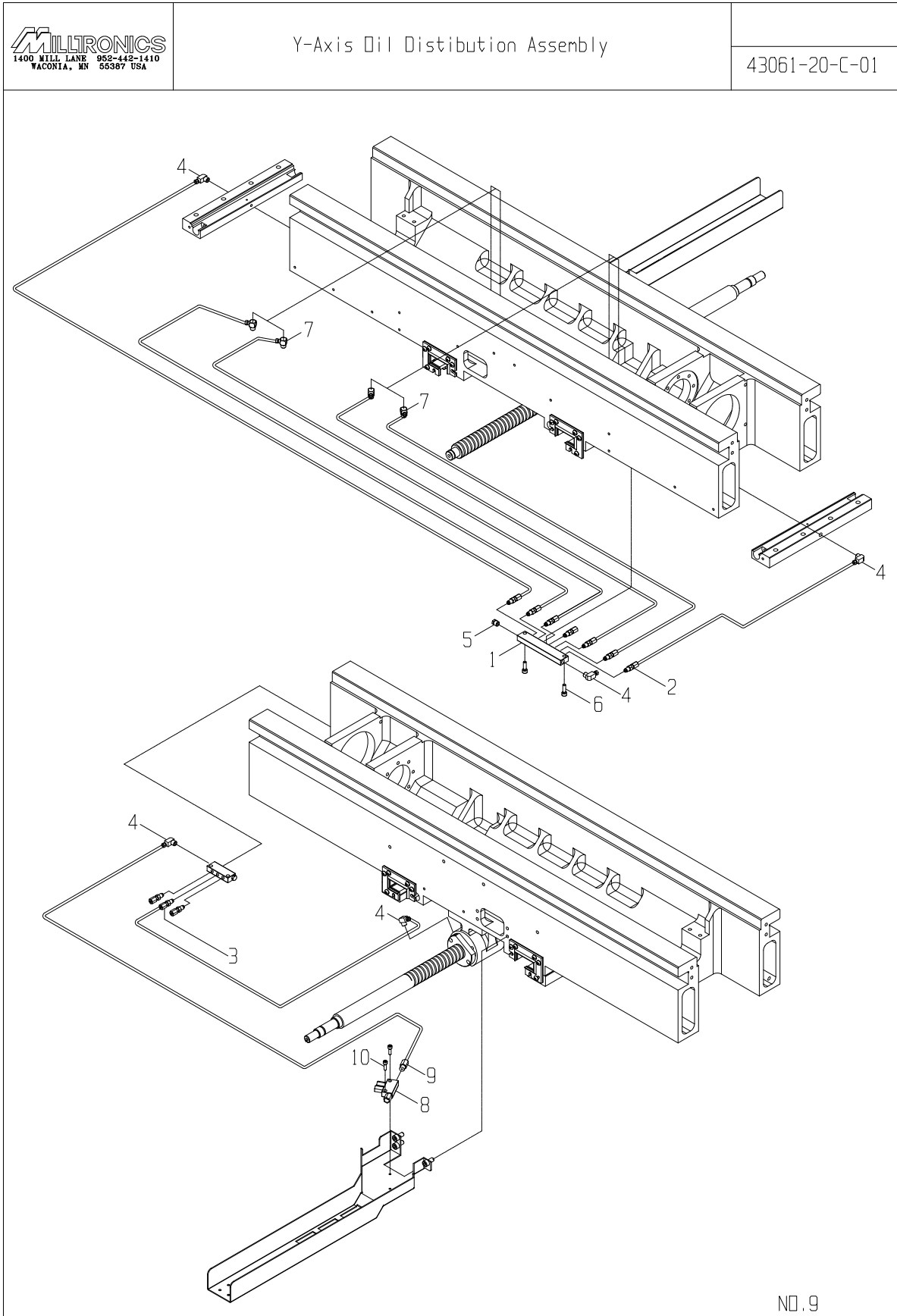


NO. 18

Y-Axis Guarding & Limit Switch Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-20001	Saddle	1		
2		Home Switch	2		SW00193
3	43061-20014	Home Switch Adjusting Bracket	2		
4	43061-20015	Home Switch Mounting Bracket	1		
5	43061-20011	Home Switch Mounting Bracket	1		
6		Washer	17	M6	
7		Socket Screw	21	M6x10	
8		Socket Screw	2	M6x25	
9	43061-20018	Cable Track Mount	2		
10	43061-20012	Wire Tray	1		
11		Socket Screw	3	M8x16	
12	43061-20019	Gib Support Plate	1		
13	43061-20017	Motor Cover	1		MPS0549
14		Socket Screw	4	M4x12	

Y-Axis Oil Routing Assembly



Y-Axis Oil Routing Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1		Manifold Block	1		
2		Meter	6	#3	NU00074
3		Meter	1	#4	NU00075
4		Elbow Connector	4		
5		Nut	1		
6		Socket Screw	2	M6x20	
7		Elbow Connector	4		
8		Manifold	1		
9		Straight Connector	1		
10		Socket Screw	2	M5x16	

Table Assembly

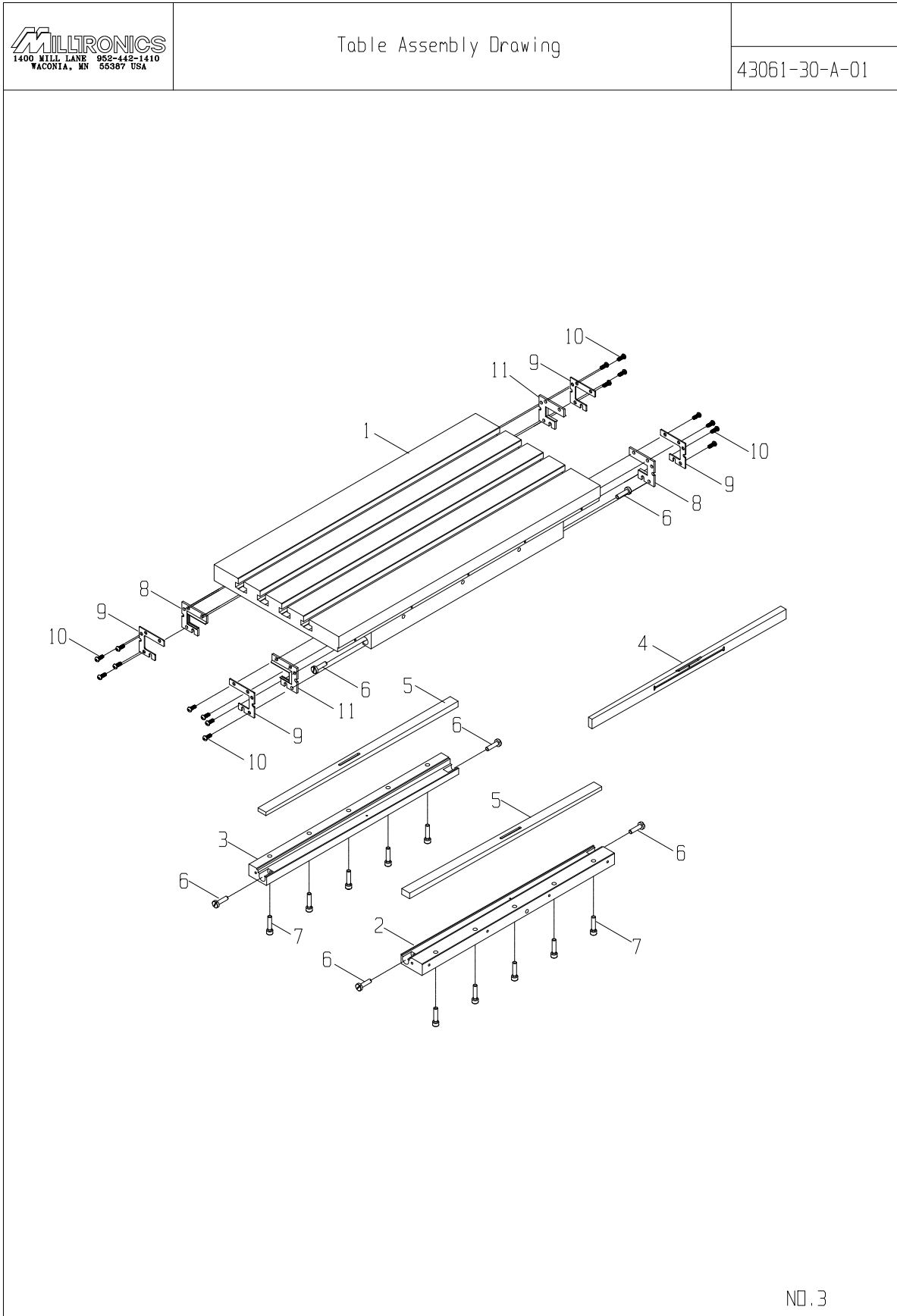


Table Assembly Part List

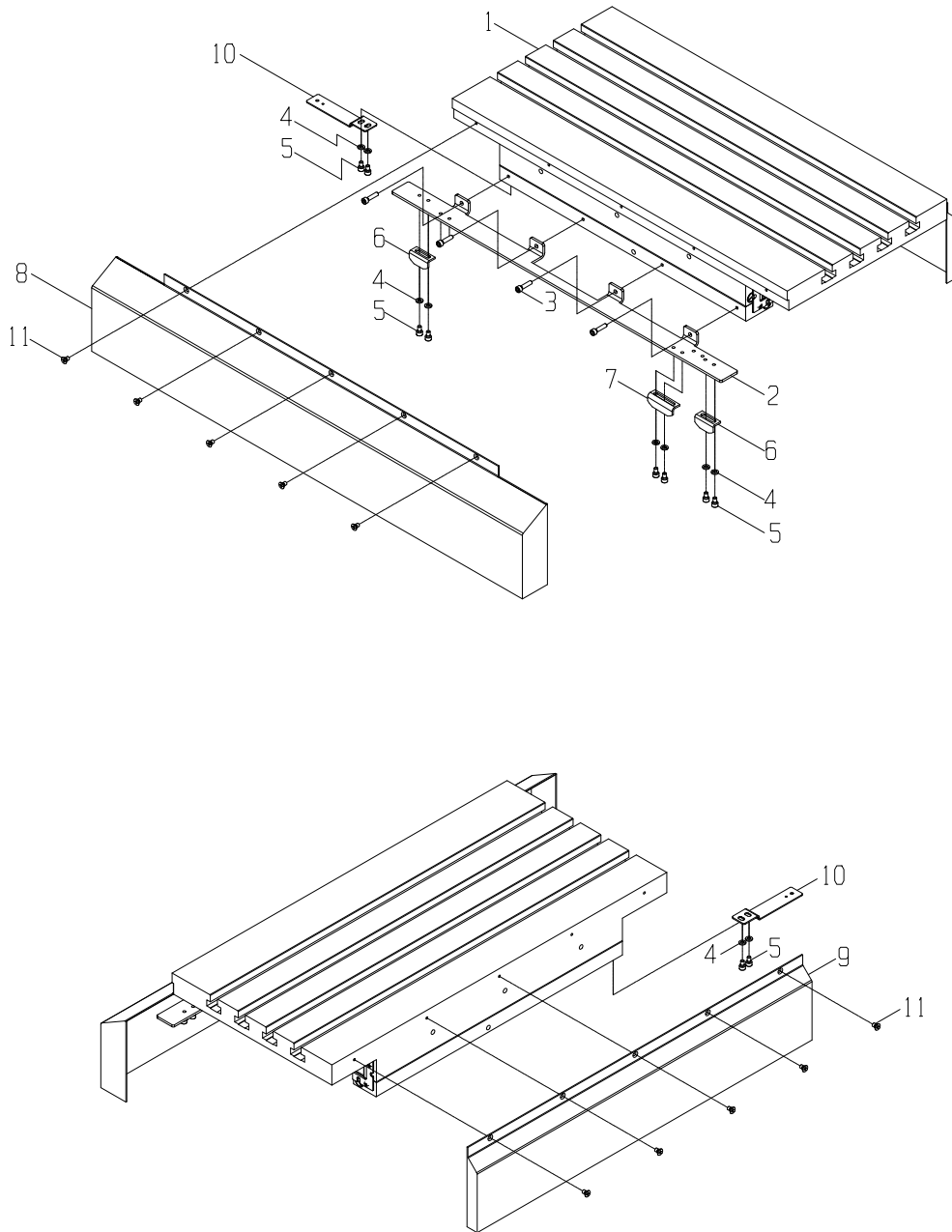
No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-30001	Table	1		
2	43061-30002	Table Clamping Plate	1		
3	43061-30003	Table Clamping Plate	1		
4	43061-30009	Tapered Gib	1		MPS0665
5	43061-30010	Tapered Gib	2		MPS0666
6	43061-20010	Gib Screw	6		MPS0604
7		Socket Screw	10	M8x35L	
8	43061-30012	Wiper	2		MPS0448 Includes #'s 8,9,11
9	43061-30013	Wiper Clamping Plate	4		
11	43061-30014	Wiper	2		
10		Cap Screw	16	M6x16L	

X-Axis Guards Assembly

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X-Axis Guarding Assembly Drawing

43061-30-B-01



X-Axis Guards Parts List

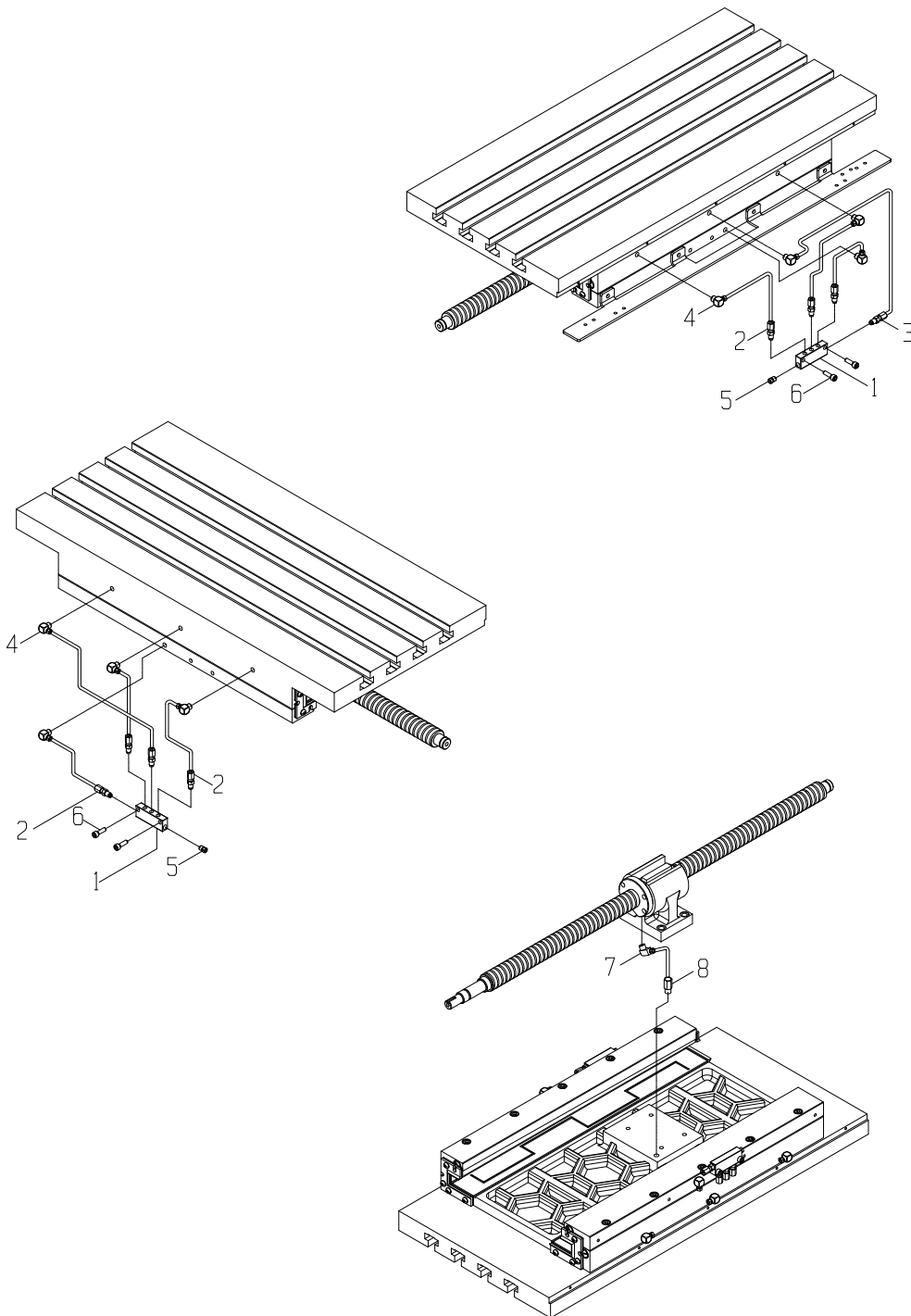
No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-30001	Table	1		
2	43061-20016	Limit Switch	1		SW00193
3		Socket Screw	4	M6x25	
4		Washer	10	M6	
5		Socket Screw	10	M6x10	
6	43061-10011	Switch Dog	2		MPS-735
7	43061-10012	Switch Dog	1		
8	43061-30011	Chip Protection Cover	1		
9	43061-30008	Chip Protection Cover	1		MPS0366
10	43061-20020	Connecting Plate	2		
11		Button Head Screw	10	M6x10	

X-Axis Oil Routing Assembly

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X-Axis Oil Route Distribution Drawing

43061-30-C-01



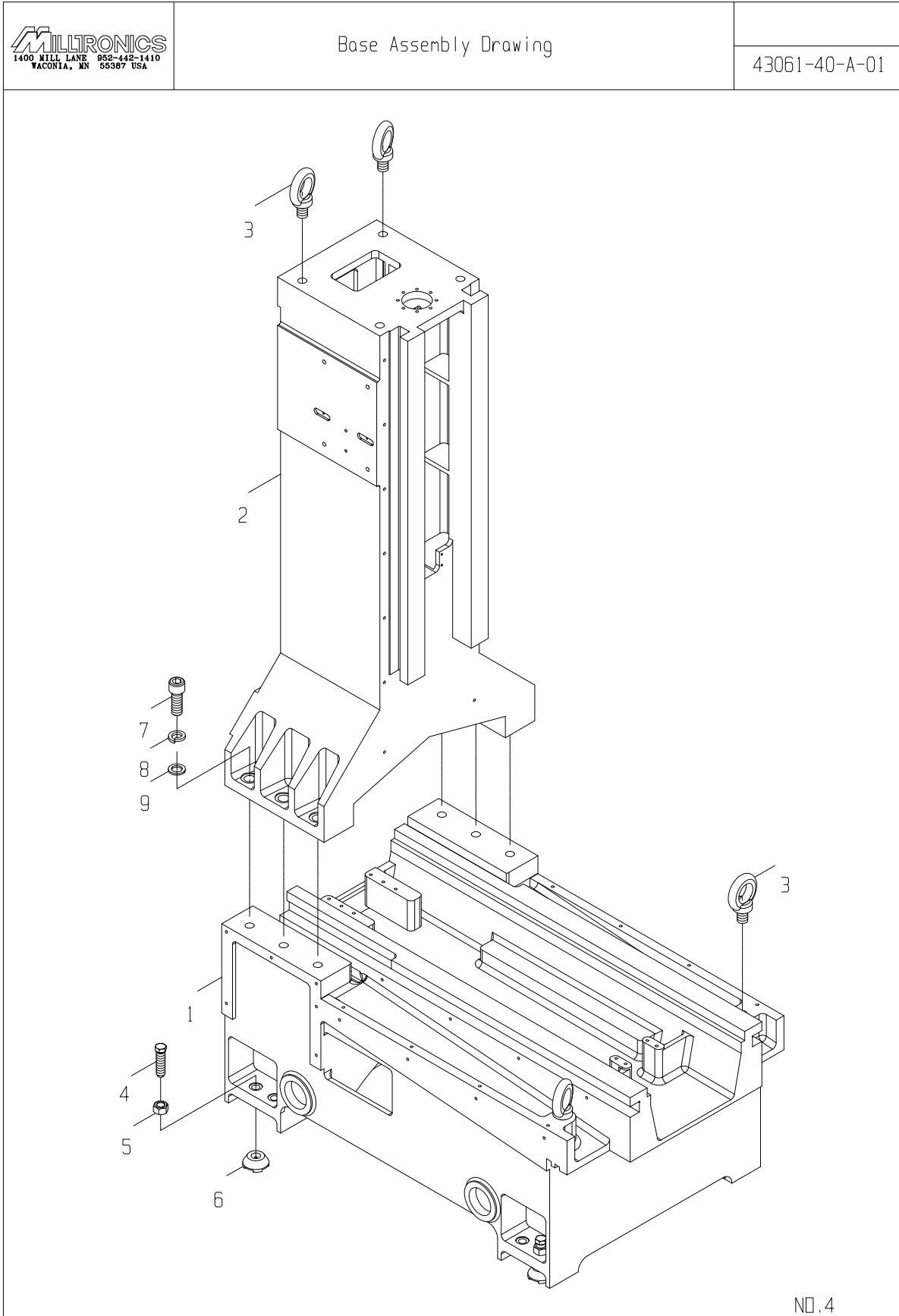
X-Axis Oil Routing Parts List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1		Manifold Block	2		
2		Meter	7	#3	NU00074
3		Meter	1	#4	NU00075
4		Elbow Connector	8		
5		Compression Nut	2		NU-532
6		Socket Screw	4	M6x20	
7		Elbow Connector	1		
8		Straight Connector	1		

X axis oil line MPS-602
 Cable track MPS-364
 X axis front oil NU-332
 X axis rear oil NU-331

Ferrule NU-531

Base Assembly



Base Assembly Part List

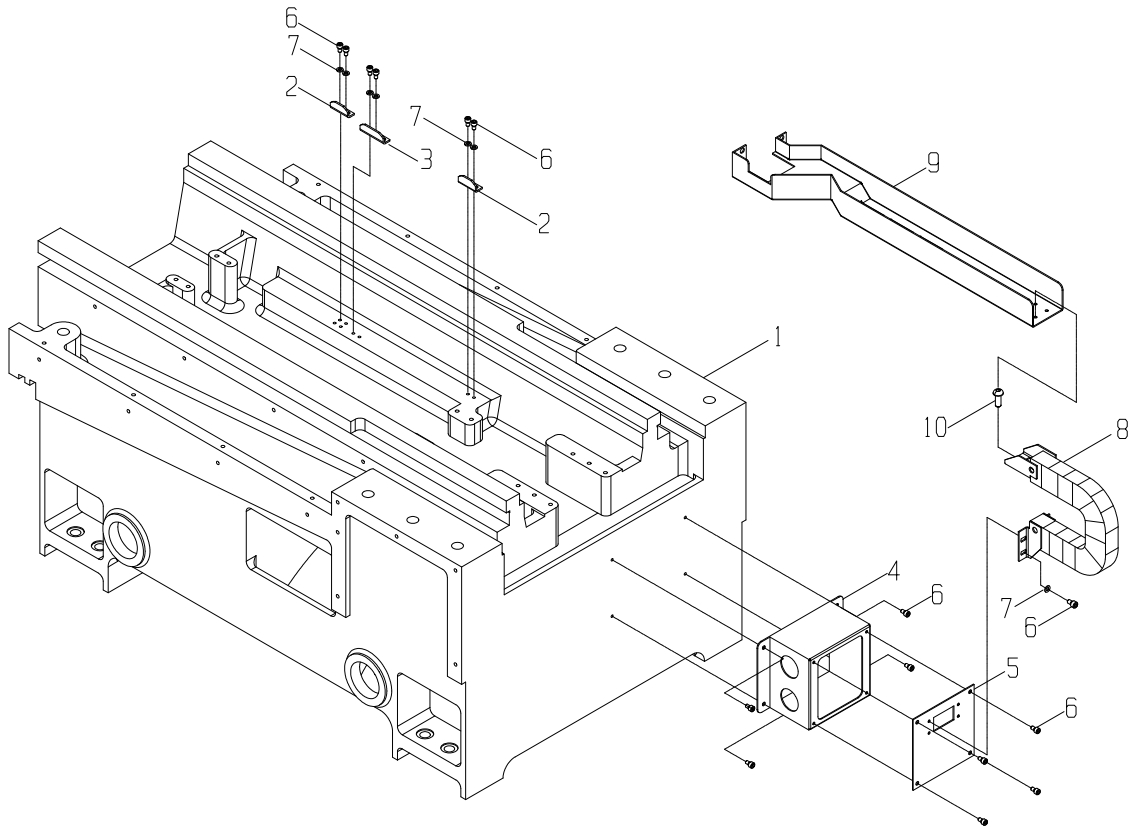
No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-40001	Base	1		
2	43061-10001	Column	1		
3	43061-40004	Lifting Eye Bolt	4		
4	43061-40002	Leveling Bolt	4		MPS0458 - Both parts
5		Nut	4		
6	43061-40003	Leveling Pad	4		MPS-725
7		Socket Screw	6		
8		Washer	6	M24	
9		Spring Washer	6	M24	

Base Guarding Assembly

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WACONIA, MN 55387 USA

Base Guarding Assembly Drawing

43061-40-B-01

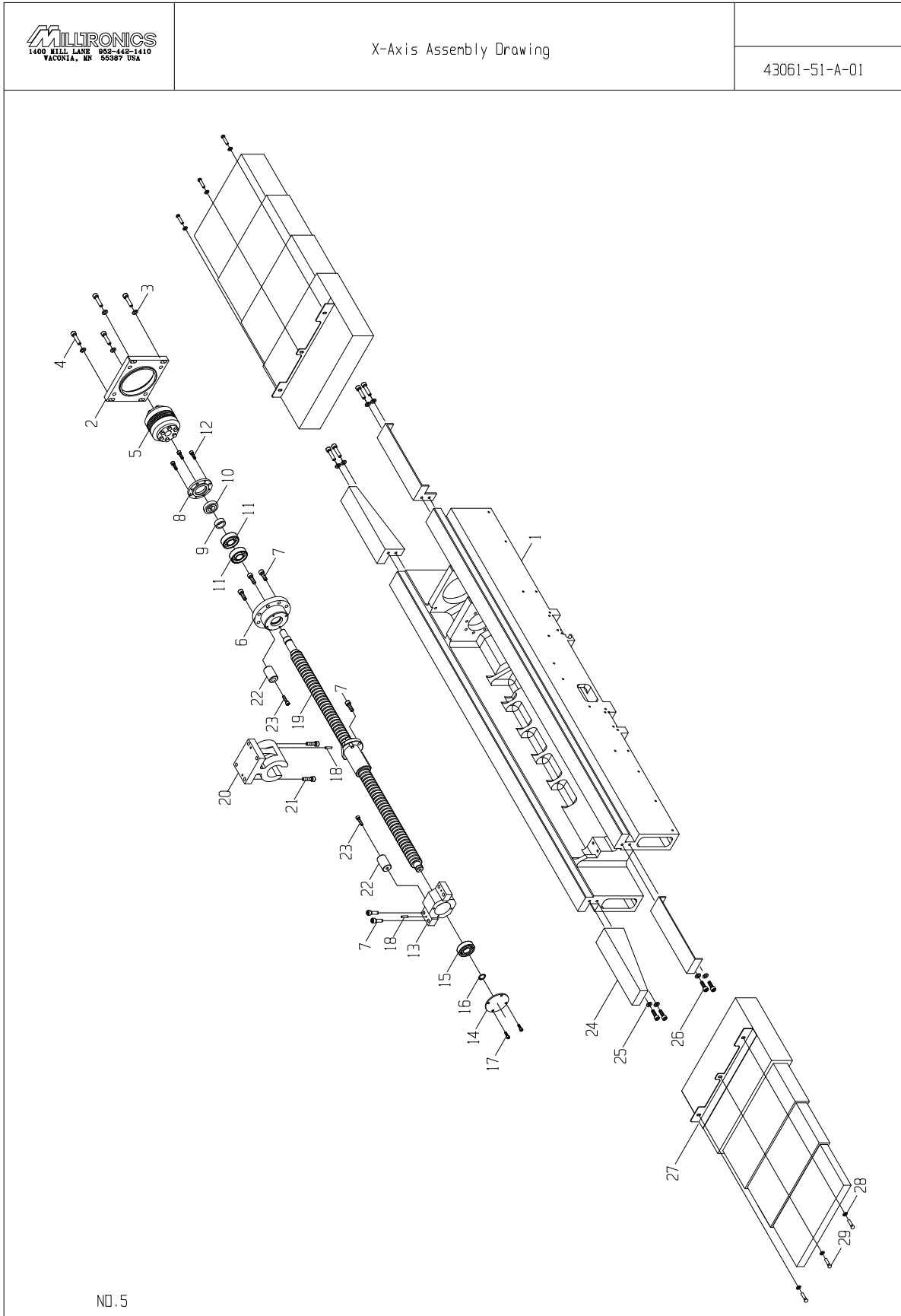


NO. 16

Base Guarding Part List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-40001	Base	1		
2	43061-10011	Switch Dog	2		MPS-735
3	43061-10012	Switch Dog	1		
4	43061-20013	Wire Junction Box	1		
5	43061-20025	Cover Plate	1		
6		Socket Screw	18	M6x10	
7		Washer	10	M6	
8	43061-71041	Y-Axis Cable Track, RW12C/14/15	1	12 sections	MPS0381
		Y-Axis Cable Track, RW18/20	1	14 sections	MPS0382
9	43061-20012	Cable Tray	1		
10		Cap Screw	4	M6x10L	

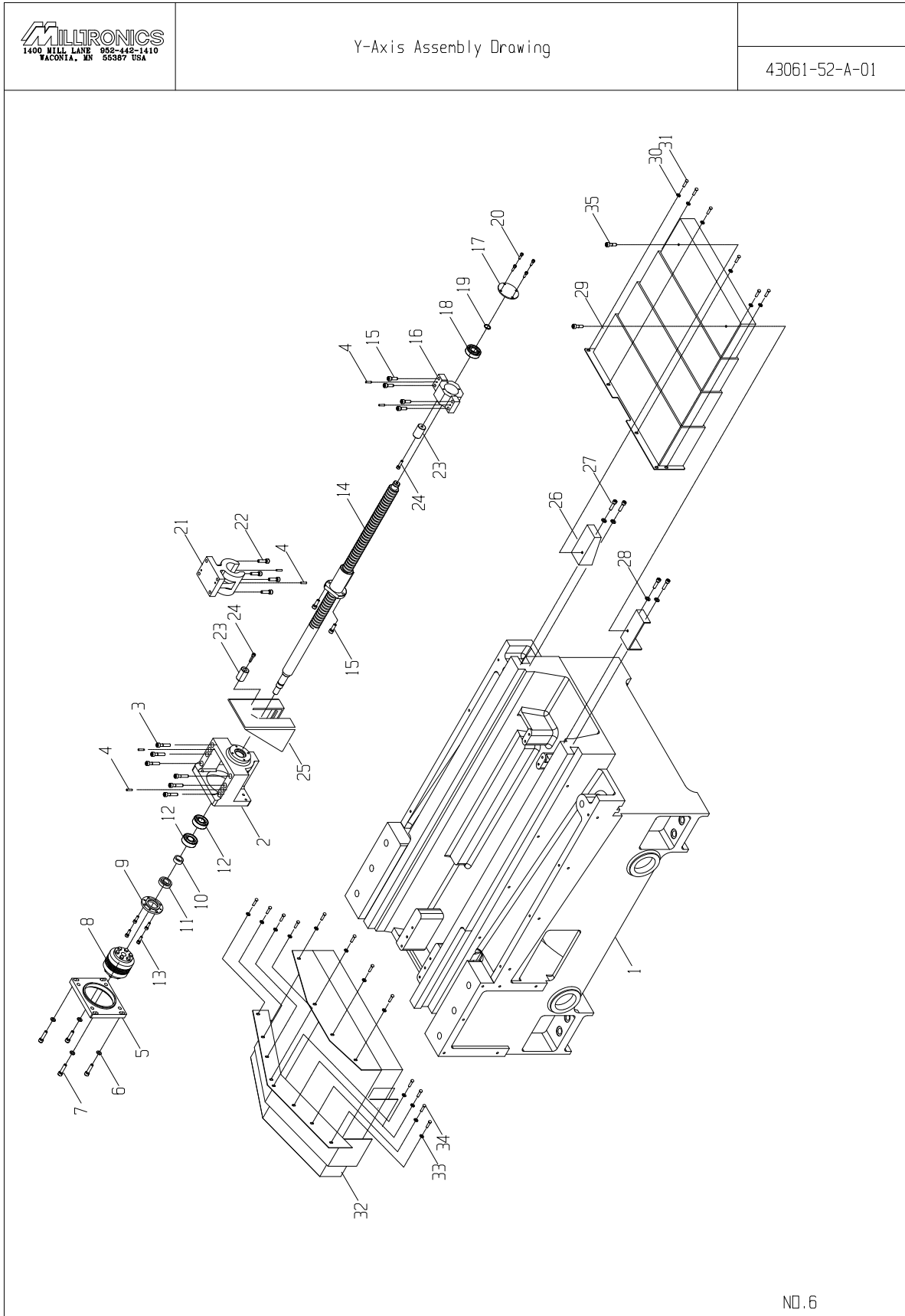
X-Axis Assembly



X-Axis Part List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-20001	Saddle	1		
2	43061-51002	Motor Flange	1		
3		Washer	4	M8	
4		Socket Screw	4	M8x35L	
5	43061-51010	Coupling	1		MA00242
5a		Coupling Key	1		MP00772
6	43061-51007	Bearing Seat	1		
7		Socket Screw	15	M8x25L	
8	43061-51005	Bearing Seat Cover	1		MPS-701
9	43061-51004	Collar	1		MPS-702
10	43061-51003	Lock Nut	1		MP00970
11		Bearing 20TAC	2		BG00102
12		Socket Screw	4		
13	43061-52003	Bearing Seat	1		
14	43061-52004	Cover	1		
15		Bearing	1	6204	BG00002
16		C-Snap Ring	1	20mm	
17		Socket Screw	4	M5x16L	
18		Pin	4	#5	
19	43061-51001	X-Axis Ball Screw and Nut	1		MP00966
20	43061-00013	Nut Seat	1		
21		Socket Screw	4	M8x30L	
22	43210-51005	Hard Stop Bumper	2		MPS-368
23		Socket Screw	2	M6x25L	
24	43061-51052	Telescoping Cover Bracket	4		
25		Washer	8	M8	
26		Socket Screw	8	M8x25L	
27	43061-51053	Telescoping Cover, Left	1		MPS0463
	43061-51051	Telescoping Cover, Right	1		MPS0464
28		Washer	10	M6	
29		Socket Screw	10	M6x25L	
		Servo Motor	1	MO-123,MO-125, or MO-127	

Y-Axis Assembly



Y-Axis Part List

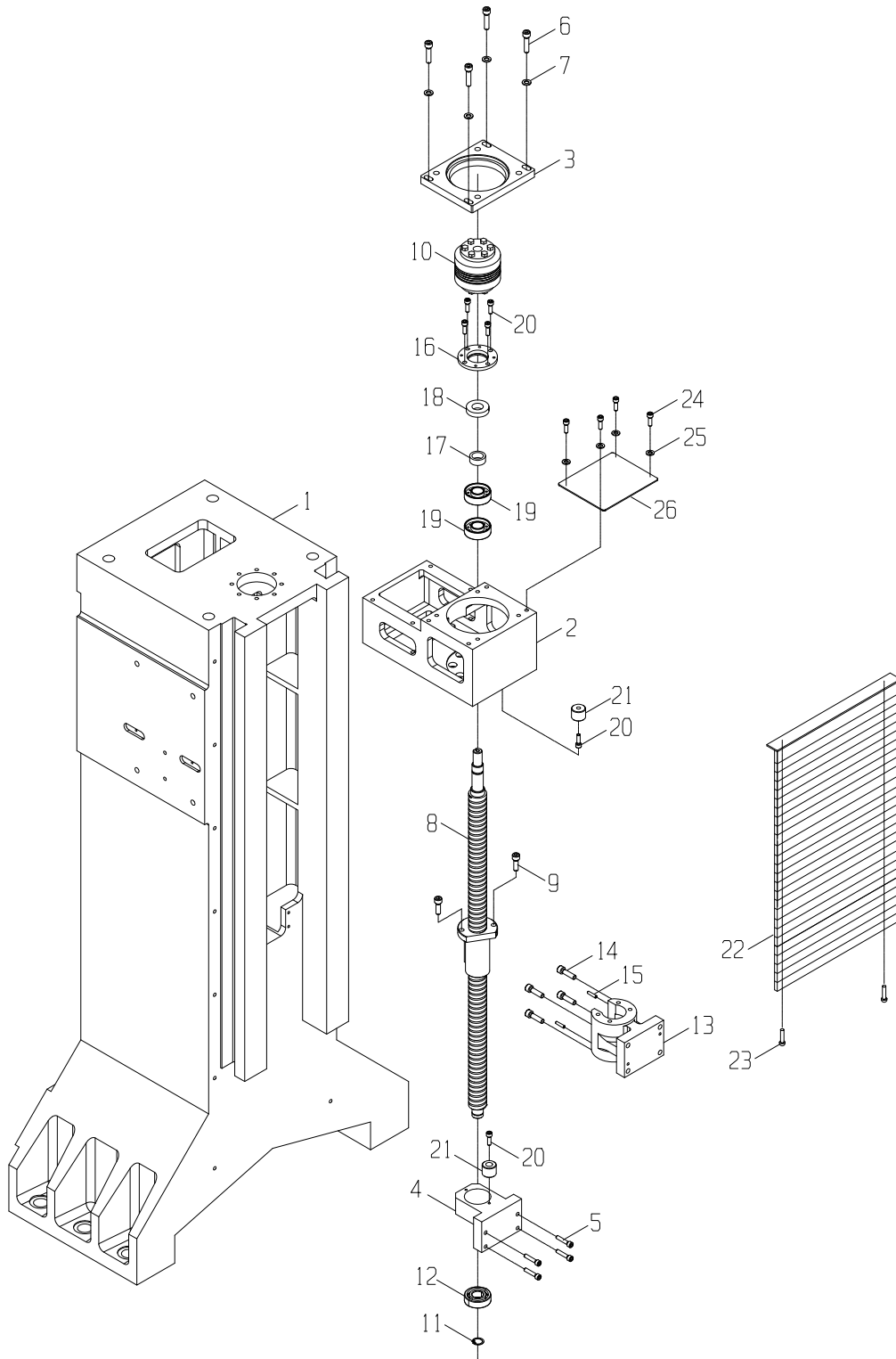
No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-40001	Base	1		
2	43061-52002	Y-Axis Motor Seat	1		
3		Socket Screw	6	M8x40L	
4		Dowel Pin	6	#5	
5	43061-51002	Motor Flange	1		
6		Washer	4	M8	
7		Socket Screw	4	M8x35L	
8	43061-51010	Coupling	1		MA00242
9	43061-51005	Bearing Seat Cover	1		MPS-701
10	43061-51004	Collar	1		MPS-702
11	43061-51003	Lock Nut	1		MP00970
12		Bearing - 20TAC	2		BG00102
13		Socket Screw	4	M6x20L	
14	43061-52001	Y-Axis Ball Screw and Nut	1	RW12C-RW15	MP00968
	43061-52501	Y-Axis Ball Screw and Nut	1	RW18 & RW20	MP00969
15		Socket Screw	7	M8x25L	
16	43061-52003	Bearing Seat	1		MPS-700
17	43061-52004	Cover	1		
18		Bearing	1	6204	BG00002
19		C-Snap Ring	1	20mm	
20		Socket Screw	4	M5x16L	
21	43061-00013	Nut Seat	1		
22		Socket Screw	4	M8x30L	
23	43210-51005	Hard Stop Bumper	2		MPS-368
24		Socket Screw	2	M6x25L	
25	43061-52005	Stop Bracket	1		
26	43061-52052	Telescoping Cover Bracket	2		
27		Socket Screw	4	M8x25L	
28		Washer	4	M8	
29	~~43061-52051~~	~~Telescoping Cover, front, RW12C-15~~	~~1~~	<del></del>	~~MPS0420~~
	43061-52554	Telescoping Cover, front, RW18-20	1		MPS0435
30		Washer	6	M6	
31		Socket Screw	6	M6x20L	
32	~~43061-52053~~	~~Telescoping Cover, rear~~	~~1~~	~~RW12C-RW15~~	~~MPS0434~~
	43061-52553	Telescoping Cover, rear	1	RW18-RW20	MPS0436
33		Washer	12	M6	
34		Socket Screw	12	M6x20L	
35		Socket Screw	2	M6x12L	
	Not shown	Servo Motor	1	MO-123, MO-125 or MO-127	
	Not shown	Way Cover Roller, Rear	..		MPS0583

Z-Axis Assembly

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1400 MILL LANE 952-442-1410
WACONIA, MN 55387 USA

Z-Axis Assembly Drawing

43061-53-A-01

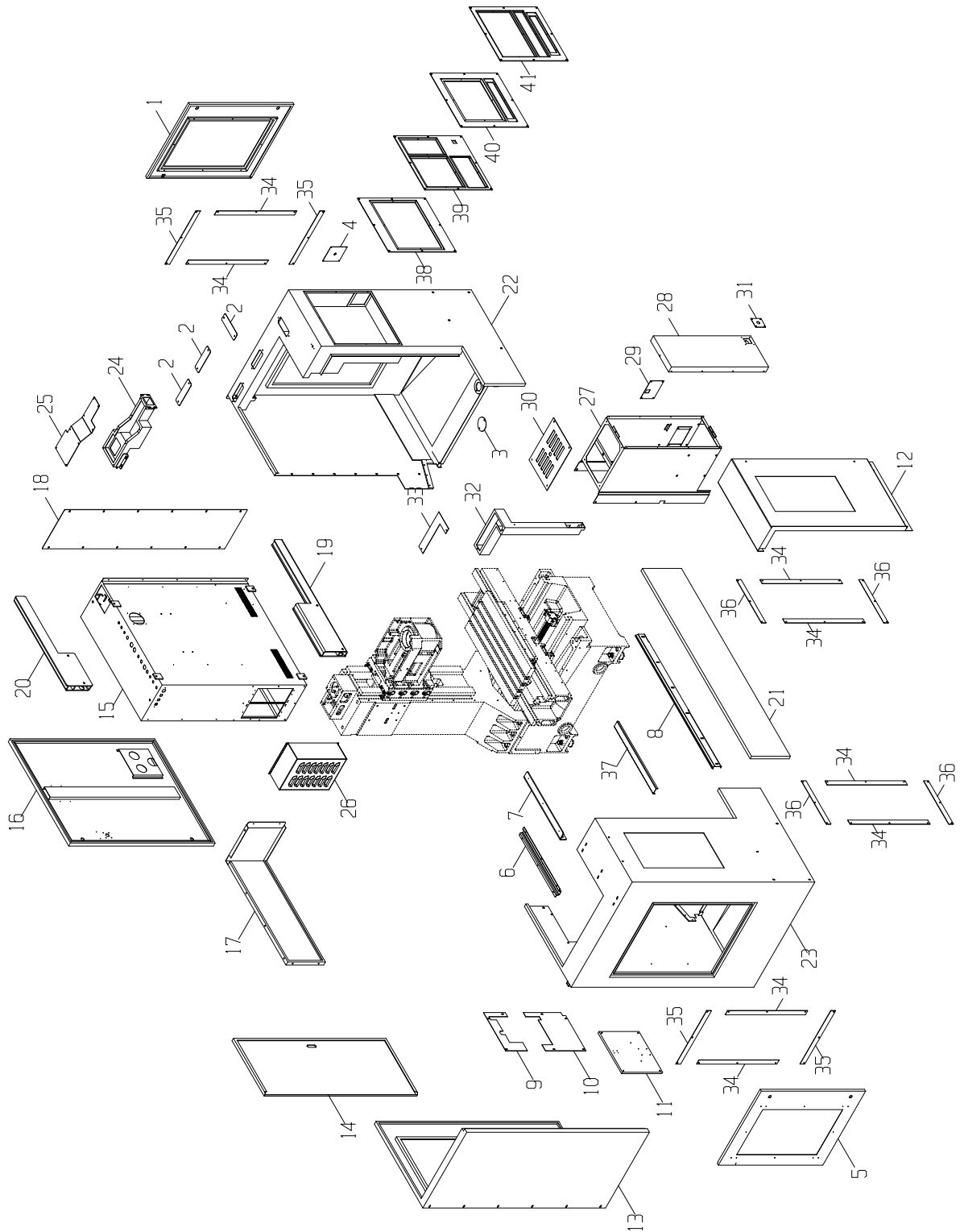


NO. 7

Z-Axis Part List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1	43061-10001	Column	1		
2	43061-53002	Z-Axis Motor Seat	1		
3	43061-51002	Motor Flange	1		
4	43061-53004	Bearing Seat	1		MPS-700
5		Socket Screw	4	M6x30L	
6		Socket Screw	4	M8x35L	
7		Washer	4	M8	
8	43061-52001	Z-Axis Ball Screw and Nut	1		9800-146
9		Socket Screw	3	M8x25L	
10	See "not shown" below	Coupling	1	N/A	Belted
11		C-Snap Ring	1	20	
12		Bearing	1	6204	BG00002
13	43061-00013	Nut Seat	1		MPS0601
14		Socket Screw	4	M8x30L	
15		Pin	2	#5	
16	43061-51005	Bearing Seat Cover	1		MPS-701
17	43061-51004	Collar	1		MPS-702
18	43061-51003	Lock Nut	1		MP00970
19		Bearing - 20TAC	2		BG00102
20		Socket Screw	6	M6x20L	
21	43061-51006	Hard Stop Bumper	2		MPS0368
22	E-BLDH-00051-01	Curtain Way Cover	1		MPS0386
23		Socket Screw	2	M6x16L	
24		Socket Screw	4	M8x20L	
25		Washer	4	M8	
26	43061-53015	Cover	1		
		Not Shown			
		Z Axis Servo Motor	1	Yaskawa	MO00126 or MO-128
		Z Axis Drive Belt	1		BT00086
		Z Axis Motor Pulley	1		PY00204
		Z Axis Motor Pulley Bushing	1		PY00212
		Z Axis Ballscrew Pulley	1		PY00205
		Z Ballscrew Pulley Bushing	1		PY00032

Enclosure Assembly



Enclosure Part List

No.	Parts No.	Description	Q'ty	Spec	Milltronics #
1		Right Side Door	1		MPS-490
2		Cover	3		
3		Cover	2		
4		Fixing Plate	1		
5		Left Side Door	1		
6		Seat	1		MPS0370
7		Guide Way Slide	1		MPS0359
8		Door Guide	1		MPS0378
9		ATC Plate	1		
10		ATC Plate	1		
11		Plate	1		
12		Door	1		
13		Rear Protection Enclosure	1		
14		Rear Protection Enclosure Window	1		
15		Electric Cabinet	1		
16		Electric Cabinet Door	1		
17		Electric Cabinet Cover	1		
18		Rear Protection Enclosure(Right)	1		
19		Plate	1		
20		Plate	1		
21		Plate	1		
22		Right Protection Enclosure	1		
23		Left Protection Enclosure	1		
24		Wire Slot	1		
25		Cover	1		
26		Drive Cover	1		
27		Spindle Cover	1		
28		Cover	1		
29		Cover	1		
30		Cover	1		
31		Cover Plate	1		
32		Spindle Cable Duct	1		
33		Cover	1		
34		Window Support Strip	8		
35		Window Support Strip	4		
36		Window Support Strip	4		
37		Foot Platform	1		
38		Operator Panel	1		
Other					
		Door Handle, Front	1		MPS0404 or MPS-375
		Window, front (15" x 28.25")	1		MPS0396
		Window, front (18" x 28.25")	1		MPS0397
		Window, side, (15" x 23")	1		MPS0398
		Window, side, (19" x 28.25")	1		MPS0399
		Skirt, Left Side	1		MP00347
		Skirt, Right Side	1		MP00348

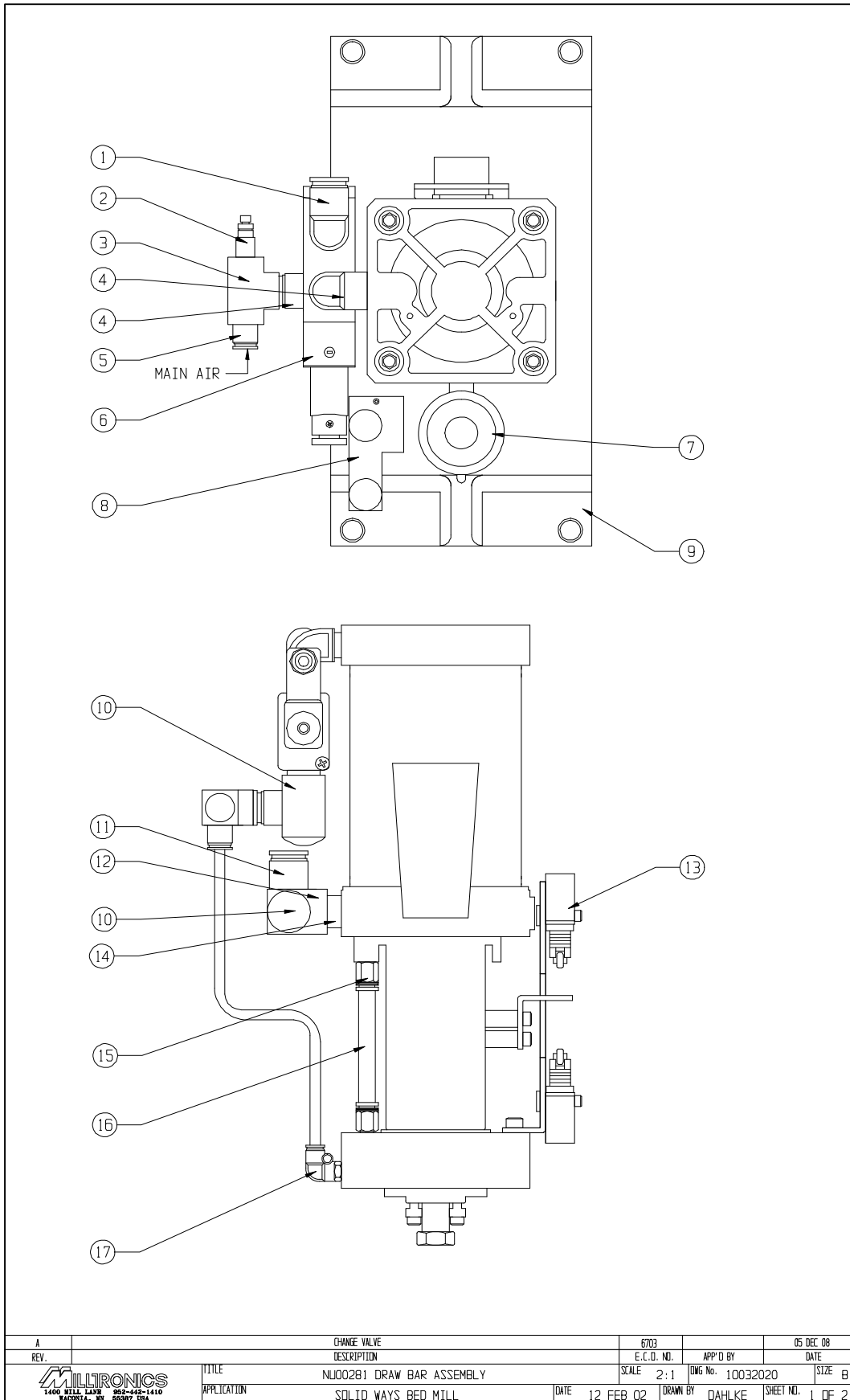
Coolant Pump MA-270

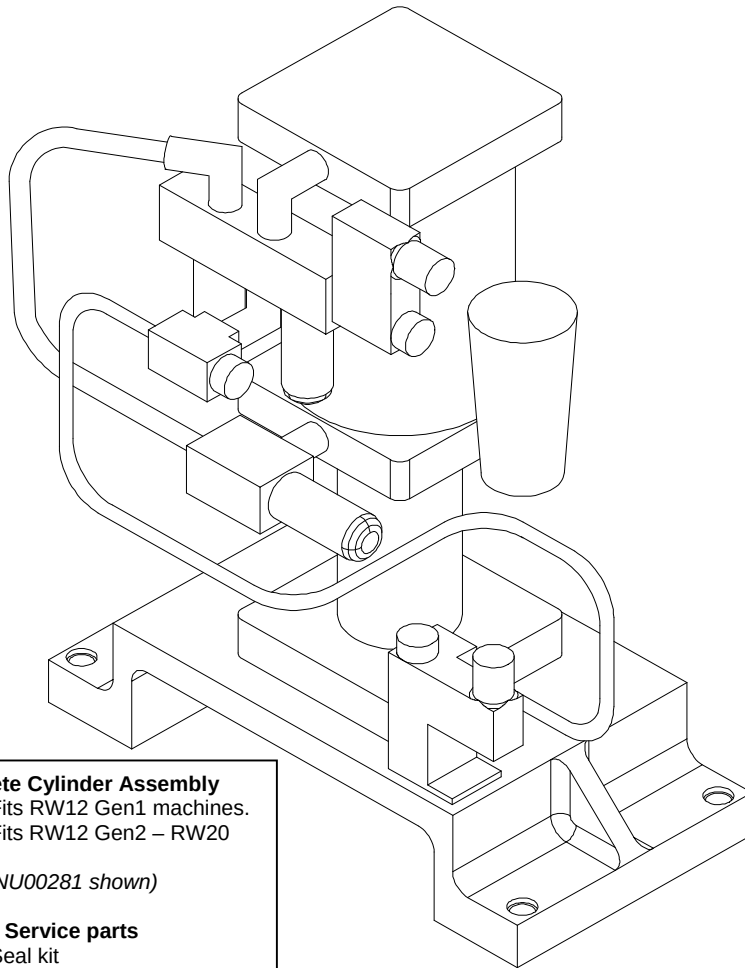
Door ledge
MPS-520 or
MPS-521

Door rollers
MPS-405(2pcs)



Power Drawbar Cylinder Assembly





Complete Cylinder Assembly

NU00281 Fits RW12 Gen1 machines.

NU00330 Fits RW12 Gen2 – RW20 E-H

(NU00281 shown)

Service parts

9800-207 Seal kit

NU00294 Oil cup

NU00275 Muffler for NU00330

NU00296 Muffler for NU00281

PARTS LIST

No.	QTY	PART No.	DESCRIPTION
1	1	NU00289	3/8NPT 90° SWIVEL 10mm TUBE
2	1	NU00290	3/8NPT 6mm TUBE - FLOW CONTROL
3	1	NU00291	3/8NPT FEMALE TEE
4	2	NU00292	3/8NPT MALE ELBOW
5	1	NU00070	3/8NPT MALE STRAIGHT 3/8 TUBE
6	1	NU00293	DRAWBAR SOLENOID
7	1	NU00294	OIL CUP
8	1	NU00433	AIR PURGE SOLENOID
9	1	-	BASE CASTING
10	3	NU00296	NOISE SUPPRESSOR (MUFFLER)
11	1	NU00297	3/8NPT MALE STRAIGHT 10mm TUBE
12	1	NU00298	CHECK VALVE
13	2	SW00052	LIMIT SWITCH
14	1	NU00299	3/8NPT BRASS NIPPLE
15	1	NU00300	1/8NPT MALE STRAIGHT 8mm TUBE
16	1	NU00301	8mm TUBING
17	1	NU00302	1/8NPT 90° SWIVEL 6mm TUBE

A	CHANGE VALVE				6703			05 DEC 08
REV.	DESCRIPTION				E.C.D. NO.	APP'D BY		DATE
 1400 MILL LANE RACONIA, WI 53097 USA 908-442-1410		TITLE			SCALE	DWG No.		SIZE
		APPLICATION			DATE	DRAWN BY		SHEET NO.
		NU00281 DRAW BAR ASSEMBLY			2:1	10032020		B
		SOLID WAYS BED MILL			12 FEB 02	DAHLKE		2 OF 2

Miscellaneous Parts Around The Machine

Main Power Disconnect

Main disconnect switch (includes handle)
 SW00199

Main disconnect switch handle only
 SW00288



Worklight

26" light assembly MA00292

Tube only (cut to length) MPS0380

Bulb only MA00293



ATC In/Out Solenoid

Assembly NU00293

Muffler NU00375



Oiler Unit

Complete oiler unit MA00219

Reservoir only MA00392

Replacement Fuse FU00132



Multi-Colored Cycle Lamp

Assembly MA00411, Replacement Bulb -
 N/A, permanent LED.

Single-Colored (blue) Cycle Lamp

Assembly MA00281, Replacement bulb
 – MA00282



FRL Assy NU-480
 FRL sight cap
 NU-566

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 (DRUM)	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, ASTM D 665, A & B	PASS
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, SUNCOD 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)	-
CMCO, P-SPEC, APPROVAL	P-47
BIJUR PT 37-1 APPROVAL	PASS
OKUMA APPROVAL	PASS

CLEAN AND FILL AIR FILTER / REGULATOR / DILER 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
2	APPLICATION SOLID WAYS BED MILL	DATE 20 SEP 00	DRAWN BY DAHLKE	SHEET NO. 1 OF 1

Retention Knob Chart

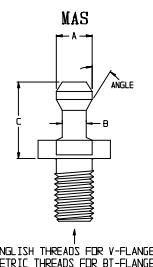
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITHOUT CTS

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILL/TRONICS		MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C		60mm SPINDLE	70mm SPINDLE						
4833	.59	.39	1.27	60°	RH19, RH20, RH30, RH33, RH35, RH15, RH20E, BR50, BR60, BR80 VM15, VM16, VM20, VM22, VM25, VM30, VM15, VM16, VM20, VM25, VM35, VM130, MM18	RH20, RH30, RH33, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM25, VM35, VM130, TT24, TT40, MM20, MM35	RB4E-0002	RK31114A	PT-532-60	C40-6000		

NAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
				60mm SPINDLE	70mm SPINDLE				
					RH19, RH20, RH30, RH33, RH35, RW15, RW20E, BR50, BR60, BR80 VM15, VM20, VM22, VM25, VM25, VM30, VM16, VM20, VM25, VM30, MM18	RH20, RH30, RH33, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM25, VM30, TT24, TT40, HMC20, HMC35			
4834	50	39	1.38	60°		RB4M-0002	RK31113A	PT-444-60	840-6000



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

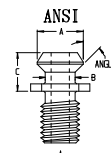
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITH CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			MILL/TRONICS MACHINE		C/MDAW PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	60mm SPINDLE	70mm SPINDLE				
4836	.75	.49	.64	45°	RC20, RH30, RH33, RH95, BR50, BR60, BR80, WM16, VM20, VM22, VM25, VM30, VM16, VM40, VM22, VM30, T24, VM20, VM20, VM	RC4E-0001	RK11122	PT-475C	C40-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILL/TRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C		60mm SPINDLE	70mm SPINDLE				
4837	74	49	.75	45°	SELECTION NOT AVAILABLE	RH20, RH30, RH32, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VMC20, VM25, VM30, TT24, TT40, HMC20, HMC35	RS4W-0115	RK11126A	N/A	B40-FADAL



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

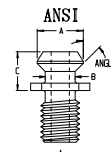
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES WITH OR WITHOUT CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILL/TRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
N/A	1.14	1.83	1.01	45°	VM25XP, VM30XP, RM35XP, HMC70	RCBE-0001	DWG RK11144	N/A	C50-ST0

ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER

ASSEMBLY SECTION	DIMENSIONS				MILL/TRONICS MACHINE	COMMAND PART NO.	KENNA/METAL PART NO.	VALENITE PART NO.	LYNDEX PART NO.
	A	B	C	ANGLE					
N/A	1.14	1.83	1.01	45°	VM25XP, VM30XP, RH35XP, HMC70	RSEM-0105	DWG RK11144A	N/A	N/A



ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR RT-FLANGE

NOTE: OPTIONAL RETENTION KNOBS FOR 40 TAPER SPINDLES

NAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILL/TRONICS	MACHINE	COMMAND PART No.	KERN/METAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
4831	.59	.39	1.27	45°	OPTION NOT AVAILABLE	R420, RH30, RH33, RH35, BR50, BR60, BR60, VM16, VM20, VM22, VM25, VM30, VMC16, VMC20, VMC30, VM30, TT24, VT40, VM25	R84E-0001	RK31114	PT-532-45	C40-4500

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

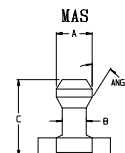
ASSEMBLY SECTION	DIMENSIONS			MILL/TRONICS MACHINE		COMMAND PART NO.	KENNAMETAL PART NO.	VALENITE PART NO.	LYNDEX PART NO.
	A	B	C	ANGLE					
					60mm SPINDLE	70mm SPINDLE			
4832	59.39	1.38	45°	SELECTION NOT AVAILABLE	R20, RH30, RH33, RH35, BR50, BR60, BR60, VW16, VW20, VW22, VW25, VW30, VWC16, VWC20, VWC25, VWC30, TT24, TT40, TT45	RB4M-0001	RK31113	PT-444-45	B40-4500

DIN 69872 RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			MILL/TRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.	
	A	B	C	ANGLE						
					60mm SPINDLE	70mm SPINDLE				
4838	.75	5.1	1.02	75°	SELECTION AVAILABLE	R120, RH30, RH33, RH35, BR50, BR60, BR80, VH16, VM20, VM22, VM25, VM30, VM16, VM20, VM22, VM25, VM30, T124, T140, VM20, VM35	RS4E-0114-C	DWG RK71125	N/A	C40-1500

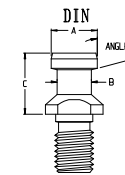
DIN 69872 RETENTION KNOBS STYLE DIN-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			MILL/TRONICS MACHINE		COMMAND PART NO.	KENNAMETAL PART NO.	VALENITE PART NO.	LYNDEX PART NO.	
	A	B	C	60mm SPINDLE	70mm SPINDLE					
4839	.75	1.5	.02	75"	SELECTION NOT AVAILABLE	R-20, RH30, RH33, RH35, BR50, BR50, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM10, VM20, VM25, VM30, TT24, TT40, HMC20, HMC35	854M-0114-C	DWG RK71124	N/A	B40-1500



A diagram showing a coiled spring hanging from a horizontal line representing a support. The spring is oriented vertically and is in its natural, unextended state.

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



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

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 FROM ECO DATE REV. G ON THIS DRAWING

G	ADD MM18 AND MOVE HMC70 FRAMES TO 50 TAPER		6193	N.M.	10/06	
F	ADD VMC, TT, AND HMC FRAMES		6175	N.M.	09/06	
E	UPDATE CHART		5992	M.N.	08/05	
D	ADD RH/RW12 & RH19		5146	N.M.	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	
 MILTRONICS 1400 HILL LANE 516-342-1410 FARMINGDALE, NY 11735-1410 516-342-1410			TITLE RETENTION KNOB CHART APPLICATION GENERAL PRODUCTS			SCALE 1:75:1 DATE 30 APR 99 DRAWN BY DAH-KE SHEET NO. 1 OF 8
			DWG NO. 6-11-018-054			

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)

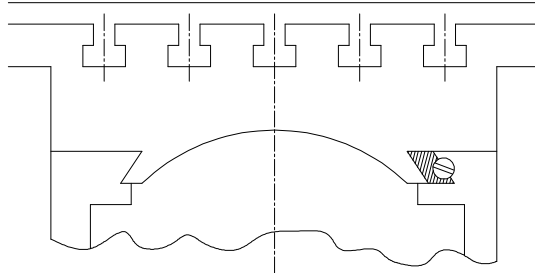


Fig. 1
Table-saddle gib

Adjustment of Saddle Gib

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

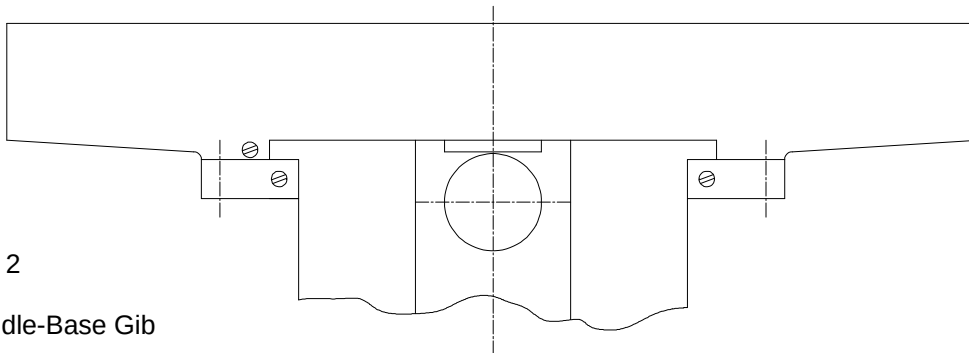


Fig. 2
Saddle-Base Gib

Adjustment of head Bolster gib.

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

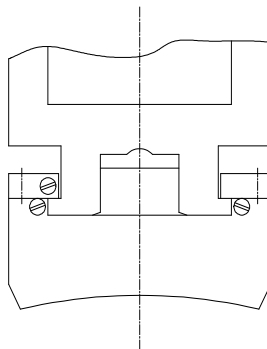


Fig. 3

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.

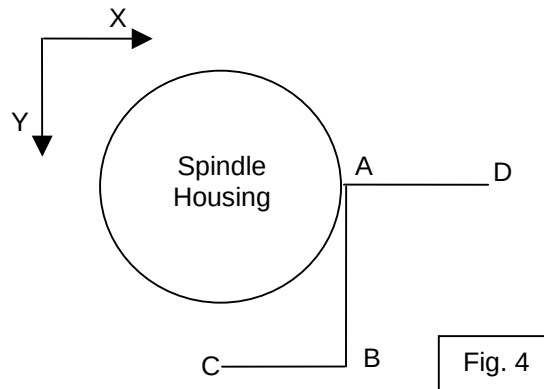
Press the jog key for the desired direction for **A** to move towards **D** (see Fig. 4) and then back to **A**, the indicator may have moved, adjust it back to zero and repeat this step until it stays at zero.

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.)

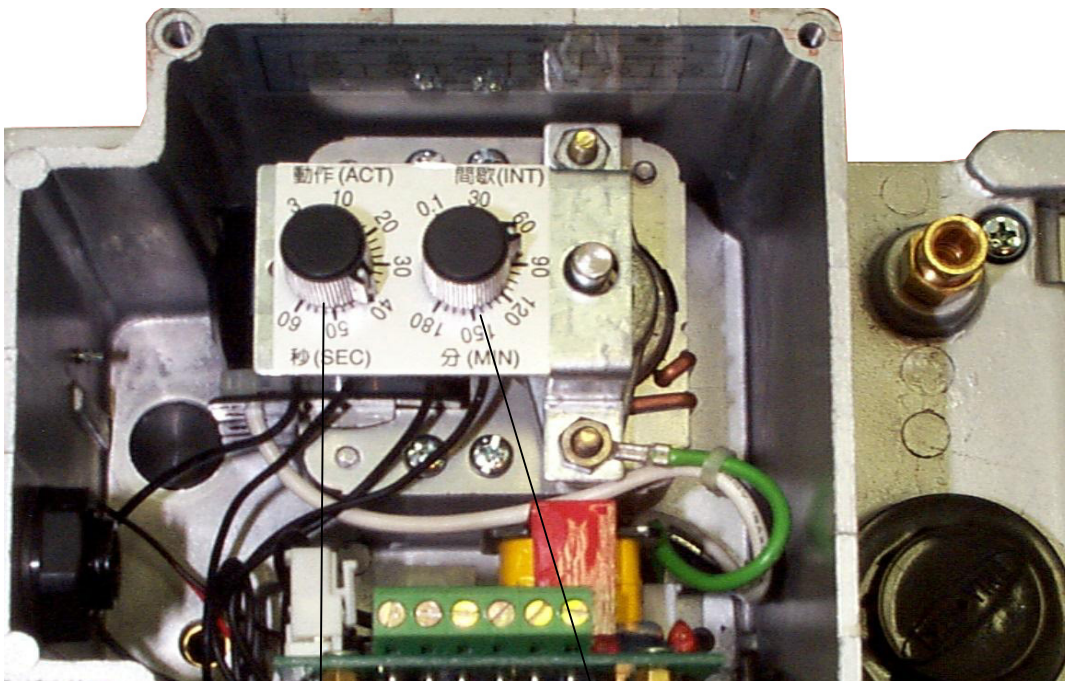


Procedure to adjust CESD (MA-219) Lubrication Unit

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.



Spindle Start up Procedure (Excludes MB models)

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.

