



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

BR50,60,80-IL B Mechanical

12-6-2010
Rev 2

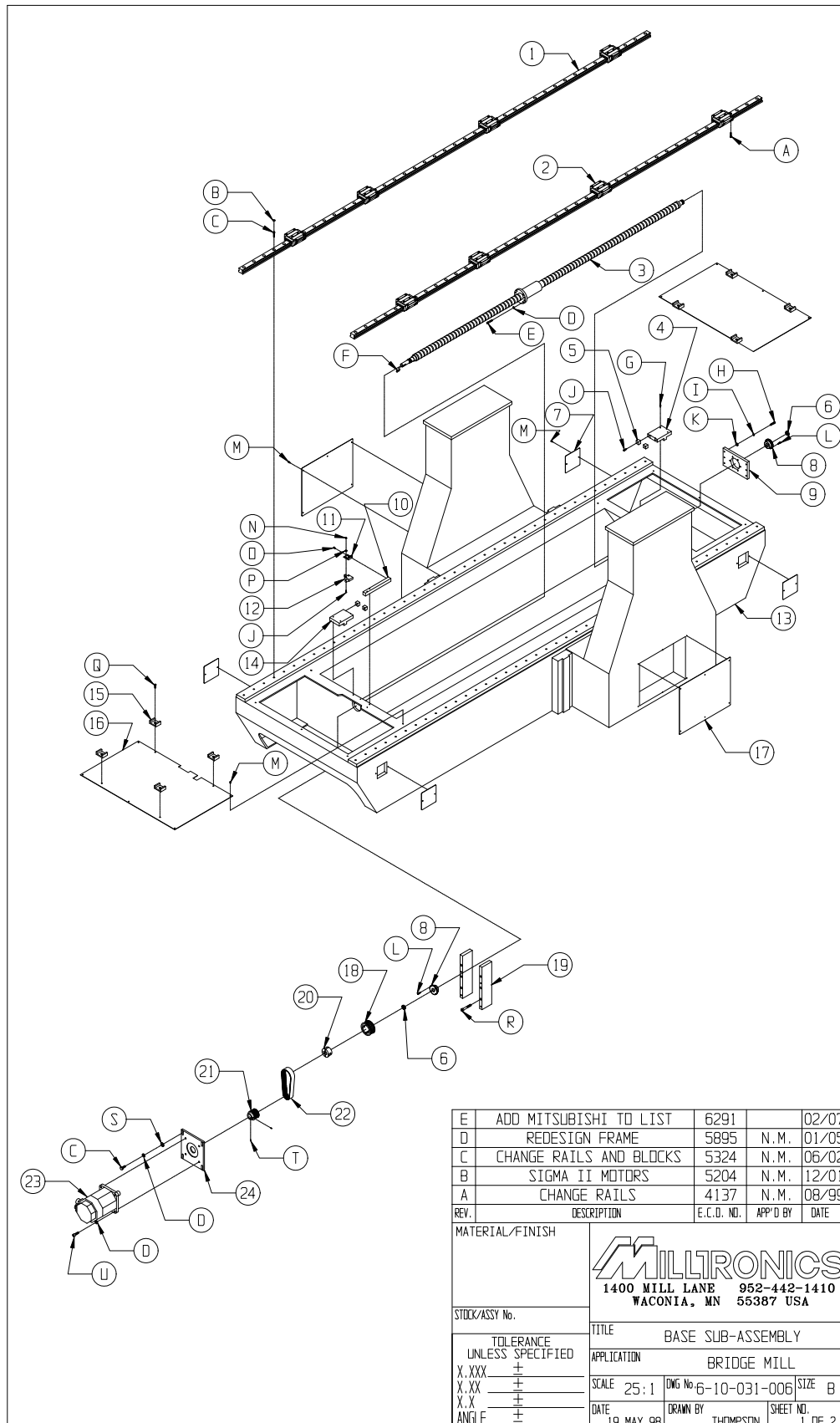
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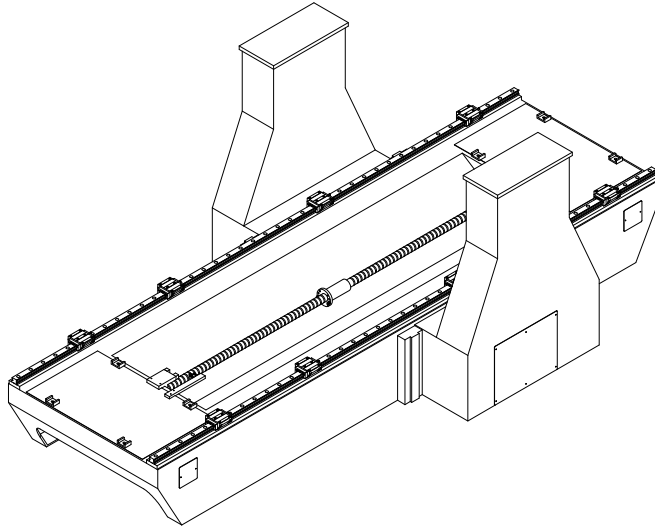
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Manual Discrepancy Sheet

1. Some enclosure drawings incomplete, listed on page 38

Base Assembly





PARTS LIST

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

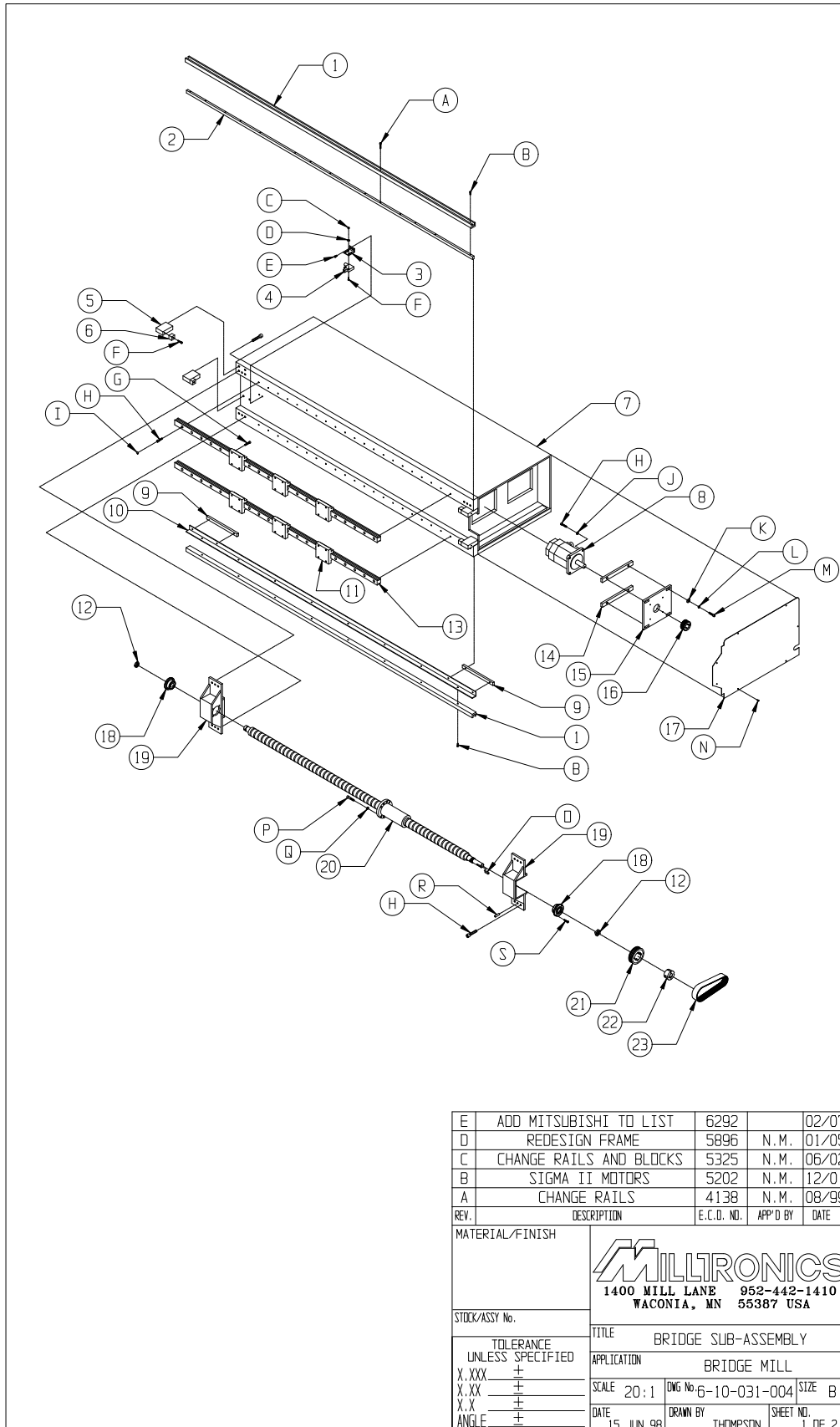
TRAVEL TABLE

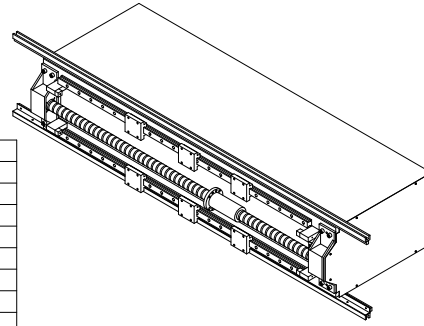
No.	DESCRIPTION	100"	150"
1	BALL RAIL	MPB-62	MPB-63
	ROLLER RAIL	N/A	N/A
2	BALL RAIL BLOCK	MP-728	MP-728
	ROLLER RAIL BLOCK	N/A	N/A
3	BALL SCREW	MPB-65	MPB-66
4	HARD STOP BLOCK	BR-155	BR-157
6	BEARING LOCKNUT	BG-119	MPB-56
8	BEARING CUP ASSEMBLY	BG-118	BG-95
14	HARD STOP BLOCK	BR-155	BR-156

* 100" REQUIRES 8 FOR X-AXIS
150" REQUIRES 14 FOR X-AXIS

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.D. 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		APPLICATION BRIDGE MILL		
X.XXX	±	SCALE 25:1	DWG No. 6-10-031-006	SIZE B
X.XX	±	DATE 19 MAY 98	DRAWN BY THOMPSON	SHEET NO. 2 OF 2
X.X	±			
ANGLE	±			

Bridge Assembly




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 1FK7100-5AF71	MD-185 (3.5kw)
	MD-146 (3kw)			
	MD-129 (4.4kw)			MD-187 (5kw)
16	PY-233	PY-233	PY-240	PY-233

RAIL, BLOCK AND BALL SCREW TABLE

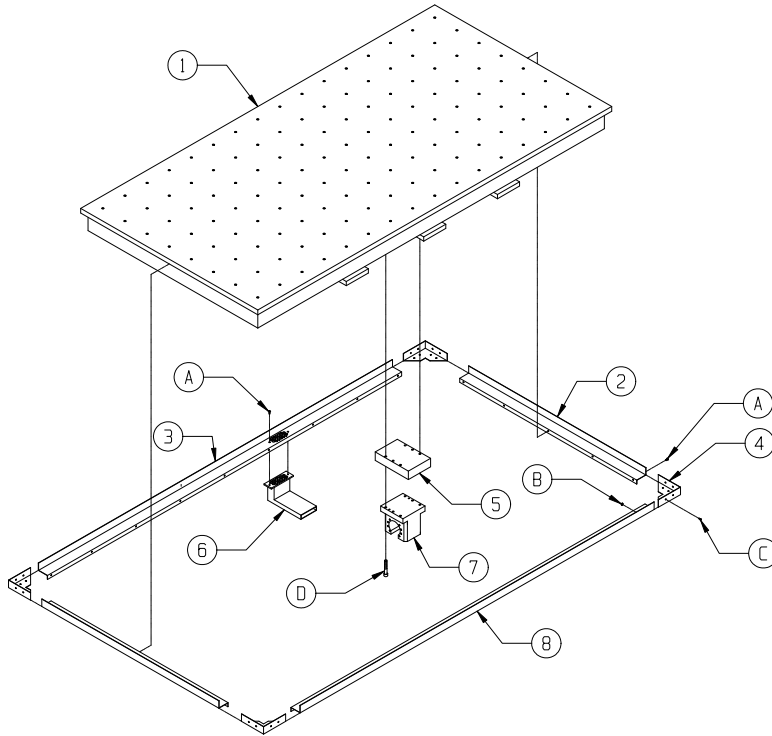
ITEM	DESCRIPTION	50"	60"	80"
11	BALL RAIL BLOCK	MP-728	MP-728	MP-728
	ROLLER RAIL BLOCK	MP-819	MP-819	MP-819
13	BALL RAIL	MPB-59	MPB-60	MPB-61
	ROLLER RAIL	MPB-72	MPB-73	MPB-74
20	BALL SCREW	MPB-67	MPB-68	MPB-69

HARDWARE LIST

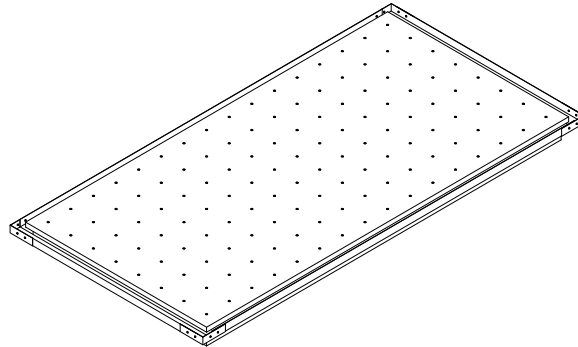
No.	QTY	DESCRIPTION
A	4	1/4-20 x 3/4 SHCS
B	18	1/4-20 x 1 1/2 FHCS
C	2	M5-.8 HEX NUT
D	2	M5 FLAT WASHER
E	2	M4-.7 x 12mm BHCS
F	6	M5-.8 x 16mm SHCS
G	28	3/8-16 x 1 1/4 SHCS
H	38	1/2-13 x 1 1/2 SHCS (50") MPB-59
	44	1/2-13 x 1 1/2 SHCS (60") MPB-60
	52	1/2-13 x 1 1/2 SHCS (80") MPB-61
	70	1/2-13 x 1 1/2 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				
STOCK/ASSY No.		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
TOLERANCE UNLESS SPECIFIED		TITLE BRIDGE SUB-ASSEMBLY		
X.XXX	±	APPLICATION BRIDGE MILL		
X.XX	±	SCALE 20:1	DWG No 6-10-031-004	SIZE B
X.X	±	DATE 15 JUN 98	DRAWN BY THOMPSON	SHEET NO. 2 OF 2
ANGLE	±			

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 ±				

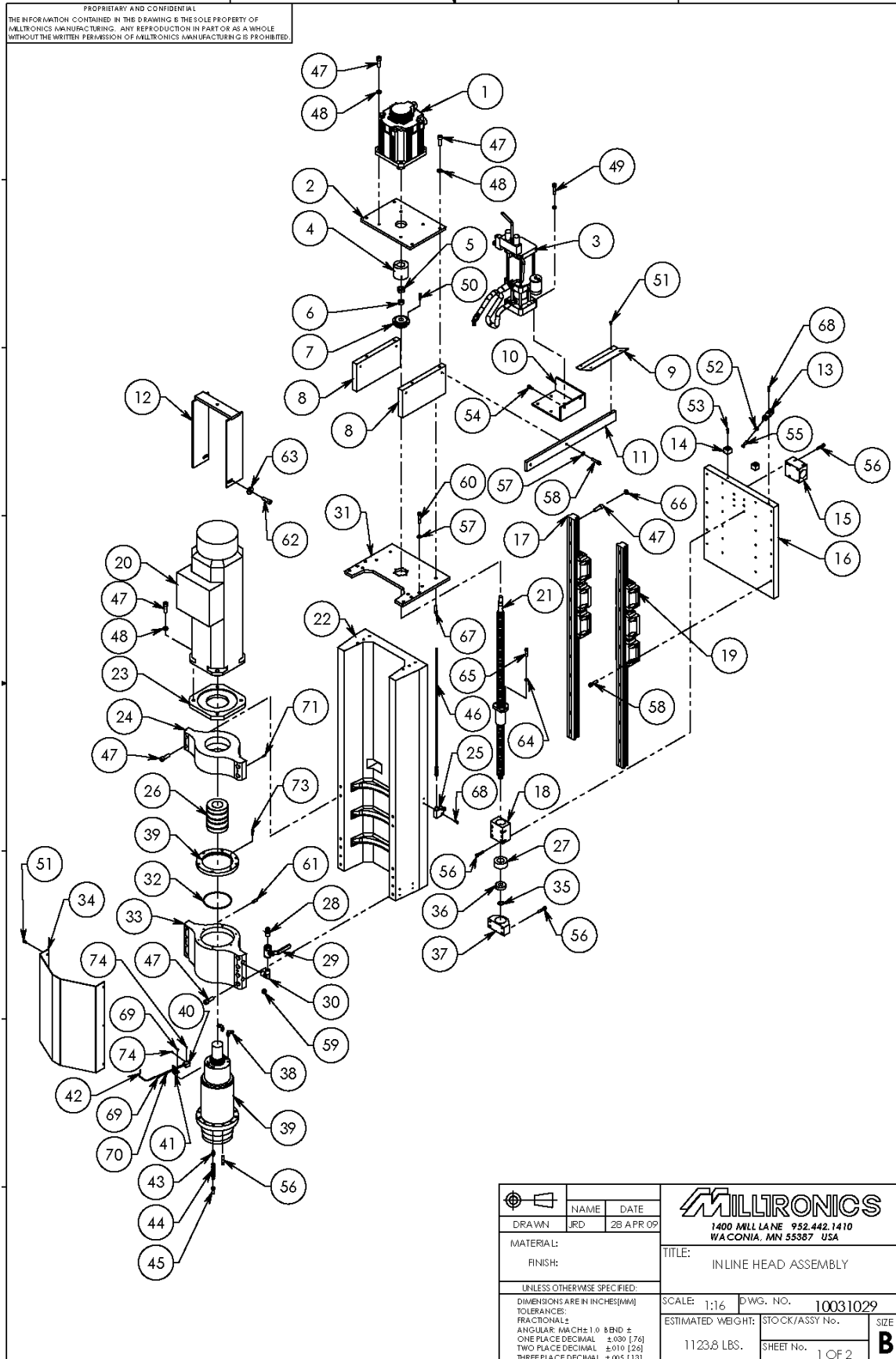


PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1		MACHINE TABLE
2	2		TABLE TROUGH - END
3	1		TABLE TROUGH - WITH DRAIN
4	4		TABLE TROUGH - CORNER
5	1		X-AXIS CARRIER SPACER
6	1		TABLE DRAIN CHUTE
7	1		X-AXIS CARRIER - MACHINED
8	1		TABLE TROUGH - WITHOUT DRAIN

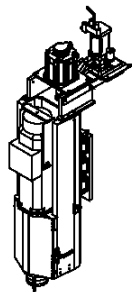
HARDWARE LIST			
No.	QTY	DESCRIPTION	
A	47	1/4-20 x 3/8 BHCS	
B	32	10-32 NUT	
C	32	10-32 3/8 BHCS	
D	6	3/8-16 x 4 SHCS	

A	REDESIGN FRAME	5897		02/05
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE TABLE SUB-ASSEMBLY		
TOLERANCE UNLESS SPECIFIED		APPLICATION BRIDGE MILL		
X .XXX	±	SCALE 20:1	DWG No. 6-10-031-005	SIZE B
X .XX	±	DATE 05 JUN 98	DRAWN BY THOMPSON	SHEET NO. 2 OF 2
X .X	±			
ANGLE	±			

Head and Z-Axis Assembly



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MOTOR LIFT			
MITSUBISHI MOTORS			
ITEM No.	MOTOR		COUPLER
12	MO00166	MP80201	MO00167
62	MP80201	MP80216	MP80216
63	M10-1.5 x 20mm SHCS	M12-1.75 x 20mm SHCS	M10 FLAT WASHER
63	M10 FLAT WASHER	M12 FLAT WASHER	

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

#26 coupler for mitsubishi motor is MA00369

RAIL & BLOCK LIST		
ITEM No.	DESCRIPTION	PART No.
17	BALL RAIL	MP80058
	ROLLER RAIL	MP80071
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	MP1128	AIR/OIL INTENSIFIER (NU-388) MOUNT
11	1	-	CABLE TRACK SUPPORT
12	1	SEE TABLE	MOTOR LIFT
13	1	MP10072	ML15 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	MP80190	INLINE BRIDGE HEAD COVER
35	1	MP10108	RETAINING RING EXTERNAL
36	1	BG00002	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	PR00050	PROX SWITCH
43	6	NU00111	LOC-LINE THREADED INSERT 1/4
44	24	MA00022	LOC-LINE LINKS 1/4
45	6	MA00216	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 PLUG	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.

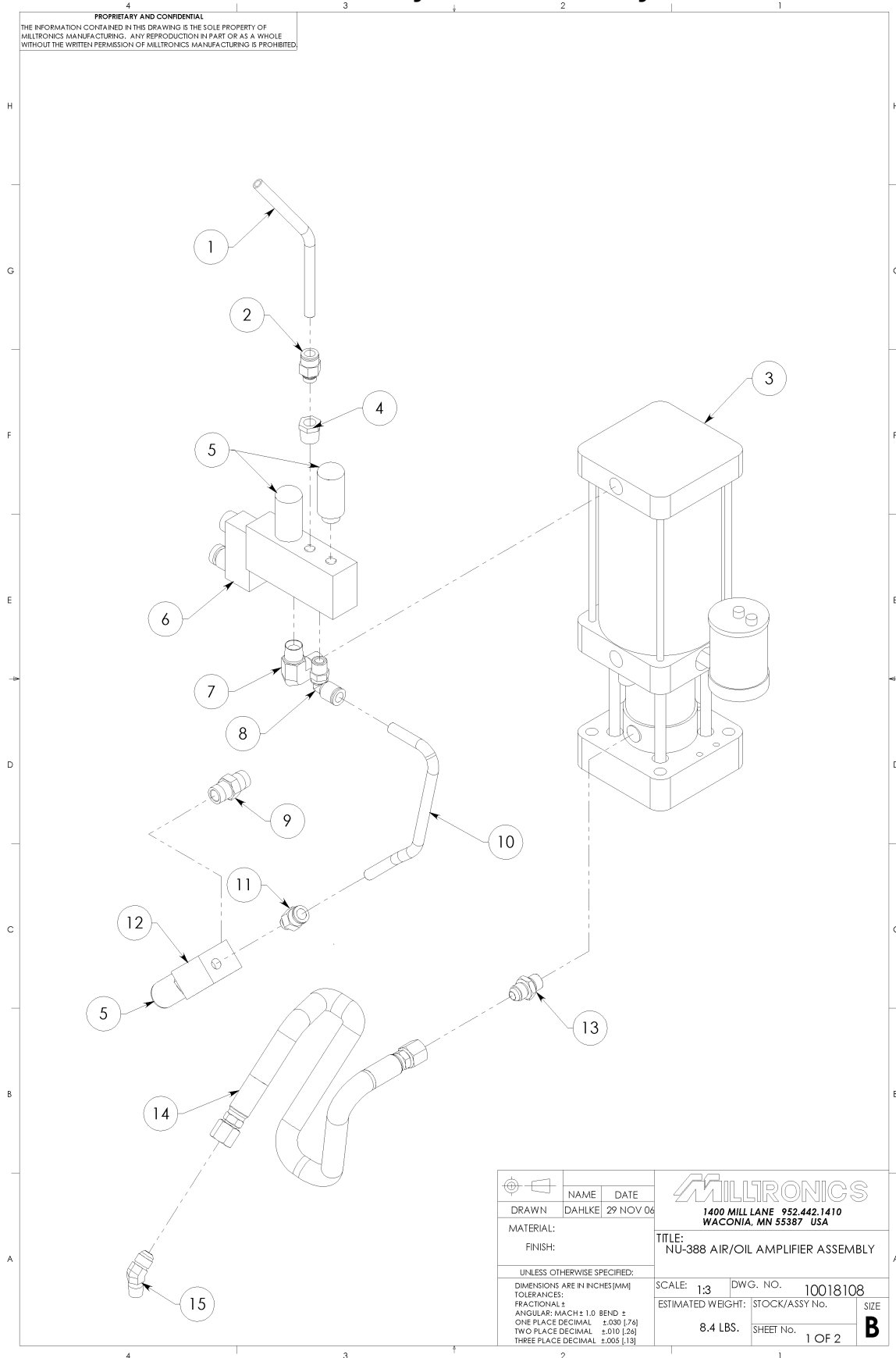
MOTOR & COUPLER TABLE				
ITEM No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
1	MO00138 (3kW)	22Nm A068-0247-B500	16Nm 1FK7083-5AF71-1EB0	MO00186 (3.5 kW)
4	MA00248	MA00248	MA00261	MO00188 (5 kW)
				MA00248

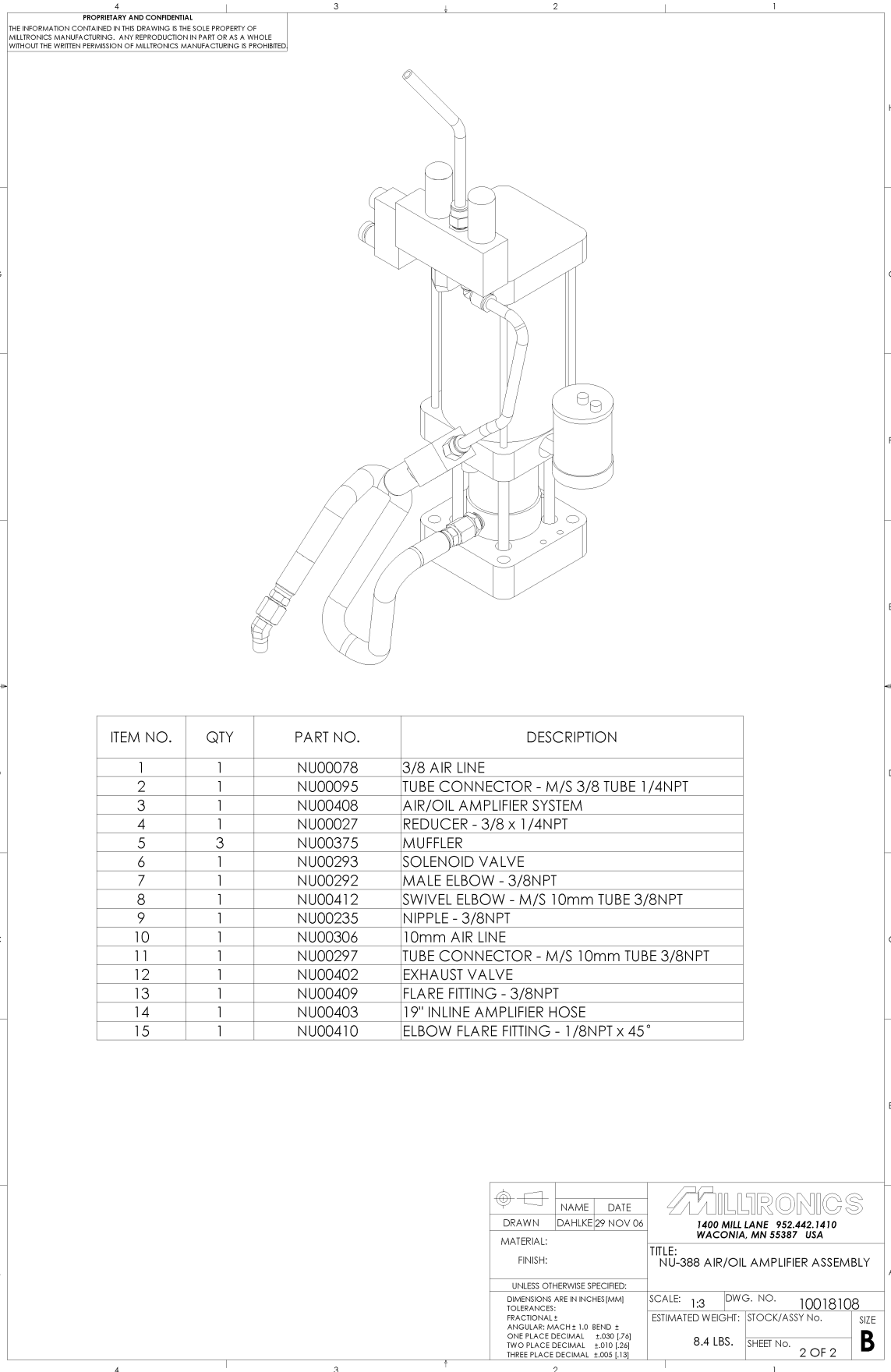
SPINDLE MOTOR		
ITEM No.	STOCK No.	DESCRIPTION
20	A068-1477-B133#0121	FANUC
	A068-1479-B133#0221	FANUC
	MO00166	MITSUBISHI
	MO00167	MITSUBISHI
	1PM6137	SIEMENS
	1PM6105	SIEMENS
	1PM6133	SIEMENS

INLINE SPINDLE		
ITEM No.	STOCK No.	DESCRIPTION
39	MP00864	10K RPM
	MP00865	15K RPM

 DRAWN: JRD DATE: 28 APR 09	NAME: _____ DATE: _____	 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA
	MATERIAL: _____ FINISH: _____ UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES(MM) TOLERANCES: FRACTIONAL ± ANGULAR: MACH ±1.0 & BND ± ONE PLACE DECIMAL ±.030 (76) TWO PLACE DECIMAL ±.010 (26) THREE PLACE DECIMAL ±.005 (13)	
TITLE: INLINE HEAD ASSEMBLY		SCALE: 1:30 DWG. NO. 10031029 ESTIMATED WEIGHT: 1123.8 LBS. STOCK/ASSY No. _____ SHEET No. 2 OF 2

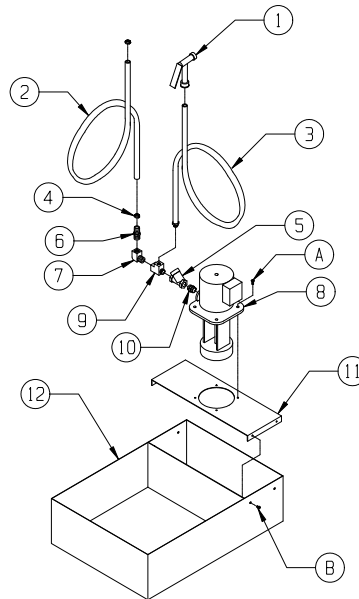
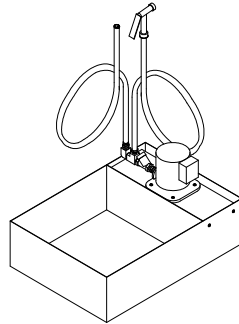
Drawbar Cylinder Assembly





Coolant Trough Assembly W/O Auger

*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

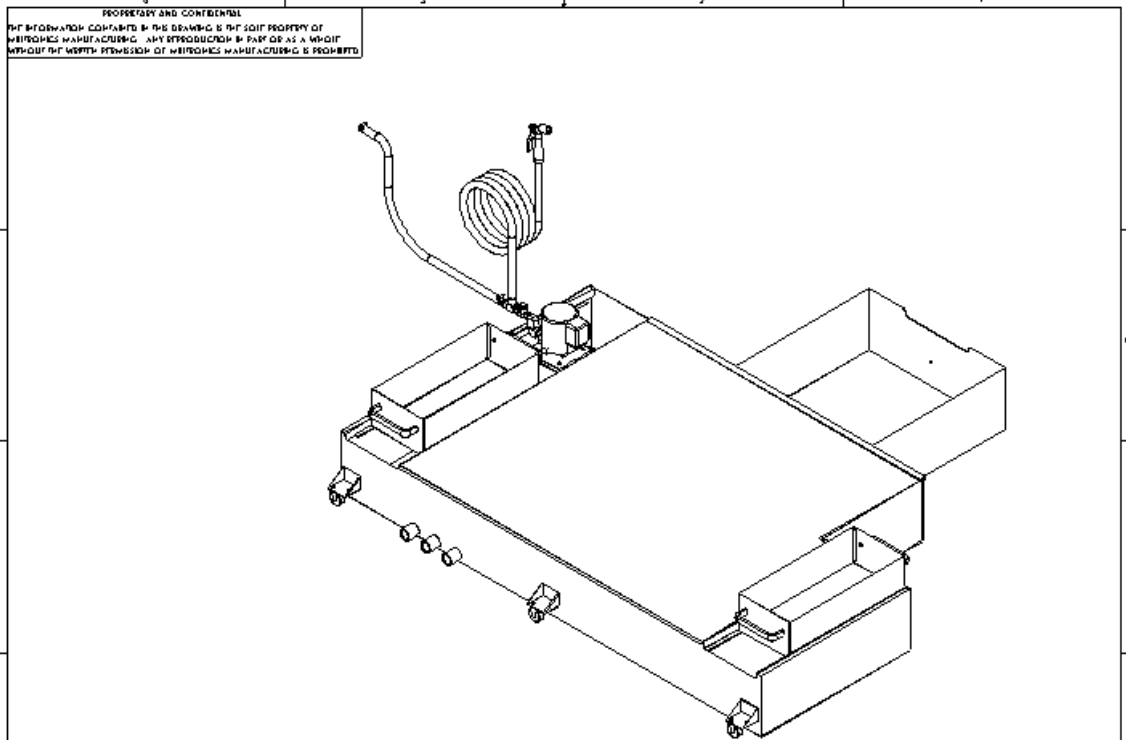
HARDWARE LIST

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
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE COOLANT TROUGH ASSEMBLY		
TOLERANCE UNLESS SPECIFIED		APPLICATION PARTNER I		
X.XXX	+/- .005	SCALE 15:1	DWG No. 6-10-008-066	SIZE B
X.XX	+/- .010			
X.X	+/- .030			
ANGLE	+/- 1.0°	DATE 10 APR 00		

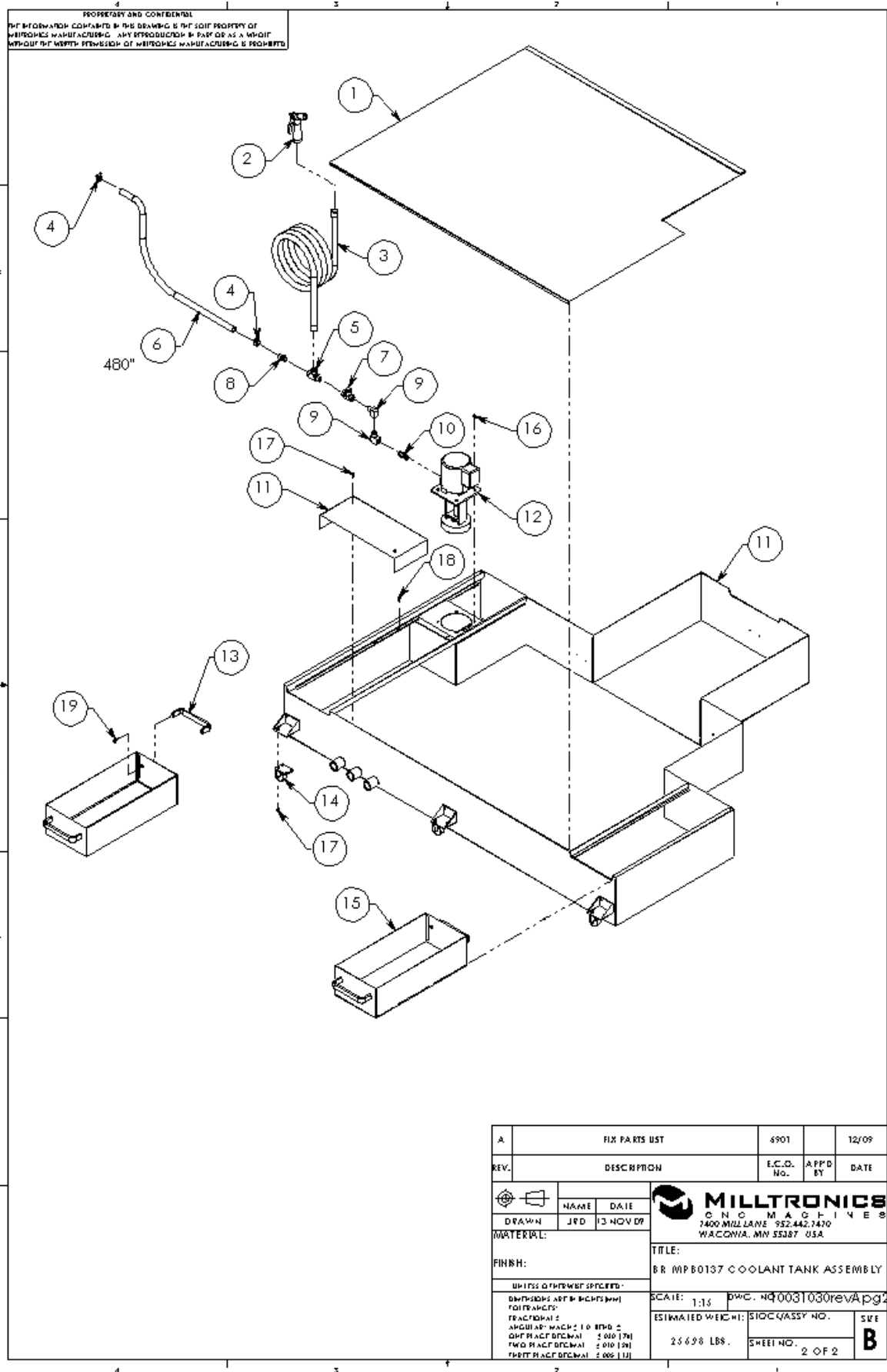
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Coolant Trough Assembly With Auger

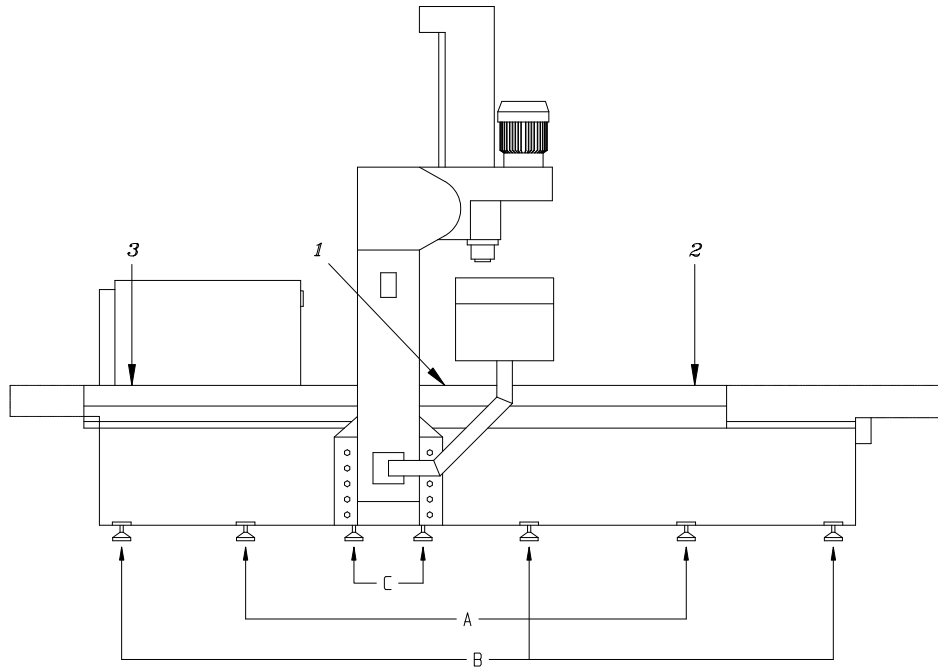


ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	-	BR TANK COVER
2	1	NU00124	NOZZEL WATER HOSE
3	1	NU00130	WASHDOWN HOSE ASSEMBLY 20'
4	2	NU00141	1" HOSE CLAMP
5	1	NU00127	TEE 1/2"NPT STREET 2225P-8
6	1	NU00069	NYLABRAID 3/4" 4511-0751
7	1	NU00128	1/2" SWING CHECK VALVE
8	1	NU00066	FITTING 1/2" NPT - 3/4" BARB
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
DRAWN	NAME DATE	 MILLTRONICS CNC MACHINES 7400 MILL LANE 932.442.7470 WACONIA, MN 55387 USA	
MATERIAL:		TITLE:	
FINISH:		BR MPB0137 COOLANT TANK ASSEMBLY	
UNITS: DIMENSIONS IN INCHES		SCALE: 1:16	QWC. NO. 10031030
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED		ESTIMATED WEIGHT: 25698 LBS.	STOCK/CLASSY NO.
FRACTIONAL: ANGULAR: MAX: 1.0 8740 2		SHEET NO. 1 OF 2	
ONE PLACE DECIMAL: 2 010 179		SHEET NO. 1 OF 2	
TWO PLACE DECIMAL: 2 005 111		SHEET NO. 1 OF 2	
THREE PLACE DECIMAL: 2 005 111		SHEET NO. 1 OF 2	



Leveling Instructions For BR 50



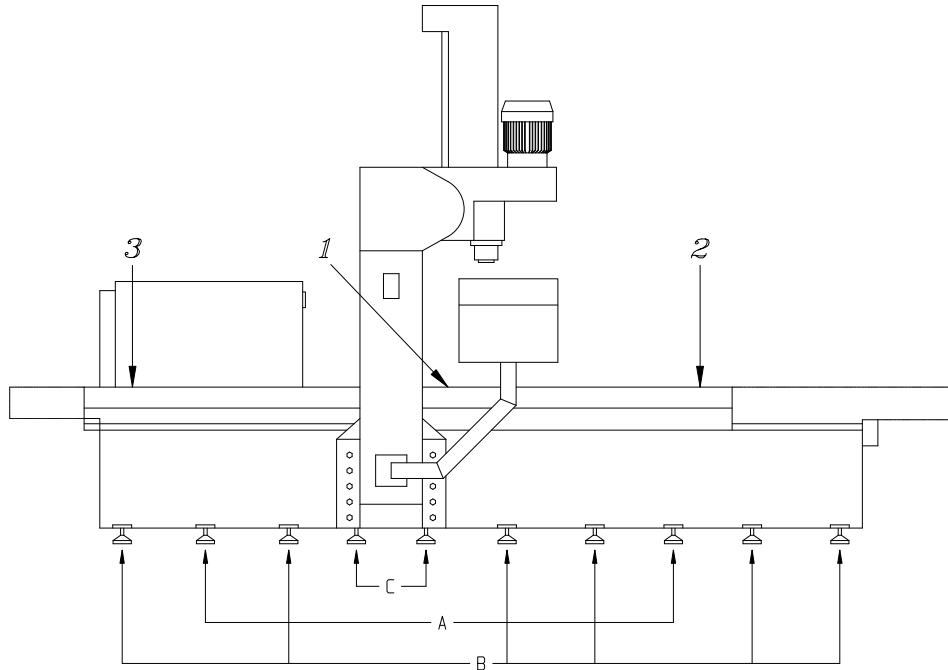
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
	MATERIAL/FINISH			
	STOCK/ASSY No.			
	TOLERANCE UNLESS SPECIFIED			
	X.XXX	±		
	X.XX	±		
	X.X	±		
	ANGLE	±		
	 1400 MILL LANE (612) 442-1410 WACONIA, MN 55387			
	TITLE BR50 LEVELING INSTRUCTIONS			
	APPLICATION BRIDGE MILL			
	SCALE 20:1	DWG No 6-10-031-018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



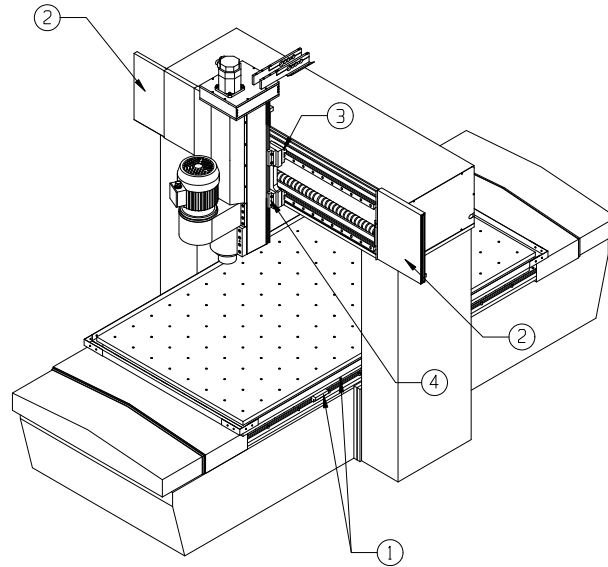
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
	MATERIAL/FINISH	 MILLTRONICS MANUFACTURING 1400 MILL LANE (612) 442-1410 WACONIA, MN 55387		
	STOCK/ASSY No.			
	TOLERANCE UNLESS SPECIFIED	TITLE BR60 & 80 LEVELING INSTRUCTIONS		
	X.XXX ±	APPLICATION BRIDGE MILL		
	X.XX ±	SCALE 20:1 DWG No 6-10-031-019 SIZE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

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.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 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.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 BRIDGE MILL GREASE INSTRUCTIONS		
X .XXX +/-		APPLICATION BRIDGE MILL		
X .XX +/-		SCALE 24:1	DWG No. 6-11-031-001	
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			
	STOCK/ASSY No.			
	TOLERANCE UNLESS SPECIFIED			
	X.XXX +/-			
	X.XX +/-			
	X.X +/-			
	ANGLE +/-			



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

TITLE BRIDGE MILL GREASE INSTRUCTIONS	
APPLICATION BRIDGE MILL	
SCALE 24:1	DWG No. 6-11-031-001 SIZE B
DATE 01 FEB 01	DRAWN BY NEW SHEET No. 2 OF 2

Retention Knob Chart

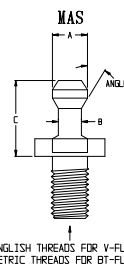
NOTE: STANDARD RETENTION KNOPS FOR 40 TAPER SPINDLES WITHOUT CTS

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART No.	KENAMETAL PART No.	VALINETE PART No.	LYNDEX PART No.
	A	B	C ANGLE	SPINDLE					
				60mm SPINDLE	70mm SPINDLE				
4833	59	39	1.27	60°	RH19, RH20, RH30, RH43, RH45, RH51, RH52, RH55, RH60, RH80 WH15, WH16, WH22, WH25, WH26, WH28, WH30, WH35, WH36, WH38, WH40, WH42, WH45, WH46, WH48, WH50, WH52, WH53, WH55, WH56, WH58, WH60, WH62, WH65, WH66, WH68, WH70, WH72, WH75, WH76, WH78, WH80, WH82, WH85, WH86, WH88, WH90, WH92, WH95, WH96, WH98, WH100, WH102, WH105, WH106, WH108, WH110, WH112, WH115, WH116, WH118, WH120, WH122, WH125, WH126, WH128, WH130, WH132, WH135, WH136, WH138, WH140, WH142, WH145, WH146, WH148, WH150, WH152, WH155, WH156, WH158, WH160, WH162, WH165, WH166, WH168, WH170, WH172, WH175, WH176, WH178, WH180, WH182, WH185, WH186, WH188, WH190, WH192, WH195, WH196, WH198, WH199, WH200, WH202, WH205, WH206, WH208, WH210, WH212, WH215, WH216, WH218, WH220, WH222, WH225, WH226, WH228, WH230, WH232, WH235, WH236, WH238, WH240, WH242, WH245, WH246, WH248, WH250, WH252, WH255, WH256, WH258, WH260, WH262, WH265, WH266, WH268, WH270, WH272, WH275, WH276, WH278, WH280, WH282, WH285, WH286, WH288, WH290, WH292, WH295, WH296, WH298, WH299, WH300, WH302, WH305, WH306, WH308, WH310, WH312, WH315, WH316, WH318, WH320, WH322, WH325, WH326, WH328, WH330, WH332, WH335, WH336, WH338, WH340, WH342, WH345, WH346, WH348, WH350, WH352, WH355, WH356, WH358, WH360, WH362, WH365, WH366, WH368, WH370, WH372, WH375, WH376, WH378, WH380, WH382, WH385, WH386, WH388, WH390, WH392, WH395, WH396, WH398, WH399, WH400, WH402, WH405, WH406, WH408, WH410, WH412, WH415, WH416, WH418, WH420, WH422, WH425, WH426, WH428, WH430, WH432, WH435, WH436, WH438, WH440, WH442, WH445, WH446, WH448, WH450, WH452, WH455, WH456, WH458, WH460, WH462, WH465, WH466, WH468, WH470, WH472, WH475, WH476, WH478, WH480, WH482, WH485, WH486, WH488, WH490, WH492, WH495, WH496, WH498, WH499, WH500, WH502, WH505, WH506, WH508, WH510, WH512, WH515, WH516, WH518, WH520, WH522, WH525, WH526, WH528, WH530, WH532, WH535, WH536, WH538, WH540, WH542, WH545, WH546, WH548, WH550, WH552, WH555, WH556, WH558, WH560, WH562, WH565, WH566, WH568, 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MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS MACHINE		COMMAND PART No.	FENAMATEL PART No.	VALENTINE PART No.	LYNDEX PART No.
	A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
4834	59	3	1.38	60°	RH19, RH20, RH30, RH33, RH35, RH36, RH37, RH38, RH39, RH40, RH41, RH42, RH43, RH44, RH45, RH46, RH47, RH48, RH49, RH50, RH51, RH52, RH53, RH54, RH55, RH56, RH57, RH58, RH59, RH60, RH61, RH62, RH63, RH64, RH65, RH66, RH67, RH68, RH69, RH70, RH71, RH72, RH73, RH74, RH75, RH76, RH77, RH78, RH79, RH80, RH81, RH82, RH83, RH84, RH85, RH86, RH87, RH88, RH89, RH90, RH91, RH92, RH93, RH94, RH95, RH96, RH97, RH98, RH99, RH100, RH101, RH102, RH103, RH104, RH105, RH106, RH107, RH108, RH109, RH110, RH111, RH112, RH113, RH114, RH115, RH116, RH117, RH118, RH119, RH120, RH121, RH122, RH123, RH124, RH125, RH126, RH127, RH128, RH129, RH130, RH131, RH132, RH133, RH134, RH135, RH136, RH137, RH138, RH139, RH140, RH141, RH142, RH143, RH144, RH145, RH146, RH147, RH148, RH149, RH150, RH151, RH152, RH153, RH154, RH155, RH156, RH157, RH158, RH159, RH160, RH161, RH162, RH163, RH164, RH165, RH166, RH167, RH168, RH169, RH170, RH171, RH172, RH173, RH174, RH175, RH176, RH177, RH178, RH179, RH180, 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ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR BT-FLANGE

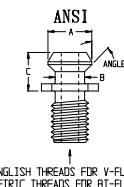
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITH CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART No.	PEN/MATERIAL PART No.	VALENTIN PART No.	LYNDEX PART No
	A	B	C ANGLE	60mm SPINDLE	70mm SPINDLE				
4836	.74	.49	.64 45°	SELECTION NOT AVAILABLE	RH20, RH30, RH33, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM22, VM25, VM30, TT24, TT40, VM25, VM30, TT24, TT40, HMC20, HMC35	RC4E-0001	RK11122	PT-475C	C40-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILLITRONICS		MACHINE	COMMAND PART NO.	KENNAMETAL PART NO.	VALENTIN PART NO.	LYNDEX PART NO.
	A	B	C		60mm SPINDLE	70mm SPINDLE					
4837	74	49	.75	45°	SECTION NOT AVAILABLE		R120, R130, R133, RH35, BR50, BR60, BR80, VM15, VM20, VM22, VM25, VM30, VM36, VM40, VM20, VM25, VM30, VM14, T140, VM25, VM30, T124, T140,	RS4M-0115	RC11126A	N/A	B40-FADAL



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

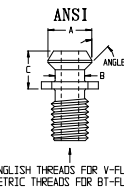
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES WITH OR WITHOUT CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				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°	VM22XP, VM25XP, VM30XP, RH33XP, RH35XP, HMC70	RCBE-0001	DWG RK11144	N/A	CSO-STO

ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILL/ONICS 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, RH55XP, HMC70	RSEM-0105	CRG DW11144A	N/A	N/A



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

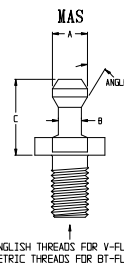
NOTE: OPTIONAL RETENTION KNOBS FOR 40 TAPER SPINDLES

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SECTION	DIMENSIONS			MILL/TRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.	
	A	B	C	ANGLE	60mm SPINDLE					70mm SPINDLE
4831	59.39	1.27	45°	SELECTION NOT AVAILABLE	RH20, RH30, RH36, RH35, GR50, BR60, BR90, RH16, VM20, VM22, VM25, VM30, VM16, VM20, VM22, VM25, VM30, VM16, VM20, VM25, VM30, VM16, VM20, HMC20, HMC35	RB4E-0001	RC13114	PT-532-45	C40-4500	

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS	MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
	A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
4832	59	39	1.38	45°	SELECTION NOT AVAILABLE	RH20, RH30, RH33, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM32, VM35, VM40, VMC25, VMC30, TT14, TT40, HMC20, HMC35, HMC35	RB4M-0001	RC31113	PT-444-45	B40-4500



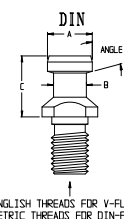
ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR BT-FLANGE

DIN 69872 RETENTION KNOBS STYLE CT-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				
4838	75	55	1.02	75°	SELECTION NOT AVAILABLE	RH20, RH30, RH33, RH35, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM40, VM22, VM25, VM30, TM24, TM40, HMC20, HMC35	RS4E-0114-C	DWG RK71125	N/A	C40-150C

DIN 69872 RETENTION KNOBS STYLE DIN-PLANGE 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				
4B39	75	55	1.02	75°	SELECTION NOT AVAILABLE		RS4N-0114-C	DWG RK71124	N/A	B40-1500



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

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 70nn 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



TITLE

RETENTION KNOB CHART

SCALE 1.75:1

DWG NO. 6-11-018-054

SIZE B

APPLICATION

GENERAL PRODUCTS

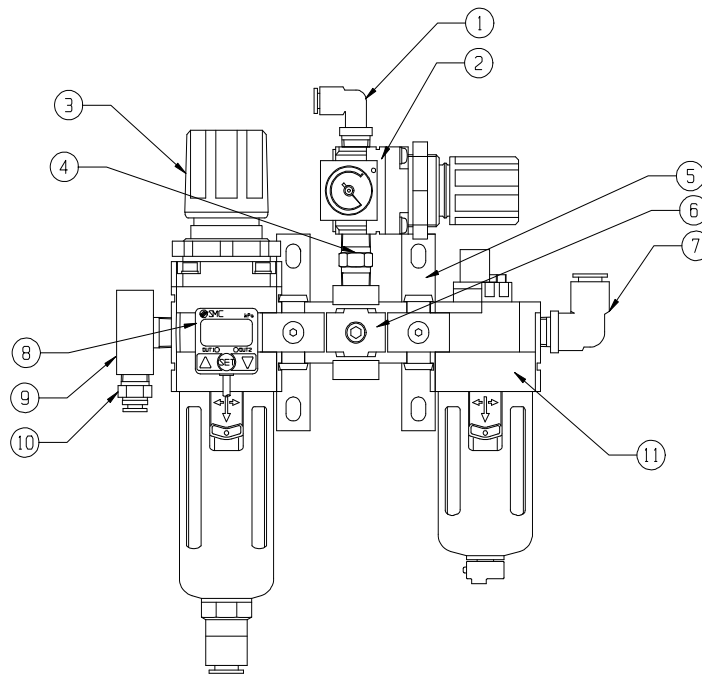
DATE 30 APR 99

DRAWN BY DAHLKE

SHEET NO. 1 OF 1

Air Filter / Regulator / Lubricator Assembly

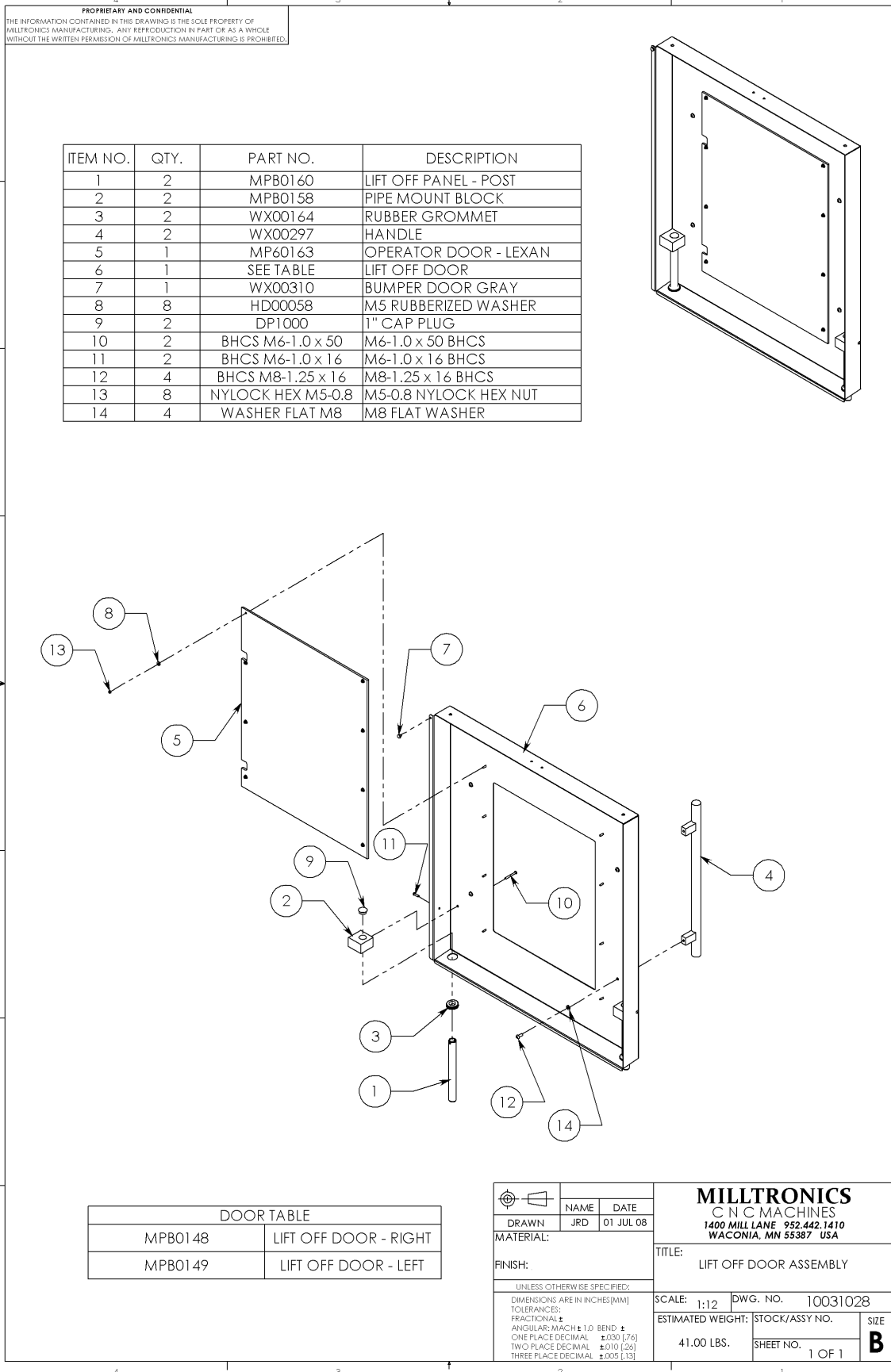
PARTS LIST			
ITEM	QTY	STOCK No.	DESCRIPTION
1	1	NU-199	1/4 NPT 3/8 TUBE SWIVEL ELBOW
2	1	NU-262	LOW PRESSURE REGULATOR W/GAGE
3	1	NU-212	LARGE FILTER/HIGH PRESSURE REGULATOR
4	1	NU-30	1/4 NPT PIPE NIPPLE
5	2	NU-210	LARGE MOUNTING SPACER
6	1	NU-211	LARGE MANIFOLD SPACER
7	1	NU-199	1/4 NPT 3/8 TUBE SWIVEL 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



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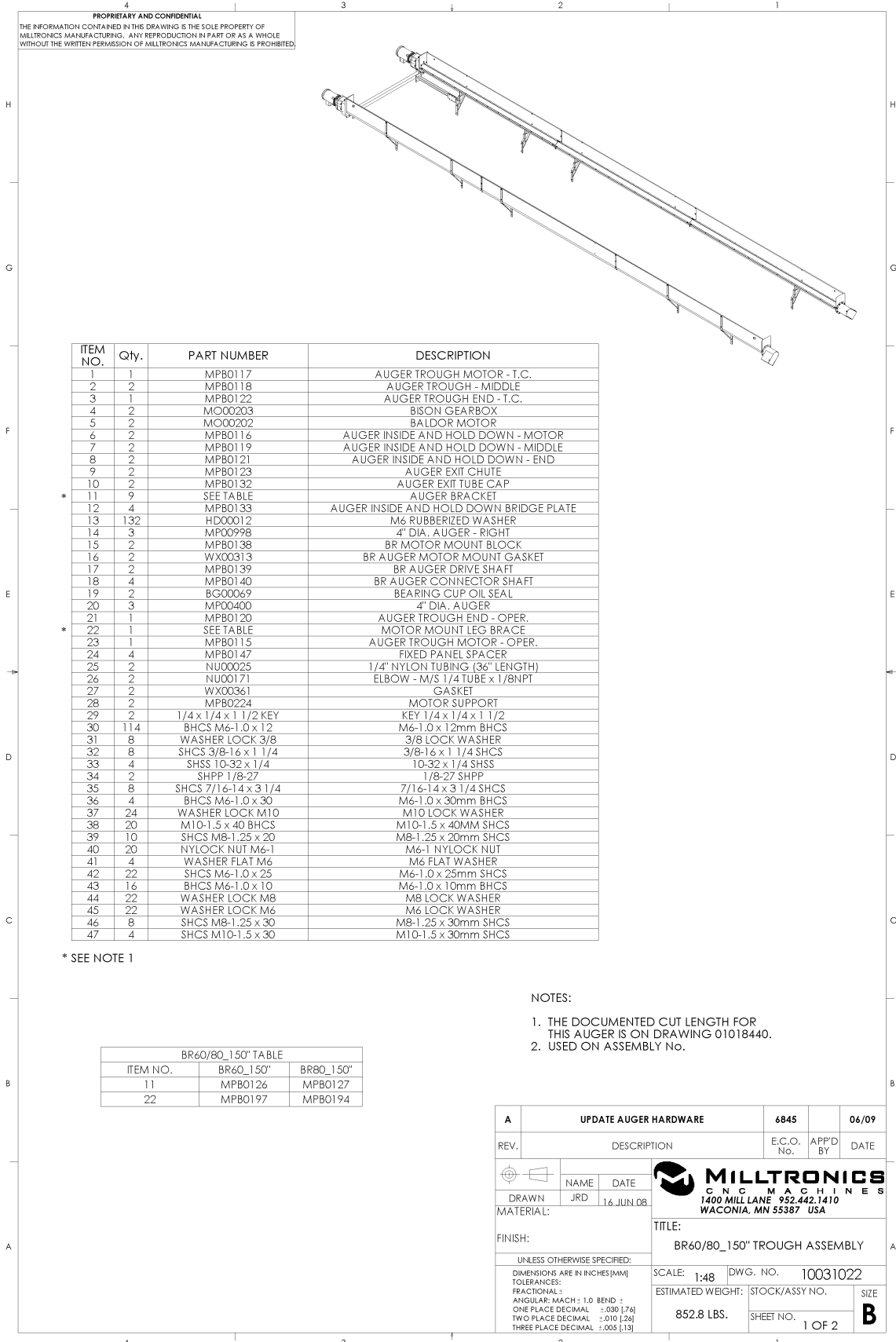
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE NU-417 FRL ASSEMBLY		
X.XXX +/-		APPLICATION GENERAL PRODUCTS		
X.XX +/-		SCALE 3:1		
X.X +/-		DATE 14 APR 08		
ANGLE +/-		DRAWN BY DAHLKE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

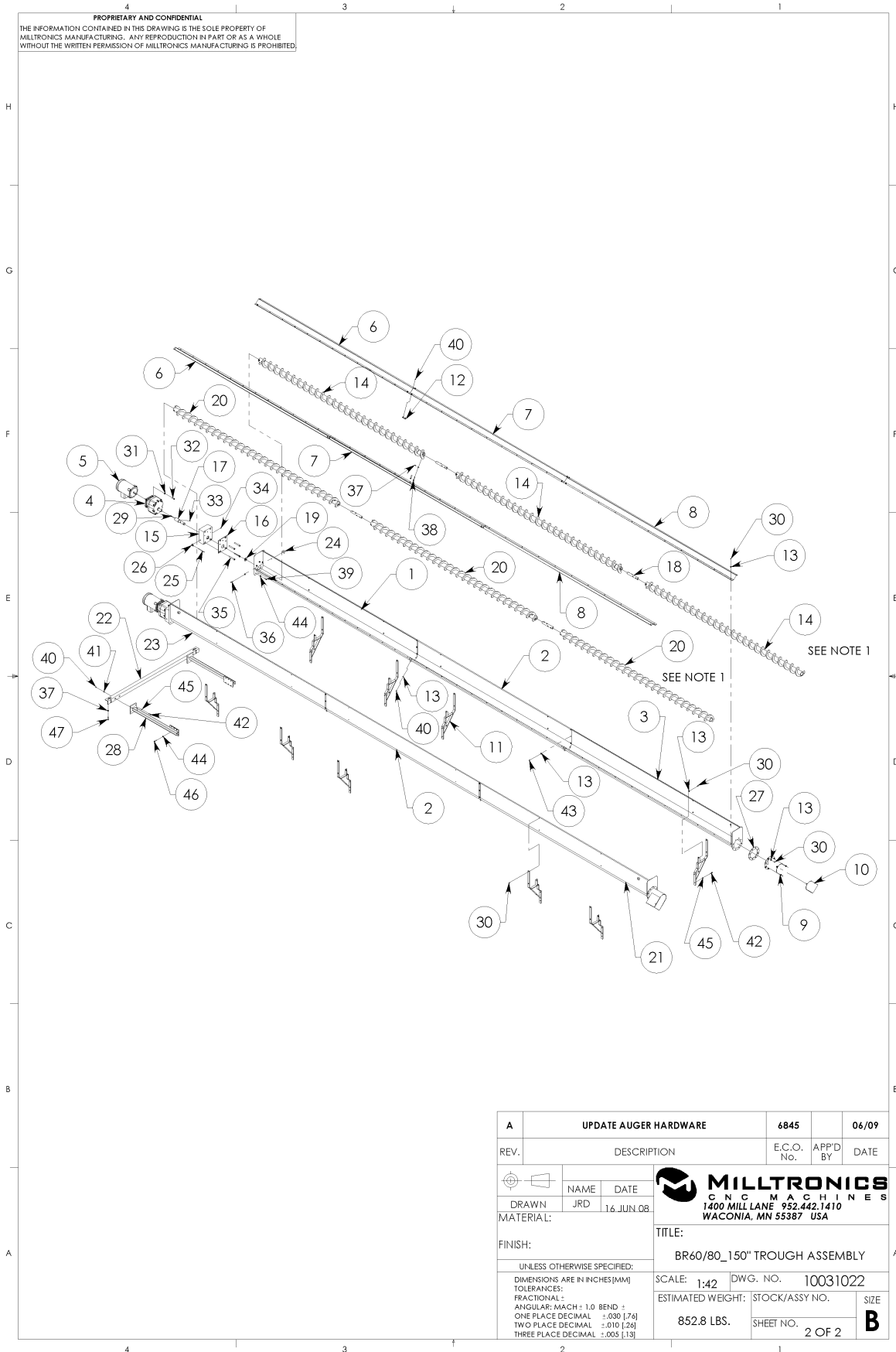
BR60/80 Lift Off Door Assembly – Operator Side



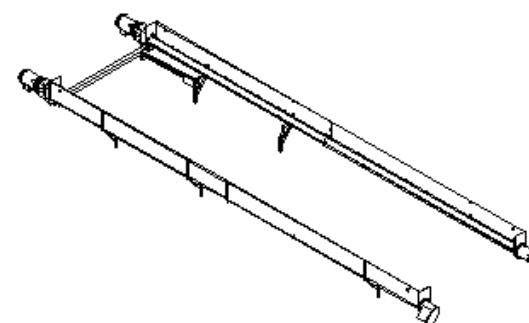
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BR60/80-150" Auger Trough Assembly





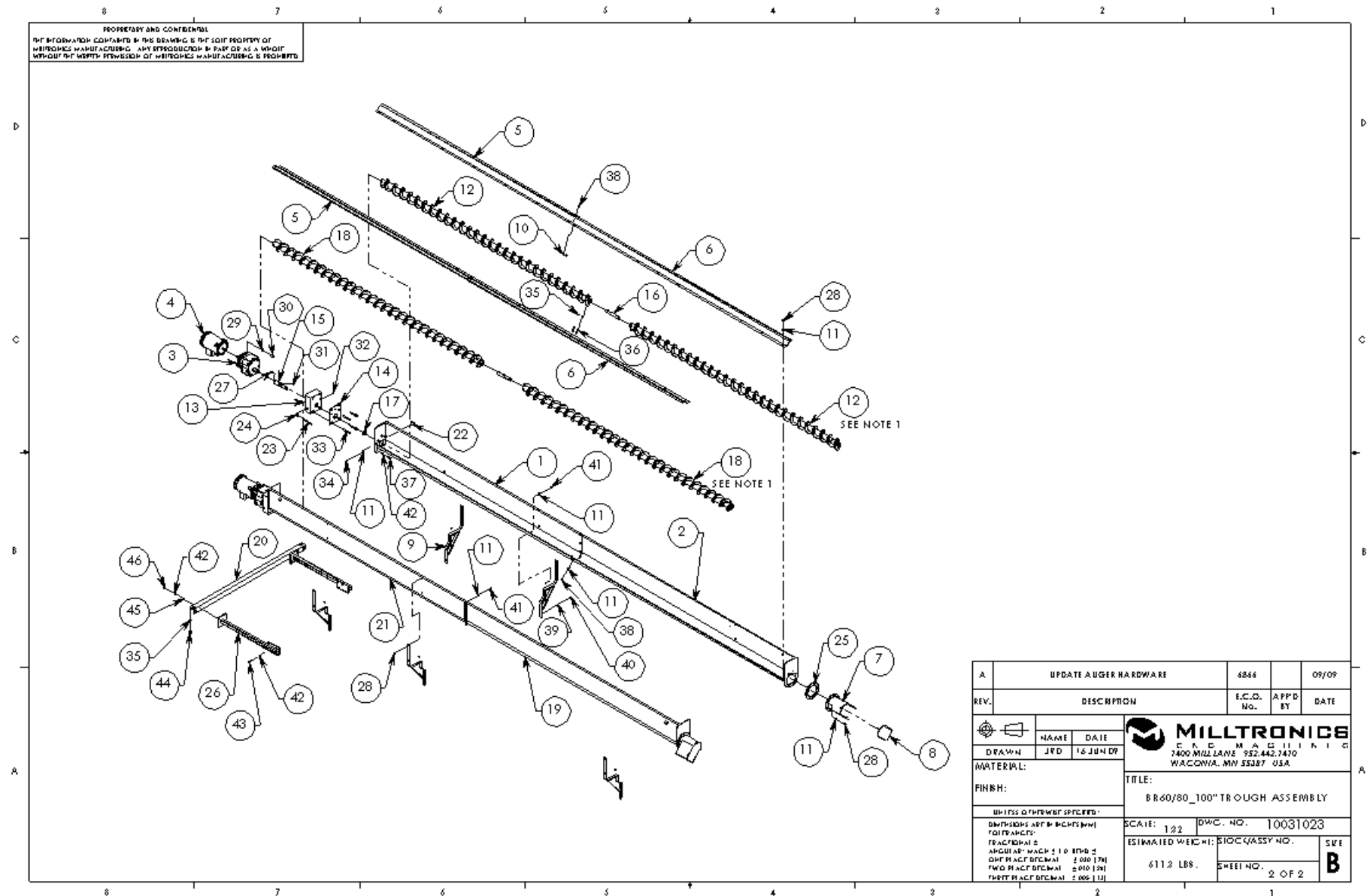
BR60/80-100" Auger Trough Assembly



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

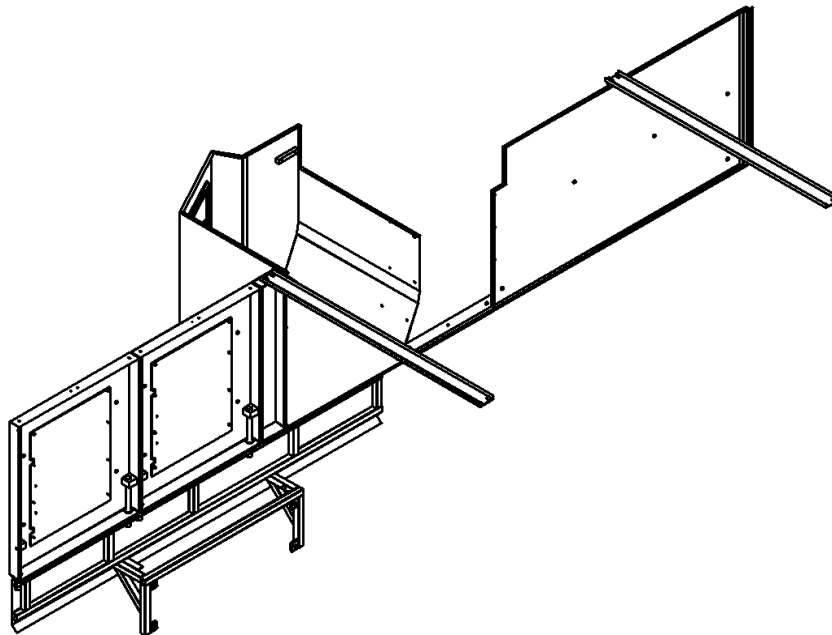
BR60/80_100" TABLE		
ITEM NO.	BR60_100"	BR80_100"
9	MPB0126	MPB0127
20	MPB0197	MPB0194

A	UPDATE AUGER HARDWARE	4844		09/09
REV.	DESCRIPTION	E.C.O. No.	APP'D BY	DATE
	NAME	DATE		
	DRAWN	JED	18 JUN 09	
MATERIAL:		TITLE:		
FINISH:		BR60/80_100" TROUGH ASSEMBLY		
UNITS: OTHERWISE SPECIFIED:		SCALE: 1:48 DWG. NO. 10031023		
DIMENSIONS ARE IN INCHES (MM)		ESTIMATED WEIGHT: 611.2 LBS.		
TOLERANCES:		SHEET NO. 1 OF 2		
FRACTIONAL		SHEET NO. 1 OF 2		
DECIMAL		SHEET NO. 1 OF 2		
ANGULAR		SHEET NO. 1 OF 2		
HOLE		SHEET NO. 1 OF 2		
TAP		SHEET NO. 1 OF 2		
WELD		SHEET NO. 1 OF 2		
OTHER		SHEET NO. 1 OF 2		



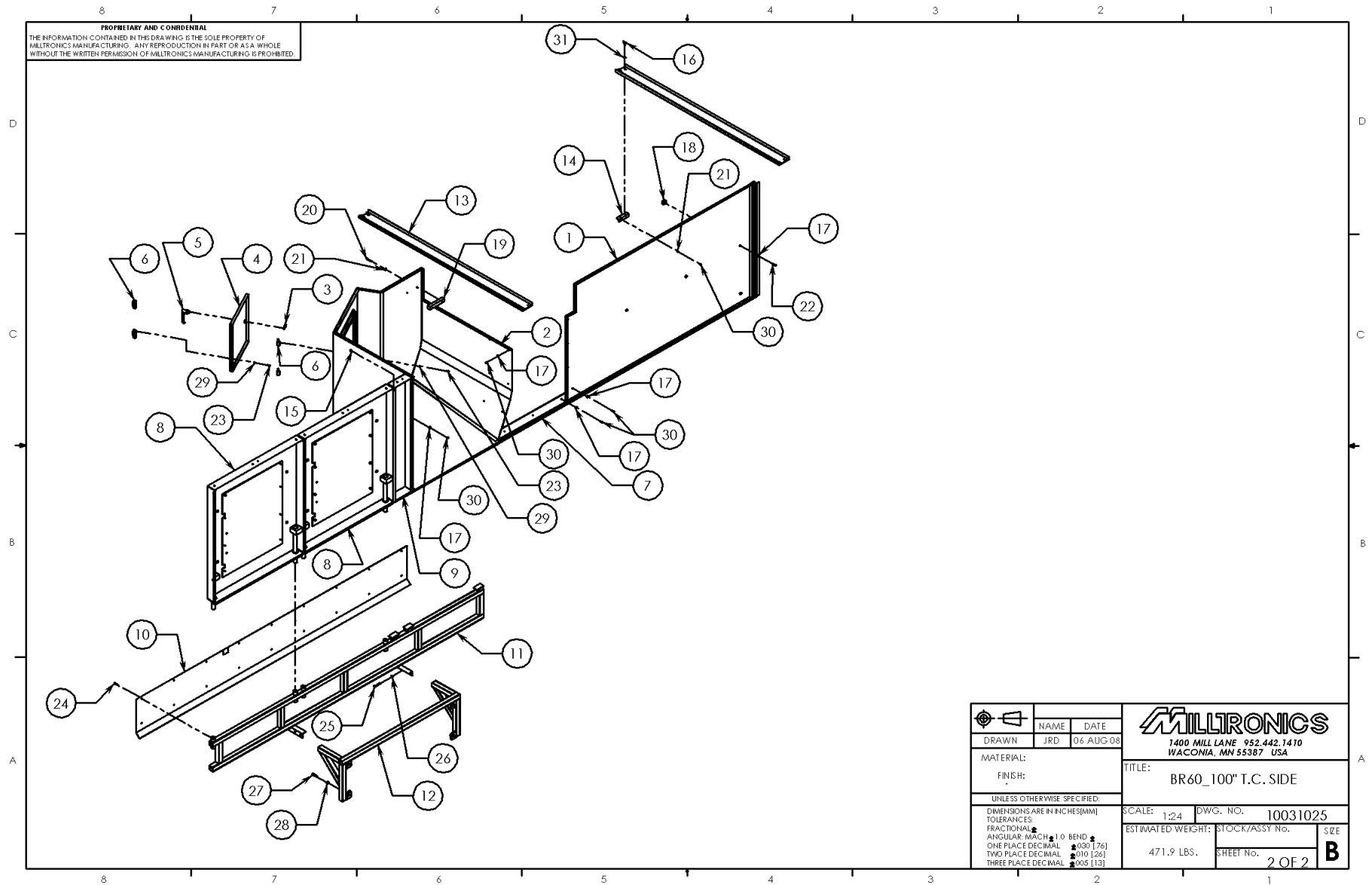
BR60-100" Enclosure Assembly – ATC Side

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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

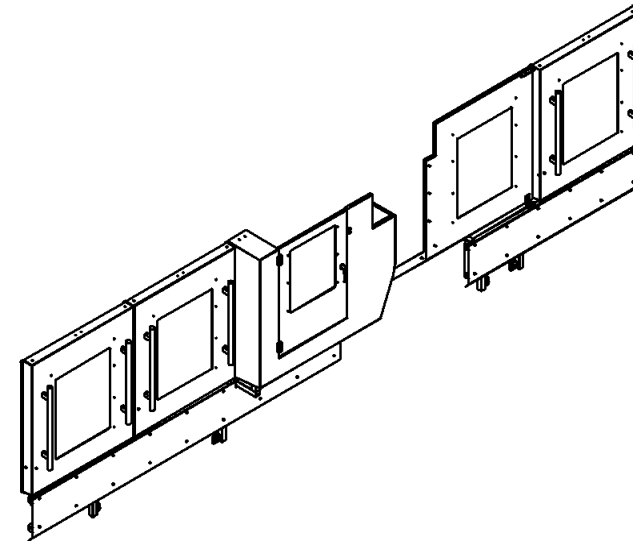
		NAME _____ DATE _____		 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA	
DRAWN: JRD		06 AUG 08			
MATERIAL:				TITLE: BR60_100" T.C. SIDE	
FINISH:				SCALE: 1:24 DWG. NO. 10031025	
UNLESS OTHERWISE SPECIFIED:				ESTIMATED WEIGHT: STOCK/ASSY No.	
DIMENSIONS ARE IN INCHES (MM) TOLERANCES: FRACTIONAL: ±.005 DECIMAL: ±.003 ANGULAR: MACH ±.010 BEND ±.005 ONE PLACE DECIMAL: ±.010 [26] TWO PLACE DECIMAL: ±.005 [13] THREE PLACE DECIMAL: ±.002 [13]				471.9 LBS. SHEET No. 1 OF 2	



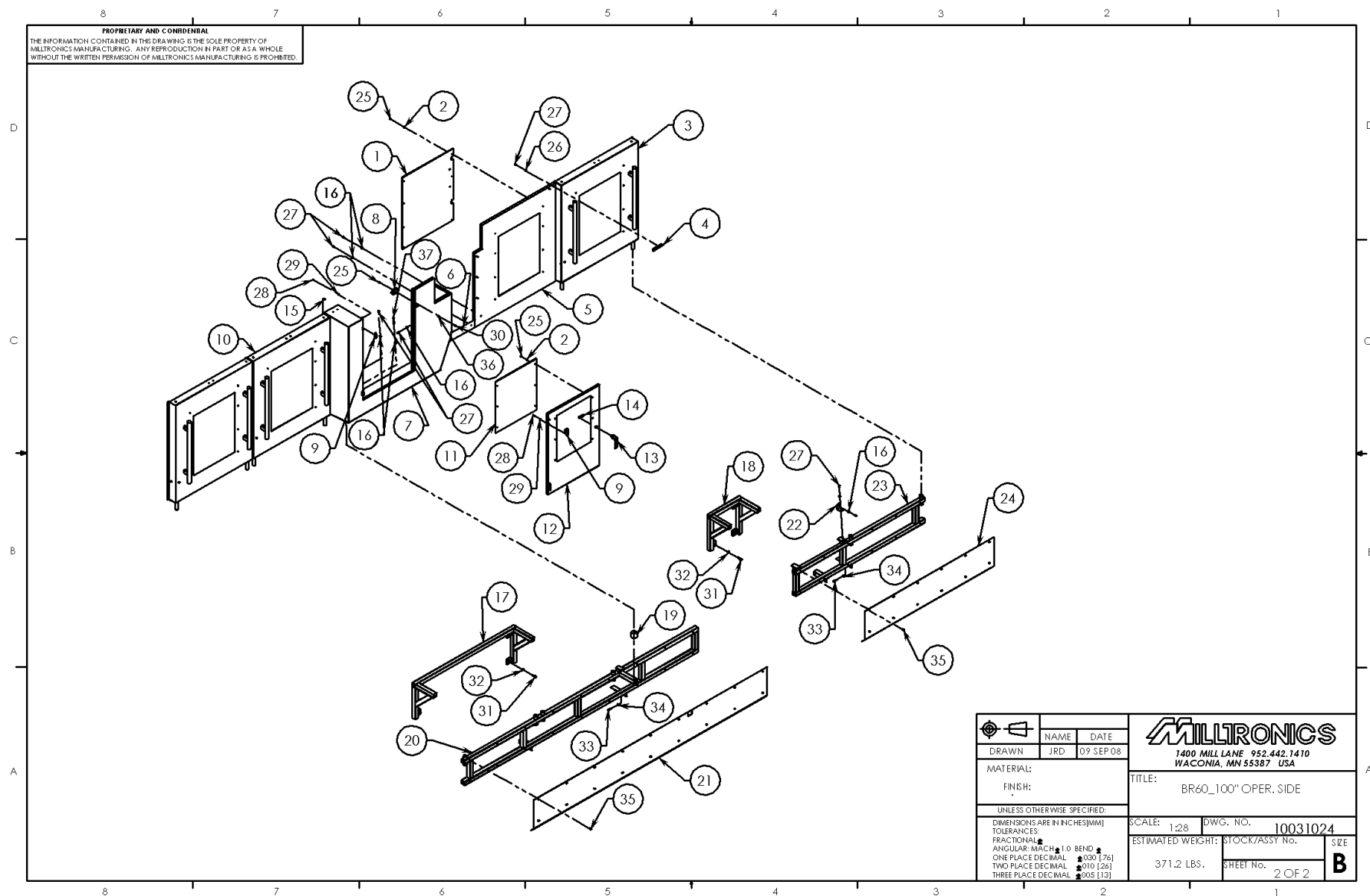
BR60-100" Enclosure Assembly - Operator Side

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ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	MP60163	OPERATOR DOOR - LEXAN
2	14	HD00058	M5 RUBBERIZED WASHER
3	1	10031028	LIFT OFF DOOR ASSEMBLY
4	1	MPB0184	TOP STIFFENER BRACKET
5	1	MPB0200	BR60 FIXED PANEL - OPER.
6	1	MPB0153	COLUMN DEFLECTOR - OPER.
7	1	MPB0156	OPERATOR DOOR FRAME
8	1	SW00266	DOOR SWITCH
9	2	WX00354	HINGE - LEFT
10	2	10031028	LIFT OFF DOOR ASSEMBLY
11	1	MPTT062	TT24 LEXAN AUTO SIDE DOOR
12	1	MPB0157	OPERATOR DOOR
13	1	WX00348	DOOR HANDLE
14	1	WX00349	DOOR LATCH
15	2	WX00310	BUMPER DOOR GRAY
16	17	HD00012	M6 RUBBERIZED WASHER
17	1	MPB0167	BR60/80 LIFT OFF DOOR FRAME BOTTOM
18	1	MPB0169	BR60/80 LIFT OFF DOOR FRAME BOTTOM - SM
19	1	MPB0198	LIFT OFF DOOR FRAME MOUNTING BLOCK
20	1	MPB0144	100" LIFT OFF DOOR FRAME - OPER. LEFT TOP
21	1	MPB0168	BR60/80 100" SKIN - LEFT
22	1	MPB0203	BR FIXED PANEL BRACE
23	1	MPB0146	100" LIFT OFF DOOR FRAME - OPER. RIGHT TOP
24	1	MPB0176	BR60/80 100" SKIN - RIGHT
25	16	NUT HEX M5-8	M5-8 NYLOCK NUT
26	2	WASHER LOCK M6	M6 LOCK WASHER
27	18	BHCS M6-1 x 12 ZP	M6-1 x 12 BHCS ZP
28	8	SHCS 10-32 x 1/2 ZP	10-32 x 1/2 SHCS ZP
29	8	WASHER LOCK #10	#10 LOCK WASHER
30	2	BHCS M5-8 x 20	M5-8 x 20 BHCS
31	8	SHCS M10-1.5 x 30	M10-1.5 x 30 SHCS
32	8	WASHER LOCK M10	M10 LOCK WASHER
33	8	SHCS M8-1.25 x 20	M8-1.25 x 20 SHCS
34	8	WASHER LOCK M8	M8 LOCK WASHER
35	30	BHCS M6-1 x 16	M6-1 x 16 BHCS
36	2	WASHER FLAT M5	M5 FLAT WASHER
37	1	BHCS M6-1 x 60	M6-1 x 60 BHCS



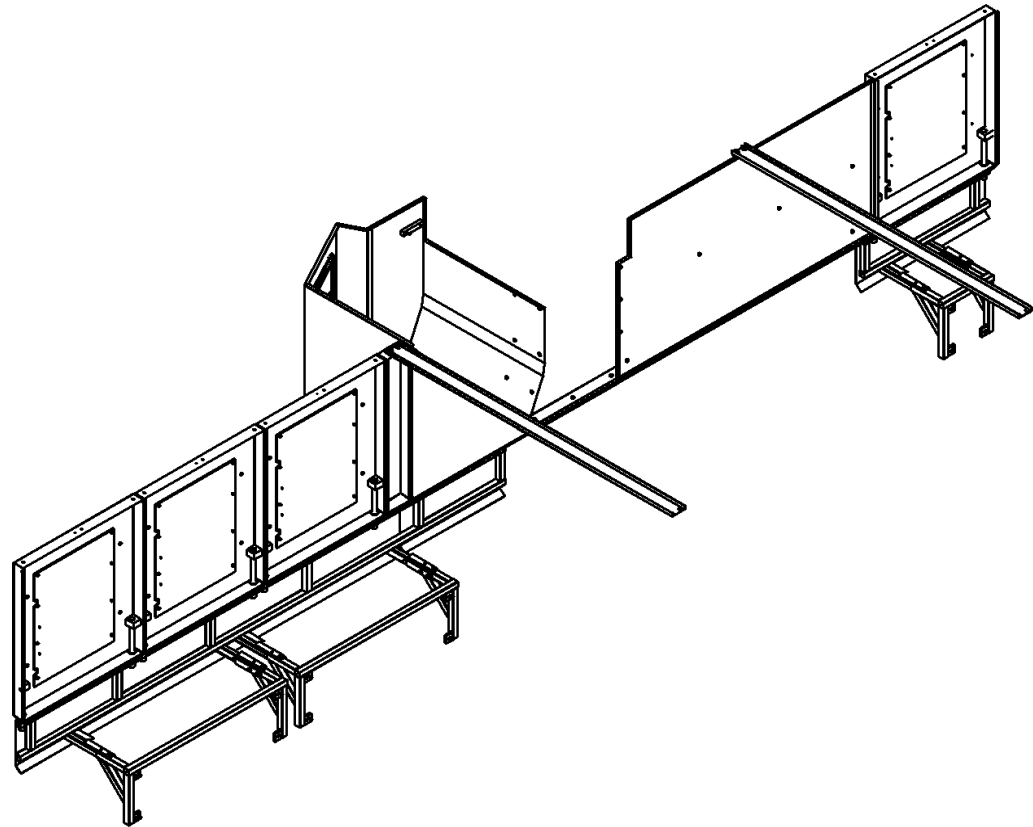
		NAME _____ DATE _____		 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA	
DRAWN: JRD		09 SEP 08			
MATERIAL:				TITLE: BR60_100" OPER. SIDE	
FINISH:					
UNLESS OTHERWISE SPECIFIED:					
DIMENSIONS ARE IN INCHES(MM) TOLERANCES: FRACTIONAL: ±.005 [126] ANGULAR: MACH ±1.0 BEND ±.005 [126] ONE PLACE DECIMAL: ±.010 [26] TWO PLACE DECIMAL: ±.005 [13] THREE PLACE DECIMAL: ±.005 [13]				SCALE: 1:28 DWG. NO. 10031024 ESTIMATED WEIGHT: 371.2 LBS. STOCK/ASSY NO. _____ SHEET No. 1 OF 2	



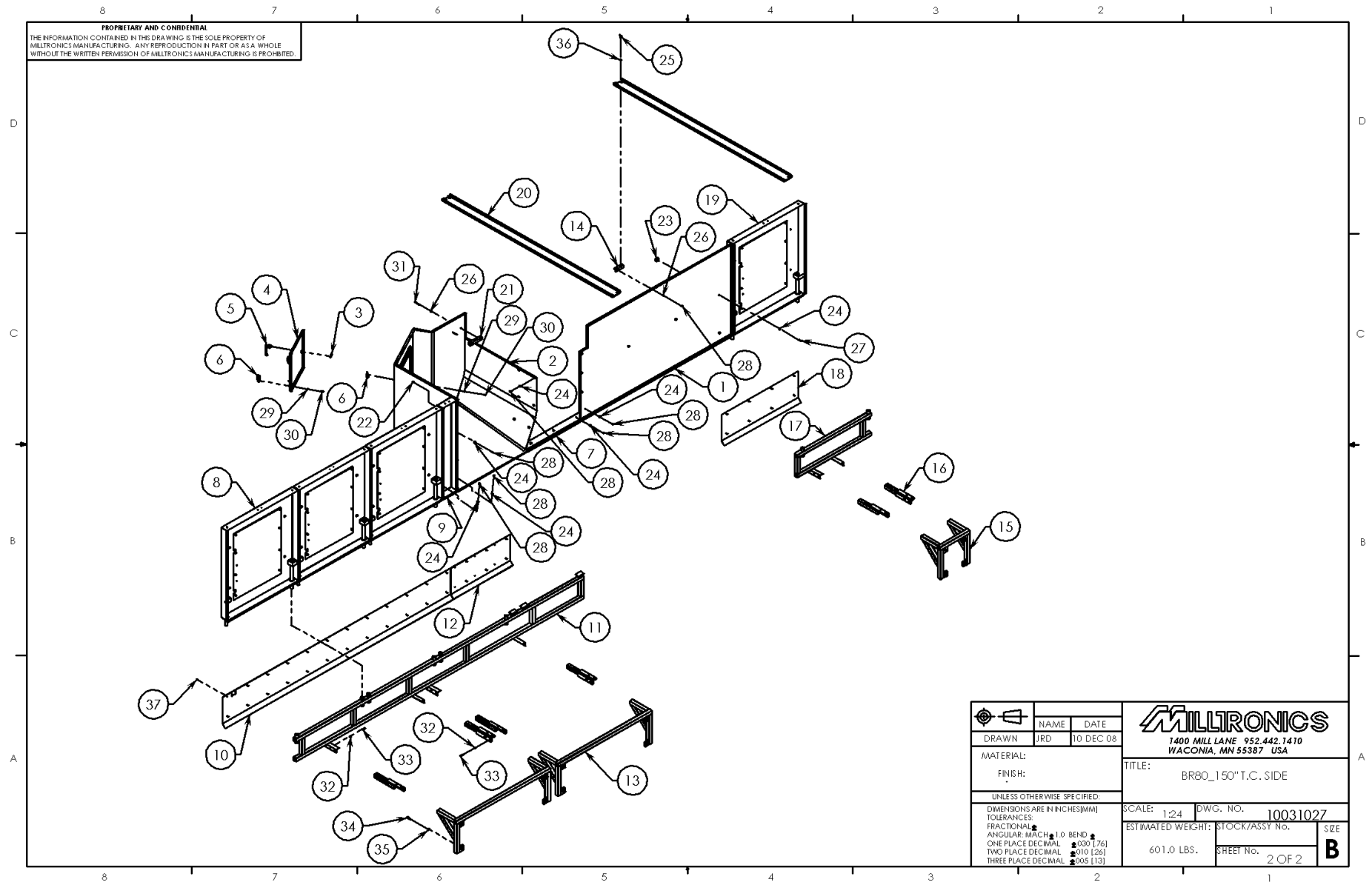
BR80-150" Enclosure Assembly – ATC Side

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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



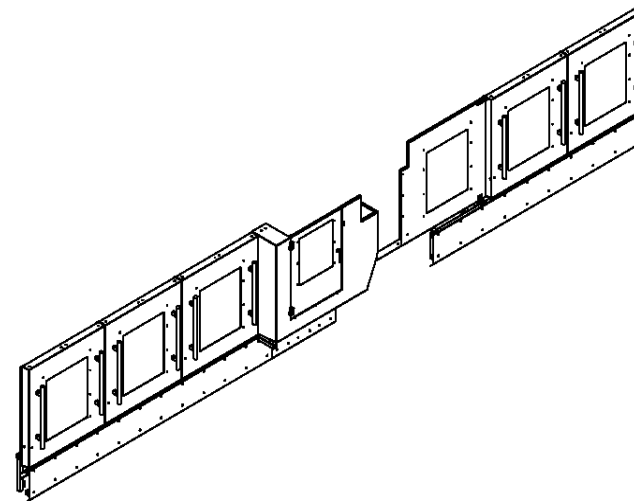
	NAME	DATE	
	DRAWN: JRD	10 DEC 08	
MATERIAL:		TITLE: BR80_150" T.C. SIDE	
FINISH:		SCALE: 1:24 DWG. NO. 10031027	
UNLESS OTHERWISE SPECIFIED:		ESTIMATED WEIGHT: 601.0 LBS.	
DIMENSIONS ARE IN INCHES (MM)		SHEET NO. 1 OF 2	
TOLERANCES		SIZE B	
FRACTIONAL: 1/16 BEND 1/8			
ANGULAR: MACH 1.0 BEND 1/8			
ONE PLACE DECIMAL: .030 [76]			
TWO PLACE DECIMAL: .010 [25]			
THREE PLACE DECIMAL: .005 [13]			



BR80-150" Enclosure Assembly – Operator Side

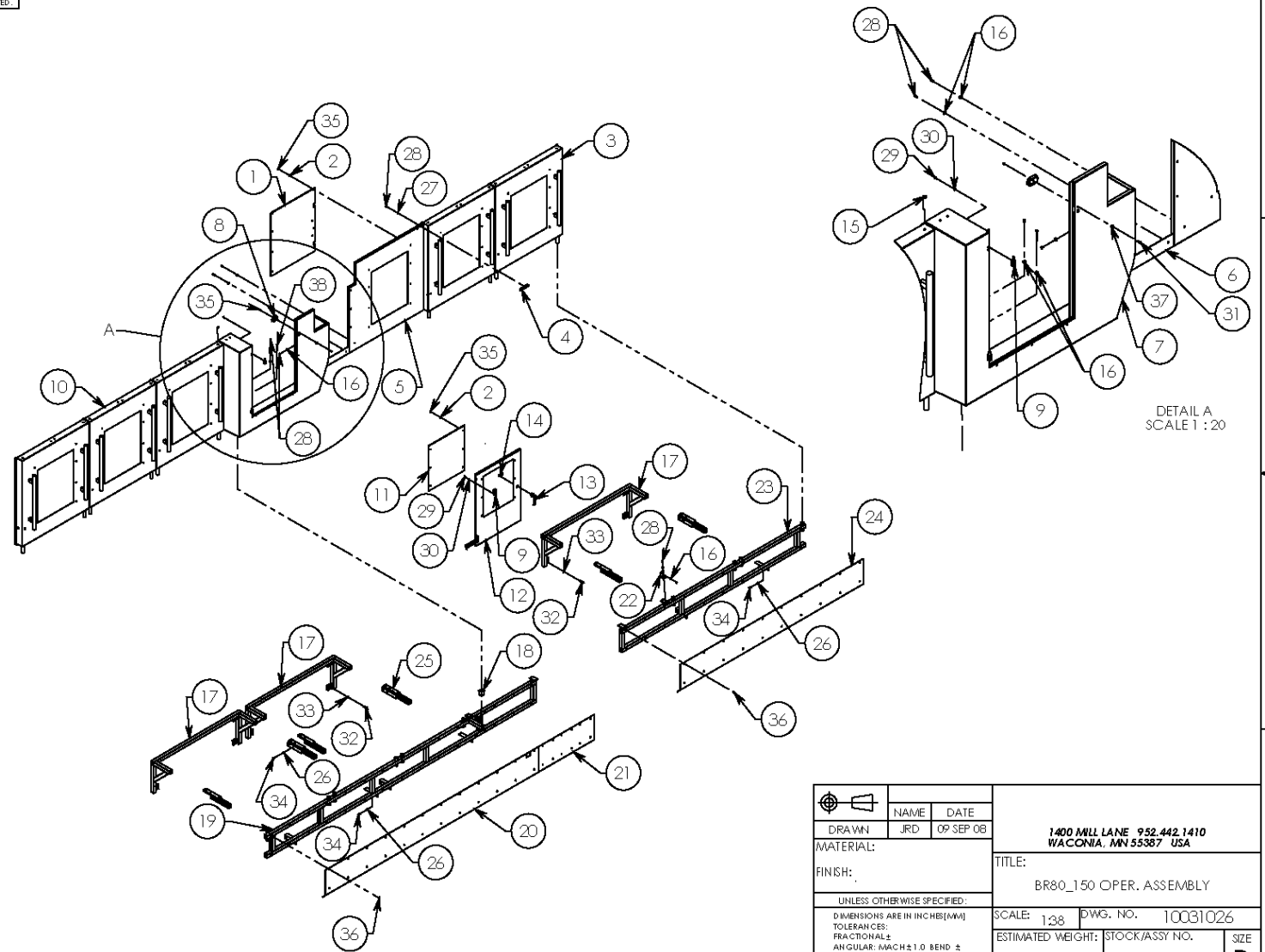
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ITEM NO.	QTY.	PART No.	DESCRIPTION
1	1	MPB0163	OPERATOR DOOR - LEXAN
2	14	HD00058	M5 RUBBERIZED WASHER
3	2	10031028	LIFT OFF DOOR ASSEMBLY - RIGHT
4	1	MPB0184	TOP STIFFENER BRACKET
5	1	MPB0151	FIXED DOOR - OPER
6	1	MPB0153	COLUMN DEFLECTOR - OPERATOR
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	MPBT062	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 55387 USA
	DRAWN JRD	09 SEP 08	
MATERIAL:			TITLE:
FINISH:			BR80_150 OPER. ASSEMBLY
UNLESS OTHERWISE SPECIFIED:			SCALE: 1:38 DWG. NO. 10031026
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)			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		
MATERIAL:			TITLE:	
FINISH:			BR80_150 OPER. ASSEMBLY	
UNLESS OTHERWISE SPECIFIED:				
DIMENSIONS ARE IN INCHES (MM)			SCALE: 1/32	DWG. NO. 10031026
TOLERANCES:			ESTIMATED WEIGHT: 863.5 LBS.	STOCK/ASSY NO.
FRACTIONAL:			SHEET NO. 2 OF 2	B
ANGULAR: MACH ±1.0 BEND ±				
ONE PLACE DECIMAL ±.030 [.76]				
TWO PLACE DECIMAL ±.010 [.25]				
THREE PLACE DECIMAL ±.005 [.13]				

Incomplete drawings at time of printing:

BR60-150" Enclosure Assembly – ATC Side

BR60-150" Enclosure Assembly - Operator Side

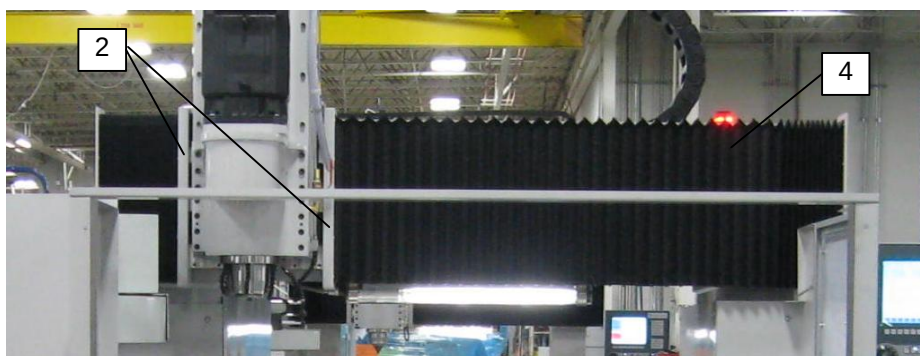
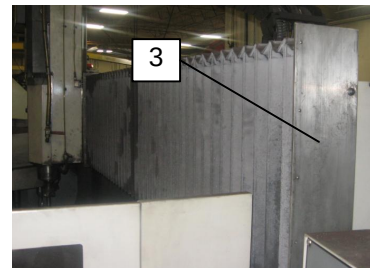
BR80-100" Enclosure Assembly – ATC Side

BR80-100" Enclosure Assembly – Operator Side

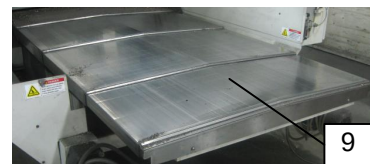
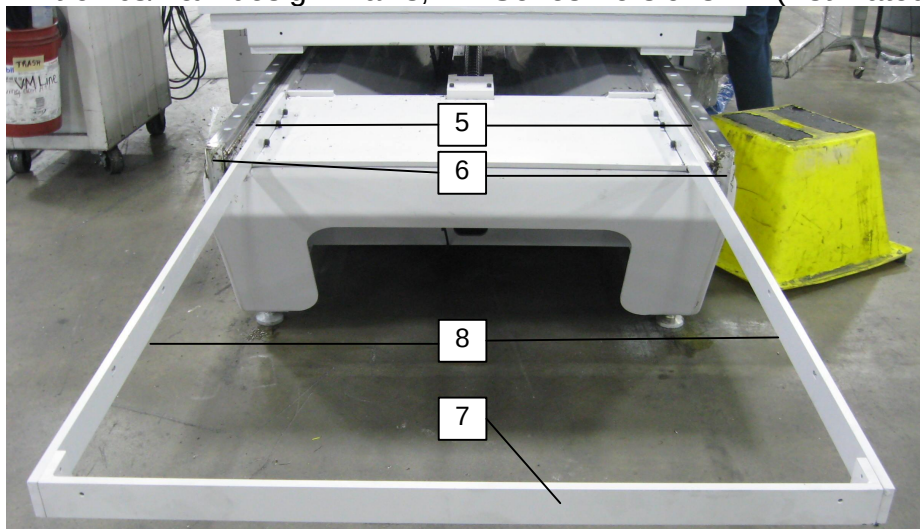
BR Series Way Cover Types

For BR Machine Versions A-K

Milltronics/A&A design Y axis, BR Series Versions I-K (Estimated)



Milltronics/A&A design X axis, BR Series Versions I-K (Estimated)



Item	Part #	Qty	Description
1	MPB-175	4	Y-axis Way cover mount extension – roller rails
	MPB-183		Y-axis Way cover mount extension – ball rails
2	MPB-177	2	Y-axis Way cover mounting bracket – Bellows – left/right
3	MPB-142	2	Y-axis Way cover mounting plate – outside – bellows – left/right
4	MPB-112	2	Y-axis Bellows way cover – Standard BR50 models
	MPB-141		Y-axis Bellows way cover – Standard BR60–80 models
	MPB-245		Y-axis Bellows way cover – BR80 MTS special
	MPB-249		Y-axis Bellows way cover – BR100
5	MPB-179	2	X-axis Spacer for mounting bar
6	MPB-180	2	X-axis Bracket, rail guide
7	MPB-181	1	X-axis Way cover mounting bracket – center
8	MPB-182	2	X-axis Way cover mounting bar – left/right
9	MPB-135	1	X-axis Way cover – 100"
	MPB-136		X-axis Way cover – 150"

Original design Y axis, BR Series Versions A-H (Estimated)



Original design X axis, BR Series Versions A-H (Estimated)



Item	Part #	Qty	Description
1	MPB-27	1	BR50 Left y-axis cover
	MPB-30		BR80 Left y-axis cover
	MPB-28	1	BR50 Right y-axis cover
	MPB-31		BR80 Right y-axis cover
2	JD	2	Y-axis rider brackets and spacers
3	JD	2	X-axis Way cover bar
4	JD	8	X-axis Way cover bar support
5	MPB-29	2	X-axis telescoping cover, BR50 standard travel
	MPB-26		X-axis telescoping cover, BR60/80
	MPB-136		X-axis telescoping cover, BR50-150 extended travel

