



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

TT80A Mechanical

12-9-2010
Rev 2

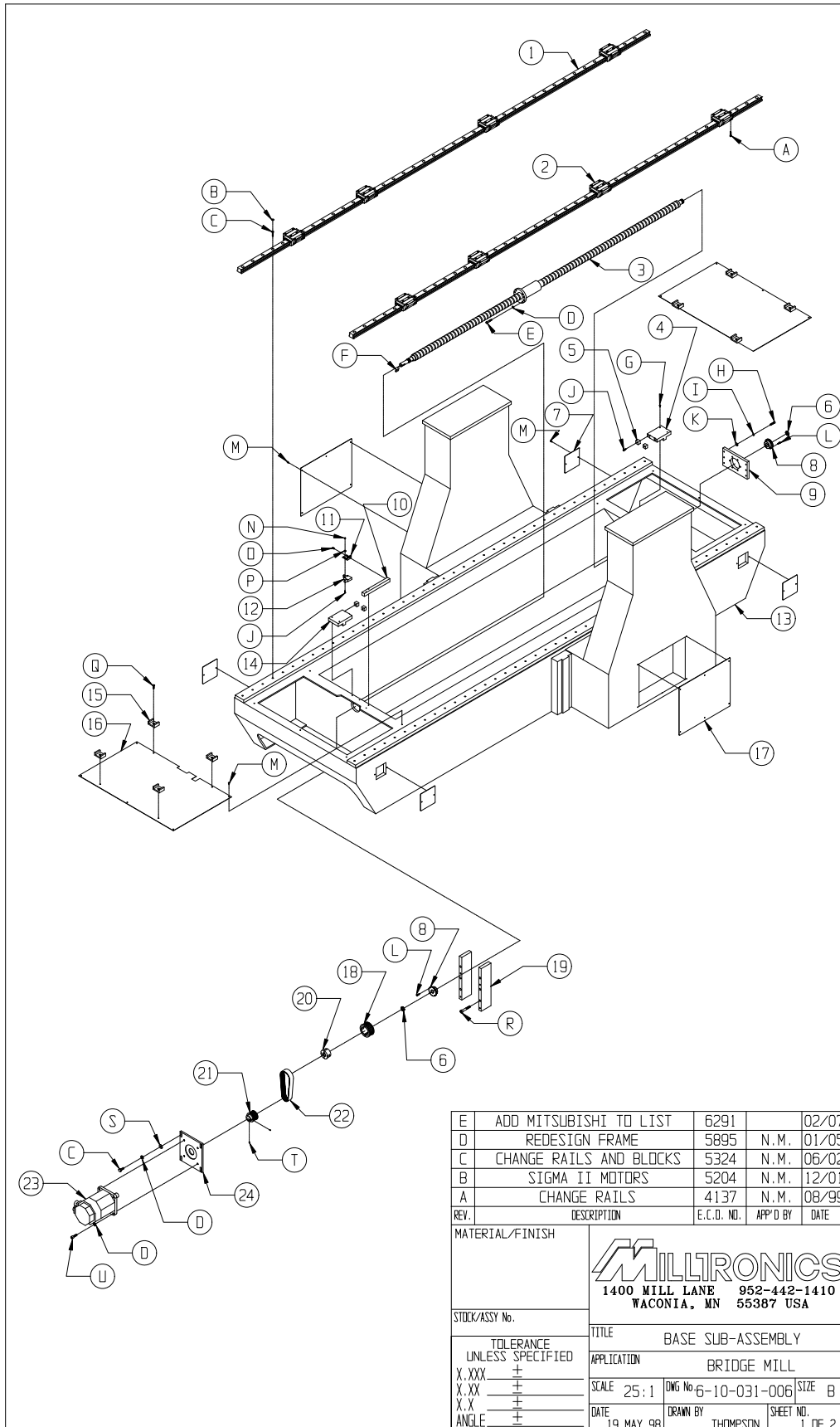
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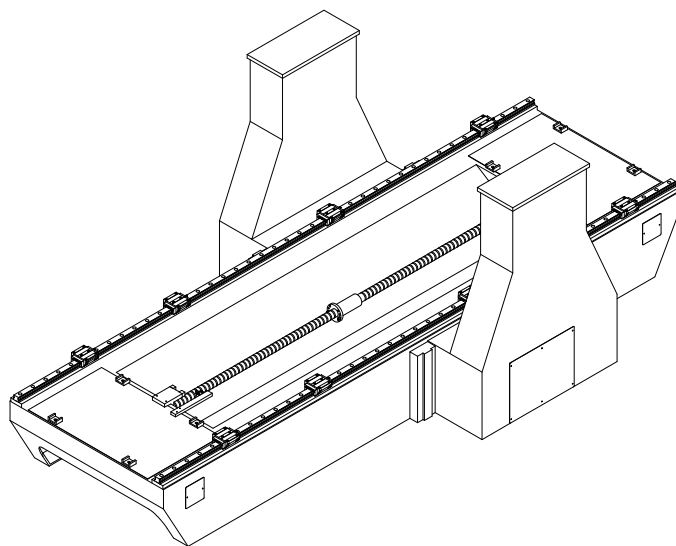
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Manual Discrepancy Sheet

1. On pages 3 and 7 quantities of some items have been modified from the original drawing.

Base Assembly





PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	2	SEE TABLE	X-AXIS RAILS
2	14	SEE TABLE	45 mm RAIL BLOCK
3	2	SEE TABLE	X-AXIS BALL SCREW
4	2	SEE TABLE	X-AXIS HARD STOP BLOCK
5	8	MP-718	PDM HARD STOP BUMPER
6	4	SEE TABLE	BEARING LOCK NUT
7	4		SMALL SIDE COVER
8	4	SEE TABLE	BEARING CUP ASSEMBLY
9	2		X-AXIS RADIAL SUPPORT PLATE
10	2	BR-154	X-AXIS SWITCH MOUNTING BAR
11	2	MP1-387	X-AXIS SWITCH BRACKET
12	2	SW-193	SWITCH
13	1		MACHINE BASE
14	2	SEE TABLE	X-AXIS HARD STOP BLOCK
15	8		X-AXIS COVER BAR SUPPORT
16	2		MOTOR ASSEMBLY COVER
17	1		COLUMN ACCESS COVER
18	2	PY-231	X-AXIS PULLEY
19	4		X-AXIS MOTOR SPACER PLATE
20	2	PY-232	X-AXIS BUSHING
21	2	SEE TABLE	MOTOR PULLEY
22	2	BT-102	720-8M-30 BELT
23	2	SEE TABLE	AXIS MOTOR
24	2		X-AXIS MOTOR PLATE

HARDWARE LIST

No.	QTY	DESCRIPTION
A	32	3/8-16 x 1 1/2 SHCS
B	82	RAIL PLUG (100")
	134	RAIL PLUG (150")
C	86	1/2-13 x 1 1/2 SHCS (100")
	138	1/2-13 x 1 1/2 SHCS (150")
D	16	1/2 LOCK WASHER
E	8	1/2-13 x 1 3/4 SHCS
F	1	10mm x 10mm x 30mm KEY
G	4	5/16-18 x 1 1/2 SHCS
H	6	3/8-16 x 1 1/4 SHCS
I	6	3/8 LOCK WASHER
J	6	M5-.8 x 20mm SHCS
K	6	3/8 FLAT WASHER
L	12	5/16-18 x 2 SHCS
M	30	1/4-20 x 1/2 BHCS
N	2	M5-.8 HEX NUT
O	2	M5-.8 x 12mm BHCS
P	2	M5 FLAT WASHER
Q	8	1/4-20 x 3/4 FHCS
R	4	1/2-13 x 3 3/4 SHCS
S	4	1/2 FLAT WASHER
T	2	1/4-20 x 1/4 SHSS
U	4	1/2-13 x 1 1/4 SHCS

MOTOR & PULLEY TABLE

No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
21	PY-233	PY-233	PY-240	PY-233
23	MD-144 (2Kw)	30Nm A06B-0253-B200	18Nm 1FK7100-5AF71	MD-185 (3.5Kw)
	MD-146 (3Kw)		27Nm 1FK7101-5AF71	MD-187 (5Kw)
	MD-129 (4.4Kw)			

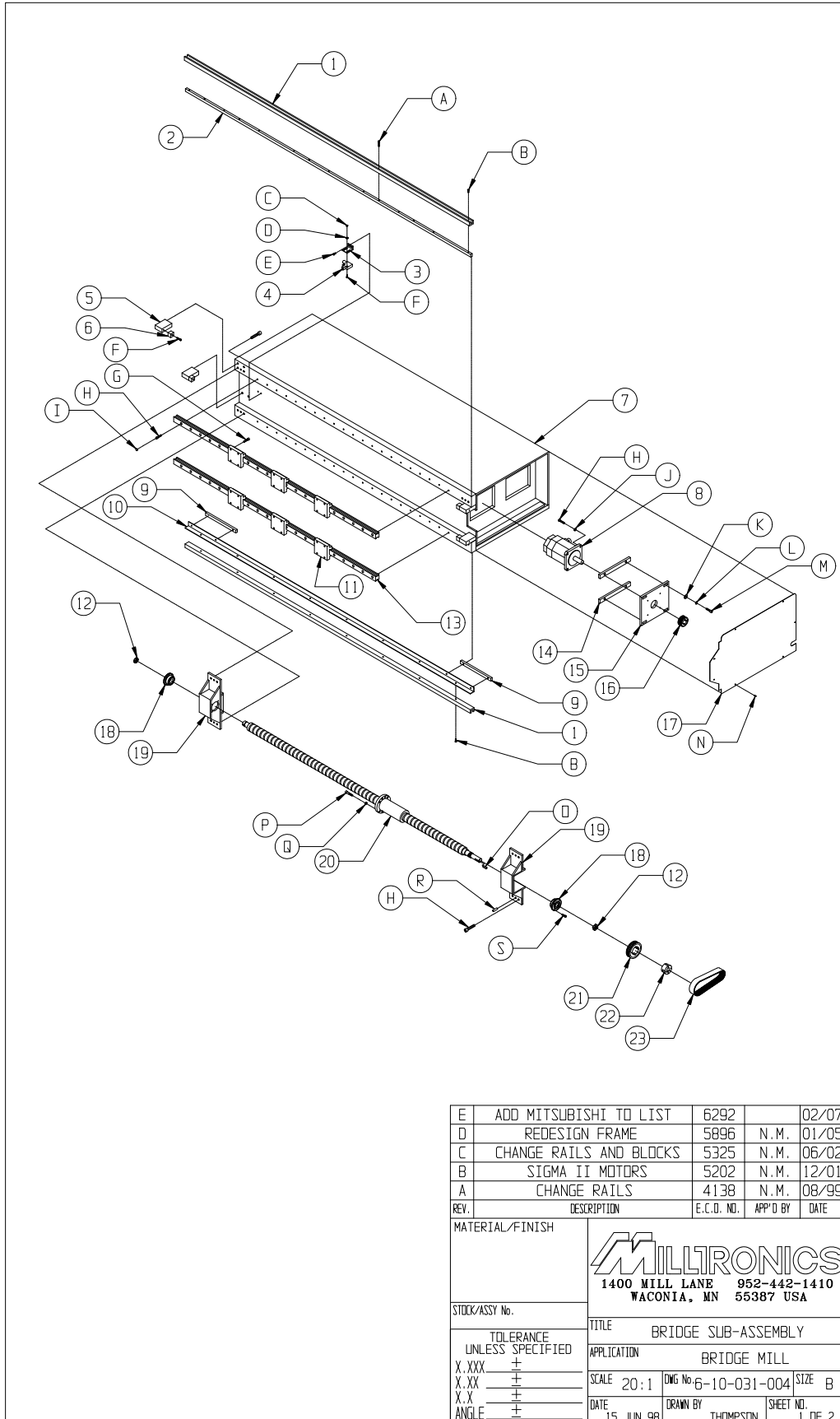
TRAVEL TABLE

No.	DESCRIPTION	
1	BALL RAIL	MPB-63
	ROLLER RAIL	N/A
2	BALL RAIL BLOCK	MP-728
	ROLLER RAIL BLOCK	N/A
3	BALL SCREW	MPB-66
4	HARD STOP BLOCK	BR-157
6	BEARING LOCKNUT	MPB-56
8	BEARING CUP ASSEMBLY	BG-95
14	HARD STOP BLOCK	BR-156

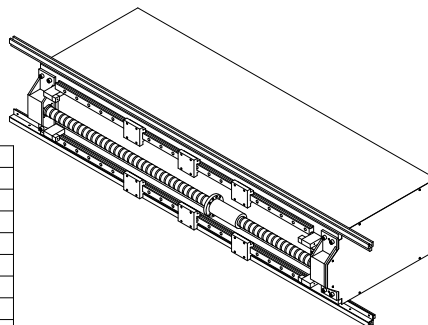
* 12 required

E	ADD MITSUBISHI TO LIST	6291		02/07
D	REDESIGN FRAME	5895	N.M.	01/05
C	CHANGE RAILS AND BLOCKS	5324	N.M.	06/02
B	SIGMA II MOTORS	5204	N.M.	12/01
A	CHANGE RAILS	4137	N.M.	08/99
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 BASE SUB-ASSEMBLY		
TOLERANCE UNLESS SPECIFIED X.XXX ± X.XX ± X.X ± ANGLE ±		APPLICATION BRIDGE MILL		
		SCALE 25:1 DWG No 6-10-031-006		SIZE B
		DATE 19 MAY 98		DRAWN BY THOMPSON
		SHEET NO. 2		OF 2

Bridge Assembly



E	ADD MITSUBISHI TO LIST	6292		02/07
D	REDESIGN FRAME	5896	N.M.	01/05
C	CHANGE RAILS AND BLOCKS	5325	N.M.	06/02
B	SIGMA II MOTORS	5202	N.M.	12/01
A	CHANGE RAILS	4138	N.M.	08/99
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH STOCK/ASSY No. TOLERANCE UNLESS SPECIFIED X.XXX ± X.XX ± X.X ± ANGLE ±  1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA				
TITLE APPLICATION SCALE DATE BRIDGE SUB-ASSEMBLY BRIDGE MILL 20:1 15 JUN 98 DWG No 6-10-031-004 DRAWN BY THOMPSON SHEET NO. 1 OF 2 SIZE B 1 OF 2				



PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	2		Y WAY COVER RIDER
2	1		Y WAY COVER RIDER SPACER BAR
3	1	MP1-387	Y SWITCH BRACKET
4	1	SW-193	LIMIT SWITCH
5	4		HARDSTOP BLOCK
6	4	MP-718	PDM HARD STOP BUMPER
7	1		BRIDGE ASSEMBLY
8	1	SEE TABLE	AXIS MOTOR
9	2		Y WAY COVER RIDER SPACER - LOWER
10	1		Y WAY COVER RIDER BRACKET - LOWER
11	6	SEE TABLE	45mm RAIL BLOCK
12	2	MP-439	BEARING LOCKNUT
13	2	SEE TABLE	Y-AXIS RAIL
14	2		Y MOTOR PLATE SPACER
15	1		Y MOTOR PLATE
16	1	SEE TABLE	MOTOR PULLEY
17	1		Y BELT & PULLEY COVER
18	2	BG-96	BALL SCREW SUPPORT
19	2		Y BEARING HOUSING
20	1	SEE TABLE	Y BALL SCREW
21	1	PY-234	TL48-8m-30 PULLEY 2012
22	1	PY-235	19mm I.D. 2012 BUSHING
23	1	BT-102	720-8M-30

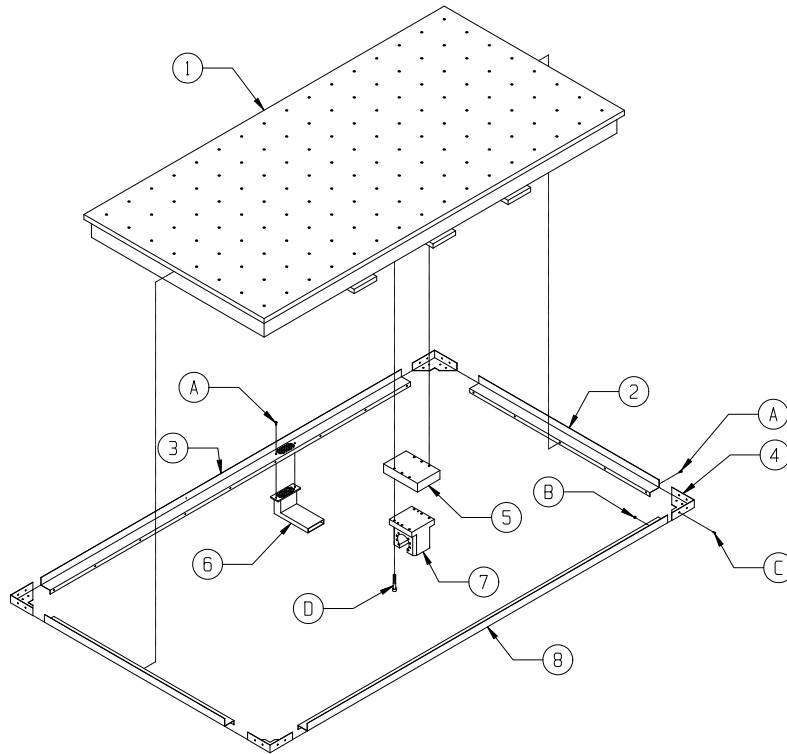
MOTOR & PULLEY TABLE				
No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
8	MD-144 (2kw)	22Nm A06B-0247-B200	18Nm 1FK7100-SAF71	MD-185 (3.5Kw)
	MD-146 (3Kw)			MD-187 (5Kw)
	MD-129 (4.4Kw)			
16	PY-233	PY-233	PY-240	PY-233

RAIL, BLOCK AND BALL SCREW TABLE				
ITEM	DESCRIPTION	50"	60"	80"
11	BALL RAIL BLOCK	MP-728	MP-728	MP-728
	ROLLER RAIL BLOCK	MP-819	MP-819	MP-819
13	BALL RAIL	MPB-59	MPB-60	MPB-61
	ROLLER RAIL	MPB-72	MPB-73	MPB-74
20	BALL SCREW	MPB-67	MPB-68	MPB-69

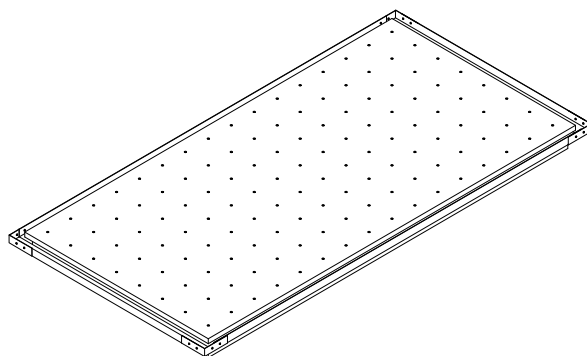
HARDWARE LIST		
No.	QTY	DESCRIPTION
A	4	1/4-20 x 3/4 SHCS
B	18	1/4-20 x 1 1/2 FHCS
C	2	M5-.8 HEX NUT
D	2	M5 FLAT WASHER
E	2	M4-.7 x 12mm BHCS
F	6	M5-.8 x 16mm SHCS
G	28	3/8-16 x 1 1/4 SHCS
H	38	1/2-13 x 1 1/2 SHCS (50") MPB-59
	44	1/2-13 x 1 1/2 SHCS (60") MPB-60
	52	1/2-13 x 1 1/2 SHCS (80") MPB-61
	70	1/2-13 x 1 1/2 SHCS (50") MPB-72
	82	1/2-13 x 1 1/2 SHCS (60") MPB-73
	98	1/2-13 x 1 1/2 SHCS (80") MPB-74
I	34	RAIL PLUG (50") MPB-59
	40	RAIL PLUG (60") MPB-60
	48	RAIL PLUG (80") MPB-61
	66	RAIL PLUG (50") MPB-72
	78	RAIL PLUG (60") MPB-73
	94	RAIL PLUG (80") MPB-74
J	4	1/2 LOCK WASHER
K	4	3/8 FLAT WASHER
L	4	3/8 LOCK WASHER
M	4	3/8-16 x 1 1/2 SHCS
N	7	10-32 x 3/8 BHCS
O	1	5mm x 5mm x 20mm KEY
P	8	5/16-18 x 1 1/4 SHCS
Q	8	5/16 LOCK WASHER
R	4	3/8 x 1 1/2 DOWEL PIN
S	8	1/4-20 x 1 SHCS

E	ADD MITSUBISHI TO LIST	6292		02/07
D	REDESIGN FRAME	5896	N.M.	01/05
C	CHANGE RAILS AND BLOCKS	5325	N.M.	06/02
B	SIGMA II MOTORS	5202	N.M.	12/01
A	CHANGE RAILS	4138	N.M.	08/99
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.		TITLE BRIDGE SUB-ASSEMBLY		
TOLERANCE UNLESS SPECIFIED		APPLICATION BRIDGE MILL		
X.XXX ±		SCALE 20:1		
X.XX ±		DWG No 6-10-031-004		
X.X ±		SIZE B		
ANGLE ±		DATE 15 JUN 98		
		DRAWN BY THOMPSON		
		SHEET NO. 2 OF 2		

Table Assembly



A	REDESIGN FRAME	5897		02/05
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 TABLE SUB-ASSEMBLY		
X.XXX ±		APPLICATION BRIDGE MILL		
X.XX ±		SCALE 20:1 DWG No 6-10-031-005 SIZE B		
X.X ±		DATE 05 JUN 98 DRAWN BY THOMPSON SHEET NO. 1 OF 2		
ANGLE ±				



PARTS LIST

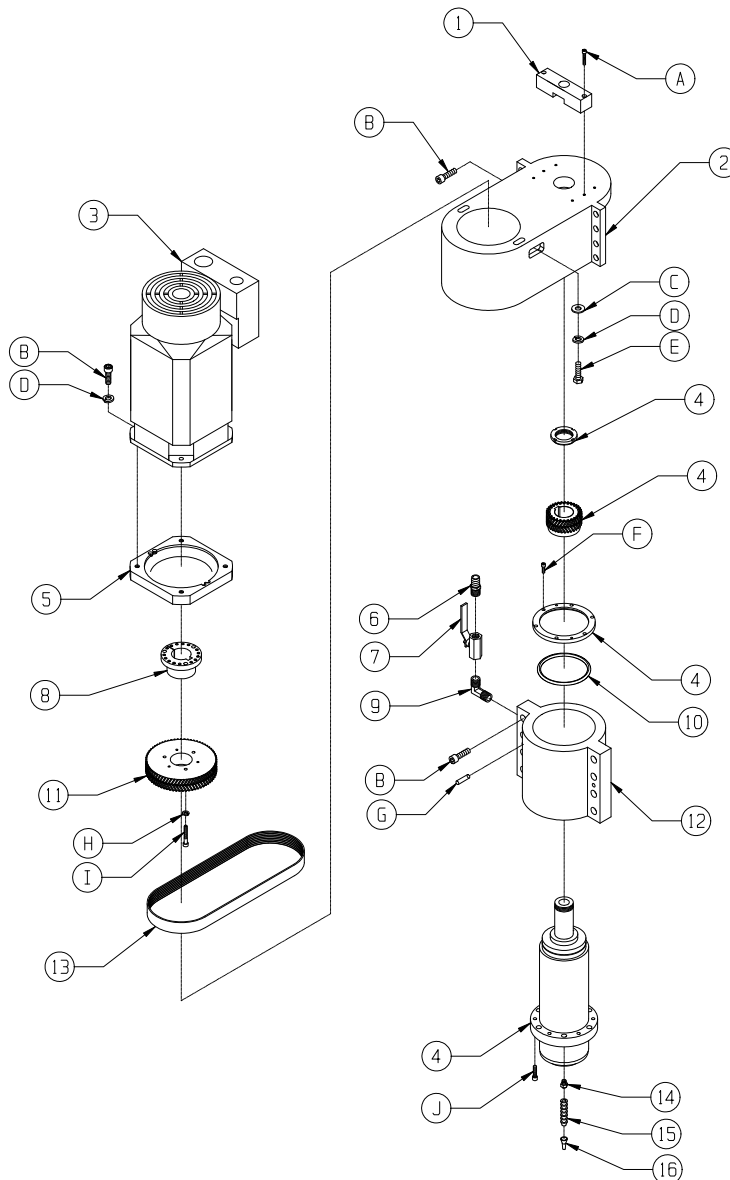
No.	QTY	STOCK No.	DESCRIPTION
1	2		MACHINE TABLE
2	2		TABLE TROUGH - END
3	1		TABLE TROUGH - WITH DRAIN
4	4		TABLE TROUGH - CORNER
5	1		X-AXIS CARRIER SPACER
6	1		TABLE DRAIN CHUTE
7	2		X-AXIS CARRIER - MACHINED
8	1		TABLE TROUGH - WITHOUT DRAIN

HARDWARE LIST

No.	QTY	DESCRIPTION
A	47	1/4-20 x 3/8 BHCS
B	32	10-32 NUT
C	32	10-32 3/8 BHCS
D	6	3/8-16 x 4 SHCS

A	REDESIGN FRAME	5897	02/05		
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			
TOLERANCE UNLESS SPECIFIED X .XXX ± X .XX ± X .X ± ANGLE ±		TABLE SUB-ASSEMBLY			
		APPLICATION			
		BRIDGE MILL			
		SCALE 20:1	DWG No 6-10-031-005	SIZE B	
		DATE 05 JUN 98	DRAWN BY THOMPSON	SHEET NO. 2	OF 2

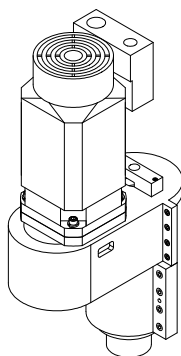
Head Assembly



H	REMOVE DRAWBAR CYLINDER	6014		11/05
G	ADD O-RING	5894	N.M.	01/05
F	NEW DRAW BAR AIR CYLINDER	5438	N.M.	01/03
E	ADD MD-132 MOTOR	5412	N.M.	10/02
D	CHANGE SPINDLE ASSEMBLY	5245	N.M.	02/02
C	CHANGE SPINDLE	5186	N.M.	11/01
B	CHANGE SPINDLE & MOTOR	5089	N.M.	05/01
A	CHANGE DRAWBAR CYLINDER	3869	N.M.	3/99
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.			
TOLERANCE UNLESS SPECIFIED	TITLE HEAD SUB-ASSEMBLY		
X.XXX ±	APPLICATION BRIDGE MILL		
X.XX ±	SCALE 10:1 DWG No 6-10-031-013 SIZE B		
X.X ±	DATE 04 JUN 98 DRAWN BY THOMPSON SHEET NO. 1 OF 2		
ANGLE ±			

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HARDWARE LIST		
No.	QTY	DESCRIPTION
A	2	1/4-20 x 1 1/2 SHCS
B	16	1/2-13 x 1 1/2 SHCS
C	2	1/2 FLAT WASHER
D	6	1/2 LOCK WASHER
E	2	1/2-13 x 1 1/2 HHCS
F	6	1/4-20 x 3/4 SHCS
G	2	3/8 DOWEL PIN
H	3	5/16 LOCK WASHER
I	3	5/16-18 x 2 SHCS
J	6	5/16-18 x 1 1/4 SHCS

O-RING	
STOCK No.	DESCRIPTION
WX-182	60mm OPTION
WX-270	70mm OPTION

SPINDLE MOTOR PULLEYS	
STOCK No.	DESCRIPTION
PY-188	12,000 RPM & 15,000 RPM
PY-192	6,000 RPM & 8,000 RPM

PARTS LIST		
No.	QTY	STOCK No. DESCRIPTION
1	1	DRAW BAR EXT. TUBE GUIDE
2	1	MACHINE HEAD
3	1	SEE TABLE SPINDLE MOTOR
4	1	SEE TABLE SPINDLE ASSEMBLY
5	1	SEE TABLE MOTOR PLATE
6	1	NU-66 3/4 BARB 1/2 NPT FITTING
7	1	NU-64 BRASS BALL VALVE
8	1	PY-97 PULLEY BUSHING
9	1	NU-140 1/2 NPT MALE ELBOW
10	1	SEE TABLE O-RING
11	1	SEE TABLE SPINDLE MOTOR PULLEYS
12	1	SPINDLE CARTRIDGE HOUSING
13	1	BT-62 W896 SPINDLE BELT
14	6	NU-111 1/4 LOCKLINK 1/8 NPT
15	24	MA-22 LOCKLINK HOSE
16	6	MA-216 1/4 NOZZLE

SPINDLE MOTORS	
STOCK No.	DESCRIPTION
MD-121	18kw DUAL WINDING SPINDLE MOTOR - YASKAWA
MD-150	11kw SINGLE WINDING SPINDLE MOTOR - YASKAWA
MD-132	11kw DUAL WINDING SPINDLE MOTOR - YASKAWA

SPINDLE ASSEMBLY SELECTION								
KW \ RPM	60mm SPINDLE				70mm SPINDLE			
	6000	8000	12000	15000	6000	8000	12000	15000
11kw SNGL-WINDING	9900	9900-1	9899-4	9899-5	9899	9899-1	9899-2	9899-3
11kw DUAL-WINDING	9900	9900-1	9899-4	9899-5	9899	9899-1	9899-2	9899-3
18kw DUAL-WINDING	9900	9900-1	9899-4	9899-5	9899	9899-1	9899-2	9899-3

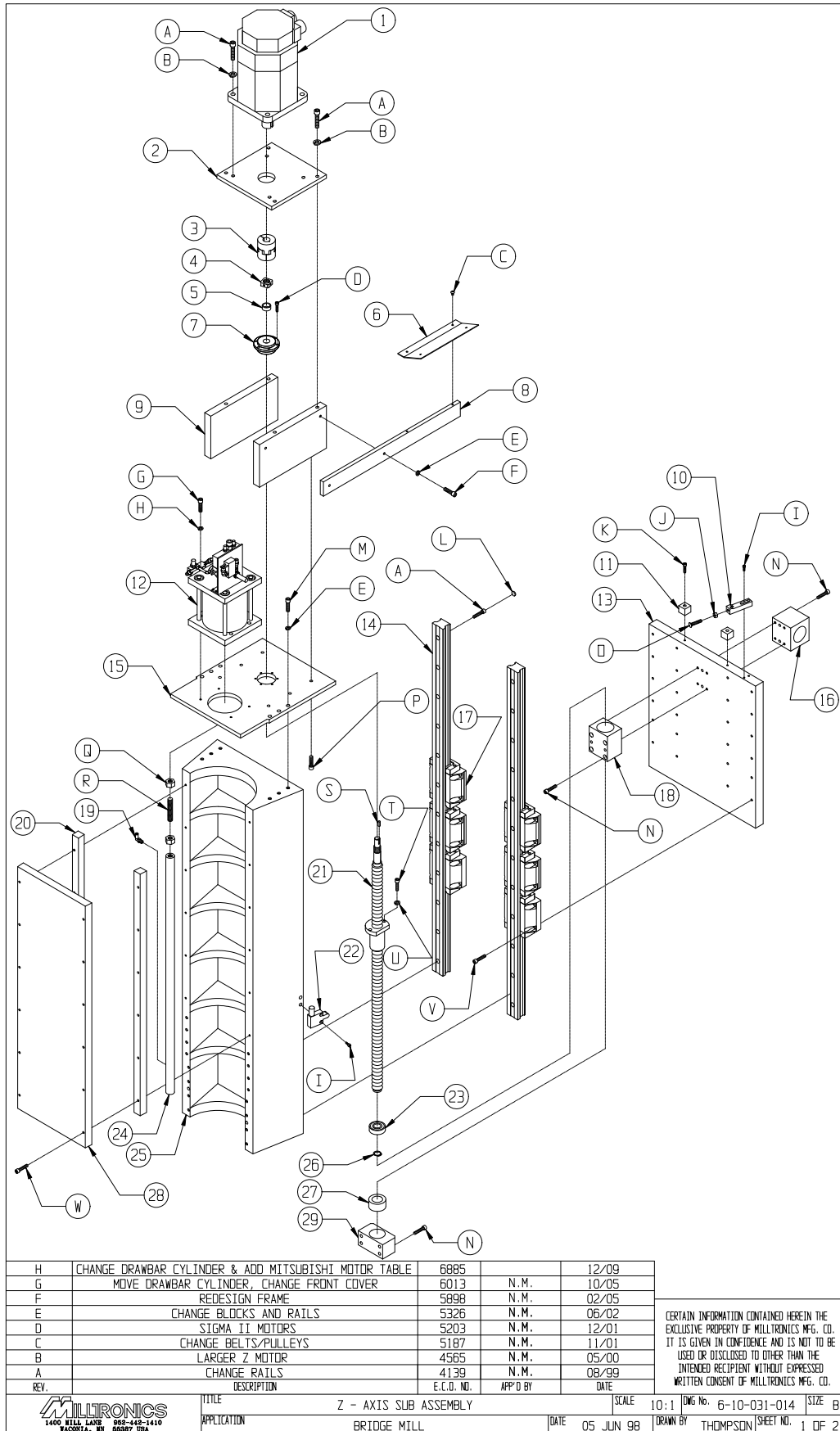
MOTOR PLATES	
STOCK No.	DESCRIPTION
MPB-40	11kw OR 18kw DUAL WINDING
MPB-45	11kw SINGLE WINDING

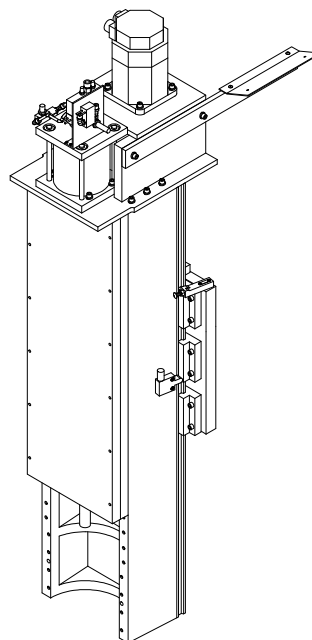
H	REMOVE DRAWBAR CYLINDER	6014		11/05
G	ADD O-RING	5894	N.M.	01/05
F	NEW DRAW BAR AIR CYLINDER	5438	N.M.	01/03
E	ADD MD-132 MOTOR	5412	N.M.	10/02
D	CHANGE SPINDLE ASSEMBLY	5245	N.M.	02/02
C	CHANGE SPINDLE	5186	N.M.	11/01
B	CHANGE SPINDLE & MOTOR	5089	N.M.	05/01
A	CHANGE DRAWBAR CYLINDER	3869	N.M.	03/99
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.		TITLE HEAD SUB-ASSEMBLY			
TOLERANCE UNLESS SPECIFIED		APPLICATION BRIDGE MILL			
X .XXX +		SCALE 10:1		DWG No. 6-10-031-013	
X .XX +		DATE 04 JUN 98		SIZE B	
X .X +		DRAWN BY THOMPSON		SHEET NO. 2 OF 2	
ANGLE +					

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Z Axis Assembly (for belt drive)





PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	AXIS MOTOR W/BRAKE
2	1		Z-AXIS MOTOR PLATE
3	1	SEE TABLE	COUPLER
4	1	MP1-94	BALL SCREW LOCK NUT
5	1	MP1-107	BEARING LOCK NUT SPACER
6	1		CABLE TRACK BRACKET
7	1	BG-94	AXIS BEARING
8	1		CABLE TRACK SUPPORT
9	2		MOTOR PLATE SPACERS
10	1	MPL-72	SWITCH DOG
11	2	MP-718	PDM HARD STOP BUMPER
12	1	10018114	NU-418 DRAWBAR CYLINDER ASSEMBLY
13	1		Y/Z RAIL MOUNTING PLATE
14	2	SEE TABLE	45mm 1220 RAILS
15	1		Z-AXIS MOUNTING PLATE
16	1		Y-AXIS BALL SCREW CARRIER
17	6	SEE TABLE	45mm RAIL BLOCK
18	1		Z-AXIS BALL SCREW CARRIER
19	1	NU-161	ELBOW
20	2		FRONT PLATE SPACER
21	1	MP-569	Z-AXIS BALL SCREW
22	1	SW-193	LIMIT SWITCH
23	1	BG-02	BEARING SKF6204 2Z
24	1		DRAW BAR EXTENSION TUBE
25	1		Z-AXIS MAIN - MACHINED
26	1	MP1-108	BALL SCREW SNAP RING
27	1		PDM HARD STOP RING
28	1		Z-AXIS FRONT PLATE
29	1		Z-AXIS RADIAL SUPPORT

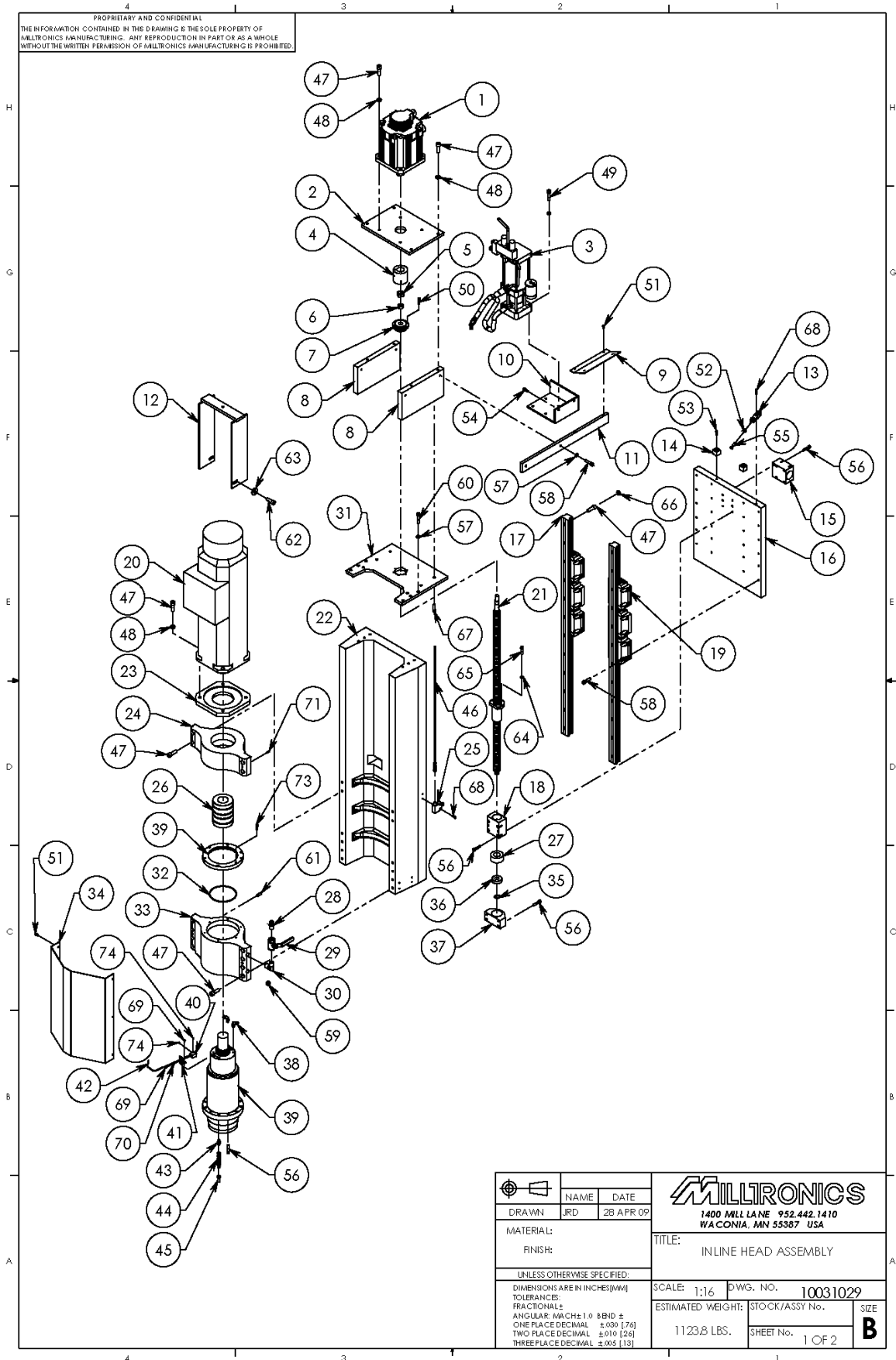
RAIL & BLOCK LIST		
No.	DESCRIPTION	PART No.
14	BALL RAIL	MPB-58
	ROLLER RAIL	MPB-71
17	BALL RAIL BLOCK	MP-728
	ROLLER RAIL BLOCK	MP-819

MOTOR & COUPLER TABLE				
No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
1	MD-138 (3Kw)	22Nm A06B-0247-B500	16Nm 1FK7083-5AF71-1EB0	MD-185 (3.5Kw)
3	MA-248	MA-248	MA-261	MA-248

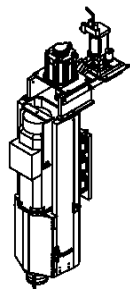
HARDWARE LIST		
No.	QTY	DESCRIPTION
A	32	1/2-13 x 1 1/2 SHCS
B	8	1/2 LOCK WASHER
C	2	1/4-20 x 3/8 BHCS
D	6	1/4-20 x 1 SHCS
E	12	3/8 LOCK WASHER
F	2	3/8-16 x 1 1/2 SHCS
G	4	1/4-20 x 1 1/4 SHCS
H	4	1/4 LOCK WASHER
I	4	M5-.8 x 20mm SHCS
J	1	M8-1.25 HEX NUT
K	2	M5-.8 x 16mm SHCS
L	24	RAIL PLUGS
M	10	3/8-16 x 1 3/4 SHCS
N	12	5/16-18 x 1 1/2 SHCS
O	1	M8-1.25 x 40mm BHCS
P	6	3/8-16 x 1 1/4 SHCS
Q	2	5/8-11 HEX NUT
R	1	5/8-11 x 3 ROD
S	1	3/16 x 3/16 x 1/2 KEY
T	3	5/16-18 x 1 1/4 SHCS
U	3	5/16 LOCK WASHER
V	24	3/8-16 x 1 1/2 SHCS
W	12	3/8-16 x 2 1/4 SHCS

H	CHANGE DRAWBAR & ADD MITSU.	6885		12/09
G	MOVE DRAWBAR CYLINDER	6013	N.M.	10/05
F	REDESIGN FRAME	5898	N.M.	02/05
E	CHANGE RAILS AND BLOCKS	5326	N.M.	06/02
D	SIGMA II MOTORS	5203	N.M.	12/01
C	CHANGE BELTS/PULLEYS	5187	N.M.	11/01
B	LARGER Z MOTOR	4565	N.M.	5/00
A	CHANGE RAILS	4139	N.M.	8/99
REV.	DESCRIPTION OF CHANGE	E.C.O. No.	APP'D BY	DATE
MATERIAL/FINISH				
STOCK/ASSY No.		1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
TOLERANCE UNLESS SPECIFIED		TITLE Z - AXIS SUB ASSEMBLY		
X.XXX	+/- .005	APPLICATION BRIDGE MILL		
X.XX	+/- .010	SCALE 10:1		
X.X	+/- .030	DWG No. 6-10-031-014		
ANGLE	+/- 1.0°	SHEET No. 2 OF 2		
DATE 05 JUN 98		DRAWN BY THOMPSON		

Z Axis Assembly (for inline spindle models)



PROPRIETARY AND CONFIDENTIAL
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MOTOR LIFT			
MITSUBISHI MOTORS			
ITEM No.	MOTOR		ITEM No.
12	MO00166	MP00201	MP00216
62	M10-1.5 x 20mm SHCS	M12-1.75 x 20mm SHCS	
63	M10 FLAT WASHER	M12 FLAT WASHER	

MOTOR COUPLER TABLE		
ITEM No.	MOTOR-END HUB 1 DIA. (mm)	SPINDLE-END HUB 2 DIA. (mm)
26	24	50
	28	50
	32	50
	38	50
	40	50
	42	50
	48	50
	50	50
	55	50

RAIL & BLOCK LIST		
ITEM No.	DESCRIPTION	PART No.
17	BALL RAIL	MP00058
	ROLLER RAIL	MP00071
19	BALL RAIL BLOCK	MP00728
	ROLLER RAIL BLOCK	MP00819

ITEM No.	QTY.	PART NUMBER	DESCRIPTION
1	1	SEE TABLE	Z MOTOR
2	1	-	Z AXIS MOTOR PLATE
3	1	10018108	AIR/OIL AMPLIFIER SYSTEM
4	1	SEE TABLE	MOTOR COUPLER
5	1	MP10094	BALLSCREW LOCKNUT
6	1	MP10107	BEARING LOCK NUT SPACER
7	1	BG00094	BALL SCREW SUPPORT BEARING
8	2	-	MOTOR PLATE SPACERS
9	1	-	CABLE TRACK BRACKET
10	1	MPTT128	AIR/OIL INTENSIFIER (NU-388) MOUNT
11	1	-	CABLE TRACK SUPPORT
12	1	SEE TABLE	MOTOR LIFT
13	1	MP10072	M15 X-AXIS SWITCH DOG
14	2	MP00718	POM HARDSTOP BLOCK
15	1	-	Y - AXIS BALLSCREW CARRIER
16	1	-	Y/Z RAIL MOUNTING PLATE
17	2	SEE TABLE	45mm INA RAIL
18	1	-	Z - AXIS BALLSCREW CARRIER
19	6	SEE TABLE	45mm RAIL BLOCK
20	1	SEE TABLE	SPINDLE MOTOR
21	1	MP00569	1.25 x 10mm x 39.72L BALLSCREW
22	1	-	BR Z HEAD
23	1	-	INLINE MOTOR PLATE
24	1	-	SPINDLE LOWER MOUNT - NARROW
25	1	SW00193	LIMIT SWITCH
26	1	SEE TABLE	SPINDLE COUPLER
27	1	-	POM HARD STOP RING
28	1	NU00066	FITTING 1/2" NPT - 3/4" BARB
29	1	NU00064	1/2" NPT BALL VALVE
30	1	NU00140	ELBOW
31	1	-	Z - AXIS BEARING MOUNT
32	1	WX00270	SPINDLE RING SEAL
33	1	-	SPINDLE LOWER MOUNT
34	1	MP00190	INLINE BRIDGE HEAD COVER
35	1	MP10108	RETAINING RING EXTERNAL
36	1	BG000002	BEARING NACHI
37	1	-	Z - AXIS RADIAL SUPPORT
38	2	NU00171	ELBOW - M/S 1/4 TUBE x 1/4NPT
39	1	SEE TABLE	INLINE SPINDLE
40	1	BR00159	INLINE DRAWBAR SWITCH HOLDER
41	1	BR00158	INLINE DRAWBAR SWITCH BRACKET
42	1	PRO0050	PROX SWITCH
43	6	NU00111	LOC-LINE THREADED INSERT 1/4
44	24	MA00022	LOC-LINE LINKS 1/4
45	6	MA000216	LOC-LINE NOZZLE 1/4
46	1	SW00238	YELLOW CABLE
47	48	SHCS 1/2-13 x 1 1/2	1/2-13 x 1 1/2 SHCS
48	12	WASHER LOCK 1/2	1/2 LOCK WASHER
49	4	SHCS M10-1.5 x 45	M10-1.5 x 45mm SHCS
50	6	SHCS 1/4-20 x 1	1/4-20 x 1 SHCS
51	8	BHCS M6-1.0 x 12	M6-1.0 x 12mm BHCS
52	1	NUT HEX M8-1.25	M8-1.25 HEX NUT
53	2	SHCS M5-0.8 x 16	M5-0.8 x 16mm SHCS
54	4	SHCS M8-1.25 x 20	M8-1.25 x 20mm SHCS
55	1	BHCS M8-1.25 x 40	M8-1.25 x 40mm BHCS
56	18	SHCS 5/16-18 x 1 1/2	5/16-18 x 1 1/2 SHCS
57	8	WASHER LOCK 3/8	3/8 LOCK WASHER
58	26	SHCS 3/8-16 x 1 1/2	3/8-16 x 1 1/2 SHCS
59	1	PLUG 1/2 NPT	1/2 NPT PLUG
60	6	SHCS 3/8-16 x 1 3/4	3/8-16 x 1 3/4 SHCS
61	2	DOWEL PIN 3/8 x 1	3/8 x 1 DOWEL PIN
62	2	SEE TABLE	SHCS
63	2	SEE TABLE	FLAT WASHER
64	2	WASHER LOCK 5/16	5/16 LOCK WASHER
65	2	SHCS 5/16-18 x 1 1/4	5/16-18 x 1 1/4 SHCS
66	24	RAIL PLUGS	RAIL PLUG
67	6	SHCS 3/8-16 x 1 1/4	3/8-16 x 1 1/4 SHCS
68	4	SHCS M5-0.8 x 20	M5-0.8 x 20mm SHCS
69	4	BHCS M4-0.7 x 8	M4-0.7 x 8mm BHCS
70	2	WASHER FLAT M4	M4 WASHER FLAT
71	2	DOWEL PIN 3/16	3/16 DOWEL PIN
72	4	WASHER LOCK M10	M10 LOCK WASHER
73	6	SHCS M6-1.0 x 20	M6-1.0 x 20mm SHCS
74	2	SHSS 10-32 x 1/4	10-32 x 1/4 SHSS

* ROLLER RAILS USE AN ADDITIONAL 22 RAIL PLUGS & 1/2-13 x 1 1/2 SHCS.

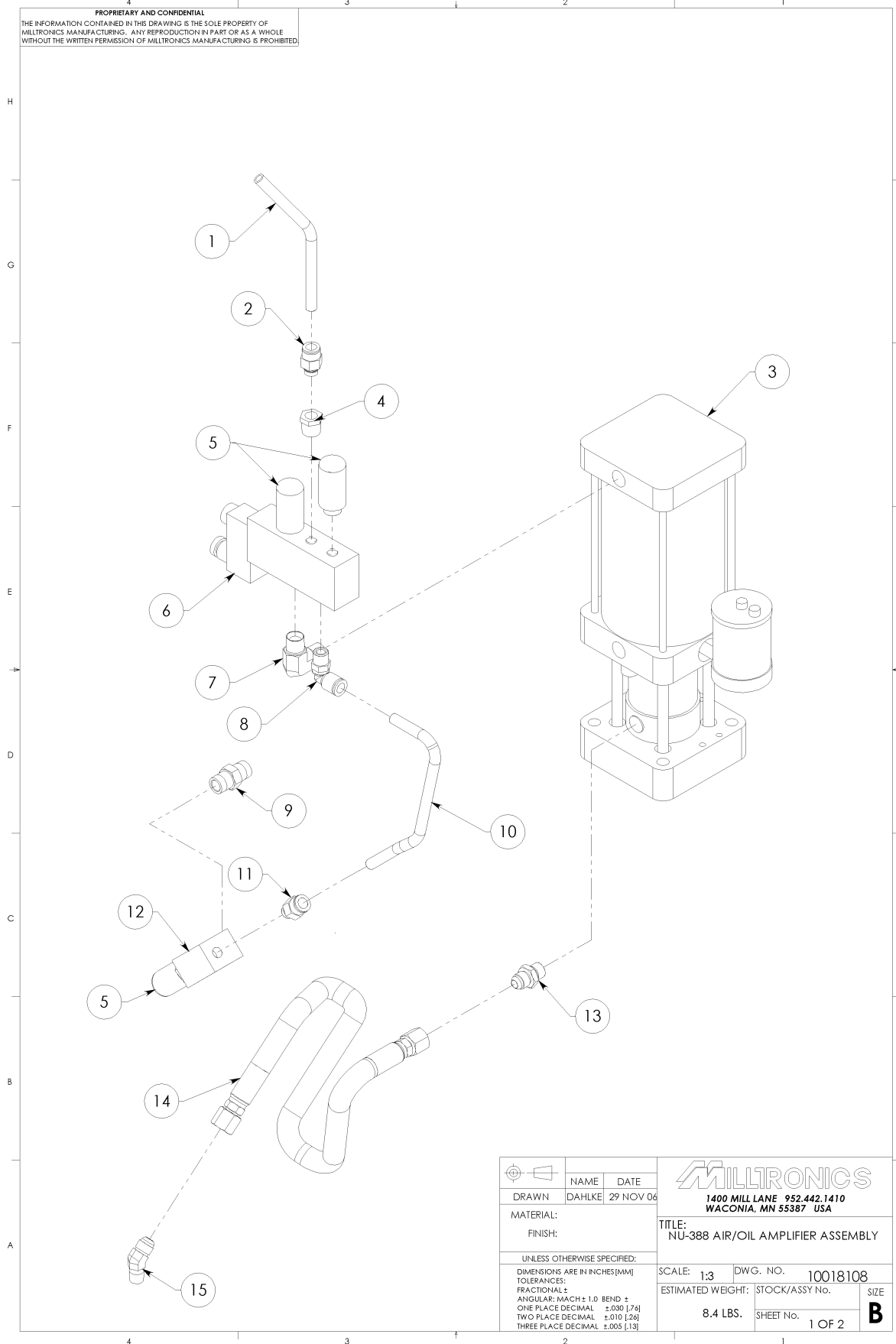
MOTOR & COUPLER TABLE				
ITEM No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
1	MO00138 (3kW)	22Nm A06B-0247-B500	16Nm 1FK7083-5AF71-1EB0	MO00186 (3.5 kW)
4	MA00248	MA00248	MA00261	MA00248

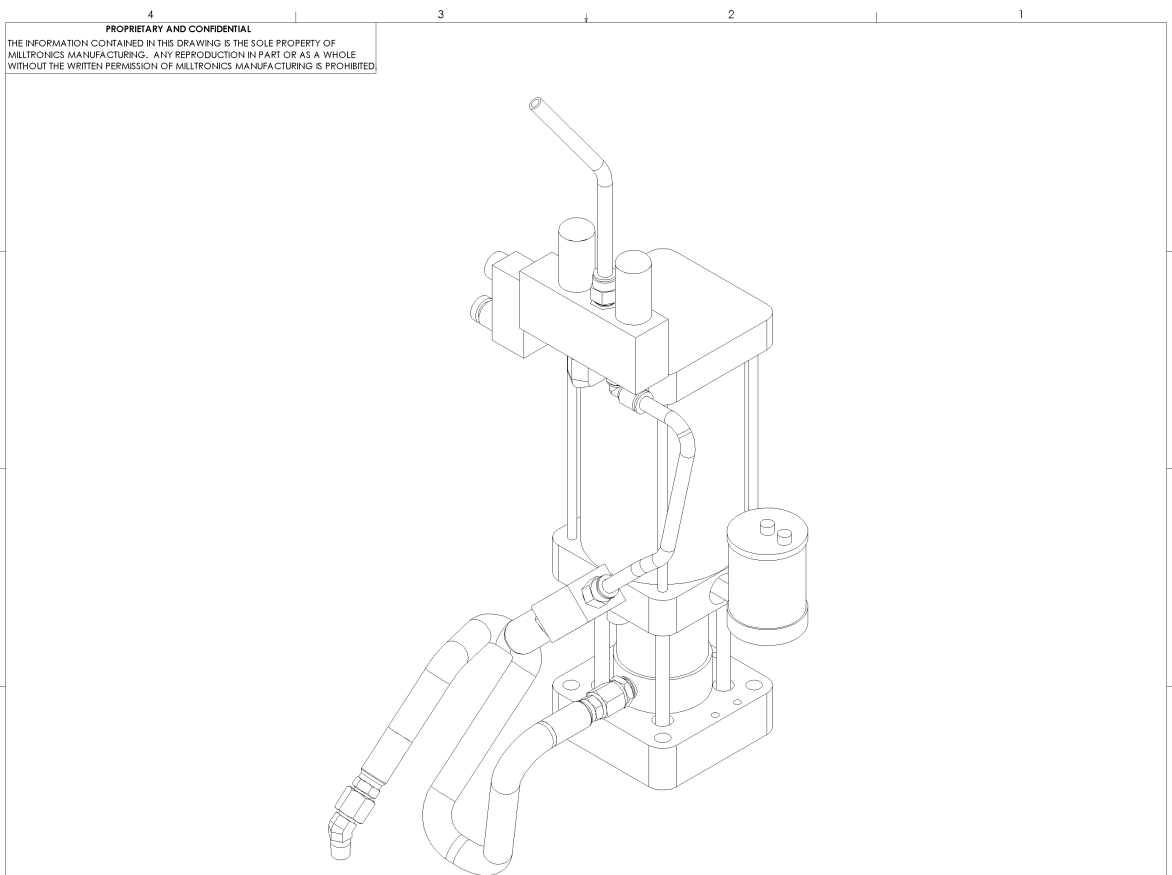
SPINDLE MOTOR		
ITEM No.	STOCK No.	DESCRIPTION
20	A06B-1477-B133#0121	FANUC
	A06B-1479-B133#0221	FANUC
	MO00166	MITSUBISHI
	MO00167	MITSUBISHI
	1PM6137	SIEMENS
	1PM6105	SIEMENS
	1PM6133	SIEMENS

INLINE SPINDLE		
ITEM No.	STOCK No.	DESCRIPTION
39	MP00844	10K RPM
	MP00845	15K RPM

	NAME	DATE	
	DRAWN	JRD	
MATERIAL:	FINISH:		TITLE:
UNLESS OTHERWISE SPECIFIED:			SCALE: 1:30 DWG. NO. 10031029
DIMENSIONS ARE IN INCHES (MM) TOLERANCES: FRACTIONALS ANGULAR: MACH ±1.0 BEND ± ONE PLACE DECIMAL ±.030 [76] TWO PLACE DECIMAL ±.010 [26] THREE PLACE DECIMAL ±.005 [13]			ESTIMATED WEIGHT: 1123.8 LBS. STOCK/ASSY No. SHEET No. 2 OF 2
			SIZE B

Power Drawbar Cylinder Assembly (for inline spindle models)





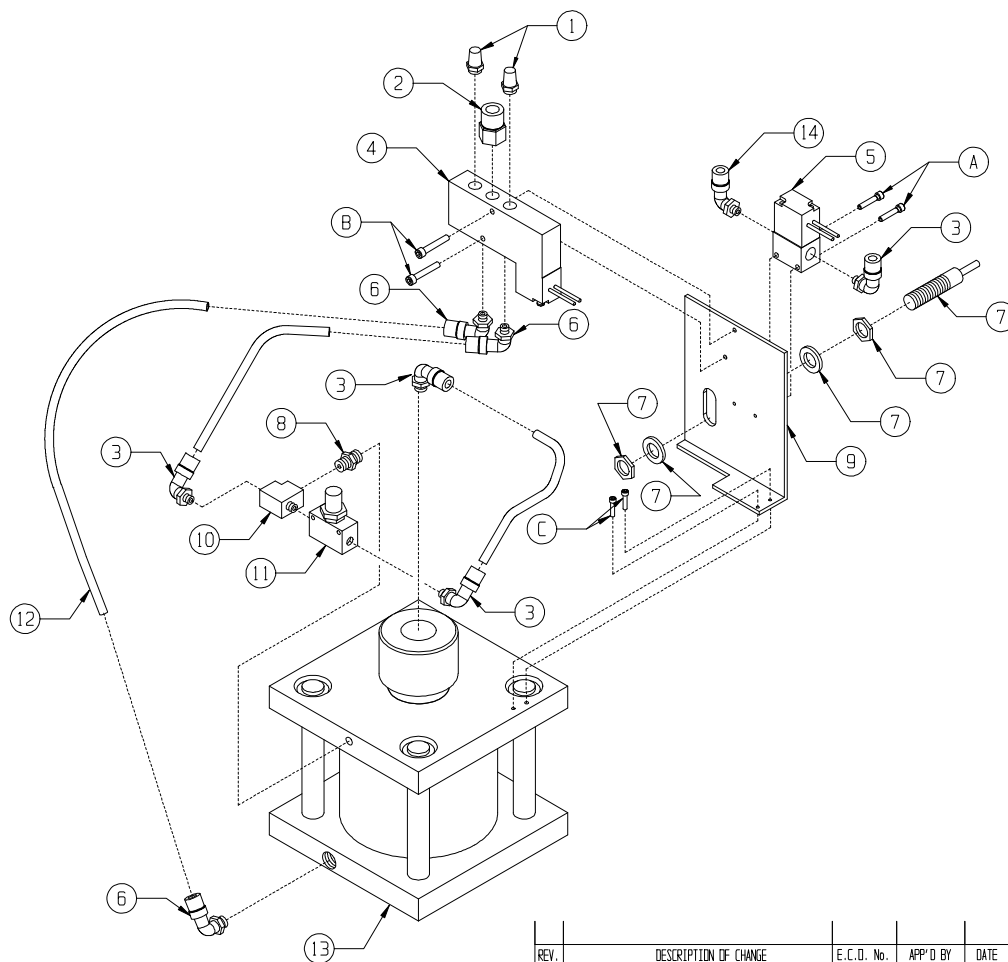
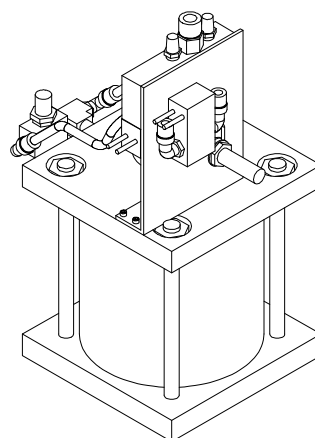
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	NU00078	3/8 AIR LINE
2	1	NU00095	TUBE CONNECTOR - M/S 3/8 TUBE 1/4NPT
3	1	NU00408	AIR/OIL AMPLIFIER SYSTEM
4	1	NU00027	REDUCER - 3/8 x 1/4NPT
5	3	NU00375	MUFFLER
6	1	NU00293	SOLENOID VALVE
7	1	NU00292	MALE ELBOW - 3/8NPT
8	1	NU00412	SWIVEL ELBOW - M/S 10mm TUBE 3/8NPT
9	1	NU00235	NIPPLE - 3/8NPT
10	1	NU00306	10mm AIR LINE
11	1	NU00297	TUBE CONNECTOR - M/S 10mm TUBE 3/8NPT
12	1	NU00402	EXHAUST VALVE
13	1	NU00409	FLARE FITTING - 3/8NPT
14	1	NU00403	19" INLINE AMPLIFIER HOSE
15	1	NU00410	ELBOW FLARE FITTING - 1/8NPT x 45°

	NAME	DATE	
	DRAWN	DAHLKE/29 NOV 06	
MATERIAL:		TITLE:	
FINISH:		NU-388 AIR/OIL AMPLIFIER ASSEMBLY	
UNLESS OTHERWISE SPECIFIED:			
DIMENSIONS ARE IN INCHES (MM)		SCALE: 1:3	DWG. NO. 10018108
TOLERANCES:		ESTIMATED WEIGHT: 8.4 LBS.	STOCK/ASSY No.
FRACTIONAL ±		SHEET No. 2 OF 2	SIZE B
ANGULAR: MACH ± 1.0 BEND ±			
ONE PLACE DECIMAL ±.030 [.76]			
TWO PLACE DECIMAL ±.010 [.25]			
THREE PLACE DECIMAL ±.005 [.13]			

Power Drawbar Cylinder Assembly (for belt drive)

PARTS LIST			
ITEM	QTY	STOCK No.	DESCRIPTION
1	2	NU-177	1/8 NPT MUFFLER
2	1	NU-95	MALE STRAIGHT 1/4 NPT - 3/8 TUBE
3	4	NU-187	SWIVEL ELBOW 1/8 NPT - 1/4 TUBE
4	1	NU-179	DRAW BAR - AIR VALVE
5	1	NU-320	AIR PURGE - AIR VALVE
6	3	NU-186	SWIVEL ELBOW 1/4 NPT - 1/4 TUBE
7	1	PR-58	DRAWBAR PROX SWITCH
8	1	NU-394	1/8 NPT - 1/4 NPT REDUCING NIPPLE
9	1	BR-145	DRAWBAR PROX SWITCH BRACKET
10	1	NU-395	1/8 NPT STREET TEE
11	1	NU-190	FLOW CONTROL FOR BLOW OUT
12	26"	NU-25	1/4" TUBING
13	1	NU-319	TRIPLE STACK DRAW BAR AIR CYLINDER
14	1	NU-474	SWIVEL ELBOW 1/8 NPT - 3/8 TUBE

HARDWARE LIST		
ITEM	QTY	DESCRIPTION
A	2	6-32 x 3/4 SHCS
B	2	8-32 x 1 SHCS
C	2	8-32 x 3/8 SHCS

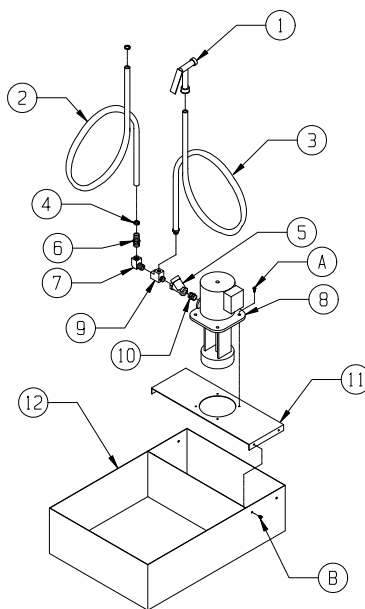
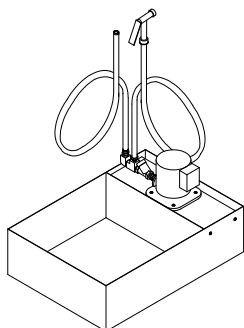


REV.	DESCRIPTION OF CHANGE	E.C.O. No.	APP'D BY	DATE
 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA				
MATERIAL/FINISH		TITLE: NU-418 DRAW BAR ASSEMBLY		
STOCK/ASSY No.		APPLICATION: GENERAL PRODUCTS		
TOLERANCE UNLESS SPECIFIED		SCALE: 3:1 DWG No: 6-10-018-114 SIZE: B		
X.XXX +/-		DATE: 14 OCT 08		
X.XX +/-		DRAWN BY: DAHLKE		
X.X +/-		SHEET No: 1 OF 1		
ANGLE +/-				

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Coolant Trough Assembly (BR50)

*THIS IS USED ON ASSEMBLY
FOR VM15, VM16, VM17.*



PARTS LIST

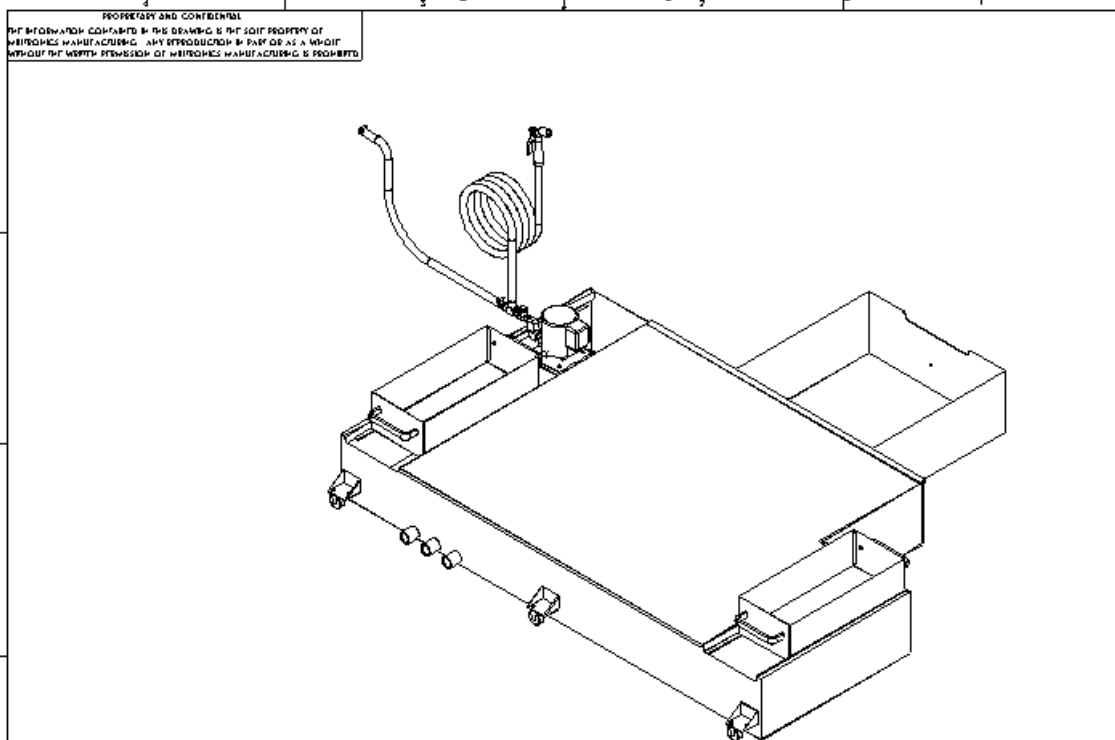
No.	QTY	STOCK No.	DESCRIPTION
1	1	NU-124	WATER HOSE NOZZLE
2	20'	NU-69	3/4" NYLOBRAID HOSE
3	1	NU-130	WASHDOWN HOSE ASSEMBLY
4	2	NU-141	1" HOSE CLAMP
5	1	NU-128	1/2" SWING CHECK VALVE
6	1	NU-66	HOSE BRASS 3/4"
7	1	NU-125	1/2" ELBOW-STREET
8	1	MA-162	FLOOD PUMP 1/4 HP MOTOR
9	1	NU-127	1/2" STREET T
10	1	NU-65	1/2" NIPPLE
11	1	MP1-24	FLOOD PUMP MOUNTING PLATE
12	1	MP1-21	FLOOD CONTAINER

HARDWARE LIST

No.	QTY	DESCRIPTION
A	4	1/4-20 x 5/8 BHCS
B	4	1/4-20 x 3/8 BHCS

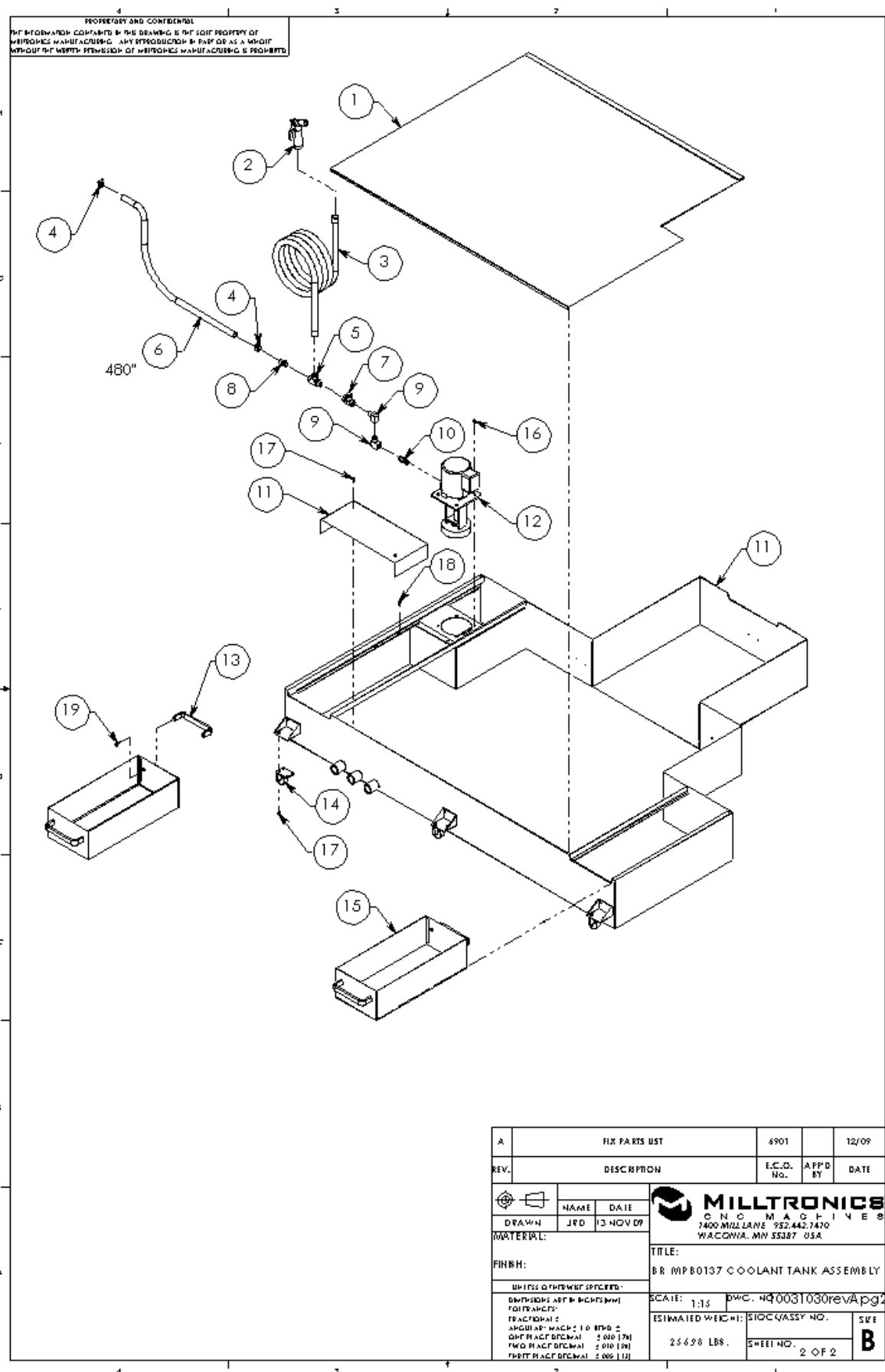
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA				
MATERIAL/FINISH		TITLE COOLANT TROUGH ASSEMBLY		
STOCK/ASSY No.		APPLICATION PARTNER I		
TOLERANCE UNLESS SPECIFIED		SCALE 15:1		
X.XXX	+/- .005	DATE 10 APR 00		
X.XX	+/- .010	DRAWN BY DAHLKE		
X.X	+/- .030	SHEET No. 1 OF 1		
ANGLE	+/- 1.0°			

Coolant Trough Assembly With Auger

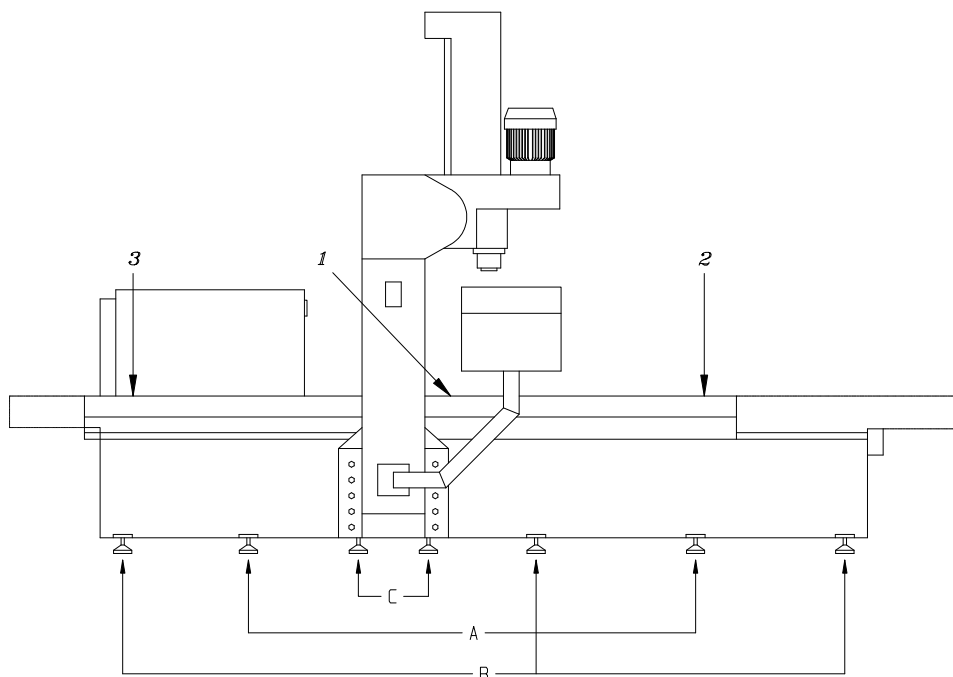


ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	-	BR TANK COVER
2	1	NU00124	NOZZEL WATER HOSE
3	1	NU00130	WASHDOWN HOSE ASSEMBLY 20'
4	2	NU00141	1" HOSE CLAMP
5	1	NU00127	TEE 1/2"NPT STREET 2225P-8
6	1	NU00069	NYLABRAID 3/4" 4511-0751
7	1	NU00128	1/2" SWING CHECK VALVE
8	1	NU00066	FITTING 1/2" NPT - 3/4" BARB
9	2	NU00125	1/2" STREET ELBOW
10	1	NU00065	1/2-14 NPT MALE/MALE NIPPLE
11	1	MPB0137	BR60/80 COOLANT TANK
12	1	MA00162	FLOOD PUMP MOTOR
13	4	WX00230	HANDLE
14	6	EL00088	WHEEL CASTER
15	2	MP10488	DRAWER-CHIP-VM20
16	4	BHCS M6-1.0 x 12	M6-1.0 x 12mm BHCS
17	14	BHCS M6-1.0 x 10	M6-1.0 x 10mm BHCS
18	2	SHCS M6-1.0 x 10	M6-1.0 x 10 SHCS
19	8	BHCS M8-1.25 x 16	M8-1.25 x 16 BHCS

A	FIX PARTS LIST	4901		12/09
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
 MILLTRONICS CNC MACHINES 7400 MILL LANE 952-442-7470 WACONIA, MN 55387 USA				
DRAWN: NAME DATE		TITLE: BR MPB0137 COOLANT TANK ASSEMBLY		
MATERIAL:		SCALE: 1:16 D.W.C. NO. 10031030		
FINISH:		ESTIMATED WEIGHT: 25.698 LBS.		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES (MM) TOLERANCES: FRACTIONAL ± .005 INCH DECIMAL ± .001 INCH ANGULAR ± .01 INCH HOLE POSITION ± .005 INCH TWO PLACE DECIMAL ± .001 INCH THREE PLACE DECIMAL ± .0001 INCH		STOCK/CLASSY NO. SHEET NO. 1 OF 2 B		



Leveling Instructions For BR 50



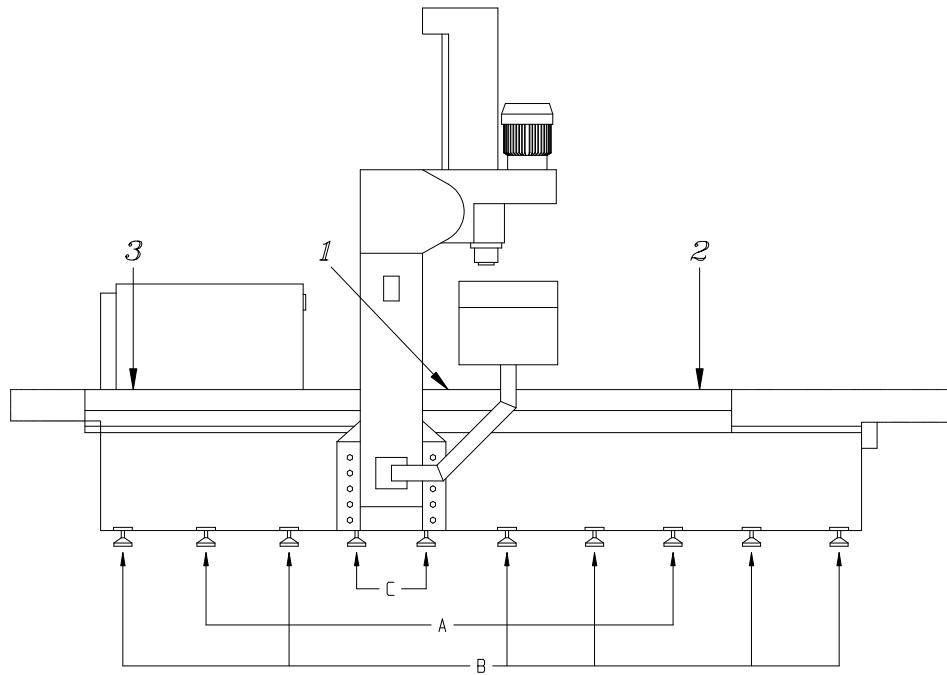
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH		 MILLTRONICS MANUFACTURING 1400 MILL LANE (612) 442-1410 WACONIA, MN 55387		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE BR50 LEVELING INSTRUCTIONS		
X .XXX ±		APPLICATION BRIDGE MILL		
X .XX ±		SCALE 20:1		
X .X ±		DWG NO 6-10-031-018		
ANGLE ±		SIZE B		
		DATE 15 JUN 98		
		DRAWN BY THOMPSON		
		SHEET NO. 1 OF 2		

NOTES:

1. Center the table in the travel of the X axis.
2. Raise the 4 leveling pads directly under the columns pads "C" most of the way in so they are NOT touching the floor.
3. With the level located in the center of the table (position 1) use pads "A" to level the machine in both X and Y.
4. With the level located at the ends of the table (position 2 and 3) level each end with pads "B" in both X and Y.
5. Double-check the level at all locations.
6. The remaining pads should be threaded approximately 2/3 to 3/4 of the way in and touching the floor. Even pressure should be applied to each of these pads.
7. Lower the 4 leveling pads directly below the columns until they are resting on the floor with even pressure.
8. Spin the locknut for each pad up then secure them in place.
9. Using a magnetic base with a dial indicator sweep the table to check tram. The tram should sweep acceptably (typically .001" over a 10" diameter sweep) if the table surface has been machined at the factory. Adjust the 4 leveling pads below the column to adjust the tram if necessary. At this stage it is more important to be level to tram and NOT level to the precision level.

REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 MILLTRONICS MANUFACTURING 1400 MILL LANE (612) 442-1410 WACONIA, MN 55387		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE BR50 LEVELING INSTRUCTIONS		
X .XXX ±		APPLICATION BRIDGE MILL		
X .XX ±		SCALE 20:1	DWG No 6-10-031-018	SIZE B
X .X ±		DATE 15 JUN 98	DRAWN BY THOMPSON	SHEET NO. 2 OF 2
ANGLE ±				

Leveling Instructions For BR 60 & 80



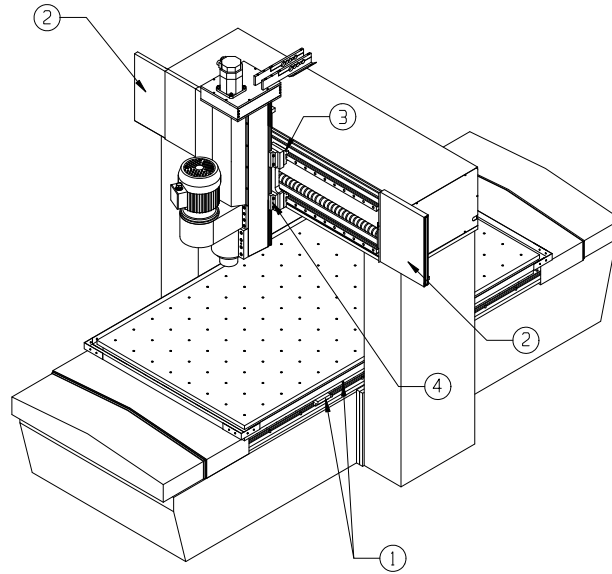
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH		 MILLTRONICS MANUFACTURING 1400 MILL LANE (612) 442-1410 WACONIA, MN 55387		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE BR60 & 80 LEVELING INSTRUCTIONS		
X .XXX X .XX X .X ANGLE		APPLICATION BRIDGE MILL		
		SCALE 20:1	DWG No 6-10-031-019	SIZE B
		DATE 15 JUN 98	DRAWN BY THOMPSON	SHEET NO. 1 OF 2

NOTES:

1. Center the table in the travel of the X axis.
2. Raise the 4 leveling pads directly under the columns pads "C" most of the way in so they are NOT touching the floor.
3. With the level located in the center of the table (position 1) use pads "A" to level the machine in both X and Y.
4. With the level located at the ends of the table (position 2 and 3) level each end with pads "B" in both X and Y.
5. Double-check the level at all locations.
6. The remaining pads should be threaded approximately 2/3 to 3/4 of the way in and touching the floor. Even pressure should be applied to each of these pads.
7. Lower the 4 leveling pads directly below the columns until they are resting on the floor with even pressure.
8. Spin the locknut for each pad up then secure them in place.
9. Using a magnetic base with a dial indicator sweep the table to check tran. The tran should sweep acceptably (typically .001" over a 10" diameter sweep) if the table surface has been machined at the factory. Adjust the 4 leveling pads below the column to adjust the tran if necessary. At this stage it is more important to be level to tran and NOT level to the precision level.

REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH		 MILLTRONICS MANUFACTURING 1400 MILL LANE (612) 442-1410 WACONIA, MN 55387		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE BR60 & 80 LEVELING INSTRUCTIONS		
X .XXX ±		APPLICATION BRIDGE MILL		
X .XX ±		SCALE 20:1 DWG No. 6-10-031-019 SIZE B		
X .X ±		DATE 15 JUN 98 DRAWN BY THOMPSON SHEET NO. 2 OF 2		
ANGLE ±				

Machine Lubrication Instructions



GREASE EVERY 500 HOURS OR SIX MONTHS

1. GREASE THE X-AXIS BEARING BLOCKS, 3 OR 4 ON EACH SIDE, AND THE X-AXIS BALLSCREW 2 PUMPS PER BLOCK.
2. SLIDE THE Y-AXIS WAY COVERS OUT TO ACCESS THE BEARING BLOCKS AND BALLSCREW.
3. GREASE THE 6 BEARING BLOCKS, 3 ON EACH SIDE, AND THE Y-AXIS BALLSCREW 2 PUMPS PER BLOCK AND BALLSCREW.
4. GREASE THE 6 BEARING BLOCKS, 3 ON EACH SIDE, AND THE Z-AXIS BALLSCREW 2 PUMPS PER BLOCK AND BALLSCREW.
5. INSTALL ALL WAY COVERS AND CYCLE MACHINE THE FULL TRAVELS AT 10 IPM MAX. TO FULLY LUBRICATE THE ENTIRE LENGTH OF THE RAILS AND BALLSCREWS.

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.				
TOLERANCE UNLESS SPECIFIED		TITLE BRIDGE MILL GREASE INSTRUCTIONS		
X.XXX	+/-	APPLICATION BRIDGE MILL		
X.XX	+/-	SCALE 24:1	DWG No. 6-11-031-001	SIZE B
X.X	+/-	DATE 01 FEB 01	DRAWN BY NEW	SHEET No. 1 OF 2
ANGLE	+/-			

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

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

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

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	

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.				
TOLERANCE UNLESS SPECIFIED		TITLE BRIDGE MILL GREASE INSTRUCTIONS		
X.XXX	+/-	APPLICATION BRIDGE MILL		
X.XX	+/-	SCALE 24:1	DWG No. 6-11-031-001	SIZE B
X.X	+/-	DATE 01 FEB 01	DRAWN BY NEW	SHEET No. 2 OF 2
ANGLE	+/-			

Retention Knob Chart

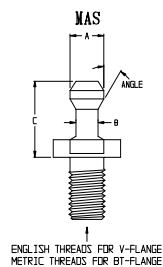
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITHOUT CTS

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY PART	DIMENSIONS			MILLITRONICS MACHINE				COMMAND PART NO.	KENAMETAL PART NO.	VALENTE PART NO.	LYNDEX PART NO.	
	A	B	C	ANGLE	60mm SPINDLE		70mm SPINDLE					
4833	59.39	1.27	60°	RH19, RH20, RH30, RH33, RH35, RH40, RH42, RH45, RH48, RH50, RH52, RH55, RH58, RH60, RH62, RH65, RH68, RH70, RH72, RH75, RH78, RH80, RH82, RH85, RH88, RH90, RH92, RH95, RH98, RH100, RH102, RH105, RH108, RH110, RH112, RH115, RH118, RH120, RH122, RH125, RH128, RH130, RH132, RH135, RH138, RH140, RH142, RH145, RH148, RH150, RH152, RH155, RH158, RH160, RH162, RH165, RH168, RH170, RH172, RH175, RH178, RH180, RH182, RH185, RH188, RH190, RH192, RH195, RH198, RH200, RH202, RH205, RH208, RH210, RH212, RH215, RH218, RH220, RH222, RH225, RH228, RH230, RH232, RH235, RH238, RH240, RH242, RH245, RH248, RH250, RH252, RH255, RH258, RH260, RH262, RH265, RH268, RH270, RH272, RH275, RH278, RH280, RH282, RH285, RH288, RH290, RH292, RH295, RH298, RH300, RH302, RH305, RH308, RH310, RH312, RH315, RH318, RH320, RH322, RH325, RH328, RH330, RH332, RH335, RH338, RH340, RH342, RH345, RH348, RH350, RH352, RH355, RH358, RH360, RH362, RH365, RH368, RH370, RH372, RH375, RH378, RH380, RH382, RH385, 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RH4838, RH4840, RH4842, RH4845, RH4848, RH4850, RH4852, RH4855, RH4858, RH4860, RH4862, RH4865, RH4868, RH4870, RH4872, RH4875, RH4878, RH4880, RH4882, RH4885, RH4888, RH4890, RH4892, RH4895, RH4898, RH4900, RH4902, RH4905, RH4908, RH4910, RH4912, RH4915, RH4918, RH4920, RH4922, RH4925, RH4928, RH4930, RH4932, RH4935, RH4938, RH4940, RH4942, RH4945, RH4948, RH4950, RH4952, RH4955, RH4958, RH4960, RH4962, RH4965, RH4968, RH4970, RH4972, RH4975, RH4978, RH4980, RH4982, RH4985, RH4988, RH4990, RH4992, RH4995, RH4998, RH5000, RH5002, RH5005, RH5008, RH5010, RH5012, RH5015, RH5018, RH5020, RH5022, RH5025, RH5028, RH5030, RH5032, RH5035, RH5038, RH5040, RH5042, RH5045, RH5048, RH5050, RH5052, RH5055, RH5058, RH5060, RH5062, RH5065, RH5068, RH5070, RH5072, RH5075, RH5078, RH5080, RH5082, RH5085, RH5088, RH5090, RH5092, RH5095, RH5098, RH5100, RH5102, RH5105, RH5108, RH5110, RH5112, RH5115, RH5118, RH5120, RH5122, RH5125, RH5128, RH5130, RH5132, RH5135, RH5138, RH5140, RH5142, RH5145, RH5148, RH5150, RH5152, RH5155, RH5158, RH5160, RH5162, RH5165, RH5168, RH5170, RH5172, RH5175, RH5178, RH5180, RH5182, RH5185, RH5188, RH5190, RH5192, RH5195, RH5198, RH5200, RH5202, RH5205, RH5208, RH5210, RH5212, RH5215, RH5218, RH5220, RH5222, RH5225, RH5228, RH5230, RH5232, RH5235, RH5238, RH5240, RH5242, RH5245, RH5248, RH5250, RH5252, RH5255, RH5258, RH								

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART	KEMANMETAL PART	VALVETTE PART	L'INDEX PART NO
	A	B	C	ANGLE					
				60mm SPINDLE	70mm SPINDLE				
4B34	59.38	1.38	60°	RH19, RH20, RH30, RH43, RH53, RH15, RK20E, BR50, BR60, BR80 VM15, VM16, VM20, VM22, VM25, VM35, VM40, VM45, VM48, VM50, VM60, MM18	RH20, RH30, RH43, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM35, VM40, VM45, VM50, VM60, VM62, VM60, VM65, VM74, VM80, MM20, MM25	RB40-0002	RX3113A	PT-444-60	B40-6000



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

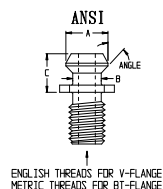
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITH CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS MACHINE		COMMAND PART No.	KENAMETAL PART No.	VALENTI PART No.	L'INDEX PART No.
	A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
4836	.74	.49	.64	45°	SELECTION NOT AVAILABLE RH20, RH30, RH33, RH35, RB50, RB60, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM25, VM30, T24, T40, VM35		RL4E-0001	RK1122	PT-475C	C40-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILLITRONICS	MACHINE	COMMAND PART No.	KEMANMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
	A	B	C		60mm SPINDLE	70mm SPINDLE				
4837	74.49	.75	45°	SELECTION NOT AVAILABLE		R420, R430, R433, R435, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM25, VM30, T740, T744, VM25, VM30, T724, T740, VM20, VM35	R54M-0115	RK11126A	N/A	B40-FADAL



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

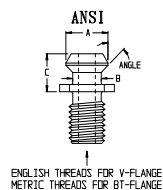
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES WITH OR WITHOUT CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
N/A	1.14	.83	1.00	45°	VM22XP, VM25XP, VM30XP, RH33XP, RH35XP, HMC70	RCCE-0001	DWG RK11144	N/A	C50-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS 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°	VM22XP, VM25XP, VM30XP, RH33XP, RH35XP, HMC70	R55N-0105	DWG RK11144A	N/A	N/A



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

NOTE: OPTIONAL RETENTION KNOBS FOR 40 TAPER SPINDLES

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART NO.	KENNAMETAL PART NO.	VALENTE PART NO.	LYNDEX PART NO.
	A	B	ANGLE	60mm SPINDLE	70mm SPINDLE				
4891	59.39	1.27	45°		RH20, RH40, RH33, RH55, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VMC25, VMC30, T124, TT40, HMC20, HMC35	RB4E-0001	RK31114	PT-532-45	C40-4500

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

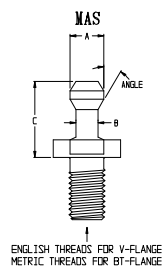
ASSEMBLY SELECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND	KERNAL/METAL	VALENTE PART No.	LYNDEX PART No.
	A	B	C ANGLE	50mm SPINDLE	70mm SPINDLE				
4B32	59	39	45°	SELECTION NOT AVAILABLE	RH20, RH30, RH33, RH35, RH50, RH60, RH60, V16, V16, V20, V22, V25, V30, VMC16, VMC20, VMC25, VMC30, T124, T140, VMC20, HMC35	RB4N-0001	RK31113	PT-444-45	B40-4500

DIN 69872 RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

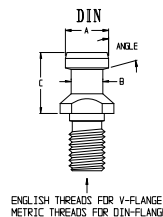
ASSEMBLY SELECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	ANGLE	70mm SPINDLE					
				60mm SPINDLE	70mm SPINDLE				
4838	75.5	1.02	75°	SELECTION NOT AVAILABLE	RH20, RH40, RH33, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM25, VM30, T124, T140, MC35	R34E-0114-C DM4-C	DWG RK71125	N/A	C40-1500

DIN 69872 RETENTION KNOBS STYLE DIN-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS MACHINE		EDWARD PART NO.	KENNEMETAL PART NO.	VALENTE PART NO.	LYNDEX PART NO.
	A	B	C	ANGLE	70mm SPINDLE					
					60mm SPINDLE	70mm SPINDLE				
4839	75	55	1.02	75°	SELECTION NOT AVAILABLE		RS4M-0114-C	DWG RK71124	N/A	B40-1500



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



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

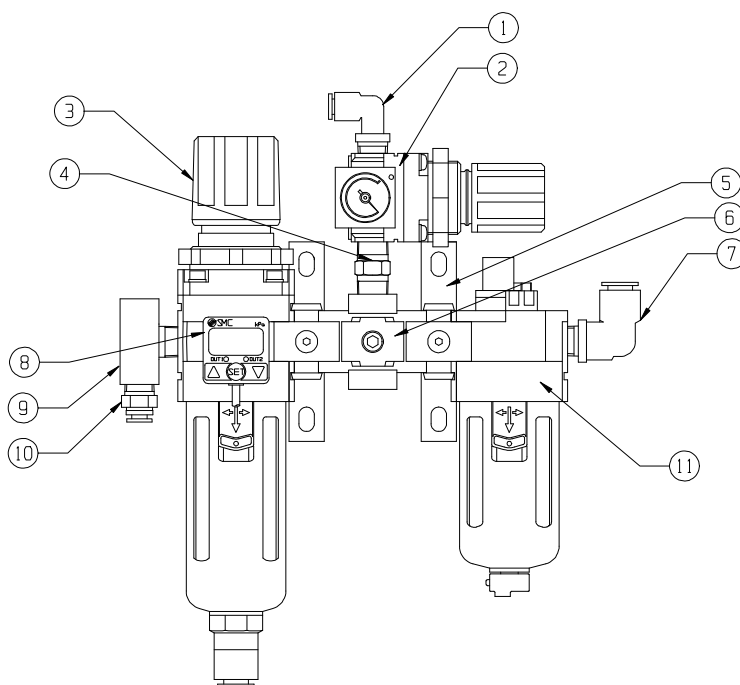
NOTES:

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 FROM ECO DATE REV. G ON THIS DRAWING.

H	ADD VM22XP, RH33XP FRAMES TO 50 TAPER	6715		01/09
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
 1400 MILL LANE FAUCETT, ME 05545-1610 850-445-1610		TITLE RETENTION KNOB CHART APPLICATION GENERAL PRODUCTS SCALE 1.75:1 DATE 30 APR 99 DRAWN BY DAHLKE SHEET NO. 1 OF 1		

Air Filter / Regulator / Lubricator Assembly

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



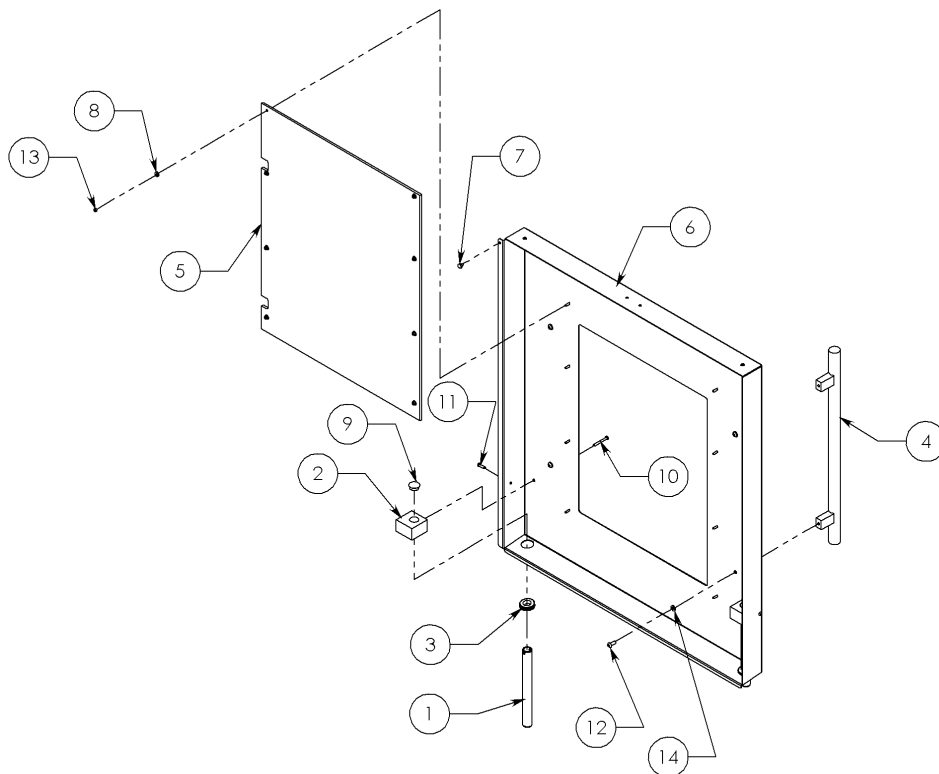
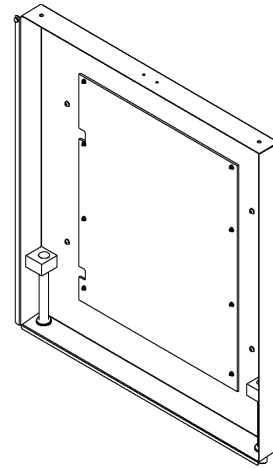
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE NU-417 FRL ASSEMBLY		
X .XXX +/-		APPLICATION GENERAL PRODUCTS		
X .XX +/-		SCALE 3:1		
X .X +/-		DATE 14 APR 08		
ANGLE +/-		DRAWN BY DAHLKE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

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BR60/80 Lift Off Door Assembly – Operator Side

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ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	MPB0160	LIFT OFF PANEL - POST
2	2	MPB0158	PIPE MOUNT BLOCK
3	2	WX00164	RUBBER GROMMET
4	2	WX00297	HANDLE
5	1	MP60163	OPERATOR DOOR - LEXAN
6	1	SEE TABLE	LIFT OFF DOOR
7	1	WX00310	BUMPER DOOR GRAY
8	8	HD00058	M5 RUBBERIZED WASHER
9	2	DP1000	1" CAP PLUG
10	2	BHCS M6-1.0 x 50	M6-1.0 x 50 BHCS
11	2	BHCS M6-1.0 x 16	M6-1.0 x 16 BHCS
12	4	BHCS M8-1.25 x 16	M8-1.25 x 16 BHCS
13	8	NYLOCK HEX M5-0.8	M5-0.8 NYLOCK HEX NUT
14	4	WASHER FLAT M8	M8 FLAT WASHER

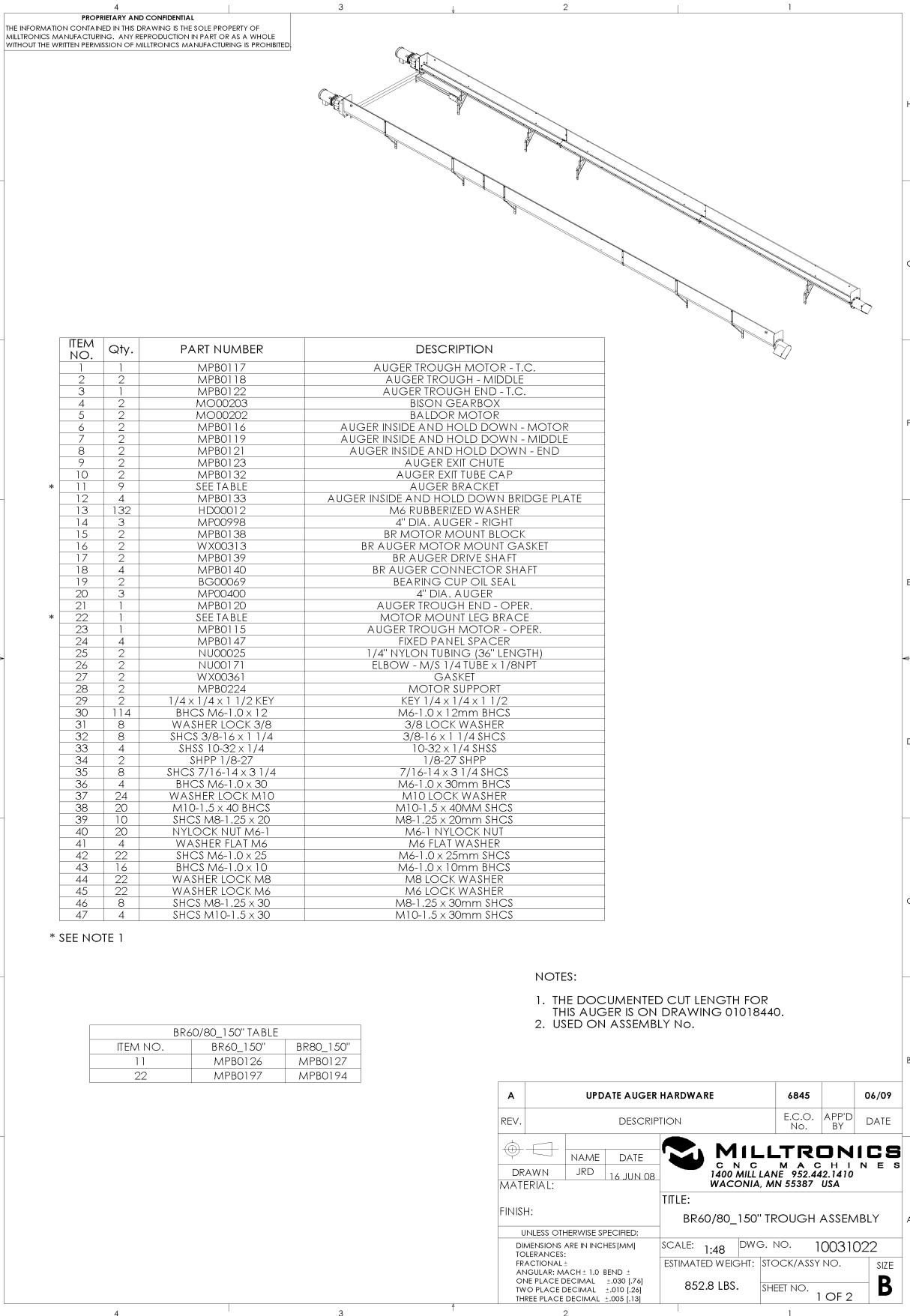


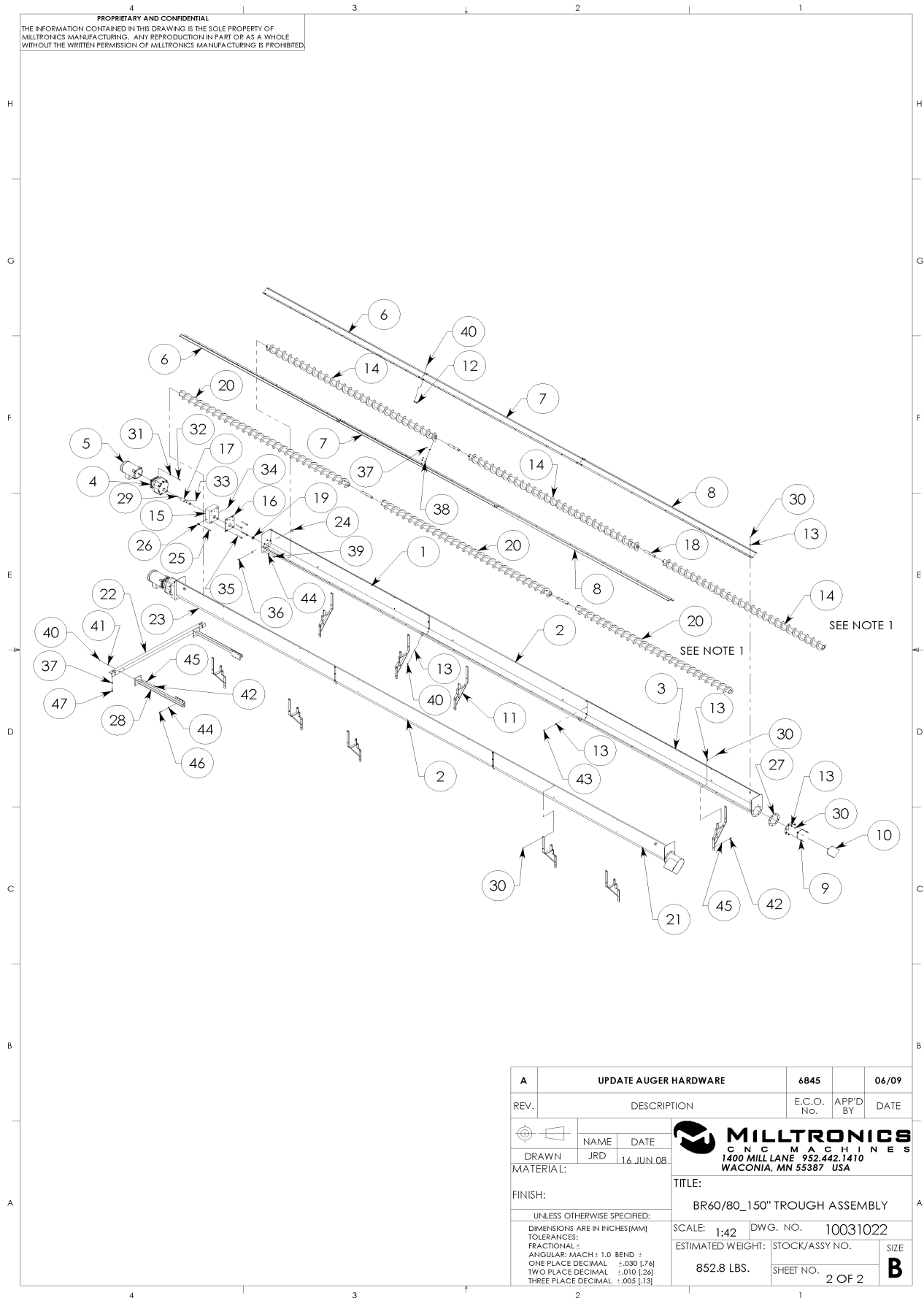
DOOR TABLE	
MPB0148	LIFT OFF DOOR - RIGHT
MPB0149	LIFT OFF DOOR - LEFT

	NAME	DATE	MILLTRONICS CNC MACHINES 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA
	DRAWN	JRD 01 JUL 08	
MATERIAL:		TITLE: LIFT OFF DOOR ASSEMBLY	
FINISH:		SCALE: 1:12 DWG. NO. 10031028	
UNLESS OTHERWISE SPECIFIED:		ESTIMATED WEIGHT: 41.00 LBS.	
DIMENSIONS ARE IN INCHES (MM) TOLERANCES: FRACTIONAL ± ANGULAR: MACH ±1.0 BEND ± ONE PLACE DECIMAL ±.030 (.76) TWO PLACE DECIMAL ±.010 (.26) THREE PLACE DECIMAL ±.005 (.13)		STOCK/ASSY NO.	SIZE B
		SHEET NO. 1 OF 1	

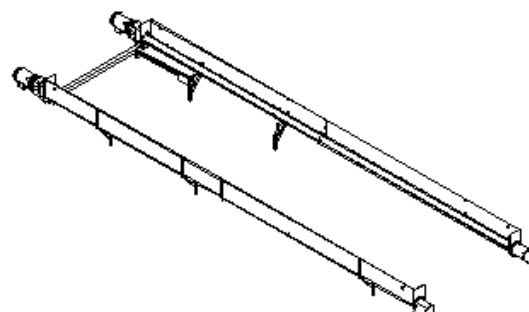
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BR60/80-150" Auger Trough Assembly





BR60/80-100" Auger Trough Assembly

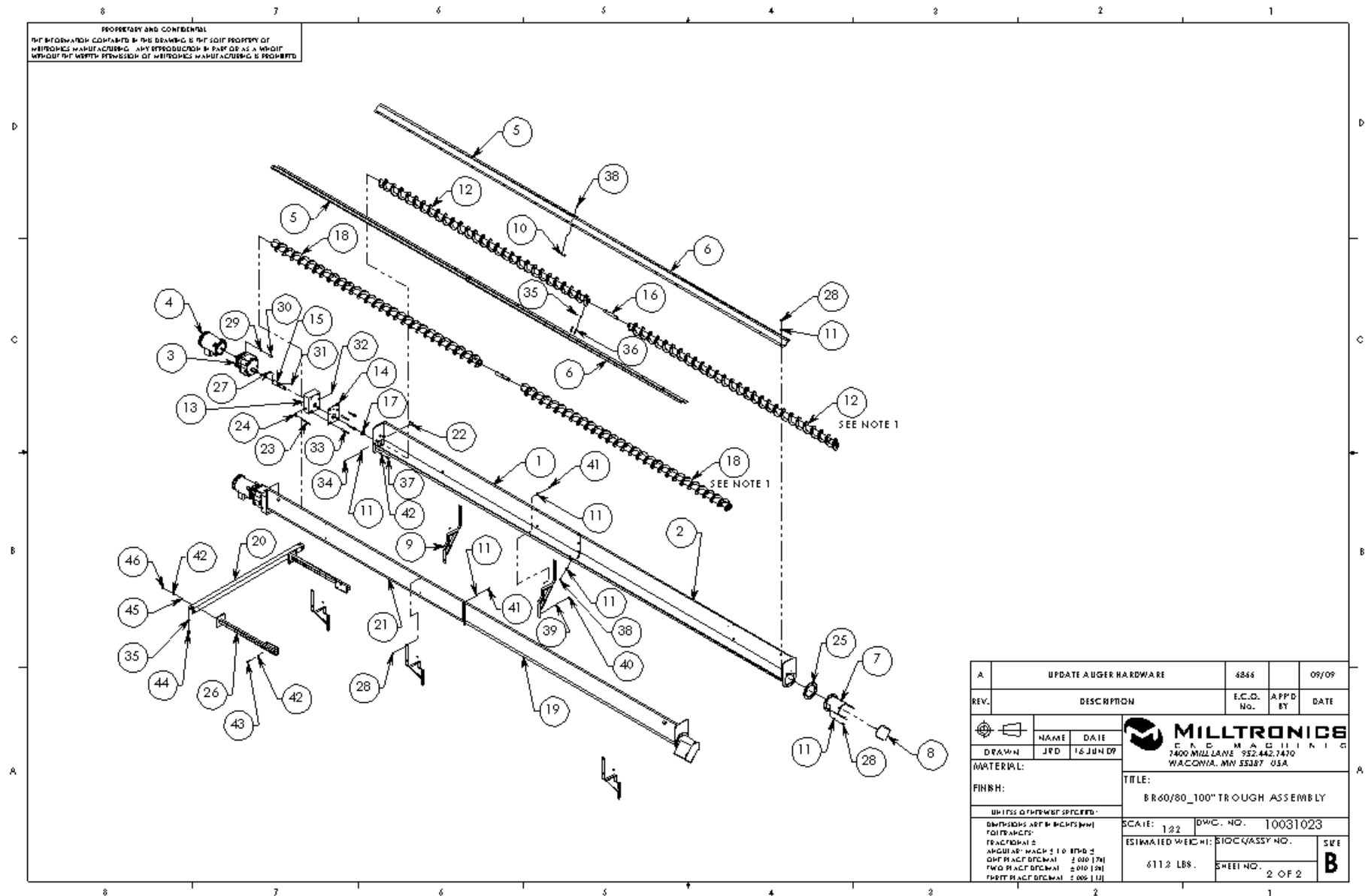


- NOTES:
1. THE DOCUMENTED CUT LENGTH FOR THIS AUGER IS ON DRAWING 01018440.
 2. USED ON ASSEMBLY NO.

BR60/80_100" TABLE		
ITEM NO.	BR60_100"	BR80_100"
9	MPB0126	MPB0127
20	MPB0197	MPB0194

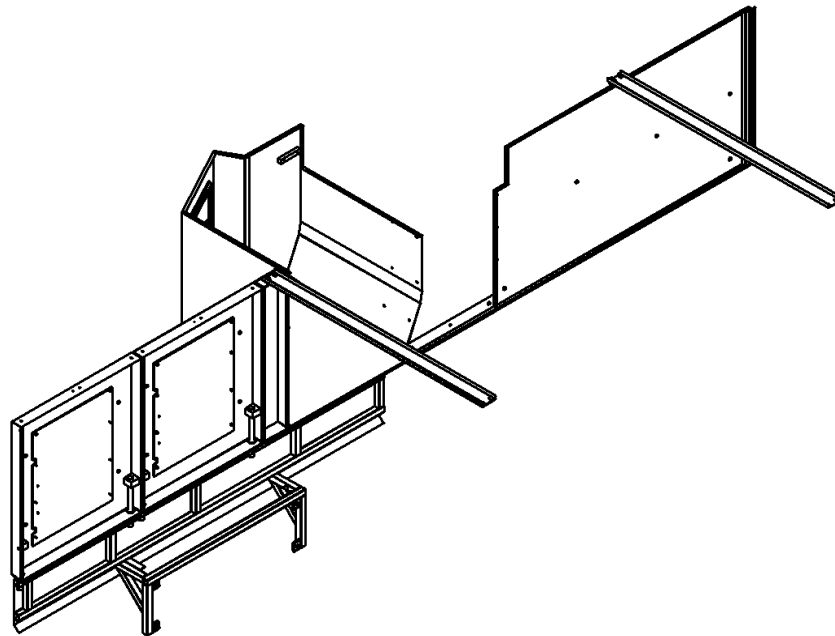
ITEM No.	Qty.	PART NO.	DESCRIPTION
1	1	MPB0117	AUGER TROUGH MOTOR - T.C.
2	1	MPB0122	AUGER TROUGH END - T.C.
3	2	MO00203	BEON GEARBOX-881-060-881-0143
4	2	MO00202	BALDOR MOTOR VM3531
5	2	MPB0116	AUGER INSIDE AND HOLD DOWN - MOTOR
6	2	MPB0121	AUGER INSIDE AND HOLD DOWN - END
7	2	MPB0123	AUGER EXIT CHUTE
8	2	MPB0132	AUGER EXIT TUBE CAP
9	5	SEE TABLE	BR60 AUGER BRACKET
10	2	MPB0133	AUGER INSIDE AND HOLD DOWN BRIDGE PLATE
11	99	HD00012	M6 RUBBERIZED WASHER
12	2	MP00998	4" DIA. AUGER - RIGHT
13	2	MPB0138	BR MOTOR MOUNT BLOCK
14	2	WX00313	BR AUGER MOTOR MOUNT GASKET
15	2	MPB0139	BR AUGER DRIVE SHAFT
16	2	MPB0140	BR AUGER CONNECTOR SHAFT
17	2	BG00069	BEARING CUP OIL SEAL
18	2	MP00400	4" DIA. AUGER
19	1	MPB0120	AUGER TROUGH END - OPER.
20	1	SEE TABLE	MOTOR MOUNT LEG BRACE
21	1	MPB0115	AUGER TROUGH MOTOR - OPER.
22	4	MPB0147	FIXED PANEL SPACER
23	2	NU00025	1/4" NYLON TUBING (36" LENGTH)
24	2	NU00171	ELBOW - MVS 1/4 TUBE X 1/4 NPT
25	2	WX00361	ROUND AUGER GASKET
26	2	MPB0224	MOTOR SUPPORT
27	2	1/4 X 1/4 X 1 1/2 KEY	KEY 1/4 X 1/4 X 1 1/2
28	86	BHCS M6-1.0 X 12	M6-1.0 X 12mm BHCS
29	8	WASHER LOCK 3/8	3/8 LOCK WASHER
30	8	SHCS 3/8-16 X 1 1/4	3/8-16 X 1 1/4 SHCS
31	4	SHSS 10-32 X 1/4	10-32 X 1/4 SHSS
32	2	SHPP 1/8-27	1/8-27 SHPP
33	8	SHCS 7/16-14 X 3 1/4	7/16-14 X 3 1/4 SHCS
34	4	BHCS M6-1.0 X 30	M6-1.0 X 30 BHCS
35	16	WASHER LOCK M10	M10 LOCK WASHER
36	12	BHCS M10-1.5 X 40	M10-1.5 X 40mm BHCS
37	10	SHCS M8-1.25 X 20	M8-1.25 X 20mm SHCS
38	8	NYLOCK NUT M6-1	M6-1 NYLOCK NUT
39	10	WASHER LOCK M6	M6 LOCK WASHER
40	10	SHCS M6-1.0 X 25	M6-1.0 X 25mm SHCS
41	8	BHCS M6-1.0 X 10	M6-1.0 X 10mm BHCS
42	22	WASHER LOCK M8	M8 LOCK WASHER
43	8	SHCS M8-1.25 X 30	M8-1.25 X 30mm SHCS
44	4	SHCS M10-1.5 X 30	M10-1.5 X 30mm SHCS
45	4	WASHER FLAT M8	M8 FLAT WASHER
46	2	SHCS M8-1.25 X 20	M8-1.25 X 20mm SHCS

A		UPDATE AUGER HARDWARE		4844		09/09
REV.	DESCRIPTION			E.C.O. NO.	APP'D BY	DATE
		NAME	DATE			
		JRD	16 JUN 09			
MATERIAL:				TITLE:		
FINISH:				BR60/80_100" TROUGH ASSEMBLY		
UNLESS OTHERWISE SPECIFIED:				SCALE: 1:48		
DIMENSIONS ARE IN INCHES (MM)				DWG. NO. 10031023		
TOLERANCES:				ESTIMATED WEIGHT: 611.2 LBS.		
FRACTIONAL 2				SHEET NO. 1 OF 2		
ANGULAR MACH 2.0 BPO 2				SHEET NO. 1 OF 2		
CHT PLAC DECIMAL 2010 (IN)				SHEET NO. 1 OF 2		
HWT PLAC DECIMAL 2010 (IN)				SHEET NO. 1 OF 2		



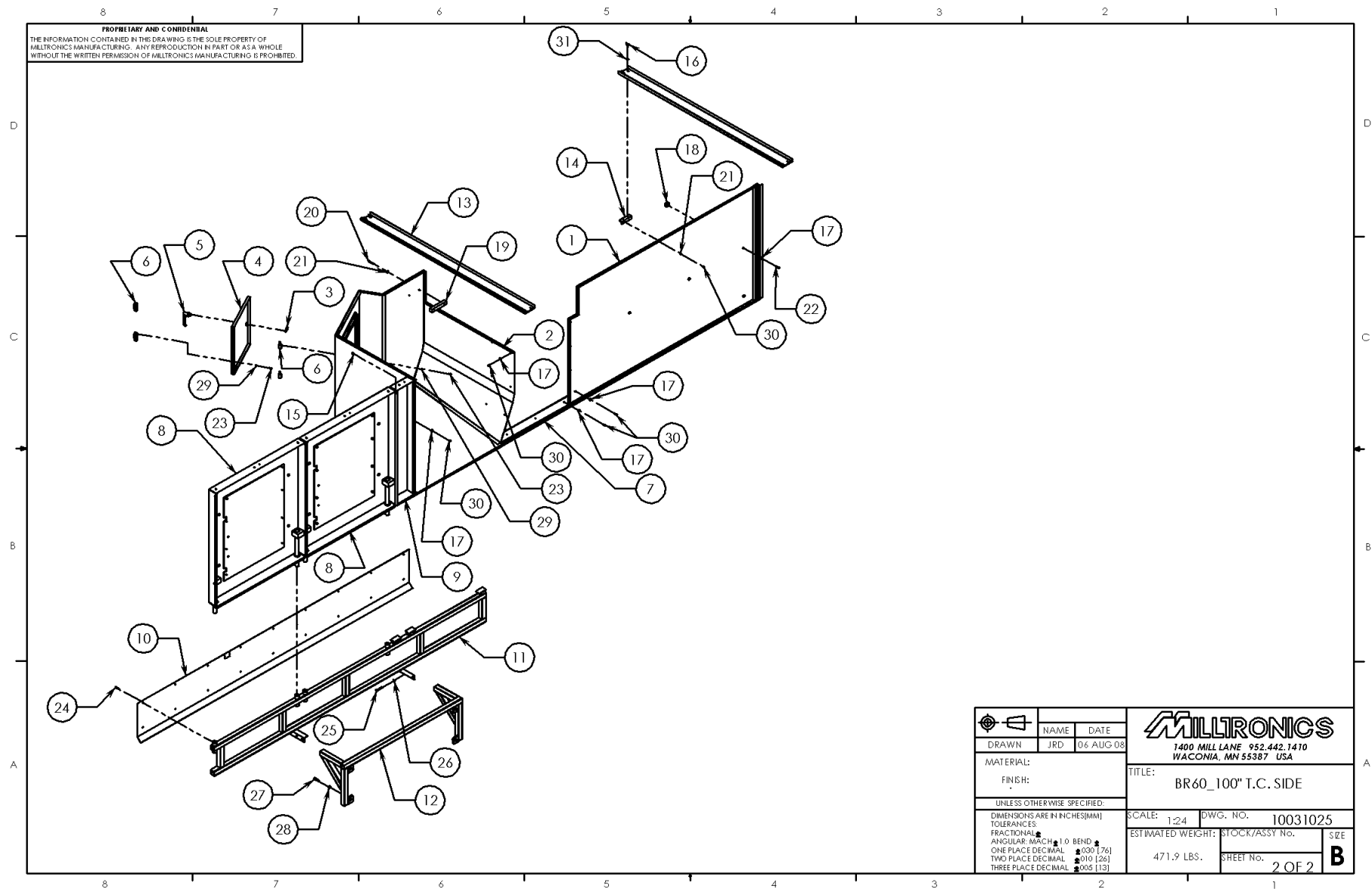
BR60-100" Enclosure Assembly – ATC Side

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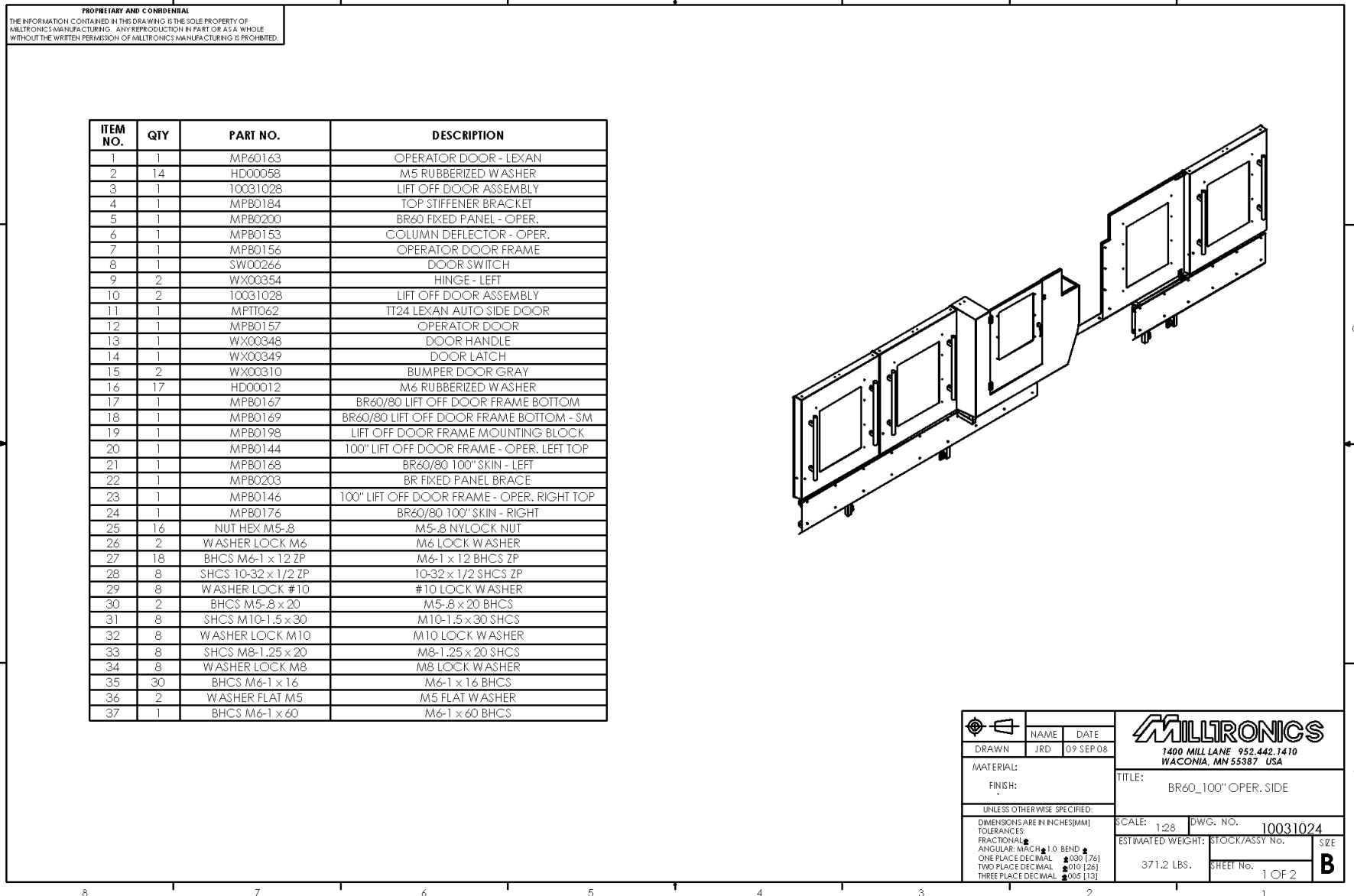


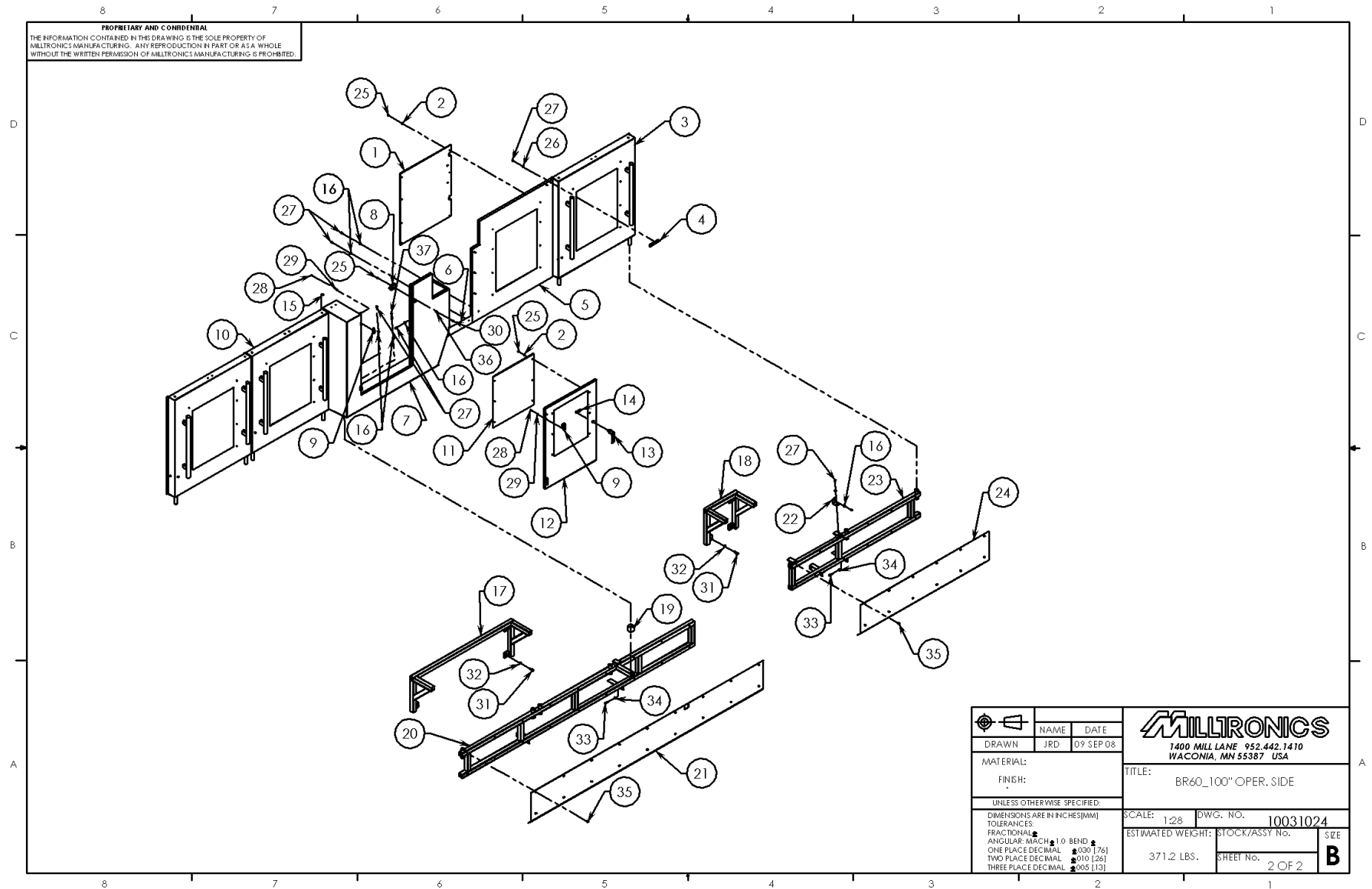
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	MPB0199	FIXED PANEL - 100"
2	1	MPB0155	CHANGER ENCLOSURE
3	1	WX00349	DOOR LATCH
4	1	MPB0174	DOOR
5	1	WX00348	DOOR HANDLE
6	2	WX0350	HINGE
7	1	MPB0152	COLUMN DEFLECTOR - T.C.
8	2	10031028	LIFT OFF DOOR ASSEMBLY
9	1	MPB0154	FILLER PANEL
10	1	MPB0168	100" SKIN - LEFT
11	1	MPB0145	LIFT OFF DOOR FRAME
12	1	MPB0167	FRAME MOUNT
13	2	MPB0159	TOP STIFFENER
14	1	MPB0184	TOP STIFFENER BRACKET
15	1	WX00310	BUMPER DOOR GRAY
16	8	WX00284	M6 THUMB SCREW
17	21	HD00012	M6 RUBBERIZED WASHER
18	4	MPB0147	FIXED PANEL SPACER
19	1	MPB0204	TOOL ARM SPACER BLOCK
20	2	BHCS M6-1 x 50 ZP	M6-1 x 50 BHCS ZP
21	4	WASHER LOCK M6	M6 LOCK WASHER
22	4	BHCS M6-1 x 25 ZP	M6-1 x 25 BHCS ZP
23	8	SHCS 10-32 x 1/2 ZP	10-32 x 1/2 SHCS ZP
24	18	BHCS M6-1 x 16	M6-1 x 16 BHCS
25	4	SHCS M8-1.25 x 20	M8-1.25 x 20 SHCS
26	4	WASHER LOCK M8	M8 LOCK WASHER
27	4	SHCS M10-1.5 x 30	M10-1.5 x 30 SHCS
28	4	WASHER LOCK M10	M10 LOCK WASHER
29	8	WASHER LOCK #10	#10 LOCK WASHER
30	19	BHCS M6-1 x 12 ZP	M6-1 x 12 BHCS ZP
31	8	WASHER FLAT M6	M6 FLAT WASHER

	NAME	DATE	
	DRAWN	JRD	
MATERIAL:			TITLE: BR60_100" T.C. SIDE
FINISH:			
UNLESS OTHERWISE SPECIFIED:			SCALE: 1:24 DWG. NO. 10031025
DIMENSIONS ARE IN INCHES (MM)			ESTIMATED WEIGHT: 471.9 LBS. STOCK/ASSY NO.
TOLERANCES:			SHEET NO. 1 OF 2 B
FRACTIONAL: $\frac{1}{16}$ 1.0 BEND			
ANGULAR: MACH ± 0.030 [76]			
ONE PLACE DECIMAL: ± 0.010 [25]			
TWO PLACE DECIMAL: ± 0.005 [13]			



BR60-100" Enclosure Assembly - Operator Side

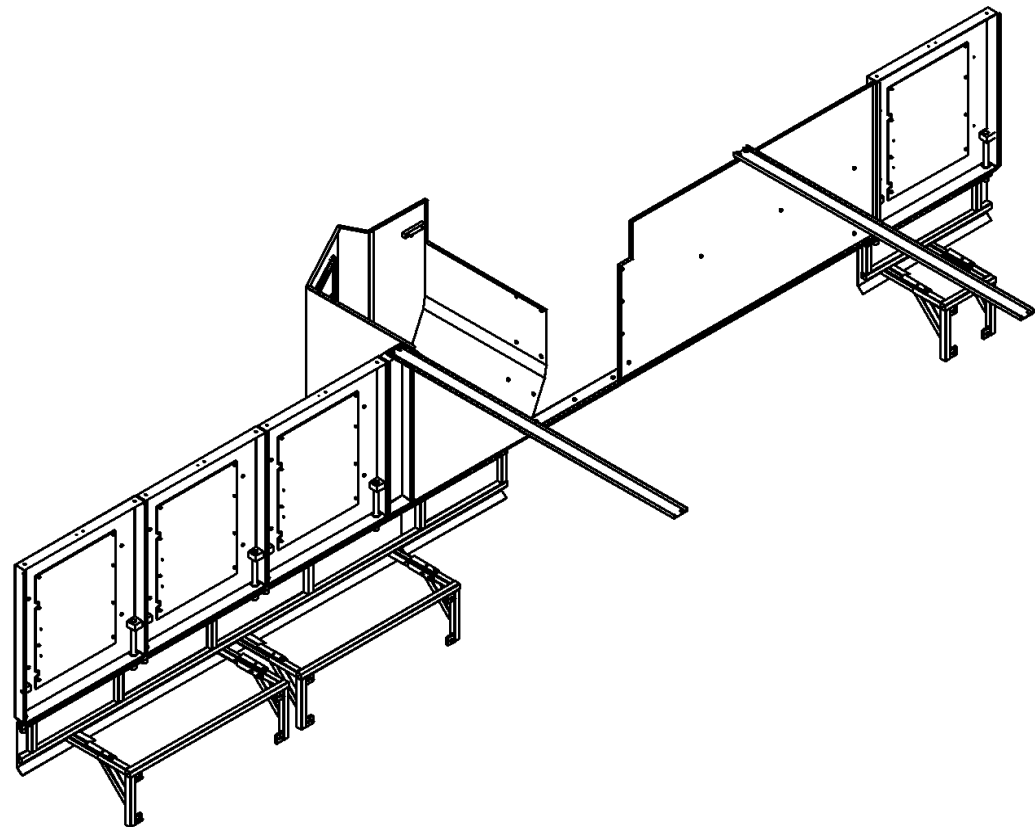




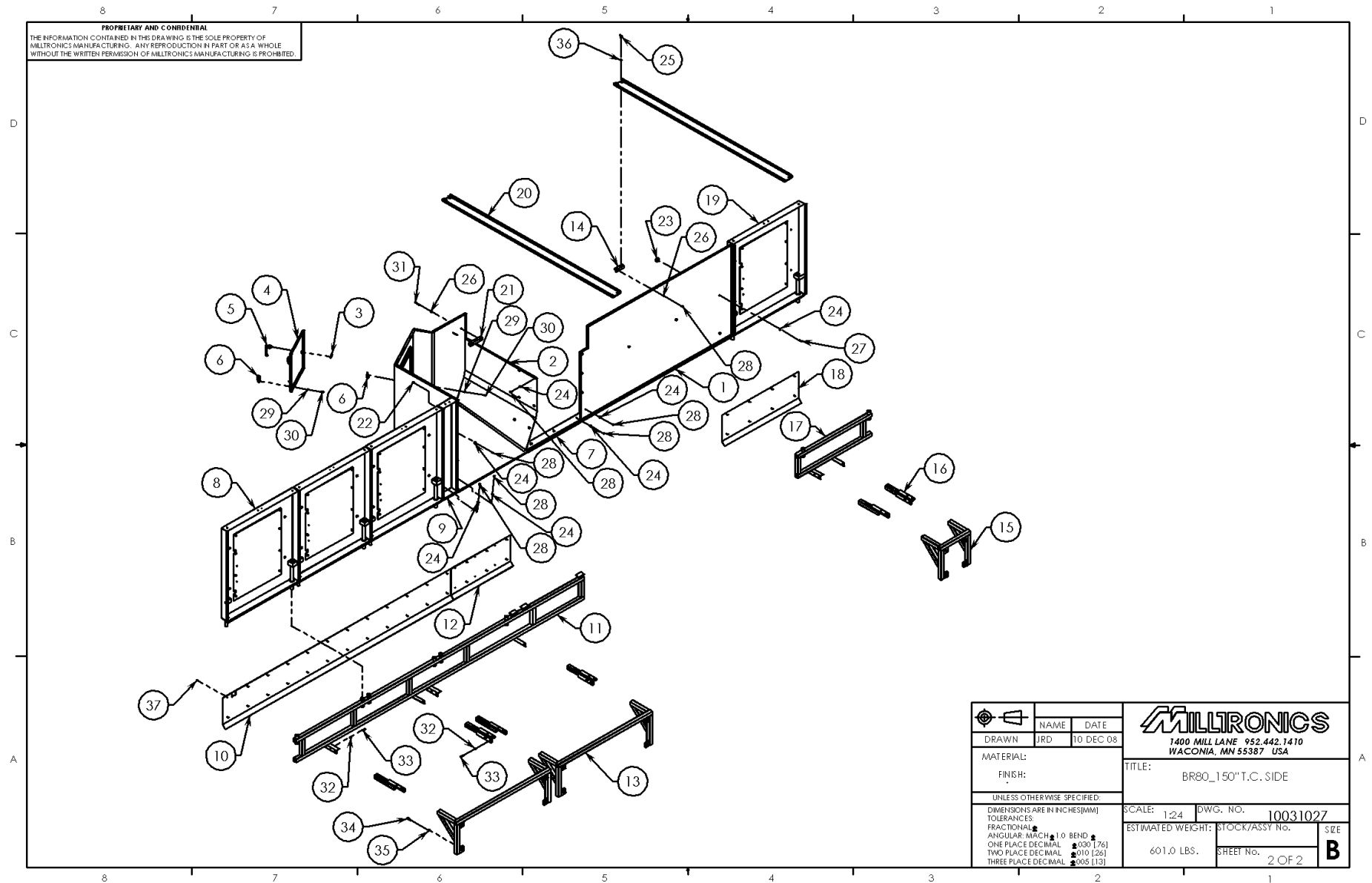
BR80-150" Enclosure Assembly – ATC Side

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ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	MPB0199	FIXED PANEL - 100"
2	1	MPB0155	CHANGER ENCLOSURE
3	1	WX00349	DOOR LATCH
4	1	MPB0174	DOOR
5	1	WX00348	DOOR HANDLE
6	2	WX00350	HINGE - RIGHT
7	1	MPB0152	COLUMN DEFLECTOR - T.C.
8	3	10031028	LIFT OFF DOOR ASSEMBLY - LEFT
9	1	MPB0154	FILLER PANEL
10	1	MPB0173	150" SKIN - LEFT
11	1	MPB0162	LIFT OFF DOOR FRAME
12	1	MPB0186	150" SKIN - LEFT FILLER
13	2	MPB0167	FRAME MOUNT
14	1	MPB0184	TOP STIFFENER BRACKET
15	1	MPB0169	FRAME MOUNT - SHORT
16	6	MPB0185	LIFT OFF DOOR FRAME EXTENSION
17	1	MPB0164	LIFT OFF DOOR FRAME - SHORT
18	1	MPB0170	150" SKIN - RIGHT
19	1	10031028	LIFT OFF DOOR ASSEMBLY - RIGHT
20	2	MPB0159	TOP STIFFENER
21	1	MPB0204	TOOL ARM SPACER BLOCK
22	2	WX00310	BUMPER DOOR GRAY
23	4	MPB0147	FIXED PANEL SPACER
24	23	HD00012	M6 RUBBERIZED WASHER
25	8	WX00284	M6 THUMB SCREW
26	4	WASHER LOCK M6	M6 LOCK WASHER
27	4	BHCS M6-1 x 25 ZP	M6-1 x 25 BHCS ZP
28	21	BHCS M6-1 x 12 ZP	M6-1 x 12 BHCS ZP
29	8	WASHER LOCK #10	#10 LOCK WASHER
30	8	SHCS 10-32 x 1/2 ZP	10-32 x 1/2 SHCS ZP
31	2	BHCS M6-1 x 50 ZP	M6-1 x 50 BHCS ZP
32	24	WASHER LOCK M8	M8 LOCK WASHER
33	24	SHCS M8-1.25 x 20	M8-1.25 x 20 SHCS
34	12	SHCS M10-1.5 x 30	M10-1.5 x 30 SHCS
35	12	WASHER LOCK M10	M10 LOCK WASHER
36	8	WASHER FLAT M6	M6 LOCK WASHER
37	38	BHCS M6-1 x 16	M6-1 x 16 BHCS

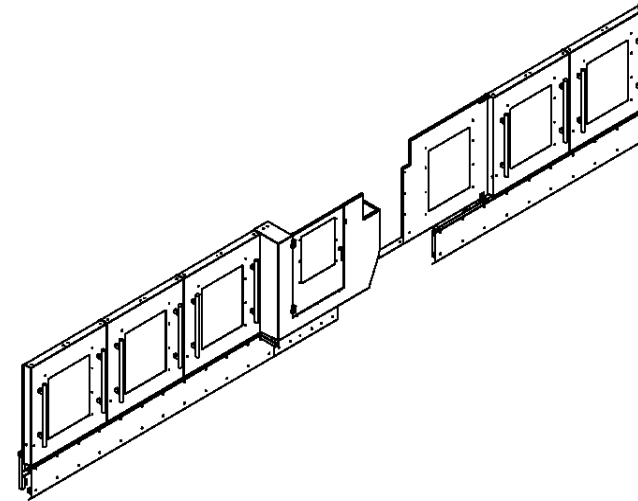


	NAME	DATE	
	DRAWN	10 DEC 08	
MATERIAL:		TITLE: BR80_150" T.C. SIDE	
FINISH:		SCALE: 1:24 DWG. NO. 10031027	
UNLESS OTHERWISE SPECIFIED:		ESTIMATED WEIGHT: 601.0 LBS.	
DIMENSIONS ARE IN INCHES (MM)		DWG. NO. 10031027	
TOLERANCES:		SHEET No. 1 OF 2	
FRACTIONAL: 1/16		SIZE B	
ANGULAR: MACH 1.0 BEND 1.0			
ONE PLACE DECIMAL: .030 [761]			
TWO PLACE DECIMAL: .010 [26]			
THREE PLACE DECIMAL: .005 [13]			



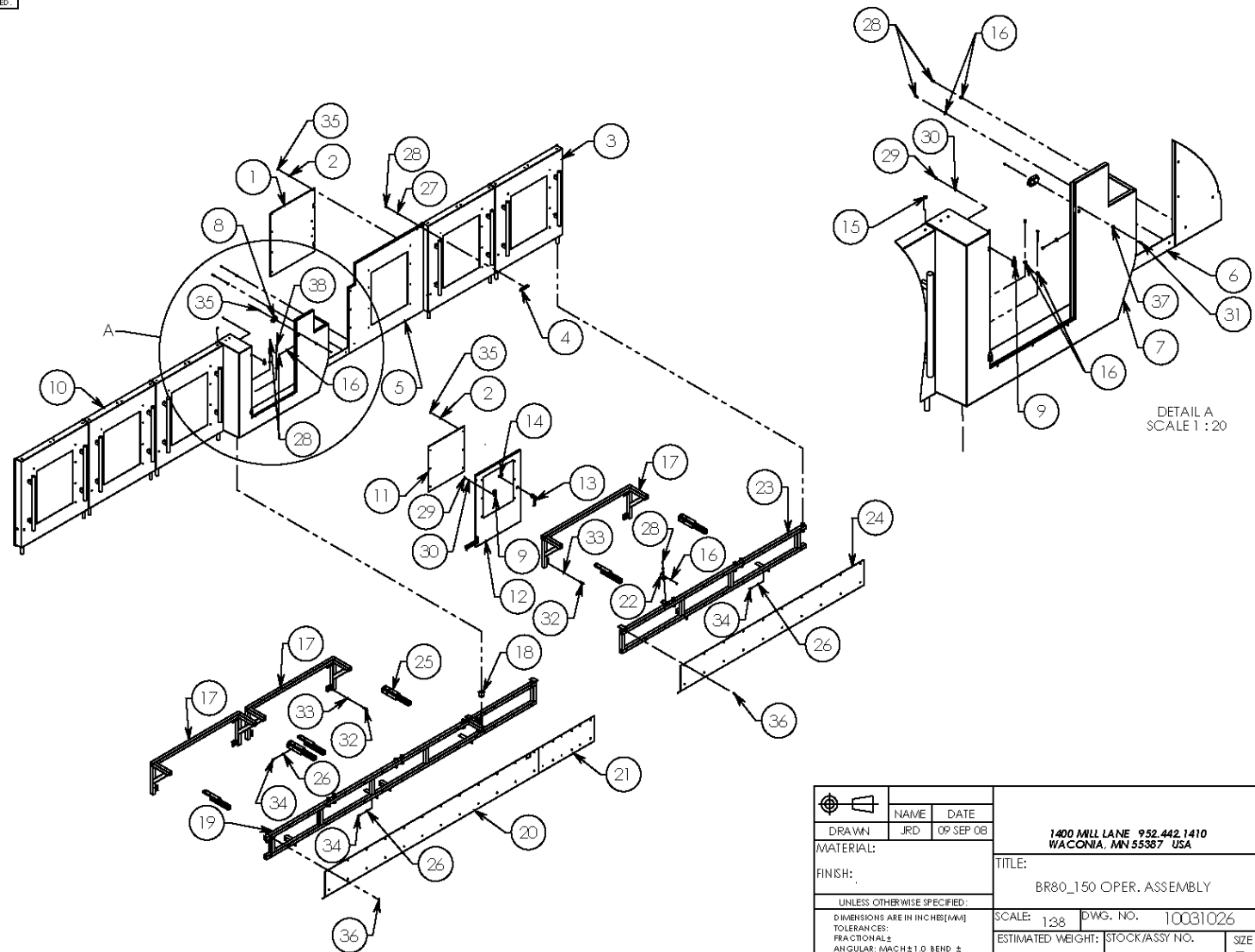
BR80-150" Enclosure Assembly – Operator Side

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ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	MPB0163	OPERATOR DOOR - LEXAN
2	14	HD00058	M5 RUBBERIZED WASHER
3	2	10031028	LIFT OFF DOOR ASSEMBLY - RIGHT
4	1	MPB0184	TOP STIFFENER BRACKET
5	1	MPB0151	FIXED DOOR - OPER
6	1	MPB0153	COLUMN DEFLECTOR - OPERATOR
7	1	MPB0156	OPERATOR DOOR FRAME
8	1	SW00266	SWITCH D4C 1203
9	2	WX00354	HINGE LEFT
10	3	10031028	LIFT OFF DOOR ASSEMBLY - LEFT
11	1	MPTT062	AUTO SIDE DOOR - LEXAN
12	1	MPB0157	OPERATOR DOOR
13	1	WX00348	NON LOCKING HANDLE
14	1	WX00349	1/4 TURN CAM LATCH
15	2	WX00310	BUMPER FRONT DOOR ENCLOSURE
16	17	HD00012	M6 RUBBERIZED WASHER
17	3	MPB0167	BR60/80 LIFT OFF DOOR FRAME BOTTOM
18	1	MPB0198	LIFT OFF DOOR FRAME MOUNTING BLOCK
19	1	MPB0161	150" LIFT OFF DOOR FRAME - OPERATOR DOOR LEFT - TOP
20	1	MPB0173	BR60/80 150" SKIN OPERATOR - LEFT
21	1	MPB0186	BR60/80 150" SKIN EXT. - OPERATOR - LEFT
22	1	MPB0203	FIXED BRACE
23	1	MPB0163	150" LIFT OFF DOOR FRAME TOOL CHANGER RIGHT-TOP
24	1	MPB0172	BR60/80 150" SKIN-RIGHT
25	6	MPB0185	BR80 LIFT OFF DOOR EXTENSION - BOTTOM
26	24	WASHER LOCK M8	M8 LOCK WASHER
27	2	WASHER LOCK M6	M6 LOCK WASHER
28	18	BHCS M6-1.0 x 12	M6-1.0 x 12mm BHCS
29	8	SHCS 10-32 x .50	SHCS 10-32 X .50
30	8	WASHER LOCK #10	#10 LOCK WASHER
31	2	BHCS M5-0.8 x 20	M5-0.8 x 20 BHCS
32	12	SHCS M10-1.5 x 30	M10-1.5 x 30mm SHCS
33	12	WASHER LOCK M10	M10 LOCK WASHER
34	24	SHCS M8-1.25 x 20	M8-1.25 x 20mm SHCS
35	16	NUT NYLOCK M5-.8	M5-.8 NYLOCK NUT
36	56	BHCS M6-1.0 x 16	M6 - 1.0 x 16mm BHCS
37	2	WASHER FLAT M5	M5 FLAT WASHER
38	1	BHCS M6-1.0 x 60	M6-1.0 x 60 BHCS



	NAME	DATE	1400 MILL LANE 952.442.1410 WACONIA, MN 55367 USA	
	DRAWN	JRD		
MATERIAL:			TITLE:	
FINISH:			BR80_150 OPER. ASSEMBLY	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES (MM) TOLERANCES: FRACTIONAL ± ANGULAR: MACH ±1.0° BEND ± ONE PLACE DECIMAL ±.030 (.76) TWO PLACE DECIMAL ±.010 (.25) THREE PLACE DECIMAL ±.005 (.13)			SCALE: 1:38	DWG. NO. 10031026
			ESTIMATED WEIGHT: 863.5 LBS.	STOCK/ASSY NO.
			SHEET NO. 1 OF 2	SIZE B

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	NAME		DATE		1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA
	DRAWN		JRD 09 SEP 08		
MATERIAL:					TITLE: BR80_150 OPER. ASSEMBLY
FINISH:					
UNLESS OTHERWISE SPECIFIED:					
DIMENSIONS ARE IN INCHES (MM)					
TOLERANCES:					
FRACTIONAL ±					
ANGULAR: MACH ± 1.0 BEND ±					
ONE PLACE DECIMAL ± 0.030 [.76]					
TWO PLACE DECIMAL ± 0.010 [.26]					
THREE PLACE DECIMAL ± 0.005 [.13]					
SCALE: 1:38				DWG. NO. 10031026	
ESTIMATED WEIGHT: 863.5 LBS.				STOCK/ASSY NO.	
SHEET NO. 2 OF 2				SIZE B	

Incomplete drawings at time of printing:

BR60-150" Enclosure Assembly – ATC Side

BR60-150" Enclosure Assembly - Operator Side

BR80-100" Enclosure Assembly – ATC Side

BR80-100" Enclosure Assembly – Operator Side

