



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

VM25IL B Mechanical

February 12, 2013
Rev 7

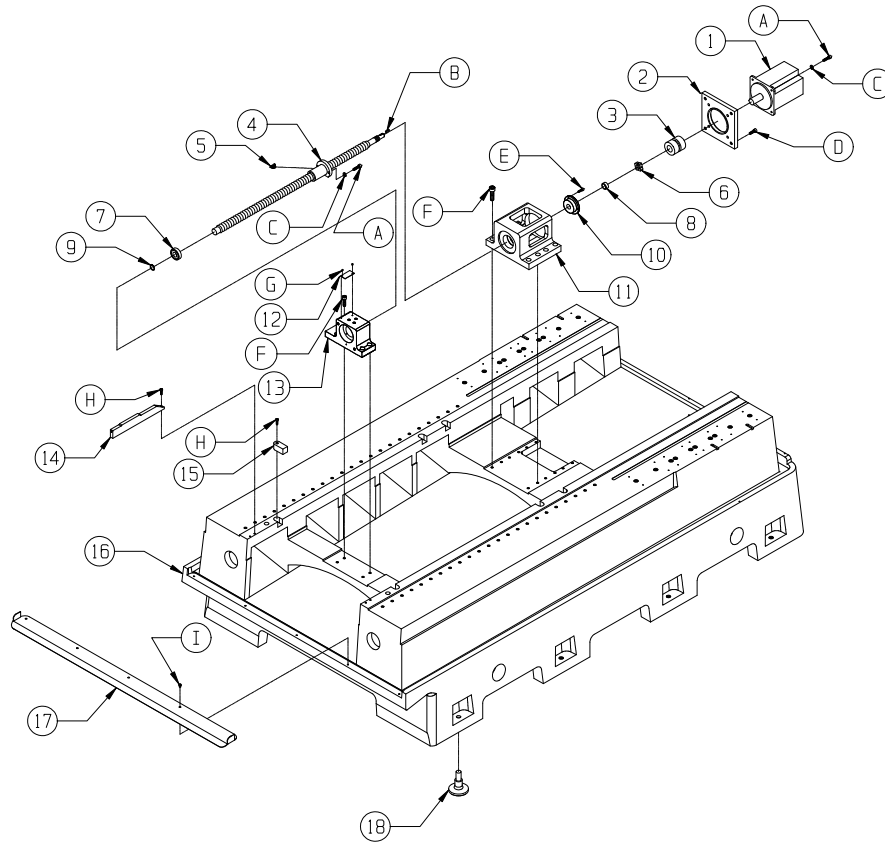
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Manual Discrepancy Sheet

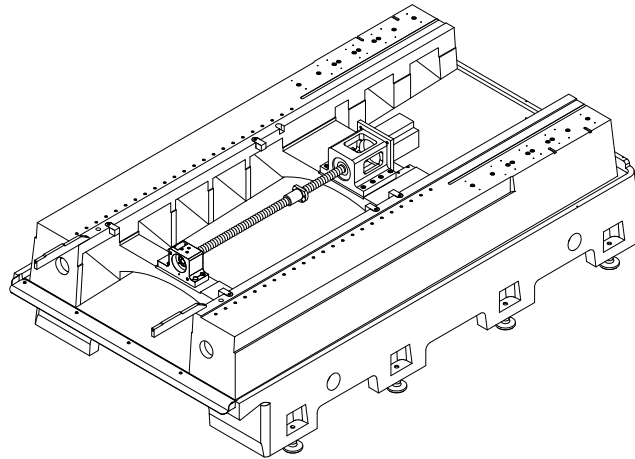
1. On pages 4 & 5, items 12 and J are not used for X axis oil track.
2. On pages 12 & 13, items 6,7,9,F,G are not used for X axis oil track.
3. On page 19 #29 is 160mm long as shown.
4. On page 27, quantity is adjusted for item #9.
5. On page 33, oil meter part numbers corrected.

Machine Base Assembly



B	UPDATE TO 25TAC62 BEARINGS	7454	N.M.	03/12
A	ADD MITSUBISHI TO LIST	6278	N.M.	02/07
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 VM25 45nn PEDESTAL SUB-ASSEMBLY		
X.XXX +/-		APPLICATION PARTNER VI		
X.XX +/-		SCALE 16:1 DWG No 6-10-027-040 SIZE B		
X.X +/-		DATE 05 JAN 06		
ANGLE +/-		DRAWN BY DAHLKE SHEET No. 1 OF 2		

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PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	AXIS MOTOR
** 2	1	SEE TABLE	MOTOR PLATE
3	1	SEE TABLE	MOTOR COUPLER
4	1	SEE TABLE	Y AXIS BALL SCREW
5	1	SEE TABLE	1/8 NPT 4mm SWIVEL ELBOW
6	1	MP00439	BALL SCREW LOCK NUT
7	1	BG00002	BEARING 6204 ZZ
8	1	01018827	BEARING LOCK NUT SPACER
9	1	MP10108	BALL SCREW SNAP RING
10	1	10018117	BALL SCREW SUPPORT BEARING
11	1	01018820	Y AXIS REAR MOTOR MOUNT
12	1	LB00027	PULLEY MOTOR WARNING LABEL
13	1	MX00064	FRONT BALL SCREW RADIAL MOUNT
14	2	SEE TABLE	Y AXIS FRONT WAY COVER BRACKET
15	5	MP00707	HARD STOP BLOCK
16	1	MX70011	PEDESTAL - MACHINED
17	1	MP60252	PEDESTAL DRIP LIP
18	8	MP10029	LEVELING PAD

FRONT WAY COVER BRACKET		
No.	DESCRIPTION	PART No.
14	BALL RAIL	MP70086
	ROLLER RAIL	MP70093

MOTOR & MOTOR PLATE & COUPLER LIST				
No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
1	MD00127 (1.5kW)	8Nn A06B-0227-B200	11Nn 1FK7063-5AF71-1EA0	MD00185 (3.5kW)
	MD00144 (2.0kW)	12Nn A06B-0243-B200	18Nn 1FK7100-5AF71-1EA0	MD00187 (5.0kW)
	MD00146 (3.0kW)			
2	- (1.5kW)	MP60231	- (11Nn)	MP60231
3	MP60231 (2.0kW/3.0kW)	MA00239 (8Nn)	SMN0009 (18Nn)	MA00249
	MA00240 (1.5kW)		MA00262 (11Nn)	
	MA00249 (2.0kW/3.0kW)	MA00249 12(Nn)	MA00288 (18Nn)	

HARDWARE LIST			
No.	QTY	DESCRIPTION	
* A	6	M8-1.25 x 30mm SHCS	
B	1	5mm x 5mm x 12mm KEY	
* C	6	M8 LOCK WASHER	
** D	4	M8-1.25 x 20mm	
E	4	M6-1 x 30mm SHCS	
F	12	M10-1.5 x 30mm SHCS	
G	2	1/4 DRIVE PIN	
H	9	M6-1 x 20mm SHCS	
I	5	M6-1 x 10mm BHCS	

* 2.0kW, 3.0kW, 11Nn & 18Nn MOTOR USES:
M12-1.75 x 35mm SHCS WITH M12 LOCK WASHER.

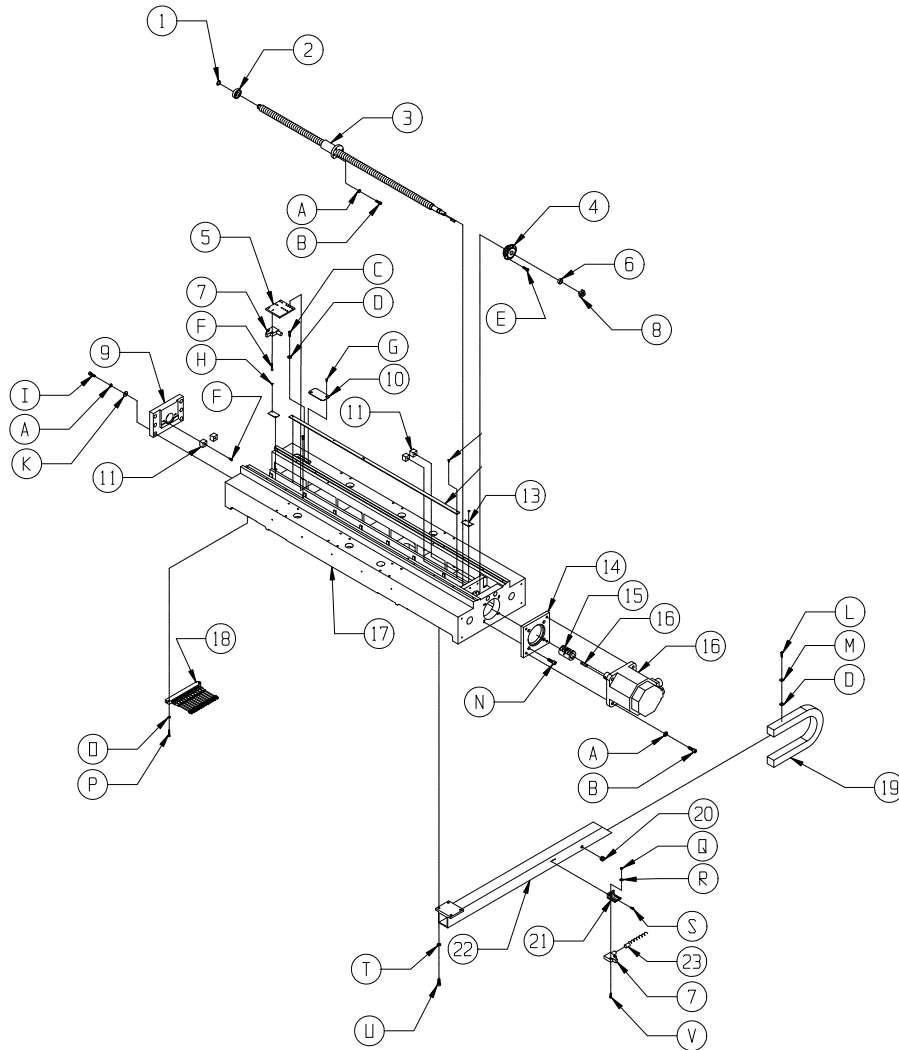
** NOT USED WITH 1.5kW or 11Nn MOTOR.
18Nn MOTOR USES M8-1.25 x 30mm SHCS

BALL SCREW, SWIVEL ELBOW TABLE			
No.	DESCRIPTION	STANDARD	HIGH SPEED RAPID
4	BALL SCREW	MP00571	MP00803
5	SWIVEL ELBOW	NU00161	NU00336

B	UPDATE TO 25TAC62 BEARINGS	7454	N.M.	03/12
A	ADD MITSUBISHI TO LIST	6278	N.M.	02/07
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 VM25 45nn PEDESTAL SUB-ASSEMBLY		
X.XXX +/-		APPLICATION PARTNER VI		
X.XX +/-		SCALE 16:1 DWG No. 6-10-027-040 SIZE B		
X.X +/-		DATE 05 JAN 06 DRAWN BY DAHLKE SHEET No. 2 OF 2		
ANGLE +/-				

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Machine Saddle Assembly – 50"

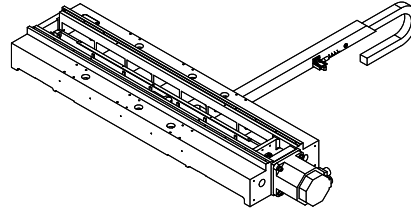


C	UPDATE TO 25TAC62 BEARING	7453	N.M.	03/12
B	CHANGE MOTOR PLATE	6944	N.M.	12/10
A	ADD MITSUBISHI TO LIST	6279	N.M.	02/07
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TITLE		VM25 45mm x 50" SADDLE SUB-ASSEMBLY		
APPLICATION		PARTNER VI		
SCALE		20:1	DWG No. 6-10-027-041	SIZE B
DATE		06 JAN 06	DRAWN BY DAHLKE	SHEET No. 1 OF 2

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TOLERANCE	UNLESS SPECIFIED
X.XXX	+/-
X.XX	+/-
X.X	+/-
ANGLE	+/-

HARDWARE LIST		
No.	QTY	DESCRIPTION
* A	12	M8 LOCK WASHER
* B	6	M8-1.25 x 30mm SHCS
C	2	M6-1 x 25mm BHCS
D	6	M6 FLAT WASHER
E	4	M6-1 x 30mm SHCS
F	6	M5-.8 x 16mm SHCS
G	2	M4-.7 x 10mm FHCS
H	4	1/4 DRIVE PIN
I	6	M8-1.25 x 40mm SHCS
J		
K	6	M8 FLAT WASHER
L	4	M6-1 x 16mm BHCS
M	4	M6 LOCK WASHER
** N	4	M8-1.25 x 30mm SHCS
O	2	M5 LOCK WASHER
P	2	M5-.8 x 30mm SHCS
Q	2	M5 HEX NUT
R	2	M5 FLAT WASHER
S	2	M5-.8 x 16mm BHCS
T	4	M10 LOCK WASHER
U	4	M10-1.5 x 30mm SHCS
V	2	M5-.8 x 20mm SHCS



MANIFOLD ASSEMBLY		
No.	DRAWING No.	DESCRIPTION
18	10008058	X & Y AIR/OIL MANIFOLD ASSEMBLY
	10018049	VM X & Y AXIS OIL MANIFOLD ASSEMBLY

PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	MP10108	SNAP RING
2	1	BG00002	6204 BEARING
3	1	SEE TABLE	X BALL SCREW
4	1	10018117	BALL SCREW SUPPORT BEARING
5	1	MP00309	X AXIS SWITCH PLATE
6	1	01018827	BEARING LOCKNUT SPACER
7	2	SW00193	LIMIT SWITCH
8	1	MP00439	BALL SCREW LOCKNUT
9	1	MP60266	VM RADIAL SUPPORT PLATE
10	1	MP00236	Y AXIS SWITCH SLOT COVER
11	4	MP00718	PDM HARD STOP BLOCK
12			
13	2	LB00027	PULLEY MOTOR WARNING LABEL
** 14	1	SEE TABLE	VM 2Kw/3Kw Z AXIS MOTOR PLATE
15	1	SEE TABLE	MOTOR COUPLER
16	1	SEE TABLE	AXIS MOTOR
17	1	01018828	VM SERIES SADDLE - MACHINED
18	1	SEE TABLE	X & Y MANIFOLD ASSEMBLIES
19	1	MP60220	Y AXIS CABLE TRACK
20	1	WX00287	RUBBER GROMMET
21	1	MP10387	Y AXIS LIMIT SWITCH MOUNTING BRACKET
22	1	MP60223	Y AXIS CABLE CARRIER
23	2	SW00191	Y AXIS SWITCH CORD

** NOT USED WITH 1.5kW OR 11Nm MOTOR.

* WITH 2.0kW OR 3.0kW MOTOR USE M12-1.75 x 35mm SHCS WITH M12 LOCK WASHER
11Nm MOTOR USES M10-1.5 x 40mm SHCS WITH M10 LOCK WASHER.

MOTOR & COUPLER LIST				
No.	YASKAWA	FANUC	SIEMENS	MITSUBISHI
14	(1.5kW) MP10453 (2.0kW/3.0kW)	(8Nm) MP10453 (12Nm)	(11Nm) SMN0081 (18Nm)	MP10453
15	MA00240 (1.5kW) MA00249 (2.0kW/3.0kW)	MA00239 (8Nm) MA00249 (12Nm)	MA00262 (11Nm) MA00263 (16Nm)	MA00249
16	M000127 (1.5kW) M000144 (2.0kW) M000146 (3.0kW)	8Nm A06B-0227-B200 12Nm A06B-0243-B200	11Nm 1FK7063-5AF71-1EA0 16Nm 1FK7083-5AF71-1EA0	M000185 (3.5kW) M000187 (5.0kW)

BALL SCREW TABLE		
No.	DESCRIPTION	PART No.
3	STANDARD RAPID	MP00573
	HIGH SPEED RAPID	MP00805

C	UPDATE TO 25TAC62 BEARING	7453	N.M.	03/12
B	CHANGE MOTOR PLATE	6944	N.M.	12/10
A	ADD MITSUBISHI TO LIST	6279	N.M.	02/07
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	+/-

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

TITLE VM25 45mm x 50" SADDLE SUB-ASSEMBLY

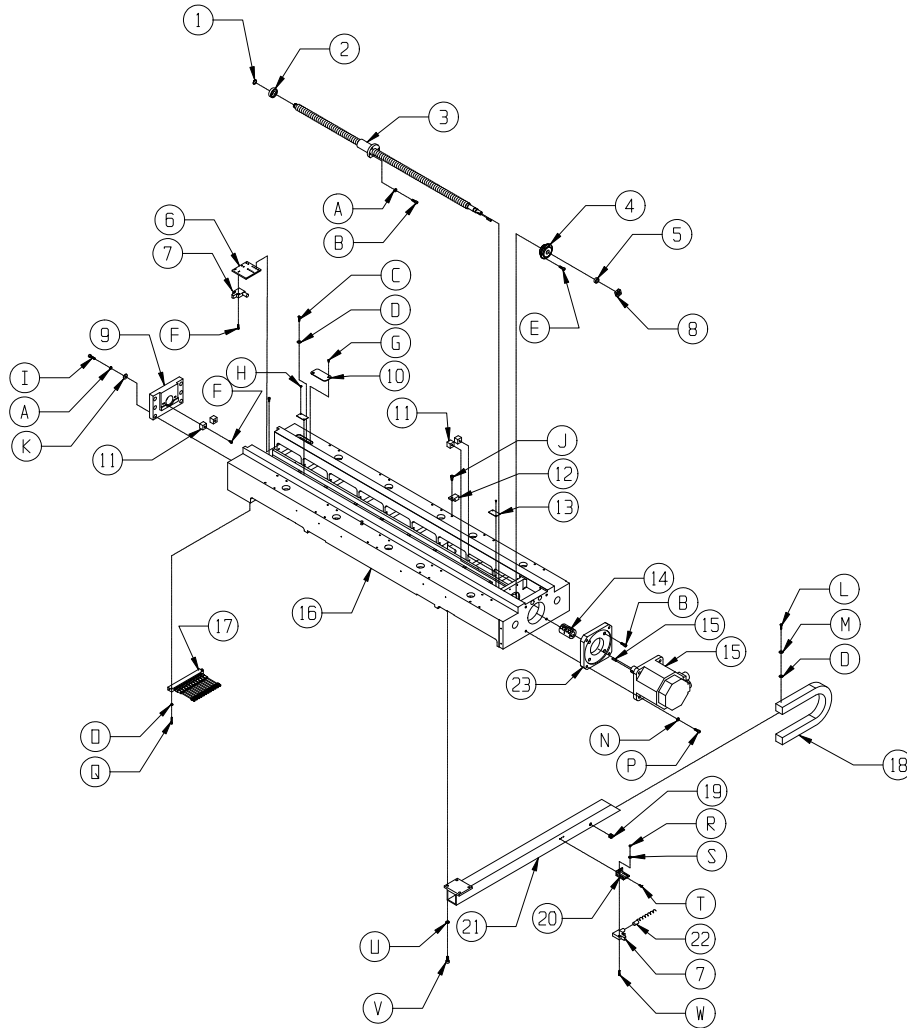
APPLICATION PARTNER VI

SCALE 20:1 DWG No. 6-10-027-041 SIZE B

DATE 06 JAN 06 DRAWN BY DAHLKE SHEET No. 2 OF 2

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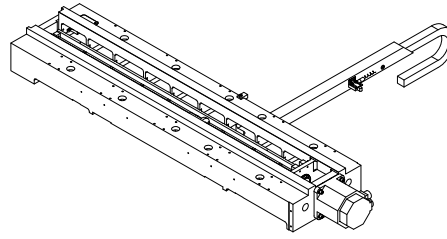
Machine Saddle Assembly – 60"



B	UPDATE TO 25TAC62 BEARING	7463	N.M.	03/12
A	ADD MITSUBISHI TO LIST	6289	N.M.	02/07
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 VM25 45mm x 60" SADDLE SUB-ASSEMBLY		
X .XXX +/-		APPLICATION PARTNER VI		
X .XX +/-		SCALE 20:1	DWG No. 6-10-027-042	SIZE B
X .X +/-		DATE 11 JAN 06	DRAWN BY DAHLKE	SHEET No. 1 OF 2
ANGLE +/-				

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TOLERANCE	UNLESS SPECIFIED
X.XXX	+/-
X.XX	+/-
X.X	+/-
ANGLE	+/-


PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	MP10108	SNAP RING
2	1	BG00002	6204 BEARING
3	1	MP00806	X BALL SCREW
4	1	10018117	BALL SCREW SUPPORT BEARING
5	1	01018827	BEARING LOCKNUT SPACER
6	1	MP00309	X AXIS SWITCH PLATE
7	2	SW00193	LIMIT SWITCH
8	1	MP00439	BALL SCREW LOCKNUT
9	1	MP60266	VM RADIAL SUPPORT PLATE
10	1	MP00236	Y AXIS SWITCH SLOT COVER
11	4	MP00718	PDM HARD STOP BLOCK
12	1	MP70100	X AXIS OIL BRACKET
13	2	LB00027	PULLEY MOTOR WARNING LABEL
14	1	SEE TABLE	MOTOR COUPLER
15	1	SEE TABLE	AXIS MOTOR
16	1	01018829	VM SERIES SADDLE - MACHINED
17	1	SEE TABLE	X & Y MANIFOLD ASSEMBLIES
18	1	MP60220	Y AXIS CABLE TRACK
19	1	WX00287	RUBBER GROMMET
20	1	MP10387	Y AXIS LIMIT SWITCH MOUNTING BRACKET
21	1	MP60223	Y AXIS CABLE CARRIER
22	2	SW00191	Y AXIS SWITCH CORD
23	1	SEE TABLE	MOTOR PLATE

HARDWARE LIST

No.	QTY	DESCRIPTION
A	10	M8 LOCK WASHER
* B	8	M8-1.25 x 30mm SHCS
C	2	M6-1 x 25mm BHCS
D	6	M6 FLAT WASHER
E	4	M6-1 x 30mm SHCS
F	6	M5-.8 x 16mm SHCS
G	2	M4-.7 x 10mm FHCS
H	4	1/4 DRIVE PIN
I	6	M8-1.25 x 45mm SHCS
J	1	M8-1.25 x 20mm SHCS
K	6	M8 FLAT WASHER
L	4	M6-1 x 16mm BHCS
M	4	M6 LOCK WASHER
N	4	M12 LOCK WASHER
O	2	M5 LOCK WASHER
** P	4	M12-1.75 x 35mm SHCS
Q	2	M5-.8 x 30mm SHCS
R	2	M5-.8 HEX NUT
S	2	M5 FLAT WASHER
T	2	M5-.8 x 10mm BHCS
U	4	M10 LOCK WASHER
V	4	M10-1.5 x 30mm SHCS
W	2	M5-.8 x 20mm SHCS

MANIFOLD ASSEMBLY

No.	DRAWING No.	DESCRIPTION
17	10020027	X & Y AIR/OIL MANIFOLD ASSEMBLY
	10018106	VM X & Y AXIS OIL MANIFOLD ASSEMBLY

MOTOR & COUPLER TABLE

No.	YASKAWA	FANUC	SIEMENS	mitsubishi
14	MA00249 (2.0kW & 3.0kW)	MA00249	MA00367 (16Nm) MA00366 (18Nm)	MA00249
15	MD00144 (2.0kW) MD00146 (3.0kW)	12Nm A06B-0243-B200	16Nm 1FK7083-SAF71-1FA0 18Nm 1FK7100-SAF71-1FA0	MD00185 (3.5kW) MD00187 (5.0kW)
23	—	—	SMN0082 (16Nm) SMN0083 (18Nm)	—

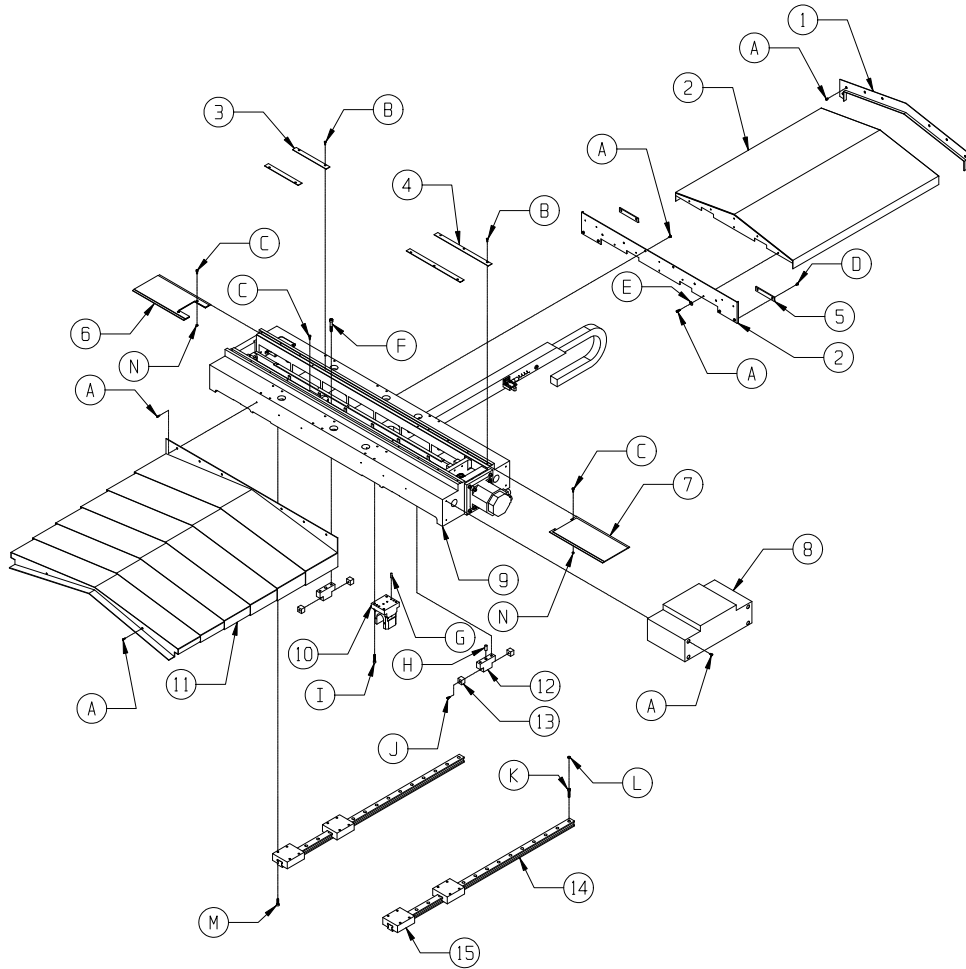
* NOT USED ON SIEMENS 18Nm MOTOR.

** SIEMENS 16Nm MOTOR USES (4) M10-1.5 x 50mm SHCS & (4) M10 LOCK WASHERS.

B	UPDATE TO 25TAC62 BEARING	7463	N.M.	03/12
A	ADD MITSUBISHI TO LIST	6289	N.M.	02/07
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 VM25 45nn x 60" SADDLE SUB-ASSEMBLY		
X .XXX +/-		APPLICATION PARTNER VI		
X .XX +/-		SCALE 20:1		DWG No. 6-10-027-042
X .X +/-		DATE 11 JAN 06		SIZE B
ANGLE +/-		DRAWN BY DAHLKE		SHEET No. 2 OF 2

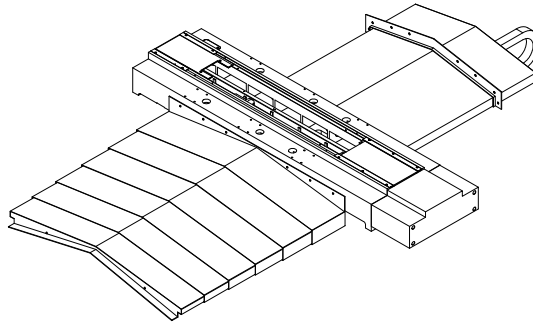
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Saddle & Way Cover Assembly – 50"



B	UPDATE BALLSCREW AND RAIL		7465		03/12
A	ADD MITSUBISHI TO LIST		6290	N.M.	02/07
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 VM25 45mm x 50" SADDLE ASSEMBLY		
X.XXX +/-			APPLICATION PARTNER VI		
X.XX +/-			SCALE 20:1		
X.X +/-			DWG No. 6-10-027-043		
X.X ANGLE +/-			SIZE B		
			DATE 11 JAN 06		
			DRAWN BY DAHLKE		
			SHEET No. 1 OF 2		

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PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	MP60216	REAR WAY COVER WIPER
2	1	MP60215	Y AXIS REAR COVER
3	2	MP00454	X AXIS WAY COVER BRACKET - LEFT
4	2	MP00453	X AXIS WAY COVER BRACKET - RIGHT
5	2	MP10247	SADDLE WIPER
6	1	MP00456	X AXIS BALL SCREW COVER - LEFT
7	1	01018814	X AXIS BALL SCREW COVER - RIGHT
8	1	MP60253	X AXIS MOTOR COVER
9	1	10027041	VM25 45mm x 50" SADDLE SUB-ASSEMBLY
10	1	SEE TABLE	VM SERIES CARRIER - MACHINED
11	1	MP70084	Y AXIS FRONT WAY COVER
12	2	MP60206	SADDLE HARD STOP BLOCK
13	4	MP00718	PDM HARD STOP BLOCK
14	2	SEE TABLE	45mm RAIL
15	4	SEE TABLE	45mm RAIL BLOCK

HARDWARE LIST		
No.	QTY	DESCRIPTION
A	36	M6-1 x 10mm BHCS
B	14	M4-.7 x 10mm FHCS
C	8	M5-.8 x 10mm SHCS
D	4	M5-.8 x 16mm BHCS
E	6	M6 LOCK WASHER
F	4	M10-1.5 x 45mm SHCS
G	2	1/4 x 1 DOWEL PIN
H	2	12mm x 25mm DOWEL PIN
I	6	M8-1.25 x 40mm SHCS
J	4	M5-.8 x 16mm SHCS
K	24	M12-1.75 x 40mm SHCS
L	24	RAIL PLUG
M	16	M10-1.5 x 35mm SHCS
N	4	M5-.8 HEX NUT

*ROLLER RAILS USES: AN ADDITIONAL (22)
 RAIL PLUGS & (22) M12-1.75 x 40mm SHCS

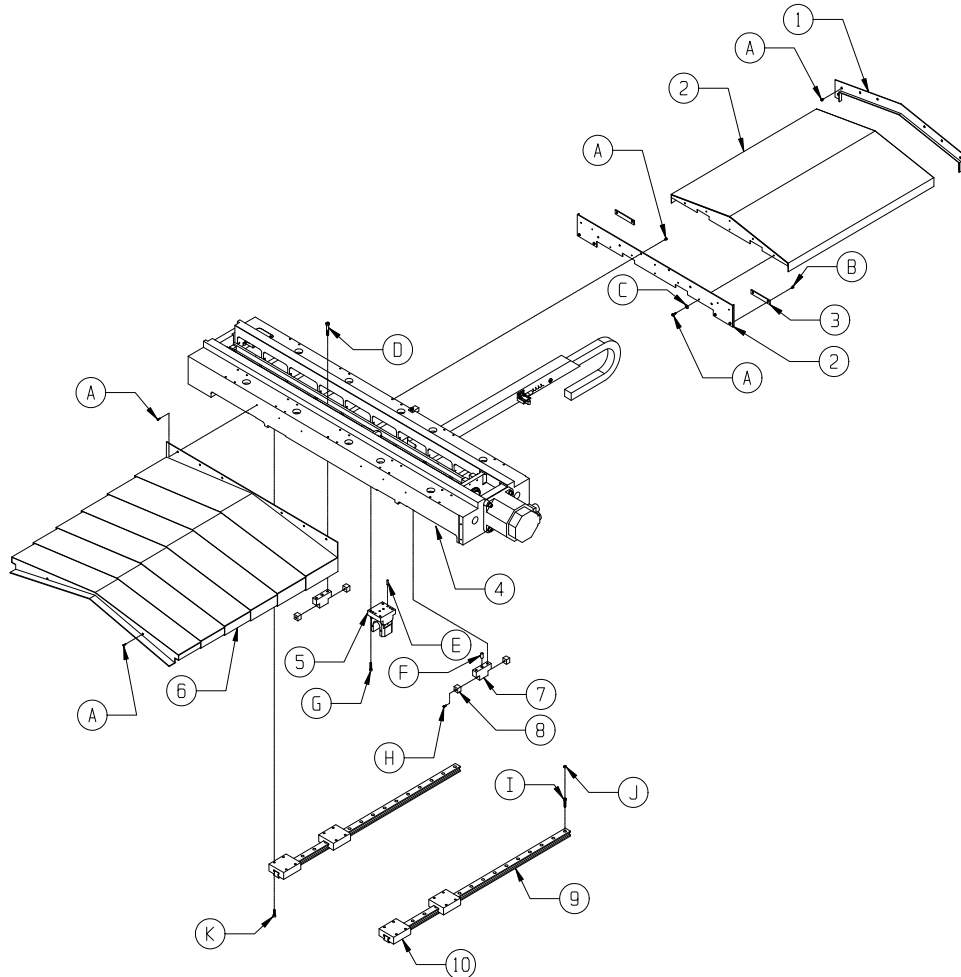
MACHINED CARRIER TABLE		
No.	DESCRIPTION	PART No.
10	STANDARD RAPID	MX00039
	HIGH SPEED RAPID	MX60044

RAIL & BLOCK TABLE		
No.	DESCRIPTION	PART No.
14	BALL RAIL	MP00727
	ROLLER RAIL	MP00817
15	BALL RAIL BLOCK	MP00728
	ROLLER RAIL BLOCK	MP00819

B	UPDATE BALLSCREW AND RAIL	7465		03/12
A	ADD MITSUBISHI TO LIST	6290	N.M.	02/07
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 VM25 45mm x 50" SADDLE ASSEMBLY		
X, XXX +/-		APPLICATION PARTNER VI		
X, XX +/-		SCALE 20:1 DWG No. 6-10-027-043 SIZE B		
X, X +/-		DATE 11 JAN 06 DRAWN BY DAHLKE SHEET No. 2 OF 2		
ANGLE +/-				

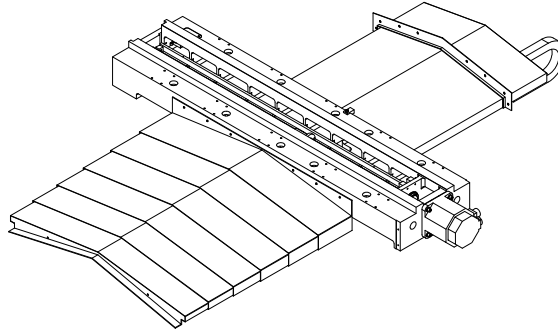
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Saddle & Way Cover Assembly – 60"



A	UPDATE RAIL	7458		03/12
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 VM25 45mm x 60" SADDLE ASSEMBLY		
TOLERANCE UNLESS SPECIFIED		APPLICATION PARTNER VI		
X.XXX +/-		SCALE 20:1		SIZE B
X.XX +/-		DATE 11 JAN 06		DRAWN BY DAHLKE
X.X +/-		DATE 11 JAN 06		SHEET No. 1 OF 2
ANGLE +/-				

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PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	MP60216	REAR WAY COVER WIPER
2	1	MP60215	Y AXIS REAR COVER
3	2	MP10247	SADDLE WIPER
4	1	10027042	VM30 SADDLE SUB-ASSEMBLY
5	1	SEE TABLE	VM SERIES CARRIER - MACHINED
6	1	MP70084	Y AXIS FRONT WAY COVER
7	2	MP60206	SADDLE HARD STOP BLOCK
8	4	MP00718	POM HARD STOP BLOCK
9	2	SEE TABLE	45mm 1240 RAIL
10	4	SEE TABLE	45mm RAIL BLOCK

HARDWARE LIST		
No.	QTY	DESCRIPTION
A	32	M6-1 x 10mm BHCS
B	4	M5-.8 x 16mm BHCS
C	6	M6 LOCK WASHER
D	4	M10-1.5 x 45mm SHCS
E	2	1/4 x 1 DOWEL PIN
F	2	12mm x 25mm DOWEL PIN
G	6	M8-1.25 x 40mm SHCS
H	4	M5-.8 x 16mm SHCS
* I	24	M12-1.75 x 40mm SHCS
* J	24	RAIL PLUG
K	16	M10-1.5 x 35mm SHCS

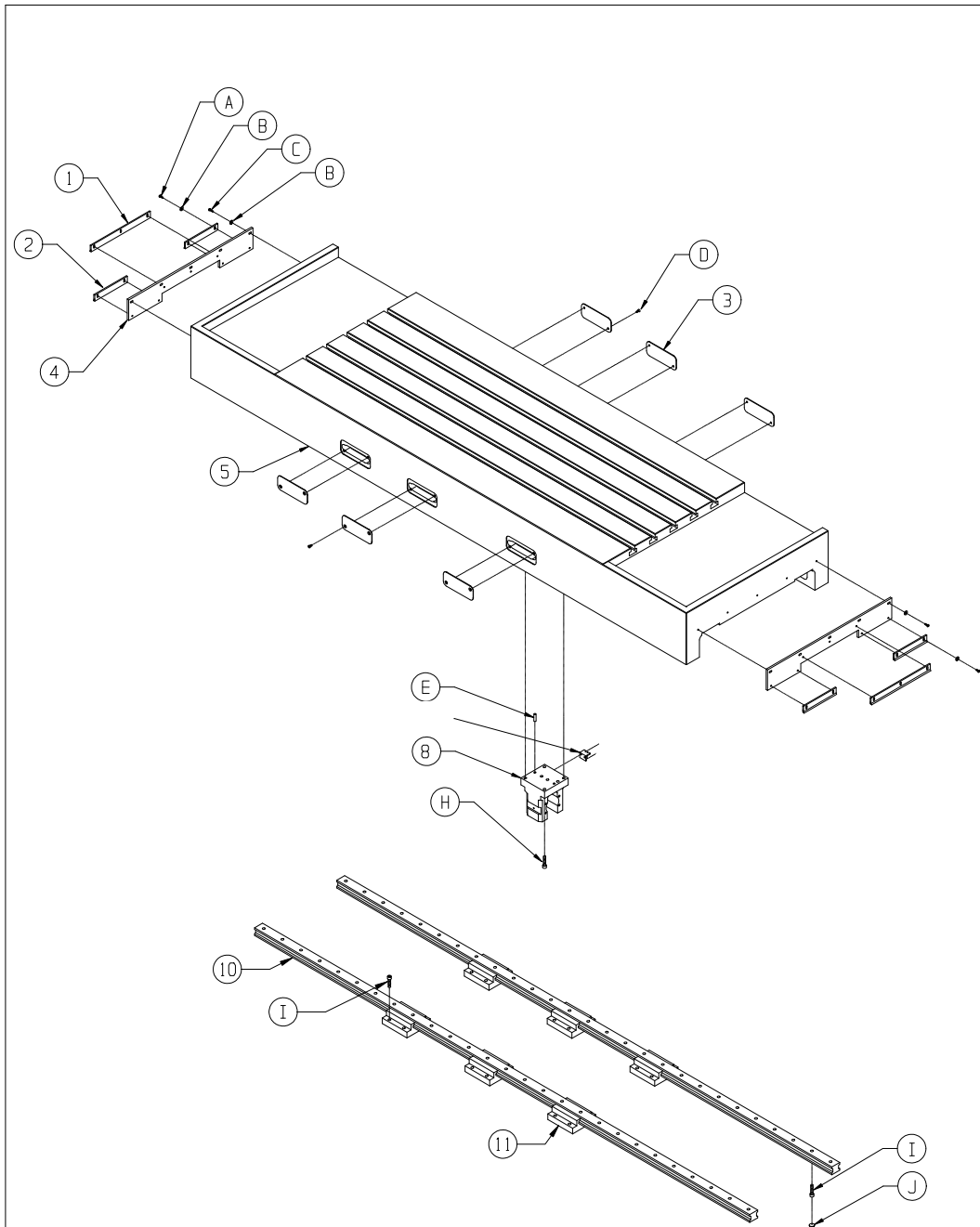
* ROLLER RAIL USES: AN ADDITIONAL (22)
 RAIL PLUGS & (22) M12-1.75 x 40mm SHCS

MACHINED CARRIER TABLE		
No.	DESCRIPTION	PART No.
5	STANDARD RAPID	MX00039
	HIGH SPEED RAPID	MX60044

RAIL & BLOCK TABLE		
No.	DESCRIPTION	PART No.
9	BALL RAIL	MP00727
	ROLLER RAIL	MP00817
10	BALL RAIL BLOCK	MP00728
	ROLLER RAIL BLOCK	MP00819

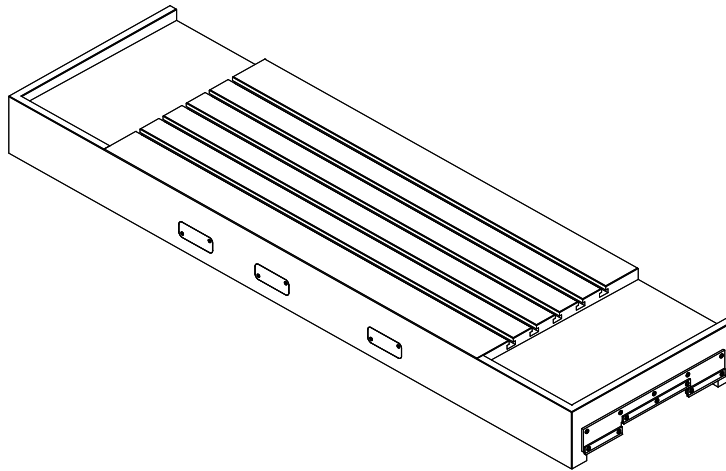
A	UPDATE RAIL	7458		03/12
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE VM25 45mm x 60" SADDLE ASSEMBLY APPLICATION PARTNER VI SCALE 20:1 DWG No. 6-10-027-044 SIZE B DATE 11 JAN 06 DRAWN BY DAHLKE SHEET No. 2 OF 2		
CERTAIN INFORMATION CONTAINED HEREIN THE EXCLUSIVE PROPERTY OF MILLTRONICS MFG. CO. IT IS GIVEN IN CONFIDENCE AND IS NOT TO BE USED OR DISCLOSED TO OTHER THAN THE INTENDED RECIPIENT WITHOUT EXPRESSED WRITTEN CONSENT OF MILLTRONICS MFG. CO.		TOLERANCE UNLESS SPECIFIED X.XXX +/- X.XX +/- X.X +/- ANGLE +/-		

Milling Table Assembly – 50”



A	UPDATE RAIL BOLT & PART No.	7483	N.M.	03/12
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 VM25 (2Kw) 50" TABLE SUB-ASSEMBLY		
X .XXX ±		APPLICATION PARTNER VI		
X .XX ±		SCALE 12:1	DWG No 6-10-027-046	SIZE B
X .X ±		DATE 12 JAN 06	DRAWN BY DAHLKE	SHEET NO. 1 OF 2
ANGLE ±				

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PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	2	MP00323	TABLE/SADDLE WIPER - UPPER
2	4	MP00324	TABLE/SADDLE WIPER - LOWER
3	6	MP00315	TABLE SLOT COVER
4	2	MP00310	TABLE/SADDLE WIPER PLATE
5	1	MX60047	VM SERIES 84 x 24 TABLE - MACHINED
6			
7			
8	1	SEE TABLE	VM SERIES CARRIER - MACHINED
9			
10	2	SEE TABLE	35mm 2125 RAILS
11	6	SEE TABLE	35mm RAIL BLOCK

HARDWARE LIST

No.	QTY	DESCRIPTION
A	14	M5-.8 x 10mm BHCS
B	24	M5 FLAT WASHER
C	10	M5-.8 x 15mm BHCS
D	12	M4-.7 x 8mm FHCS
E	2	1/4 x 1 DOWEL PIN
F		
G		
H	6	M8-1.25 x 40mm SHCS
I	78	M8-1.25 x 30mm SHCS - MP60203 BALL RAIL
	130	M8-1.25 x 35mm SHCS - MP00813 ROLLER RAIL
J	54	RAIL PLUG - MP60203 BALL RAIL
	106	RAIL PLUG - MP00813 ROLLER RAIL

MACHINED CARRIER TABLE

No.	DESCRIPTION	PART No.
8	STANDARD RAPID	MX00039
	HIGH SPEED RAPID	MX60044

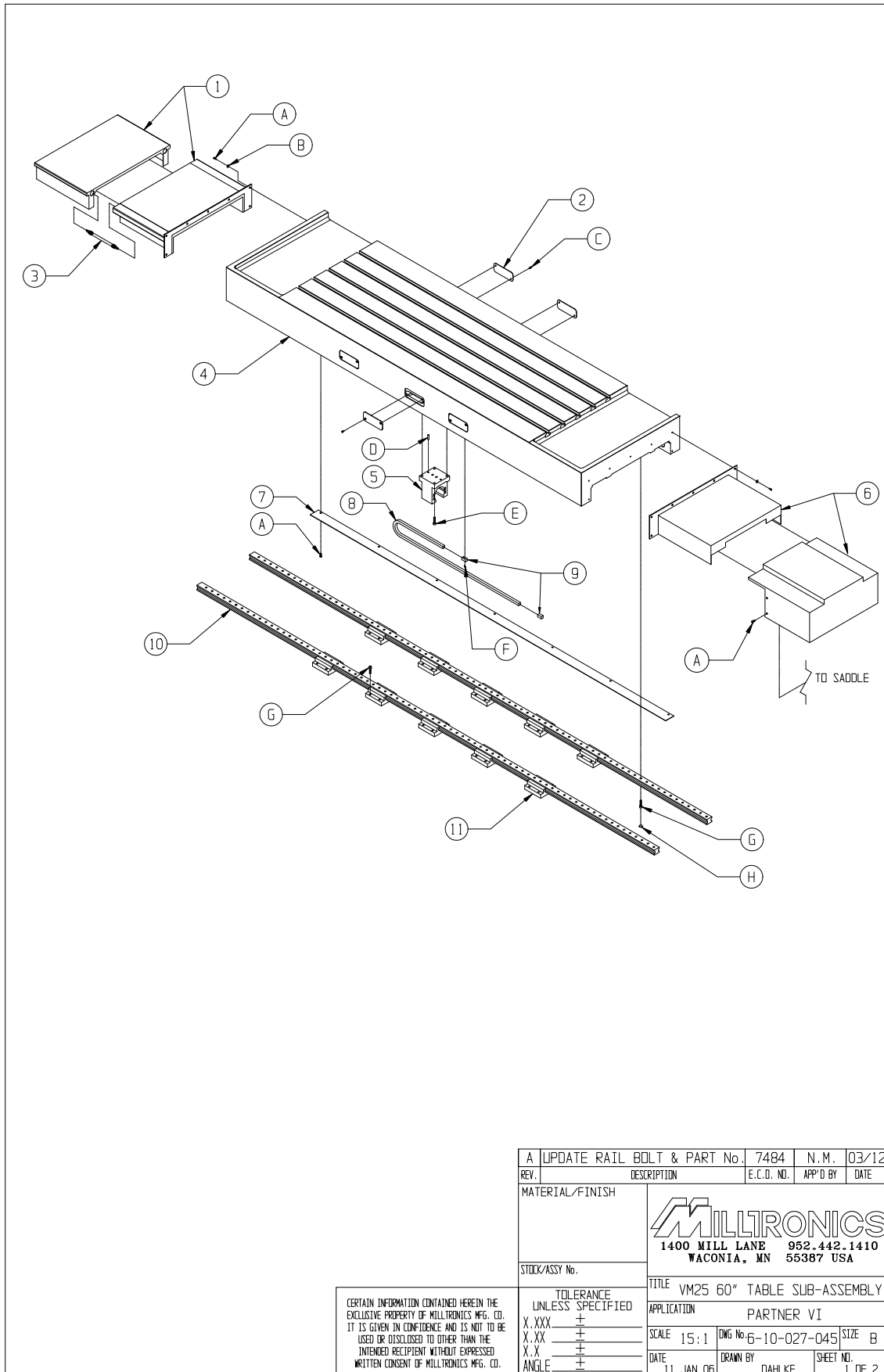
RAIL & BLOCK TABLE

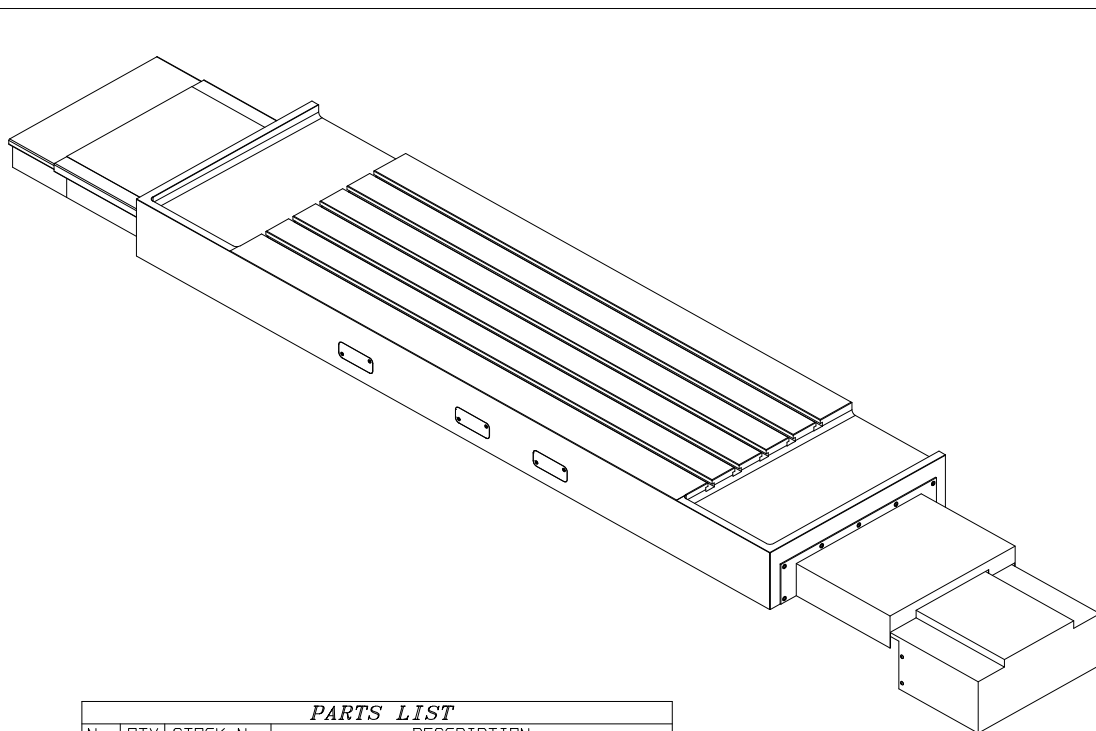
No.	DESCRIPTION	PART No.
10	BALL RAIL	MP60203
	ROLLER RAIL	MP00813
11	BALL RAIL BLOCK	MP00641
	ROLLER RAIL BLOCK	MP00815

A	UPDATE RAIL BOLT & PART No.	7483	N.M.	03/12
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 VM25 (2Kw) 50" TABLE SUB-ASSEMBLY		
X.XXX ±		APPLICATION PARTNER VI		
X.XX ±		SCALE 12:1 DWG No. 6-10-027-046 SIZE B		
X.X ±		DATE 12 JAN 06 DRAWN BY DAHLKE SHEET NO. 2 OF 2		
ANGLE ±				

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Milling Table Assembly – 60”




PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	MP70096	VM30 60" X AXIS WAYCOVER LEFT
2	6	MP00315	TABLE SLOT COVER
3	2	HD00062	WAYCOVER SPRING
4	1	MX70010	VM SERIES 94 x 26 TABLE - MACHINED
5	1	MX60044	VM SERIES CARRIER - MACHINED
6	1	MP70083	VM30 60" X AXIS WAYCOVER RIGHT
7	1	MP70097	X-AXIS TABLE PLATE
8	6'	MP00844	X AXIS OIL/ CABLE TRACK (89 LINKS)
9	1	MP00845	CABLE TRACK ENDS (SET)
10	2	SEE TABLE	35mm 3060 RAILS
11	10	SEE TABLE	35mm RAIL BLOCK

HARDWARE LIST

No.	QTY	DESCRIPTION
A	25	M6-1 x 12mm BHCS
B	14	M6 LOCK WASHER
C	12	M4-.7 x 8mm FHCS
D	2	1/4 x 1 DOWEL PIN
E	6	M8-1.25 x 40mm SHCS
F	4	M3-.5 x 5mm SHCS
G	100	M8-1.25 x 30mm SHCS - MP60245 BALL RAIL
	158	M8-1.25 x 35mm SHCS - MP00814 ROLLER RAIL
H	60	RAIL PLUG - MP60245 BALL RAIL
	118	RAIL PLUG - MP00814 ROLLER RAIL

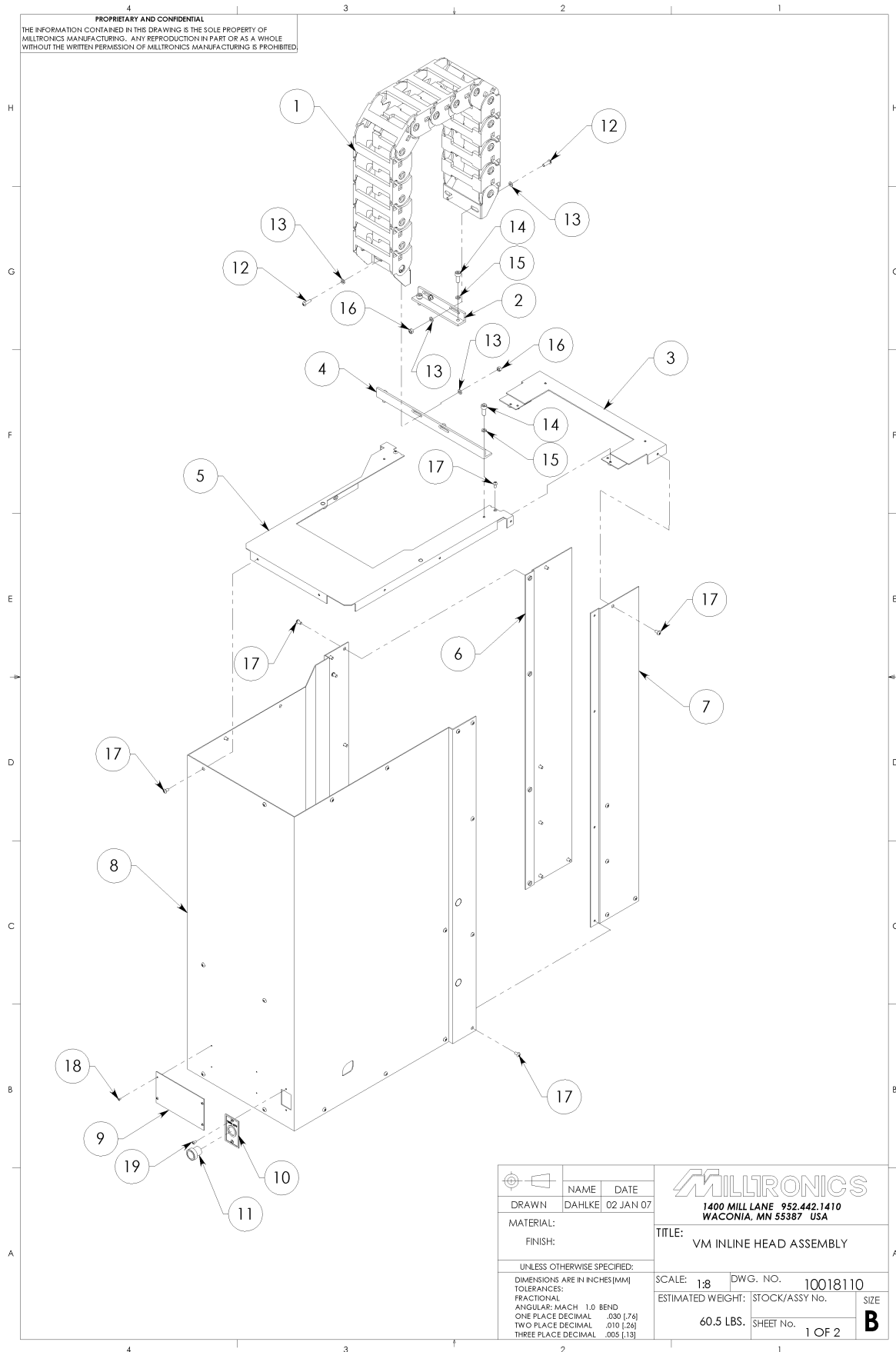
RAIL & BLOCK TABLE

No.	DESCRIPTION	PART No.
10	BALL RAIL	MP60245
	ROLLER RAIL	MP00814
11	BALL RAIL BLOCK	MP00641
	ROLLER RAIL BLOCK	MP00815

A UPDATE RAIL BOLT & PART No.		7484	N.M.	03/12
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 VM25 60" TABLE SUB-ASSEMBLY		
X.XXX ±		APPLICATION PARTNER VI		
X.XX ±		SCALE 12:1	DWG No. 6-10-027-045	SIZE B
X.X ±		DATE 11 JAN 06	DRAWN BY DAHLKE	SHEET NO. 2 OF 2
ANGLE ±				

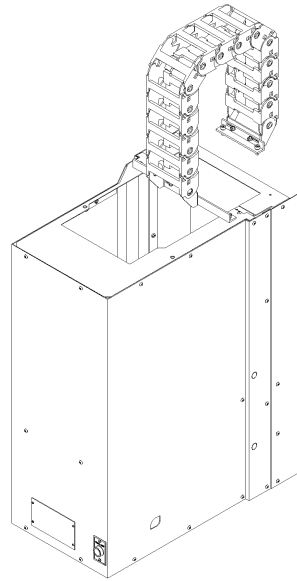
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Machine Head Assembly



4 3 2 1

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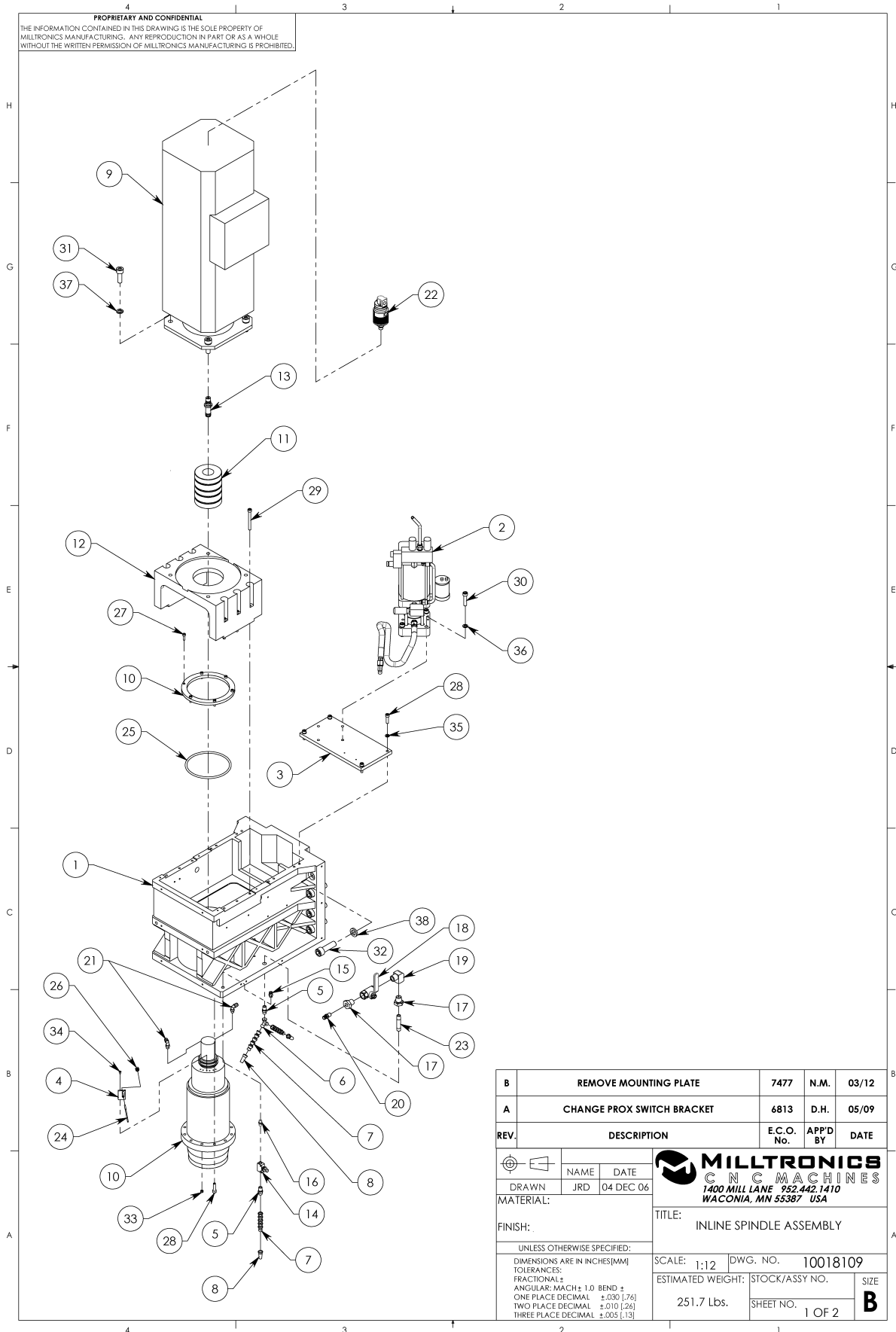
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	SEE TABLE	SPINDLE CABLE TRACK
2	1	MP00316	SPINDLE CABLE SUPPORT BRACKET
3	1	SEE TABLE	VM HEAD COVER - TOP
4	1	MP00664	VM SPINDLE CABLE SUPPORT BRACKET
5	1	MP00639	UNIVERSAL HEADCOVER - TOP
6	1	SEE TABLE	VM HEAD COVER - LEFT
7	1	SEE TABLE	VM HEAD COVER - RIGHT
8	1	MP00635	UNIVERSAL HEAD COVER
9	1	LB00001	SAFETY STICKER
10	1	LB00181	TOOL OUT LABEL
11	1	SW00067	TOOL OUT SWITCH
12	4	BHCS M6-1.0 x 20	M6 - 1.0 x 20 BHCS
13	8	WASHER FLAT M6	M6 WASHER FLAT
14	4	SHCS M6-1.0 x 20	M6-1.0 x 20 SHCS
15	4	WASHER LOCK M6	M6 WASHER LOCK
16	4	NUT M6-1	M6-1 NYLOCK NUT
17	41	BHCS M6-1.0 x 10	M6-1.0 x 10 BHCS
18	4	BHCS M3-0.5 x 5	M3-0.5 x 5 BHCS
19	2	BHCS M4-0.7 x 8	M4-0.7 x 8 BHCS

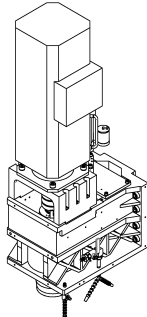
VM TABLE				
ITEM No.	VM20	VM22	VM25	VM30
1	MP00443	MP00760 *	MP00760 *	MP00760 *
3	MP10461	MP60218	MP00633	MP00638
6	MP10459	MP60219	MP00634	MP00637
7	MP10460	MP60217	MP00632	MP00636

* XP MACHINES USE MP-850 CABLE TRACK.

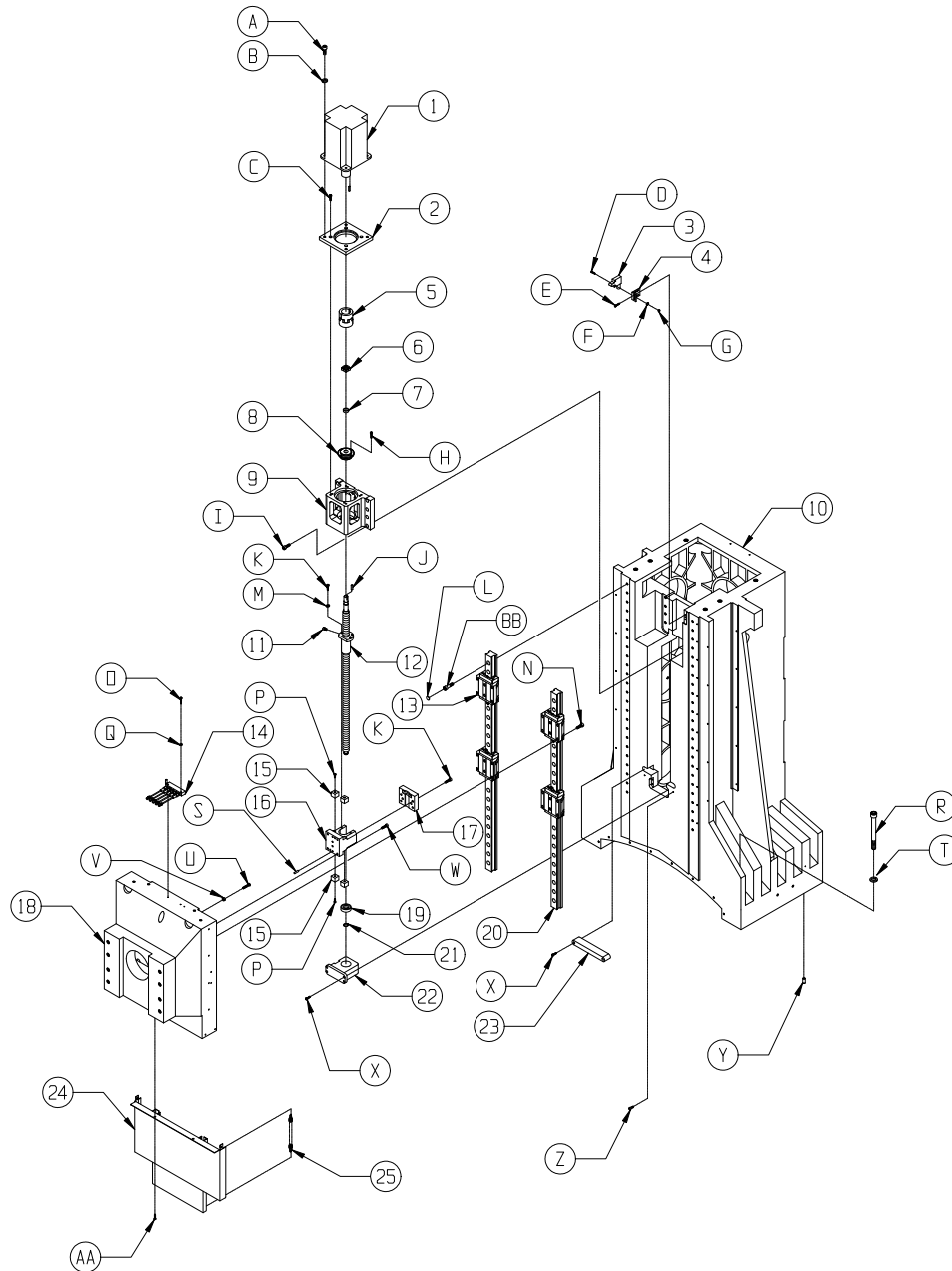
	NAME	DATE	 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA	
	DRAWN	DAHLKE		
MATERIAL:			TITLE: VM INLINE HEAD ASSEMBLY	
FINISH:				
UNLESS OTHERWISE SPECIFIED:			SCALE: 1:12 DWG. NO. 10018110	
DIMENSIONS ARE IN INCHES (MM) TOLERANCES: FRACTIONAL ANGULAR: MACH 1.0 BEND ONE PLACE DECIMAL .030 (.76) TWO PLACE DECIMAL .010 (.25) THREE PLACE DECIMAL .005 (.13)			ESTIMATED WEIGHT: 60.5 LBS.	STOCK/ASSY No. SHEET No. 2 OF 2
			SIZE	B

Inline Spindle Assembly



PROPRIETARY AND CONFIDENTIAL																																																																																																																																																																	
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SPINDLE MOTOR TABLE <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ITEM NO.</th> <th>STOCK NO.</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td rowspan="2">10</td> <td>MP001023</td> <td>10K RPM</td> </tr> <tr> <td>MP001129</td> <td>15K RPM</td> </tr> </tbody> </table>		ITEM NO.	STOCK NO.	DESCRIPTION	10	MP001023	10K RPM	MP001129	15K RPM	MOTOR COUPLER TABLE <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ITEM NO.</th> <th>MOTOR-END HUB 1 DIA. (MM)</th> <th>SPINDLE-END HUB 2 DIA. (MM)</th> </tr> </thead> <tbody> <tr><td rowspan="8">11</td><td>24</td><td>50</td></tr> <tr><td>28</td><td>50</td></tr> <tr><td>32</td><td>50</td></tr> <tr><td>38</td><td>50</td></tr> <tr><td>40</td><td>50</td></tr> <tr><td>42</td><td>50</td></tr> <tr><td>48</td><td>50</td></tr> <tr><td>50</td><td>50</td></tr> <tr><td>55</td><td>50</td></tr> </tbody> </table>		ITEM NO.	MOTOR-END HUB 1 DIA. (MM)	SPINDLE-END HUB 2 DIA. (MM)	11	24	50	28	50	32	50	38	50	40	50	42	50	48	50	50	50	55	50																																																																																																																																
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8	3	MA00216	LOC-LINE NOZZLE 1/4																																																																																																																																																														
9	1	SEE TABLE	SPINDLE MOTOR																																																																																																																																																														
10	1	SEE TABLE	SPINDLE ASSEMBLY																																																																																																																																																														
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12	1	SEE TABLE	MOTOR CASTING MITSUBISHI AND FANUC																																																																																																																																																														
13	1	MP00958	CTS SPINDLE MOTOR CONNECTING TUBE (CTS OPTION)																																																																																																																																																														
14	1	NU00007	AIR RESTRICTOR																																																																																																																																																														
15	1	NU00017	1/8"NPT X 1/4 TUBE M/S																																																																																																																																																														
16	1	NU00024	1/8 NPT BRASS NIPPLE UNION																																																																																																																																																														
17	2	NU00028	1/2" NPT (MALE) - 1/4" NPT(FEMALE)																																																																																																																																																														
18	1	NU00064	1/2" NPT BALL VALVE																																																																																																																																																														
19	1	NU00125	1/2" STREET ELBOW																																																																																																																																																														
20	1	NU00139	FITTING 1/4NPT-1/2 BARB																																																																																																																																																														
21	2	NU00171	ELBOW - M/S 1/4 TUBE x 1/8NPT																																																																																																																																																														
22	1	NU00226	DEUBLIN COOLANT UNION																																																																																																																																																														
23	1	NU00263	NIPPLE .25NPT x 2.50																																																																																																																																																														
24	1	PR00050	PROX SWITCH																																																																																																																																																														
25	1	WX00270	70mm REAR CARTRIDGE SEAL O-RING																																																																																																																																																														
26	1	WX00358	PROX SWITCH RESTRAINT																																																																																																																																																														
27	6	SHCS M6-1.0 x 20	M6-1.0 x 20mm SHCS																																																																																																																																																														
28	10	SHCS M8-1.25 x 30	M8-1.25 x 30mm SHCS																																																																																																																																																														
29	6	M8-1.25x160mm SHCS	M8-1.25x160mm SHCS																																																																																																																																																														
30	4	SHCS M10-1.5 x 45	M10-1.5 x 45mm SHCS																																																																																																																																																														
31	4	SHCS M14-2.0 x 45	M14-2.0 x 45mm SHCS																																																																																																																																																														
32	8	SHCS 3/4-10 x 2.5	3/4-10 x 2.5 SHCS																																																																																																																																																														
33	6	SHPP 1/8-28 BSPP	1/8-28 BSPP SHPP																																																																																																																																																														
34	2	BHCS M4-0.7 x 8	M4-0.7 x 8mm BHCS																																																																																																																																																														
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Machine Column Assembly



D	UPDATE TO 25TAC62 BEARINGS	7457		03/12
C	ADD MITSUBISHI TO LIST	6288	N.M.	02/07
B	ADD ROLLER TABLE	5915	N.M.	02/05
A	ADD MOTOR, COUPLER TABLE	5728	N.M.	03/04
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 +/-

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

TITLE VM25 COLUMN SUB-ASSEMBLY

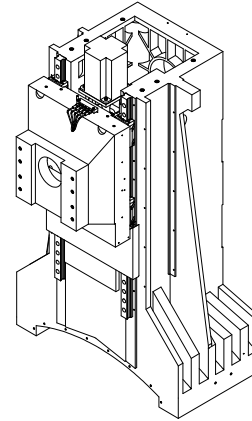
APPLICATION PARTNER VI

SCALE 20:1 DWG No. 6-10-027-039 SIZE B

DATE 07 JUL 03	DRAWN BY DAHLKE	SHEET No. 1 OF 2
----------------	-----------------	------------------

PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	AXIS MOTOR
2	1	SEE TABLE	Z - AXIS MOTOR PLATE
3	1	SW00193	LIMIT SWITCH
4	1	MP10387	X & Z LIMIT SWITCH MOUNTING BRACKET
5	1	SEE TABLE	MOTOR COUPLER
6	1	MP00439	BALL SCREW LOCK NUT
7	1	01018827	BEARING LOCK NUT SPACER
8	1	10018117	VM BEARING CUP ASSEMBLY
9	1	01018820	REAR MOTOR MOUNT Y/Z-AXIS
10	1	MX60039	VM SERIES COLUMN - MACHINED
11	1	SEE TABLE	1/8 NPT 5/32 TUBE M/S
12	1	SEE TABLE	Z BALL SCREW
13	4	SEE TABLE	45mm RAIL BLOCKS
14	1	SEE TABLE	Z - AXIS MANIFOLD ASSEMBLY
15	4	MP00718	PDM HARD STOP BUMPER
16	1	SEE TABLE	VM SERIES CARRIER - MACHINED
17	1	SEE TABLE	Z - AXIS BALL SCREW SAFETY CATCH
18	1	MX60038	VM25 45mm HEAD EXTENSION - MACHINED
19	1	BG00002	6204 BEARING
20	2	SEE TABLE	45mm RAILS
21	1	MP10108	SNAP RING
22	1	MP00248	VM BALL SCREW SUPPORT
23	1	MP60225	Z - AXIS HARDSTOP BAR
24	1	MP60214	Z - AXIS WAYCOVER
25	2	HD00062	WAYCOVER SPRING


MOTOR, COUPLER & MOTOR PLATE TABLE

No.	YASKAWA	FANUC	SIEMENS	mitsubishi
1	MD00138 (3.0kW)	22Nn A06B-0247-B500 30Nn A06B-0253-B500	18Nn 1FK7100-5AF71-1EB0 27Nn 1FK7101-5AF71-1EB0	MD00186 (3.5kW) MD00188 (5.0kW)
2	MP60231	MP60231	SMN0009	MP60231
5	MA00249	MA00249	MA00288	MA00249

HARDWARE LIST

No.	QTY	DESCRIPTION
A	4	M12-1.75 x 35mm SHCS
B	4	M12 LOCK WASHER
C	4	M8-1.25 x 20mm SHCS
D	2	M5-.8 x 20mm SHCS
E	2	M5-.8 x 16mm BHCS
F	2	M5 FLAT WASHER
G	2	M5-.8 HEX NUT
H	4	M6-1 x 30mm SHCS
I	8	M10-1.5 x 30mm SHCS
J	1	5mm x 5mm x 15mm BALL SCREW KEY
K	8	M8-1.25 x 30mm SHCS
L	24	RAIL PLUGS
M	2	M8 LOCK WASHER
N	24	M10-1.5 x 35mm SHCS
O	2	M5-.8 x 30mm SHCS
P	4	M5-.8 x 16mm SHCS
Q	2	M5 LOCK WASHER
R	10	3/4-10 x 7 1/2 SHCS
S	2	1/4 x 1 DOWEL PIN
T	10	3/4 LOCK WASHER
U	1	M8-1.25 x 40mm BHCS
V	1	M8-1.25 HEX NUT
W	6	M8-1.25 x 40mm SHCS
X	6	M6-1 x 20mm SHCS
Y	2	M12 x 26mm DOWEL PIN
Z	2	M6 SHOULDER BOLT
AA	4	M6-1 x 10mm BHCS
BB	24	M12-1.75 x 40mm SHCS

* ROLLER RAILS USE: AN ADDITIONAL (24)
RAIL PLUGS & (24) M12-1.75 x 40mm SHCS

** FOR SIEMEN MOTOR OPTION USE:
M8-1.25 x 30mm SHCS.

Z-AXIS MANIFOLD ASSEMBLIES

No.	DRAWING No.	DESCRIPTION
14	10018050	VM Z-AXIS OIL MANIFOLD ASSEMBLY
	10008059	Z-AXIS AIR/OIL MANIFOLD ASSEMBLY

BALL SCREW, SAFETY CATCH TABLE

No.	DESCRIPTION	STANDARD	HIGH SPEED RAPID
11	OIL FITTING	NU00154	NU00336
12	BALL SCREW	MP00571	MP00803
16	VM SERIES CARRIER	MX00039	MX60044
17	SAFETY CATCH	MP60229	MP60243

RAIL & BLOCK TABLE

No.	DESCRIPTION	PART No.
13	BALL RAIL BLOCK	MP00728
	ROLLER RAIL BLOCK	MP00819
20	BALL RAIL	MP00727
	ROLLER RAIL	MP00818

D	UPDATE TO 25TAC62 BEARINGS	7457		03/12
C	ADD MITSUBISHI TO LIST	6288	N.M.	02/07
B	ADD ROLLER TABLE	5915	N.M.	02/05
A	ADD MOTOR, COUPLER TABLE	5728	N.M.	03/04
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 +/-

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

TITLE VM25 COLUMN SUB-ASSEMBLY

APPLICATION PARTNER VI

SCALE 20:1 DWG No. 6-10-027-039 SIZE B

DATE 07 JUL 03 DRAWN BY DAHLKE SHEET No. 2 OF 2

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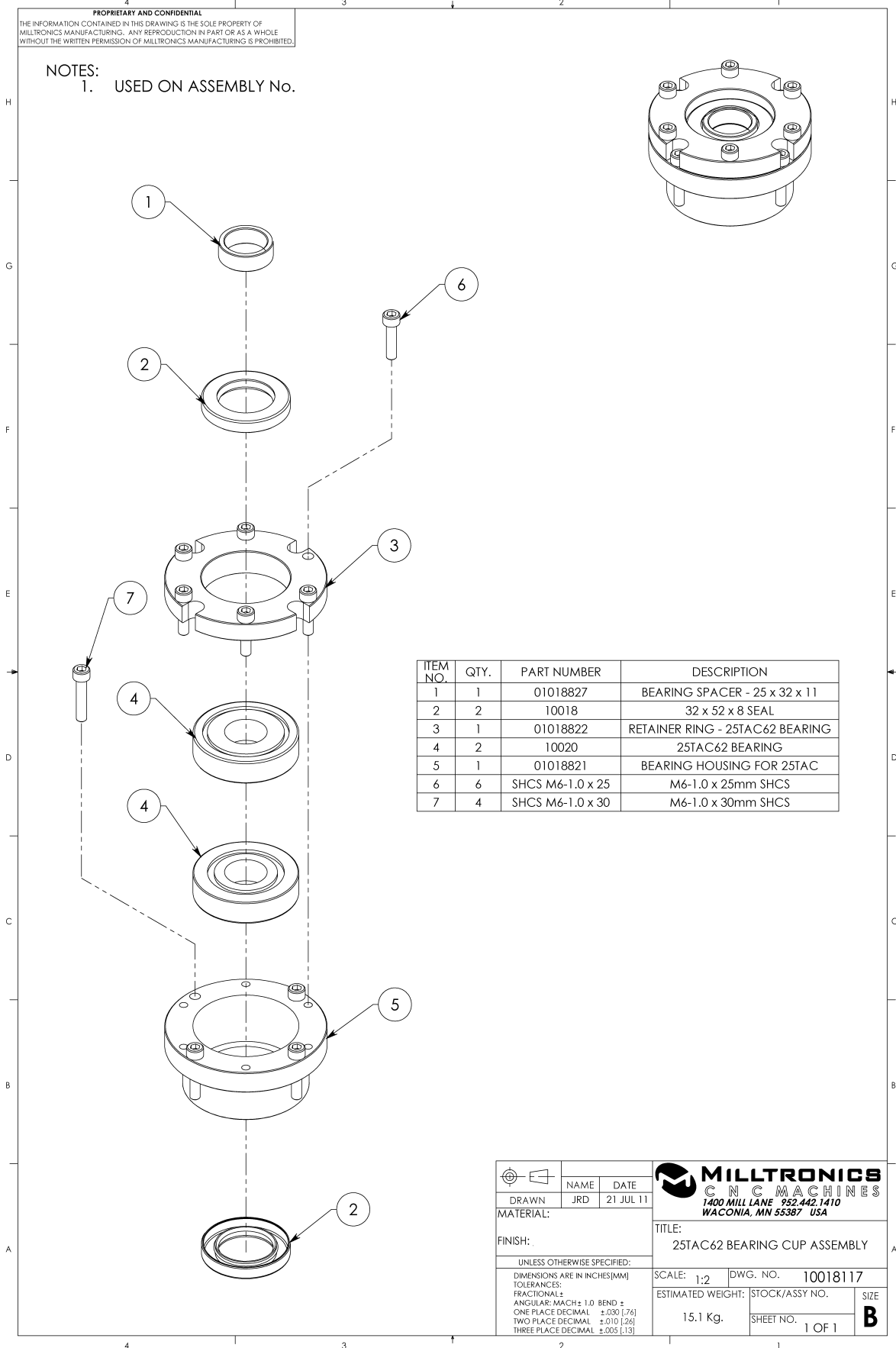
Thrust Bearing Cup Assembly (25TAC62)

PROPRIETARY AND CONFIDENTIAL

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NOTES:

1. USED ON ASSEMBLY No.



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	01018827	BEARING SPACER - 25 x 32 x 11
2	2	10018	32 x 52 x 8 SEAL
3	1	01018822	RETAINER RING - 25TAC62 BEARING
4	2	10020	25TAC62 BEARING
5	1	01018821	BEARING HOUSING FOR 25TAC
6	6	SHCS M6-1.0 x 25	M6-1.0 x 25mm SHCS
7	4	SHCS M6-1.0 x 30	M6-1.0 x 30mm SHCS

FINISH:

UNLESS OTHERWISE SPECIFIED:

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]

MILLTRONICS
CNC MACHINES

1400 MILL LANE 552.442.1410
WACONIA, MN 55387 USA

TITLE:
25TAC62 BEARING CUP ASSEMBLY

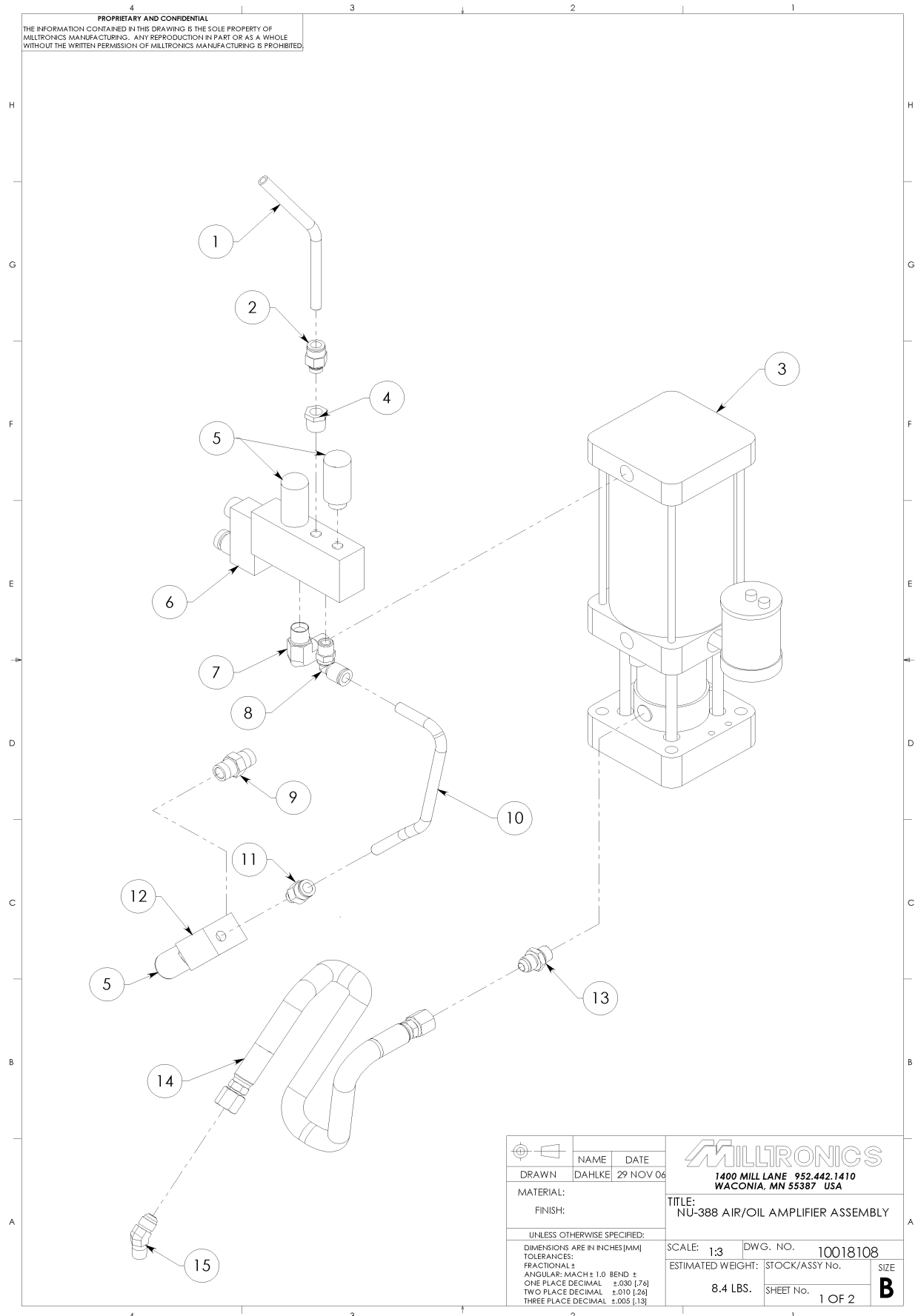
SCALE: 1:2 **DWG. NO.** 10018117

ESTIMATED WEIGHT: 15.1 Kg. **STOCK/ASSY NO.** **SIZE** B

SHEET NO. 1 OF 1

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Power Drawbar Cylinder Assembly



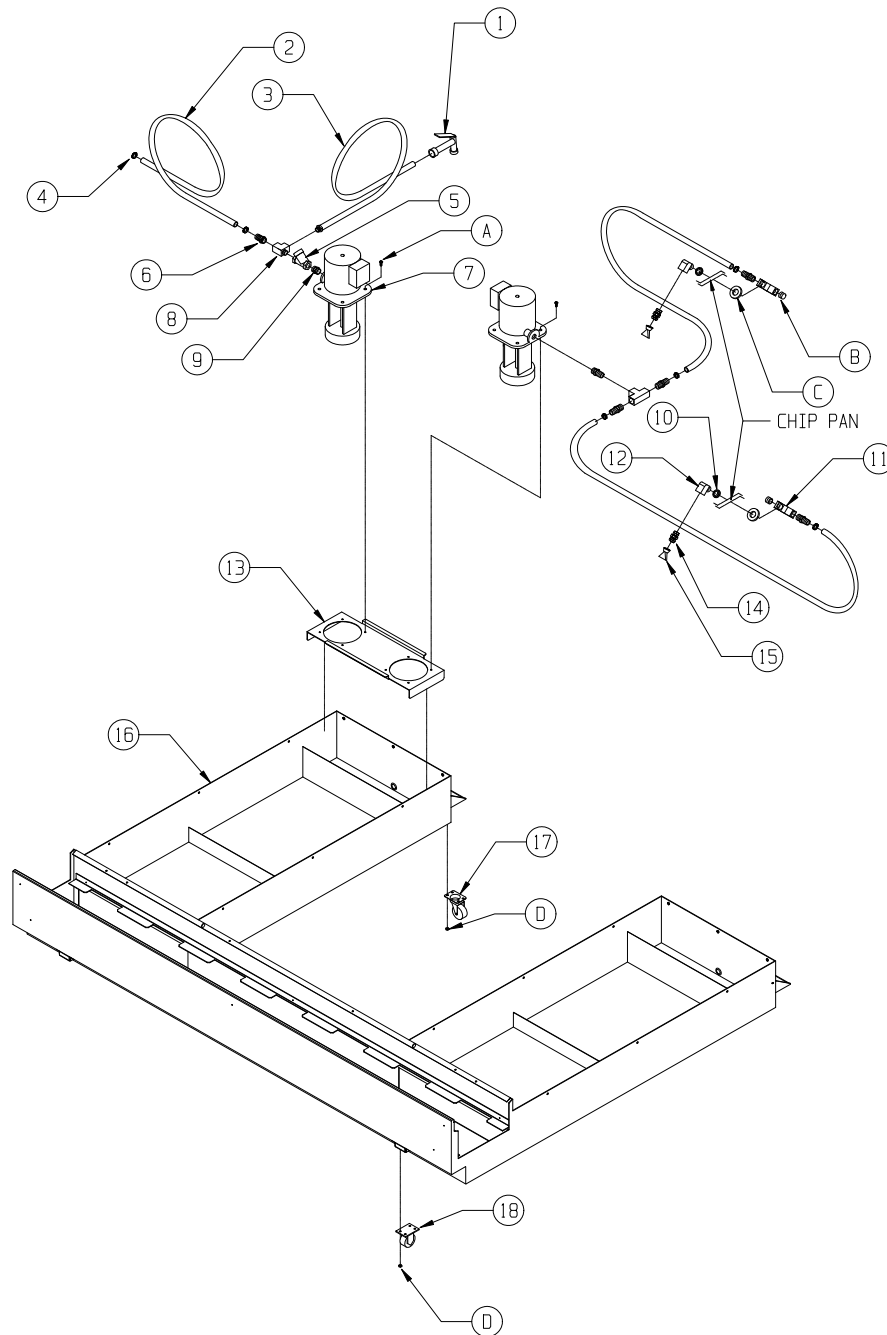


SERVING YOUR METAL CUTTING NEEDS FOR MORE THAN 25 YEARS

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°

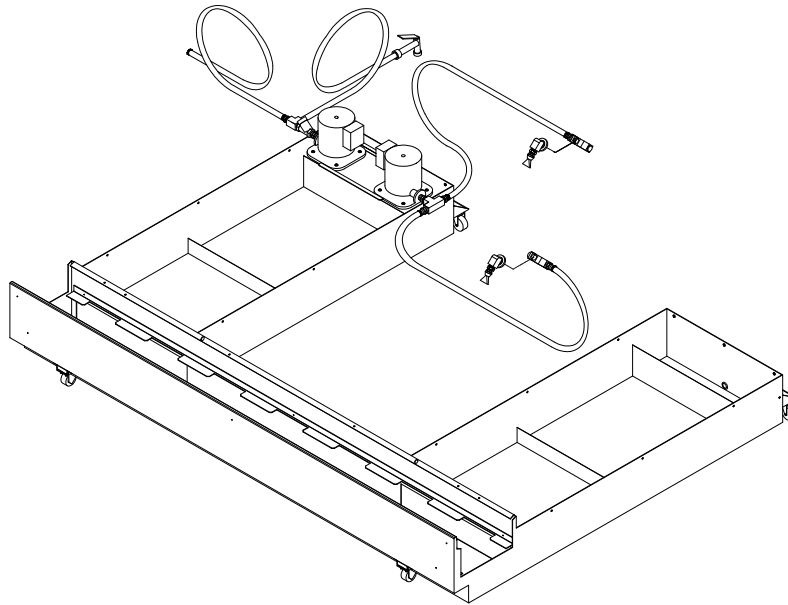
	NAME		DATE		
	DRAWN DAHLKE		29 NOV 06		
MATERIAL:					TITLE: NU-388 AIR/OIL AMPLIFIER ASSEMBLY
FINISH:					
UNLESS OTHERWISE SPECIFIED:					
DIMENSIONS ARE IN INCHES [MM] TOLERANCES: FRACTIONAL ± .005 ANGULAR: MATCH ± 1.0 BEND ± .030 [7.6] ONE PLACE DECIMAL ± .010 [2.6] TWO PLACE DECIMAL ± .005 [0.125] THREE PLACE DECIMAL ± .001 [0.025]					SCALE: 1:3 DWG. NO. 10018108 ESTIMATED WEIGHT: 8.4 LBS.
					STOCK/ASSY No. SHEET No. 2 OF 2
					SIZE B

Coolant Tank Assembly



A	ONE PIECE COOLANT TANK		6017	11/05		
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 VM22, 25, 30 FLOOD TANK W/WASHDOWN ASSEMBLY			
X .XXX ±			APPLICATION GENERAL PRODUCTS			
X .XX ±			SCALE 15:1		DRG No. 6-10-018-104	SIZE B
X .X ±			DATE 18 DEC 03		DRAWN BY DAHLKE	SHEET No. 1 OF 2
ANGLE ±						

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PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	NU-124	WATER HOSE NOZZLE
2	30'	NU-69	3/4" NYLOBRAID HOSE
3	1	NU-130	WASHDOWN HOSE ASSEMBLY
4	6	NU-141	1" HOSE CLAMP
5	1	NU-128	1/2" SWING CHECK VALVE
6	5	NU-66	1/2 NPT - 3/4 BARB FITTING
7	2	MA-162	FLOOD PUMP 1/4 HP MOTOR
8	1	NU-127	1/2" STREET T
9	2	NU-65	1/2" NIPPLE
10	2	WX-38	O' RING
11	3	NU-61	1/2" FEMALE T
12	2	NU-125	1/2" STREET ELBOW
13	1	MP-755	COOLANT PUMP MOUNTING PLATE
14	2	NU-176	1/2" CONNECTOR
15	2	NU-175	1 1/4" FLARE NOZZLE
16	1	MP-808	COOLANT TANK
17	4	EL-88	CASTER - SWIVEL
18	2	EL-98	CASTER - RIGID

HARDWARE LIST

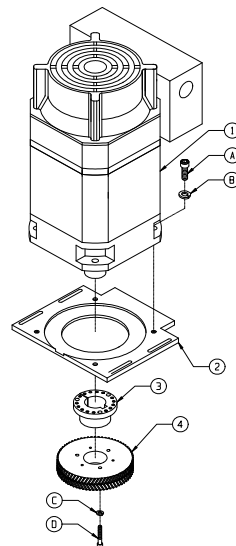
No.	QTY	DESCRIPTION
A	8	M6-1 x 12mm BHCS
B	2	1/2-14 NPT SHPP
C	2	7/8 FLAT WASHER 3/8 THICK
D	12	M6-1 NYLOCK HEX NUT

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A	ONE PIECE COOLANT TANK	6017		11/05
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 VM22,25,30 FLOOD TANK W/WASHDOWN ASSEMBLY		
X .XXX ±		APPLICATION GENERAL PRODUCTS		
X .XX ±		SCALE 15:1 DWG No. 6-10-018-104		SIZE B
X .X ±		DATE 18 DEC 03 DRAWN BY DAHLKE		SHEET No. 2 OF 2
ANGLE ±				

Spindle Motor and Pulley Assembly

SPINDLE MOTORS		
No.	STOCK No.	DESCRIPTION
1	M000121	18 kW UAASKD-19LYA41 - YASKAWA
	M000132	11 kW UAASKD-11LYA41 - YASKAWA
	M000131	7.5 kW UAASKD-08LYA21 - YASKAWA
	M000114	7.5 kW UAASKA-08FZ1 - YASKAWA
	M000150	11 kW UAASKA-11LYA31 - YASKAWA
	FANUC	8 kW A06B-1407-B103
	FANUC	12 kW A06B-1428-B103
	FANUC	22 kW A06B-1451-B113
	FANUC	8 kW A06B-1477-B133
	FANUC	15 kW A06B-1479-B133
	SIEMENS	11 kW 1PH7131-2QF02-OLK0
	SIEMENS	12 kW 1PH7163-2QB03-OLK0
	SIEMENS	16 kW 1PH7167-2QB03-OLK0
	SIEMENS	7.5 kW 1PM6105-2LF81-1AR1-Z
	SIEMENS	11 kW 1PM6133-2LF81-1AR1-Z
SIEMENS	18.5 kW 1PM6137-2LF81-1AR1-Z	



MOTOR PLATES		
No.	STOCK No.	DESCRIPTION
2	MP00548	M000121 & M000131 & M000132 - YASKAWA 12 kW & 22 kW - FANUC
	MP00587	M000114 & M000150 - YASKAWA (8 kW - FANUC)
	MPB0045	M000114 & M000150 - YASKAWA (BRIDGE MILL ONLY)
	MPB0040	M000131 & M000132 - YASKAWA (BRIDGE MILL ONLY)
	SMN0008	11 kW - SIEMENS
	SMN0061	7.5 kW - SIEMENS & 8 kW - FANUC
	SMN0062	11 kW & 18.5 kW - SIEMENS
	MPT045	15 kW - FANUC

BUSHINGS		
No.	STOCK No.	DESCRIPTION
3	PY00097	48mm ID SK BUSHING(USED WITH M000121, M000131, M000132, M000150 - YASKAWA) (8 kW & 12 kW - FANUC)
	PY00184	32mm ID SK BUSHING(USED WITH M000114 - YASKAWA)
	PY00215	55mm ID SK BUSHING(USED WITH 16 kW - SIEMENS & 22 kW - FANUC)
	PY00216	38mm ID SK BUSHING(USED WITH 7.5 kW - SIEMENS & 8 kW - FANUC)
	PY00217	42mm ID SK BUSHING(USED WITH 11 kW & 18.5 kW - SIEMENS)
	PY00280	TLK 110-48-62 BUSHING (USED ON 50 TAPER MACHINES)

[illegible]

PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	SPINDLE MOTORS
2	1	SEE TABLE	MOTOR PLATES
3	1	SEE TABLE	BUSHINGS
4	1	SEE TABLE	SPINDLE MOTOR PULLEYS

<i>HARDWARE LIST</i>		
No.	QTY	DESCRIPTION
A	4	1/2-13 x 1 1/4 SHCS
B	4	1/2 LOCK WASHER
C	3	5/16 LOCK WASHER
D	3	5/16-18 x 2 SHCS

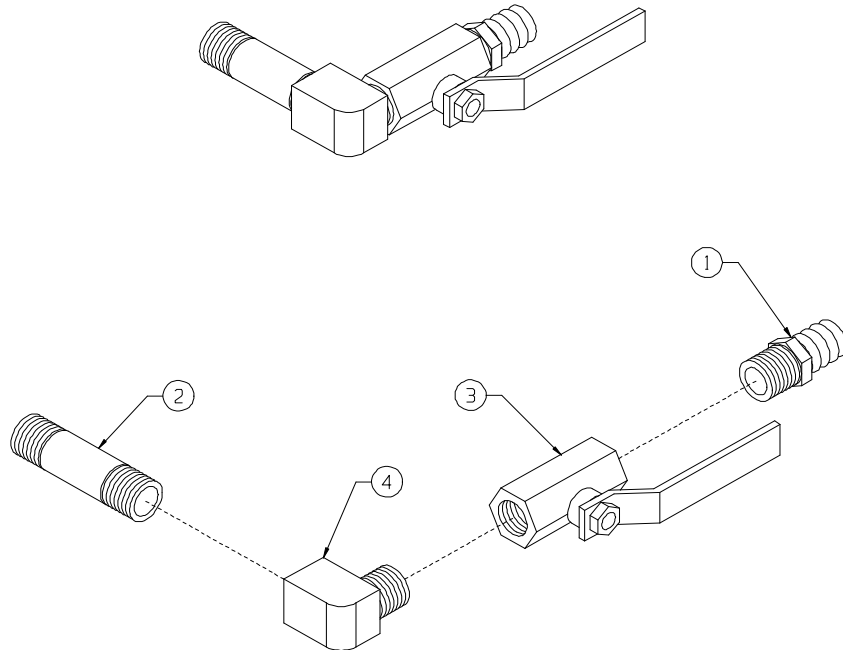
J	ADD 50 TAPER TO CHART	7078		05/11
I	ADD FANUC/SIEMENS TO CHART	6314	N.M.	03/07
H	EDIT CHART	5953	N.M.	05/05
G	ADD M000150	5826	N.M.	11/04
F	MODIFY CHART	5697	N.M.	01/04
E	ADD M000121 MOTOR	5509	N.M.	03/03
D	CHANGE 15 HP SPINDLE MOTOR	5257	N.M.	02/02
C	CHANGE MOTOR/PULLEY CHARTS	5251	N.M.	02/02
B	CHANGE 6K & 8K MOTOR PULLEY	5197	N.M.	12/01
A	ADD MOTOR PLATE TO CHART	5058	N.M.	04/01
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE

REV#	DESCRIPTION	DATE	REV#	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 ±		GOODYEAR MOTOR AND PULLEY ASSEMBLY		
		APPLICATION		
		GENERAL PRODUCTS		
		SCALE	10:1	DWG NO 6-10-018-089
		DATE	04 AUG 00	DRAWN BY DAHLKE
				SHEET NO. 1 OF 1

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Flood Coolant Valve Handle Assembly

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



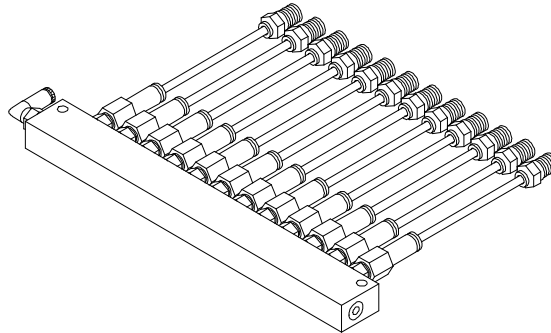
PARTS LIST

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

B	CHANGE PIPE NIPPLE	4778		11/00
A	CHANGE PIPE NIPPLE	3851	N. M.	2/99
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE VM17 FLOOD HANDLE SUB-ASSEMBLY		
X.XXX ±		APPLICATION PARTNER I		
X.XX ±		SCALE 2:1 DWG No 6-10-008-039 SIZE B		
X.X ±		DATE 29 APR 97 DRAWN BY THOMPSON SHEET NO. 1 OF 1		
ANGLE ±				

Rev.7

THIS ASSEMBLY IS USED ON
 VM15, VM16, VM20, VM25 & VM30



PARTS LIST

No.	QUANTITY	STOCK No.	DESCRIPTION
1	12	NU-154	5/32 TUBE 1/8 NPT M/S
2	1	NU-161	1/8 NPT-.156 SWIVEL FITTING
3	SEE TABLE	NU-117	5/32 NYLON TUBING
4	12	NU-157	5/32 TUBE-1/8 NPT FEM.
5	-	SEE TABLE	OIL METER
6	1	MP-356	X & Y AIR/OIL LUBE MANIFOLD

NU-117 TUBING LENGTH

CONNECTION	VM15-16	VM20	VM22	VM25/30(50)	OIL METER
X LEFT REAR RAIL BLOCK	20	20	24	24	#3 (NU-156)
X RIGHT REAR RAIL BLOCK	27	27	44	44	#3 (NU-156)
Y LEFT REAR RAIL BLOCK	12	12	24	24	#3 (NU-156)
Y RIGHT REAR RAIL BLOCK	24	30	44	44	#3 (NU-156)
X MIDDLE REAR RAIL BLOCK	-	-	38	38	#3 (NU-156)
Y BALL SCREW	26	32	39	39	#2 (NU-155)
X MIDDLE FRONT RAIL BLOCK	-	-	38	38	#3 (NU-156)
Y RIGHT FRONT RAIL BLOCK	24	30	44	44	#3 (NU-156)
Y LEFT FRONT RAIL BLOCK	12	12	24	24	#3 (NU-156)
X RIGHT FRONT RAIL BLOCK	27	27	44	44	#3 (NU-156)
X LEFT FRONT RAIL BLOCK	20	20	24	24	#3 (NU-156)
X BALL SCREW	40	40	60	60	#2 (NU-155)

ALL MEASUREMENTS ARE IN INCHES

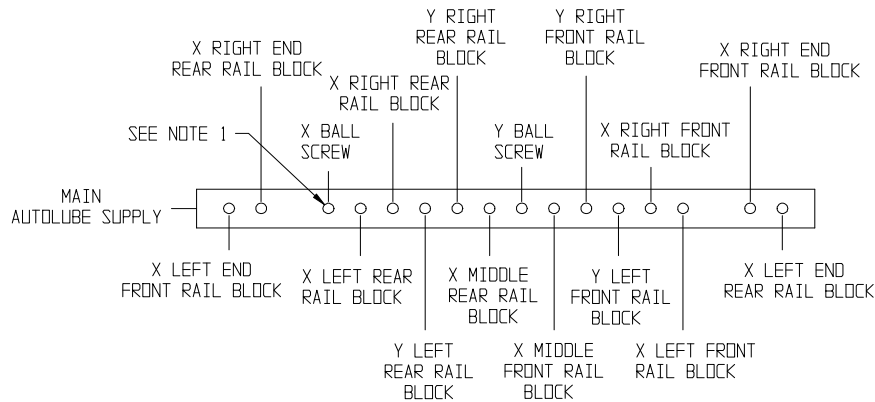
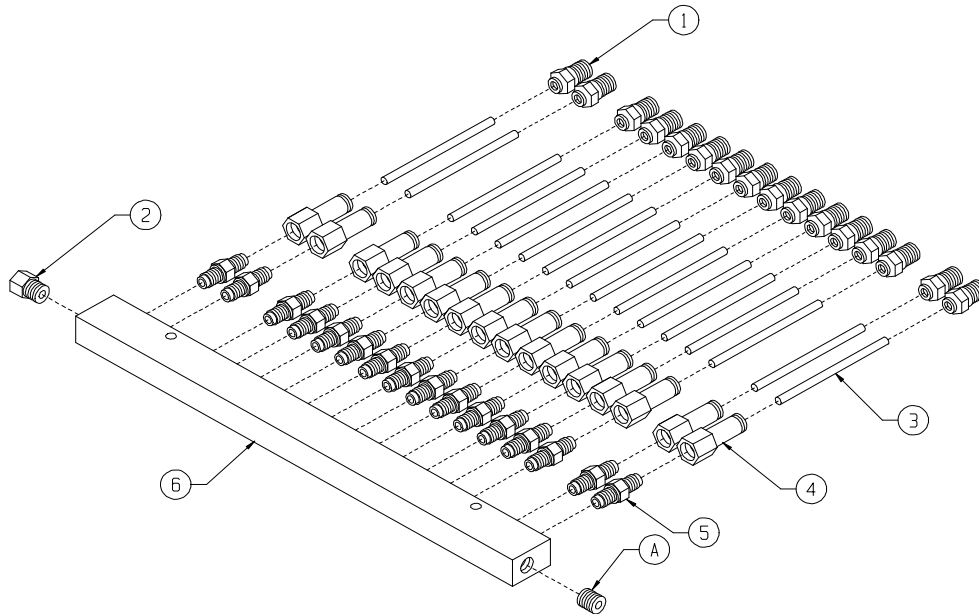
HARDWARE LIST

No.	QTY	DESCRIPTION
A	1	1/8-27 NPT SHPP

B	UPDATE OIL METER FITTINGS	6760		03/09
A	ADD FRAMES TO CHART	5996	N.M.	08/05
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 X & Y AXIS AUTOLUBE MANIFOLD ASSEMBLY		
X, .XXX ±		APPLICATION GENERAL PRODUCTS		
X, .XX ±		SCALE 2:1	DWG No. 6-10-018-049	SIZE B
X, .X ±		DATE 25 JUL 97	DRAWN BY THOMPSON	SHEET NO. 2 OF 2
ANGLE ±				

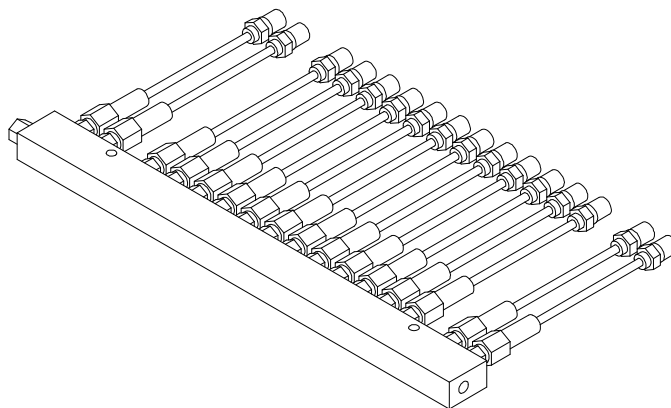
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X & Y Axis Autolube Manifold Assembly – 60”



AUTOLUBE LINE DESTINATIONS

A	CHANGE TABLE		6059	01/06
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 X & Y AXIS 16 PORT AUTOLUBE MANIFOLD ASSEMBLY	
X. XXX ±			APPLICATION GENERAL PRODUCTS	
X. XX ±			SCALE 2:1 DWG No 6-10-018-106 SIZE B	
X. X ±			DATE 17 JUN 05 DRAWN BY DAHLKE SHEET NO. 1 OF 2	
ANGLE ±				


PARTS LIST

No.	QUANTITY	STOCK No.	DESCRIPTION
1	16	NU-154	5/32 TUBE 1/8 NPT M/S
2	1	NU-110	1/8 NPT-M8-1 OIL FITTING
3	SEE TABLE	NU-117	5/32 NYLON TUBING
4	16	NU-157	5/32 TUBE-1/8 NPT FEM.
5	-	SEE TABLE	OIL METER
6	1	MP7-95	X & Y AIR/OIL LUBE MANIFOLD

NU-117 TUBING LENGTH

CONNECTION	VM25/30(60)	OIL METER
X LEFT REAR END RAIL BLOCK	18	#3
X RIGHT REAR END RAIL BLOCK	73	#3
X LEFT REAR RAIL BLOCK	32	#3
X RIGHT REAR RAIL BLOCK	60	#3
Y LEFT REAR RAIL BLOCK	25	#3
Y RIGHT REAR RAIL BLOCK	55	#3
X MIDDLE REAR RAIL BLOCK	46	#3
Y BALL SCREW	42	#2
X MIDDLE FRONT RAIL BLOCK	46	#3
Y RIGHT FRONT RAIL BLOCK	55	#3
Y LEFT FRONT RAIL BLOCK	25	#3
X RIGHT FRONT RAIL BLOCK	60	#3
X LEFT FRONT RAIL BLOCK	32	#3
X BALL SCREW	60	#2
X RIGHT FRONT END RAIL BLOCK	73	#3
X LEFT FRONT END RAIL BLOCK	18	#3

Oil meter
Part numbers:

#2=NU-155

#3=NU-156

ALL MEASUREMENTS ARE IN INCHES

HARDWARE LIST

No.	QTY	DESCRIPTION
A	1	1/8-27 NPT SHPP

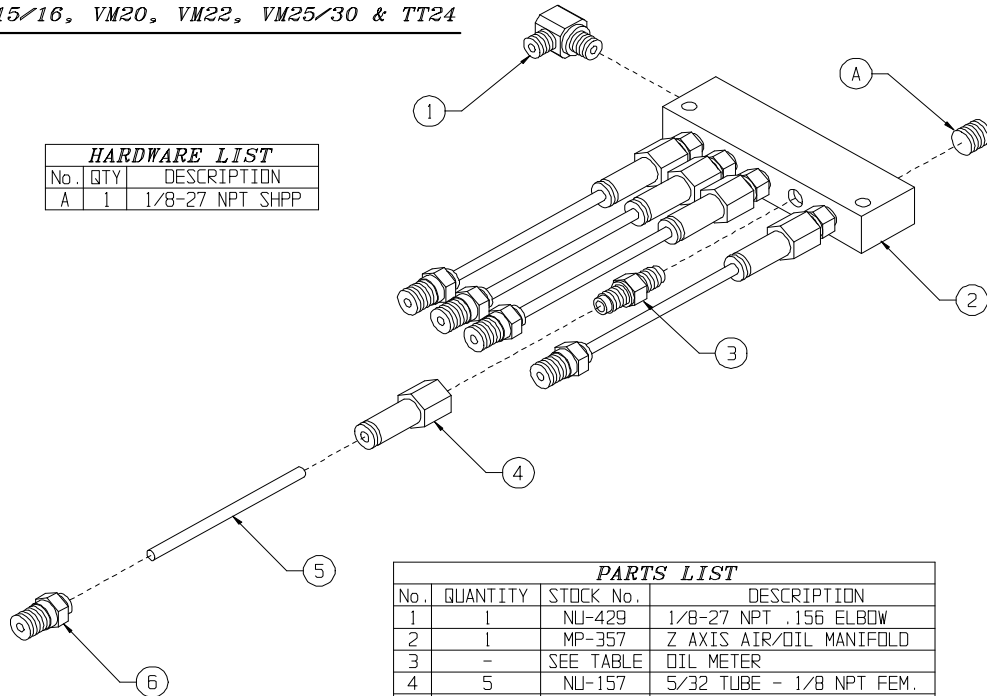
A	CHANGE TABLE	6059		01/06
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE X & Y AXIS 16 PORT AUTOLUBE MANIFOLD ASSEMBLY		
X .XXX X .XX X .X X .X ANGLE		APPLICATION GENERAL PRODUCTS		
		SCALE 2:1 DWG No. 6-10-018-106 SIZE B		
		DATE 17 JUN 05 DRAWN BY DAHLKE SHEET NO. 2 OF 2		

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Z-Axis Autolube Manifold Assembly

THIS ASSEMBLY USED ON
 VM15/16, VM20, VM22, VM25/30 & TT24

HARDWARE LIST		
No.	QTY	DESCRIPTION
A	1	1/8-27 NPT SHPP



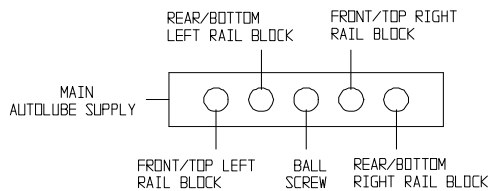
PARTS LIST			
No.	QUANTITY	STOCK No.	DESCRIPTION
1	1	NU-429	1/8-27 NPT .156 ELBOW
2	1	MP-357	Z AXIS AIR/OIL MANIFOLD
3	-	SEE TABLE	OIL METER
4	5	NU-157	5/32 TUBE - 1/8 NPT FEM.
5	SEE TABLE	NU-117	5/32 NYLON TUBING
6	5	SEE TABLE	5/32 TUBE-1/8 NPT M/S

NU-117 TUBING LENGTH						OIL METER
CONNECTION	VM15/16	VM20	VM22	VM25/30	TT24	
FRONT/TOP LEFT RAIL BLOCK	18	20	30	30	10	No.3 (NU-156)
REAR/BOTTOM LEFT RAIL BLOCK	35	14	42	42	20	No.3 (NU-156)
BALL SCREW	24	15	30	30	8	No.2 (NU-155)
REAR/BOTTOM RIGHT RAIL BLOCK	35	8	42	42	20	No.3 (NU-156)
FRONT/TOP RIGHT RAIL BLOCK	18	11	30	30	10	No.3 (NU-156)

ALL MEASUREMENTS ARE IN INCHES

No.	DESCRIPTION	VM15/16	VM20	VM22	VM25/30	TT24
6	ROLLER RAIL	NU-315	NU-315	NU-315	NU-315	NU-315
	BALL RAIL	NU-315 NU-154	NU-315	NU-315	NU-315	NU-315

AUTOLUBE LINE DESTINATIONS



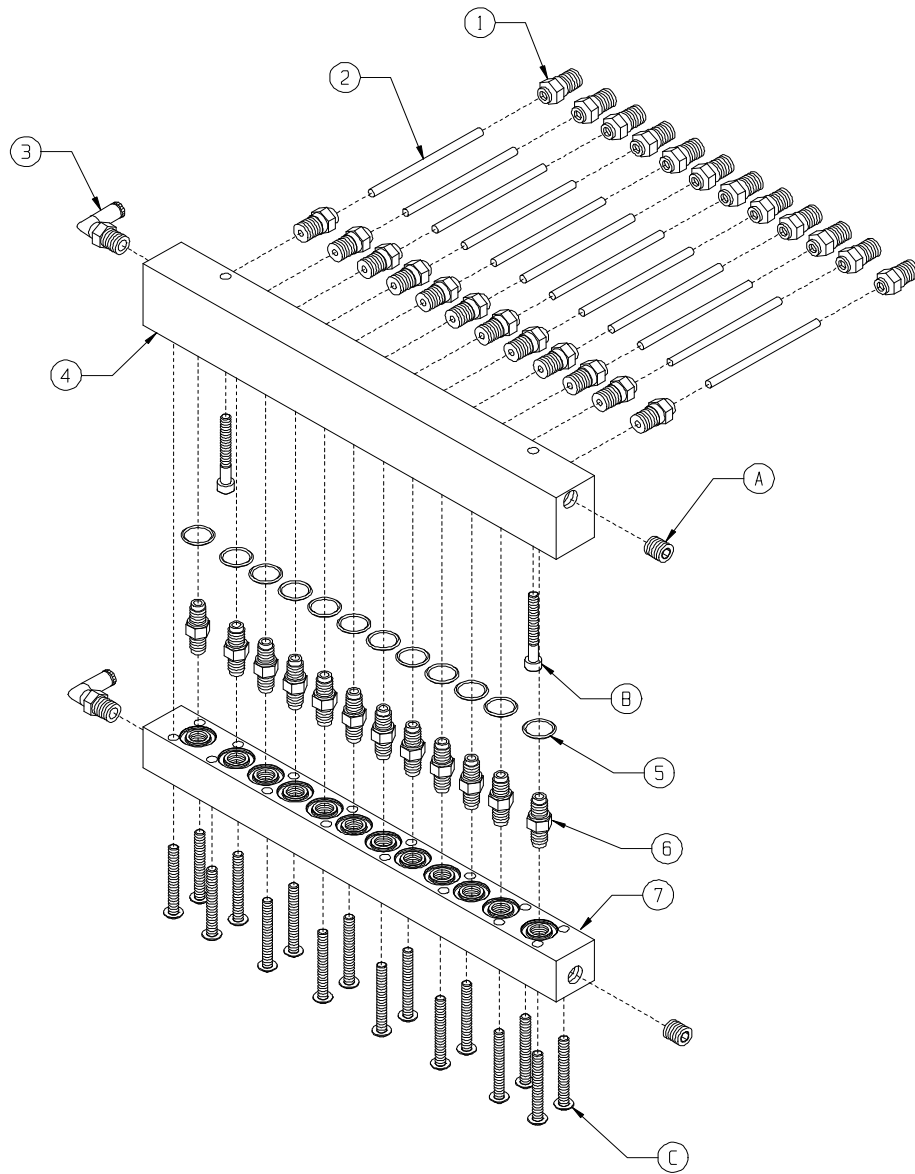
NOTES:

1. USED ON ASSEMBLY No.

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B	ADD TT24	6750		03/09
A	ADD FRAMES TO CHART	6001	N.M.	08/05
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.				
TOLERANCE UNLESS SPECIFIED		TITLE 5 PORT AUTOLUBE MANIFOLD ASSEMBLY		
X.XXX ±		APPLICATION GENERAL PRODUCTS		
X.XX ±		SCALE 1.5:1 DWG No. 6-10-018-050 SIZE B		
X.X ±		DATE 20 AUG 97		
ANGLE ±		DRAWN BY THOMPSON		
		SHEET NO. 1 OF 1		

X & Y Axis Air/Oil Manifold Assembly – 50"



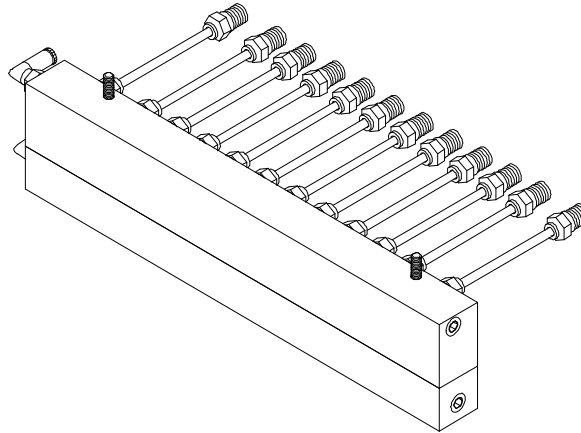
AIR SUPPLY-----

1 2 3 4 5 6 7 8 9 10 11 12

AIR/OIL LINE DESTINATIONS	
No.	RAIL BLOCK/BALL SCREW
1	X BALL SCREW
2	X LEFT REAR RAIL BLOCK
3	X RIGHT REAR RAIL BLOCK
4	Y LEFT REAR RAIL BLOCK
5	Y RIGHT REAR RAIL BLOCK
6	X MIDDLE REAR RAIL BLOCK
7	Y BALL SCREW
8	X MIDDLE FRONT RAIL BLOCK
9	Y RIGHT FRONT RAIL BLOCK
10	Y LEFT FRONT RAIL BLOCK
11	X RIGHT FRONT RAIL BLOCK
12	X LEFT FRONT RAIL BLOCK

E	CHANGE TABLE	6060		01/06
D	ADD FRAMES	5995	N.M.	08/05
C	CHANGED METERS	4988	D.H.	2/01
B	ADD VMG17 TO NOTE	4729	N.M.	10/00
A	ADD VMG24 TO NOTE	4327	N.M.	12/99
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 X & Y AXIS AIR/OIL MANIFOLD ASSEMBLY		
X, XXX +/- .005		APPLICATION PARTNER I		
X, XX +/- .010		SCALE 2:1		DWG No. 6-10-008-058
X, X +/- .030		DATE 10 JUN 99		SIZE B
ANGLE +/- 1.0°		DRAWN BY HERME		SHEET No. 1 OF 2

THIS ASSEMBLY IS USED ON VM15, VM16, VM17, VM20, VM22, VM25/30(50)



PARTS LIST

No.	QUANTITY	STOCK No.	DESCRIPTION
1	32	NU-154	5/32 TUBE 1/8 NPT M/S
2	SEE TABLE	NU-117	5/32 NYLON TUBING
3	2	NU-161	ELBOW - SWIVEL 5/32 TUBE 1/8 NPT
4	1	MP6-183	X & Y AIR/OIL MANIFOLD - AIR
5	16	WX-248	O-RING BUNA 1/2 ID x 5/8 OD
6	-	SEE TABLE	OIL METER
7	1	MP-661	16 PORT 1/8 NPT MANIFOLD - OIL

NU-117 TUBING LENGTH

	VM15/16	VM20	VM22	VM25/30(50)	OIL METER
X LEFT REAR RAIL BLOCK	20	20	24	24	#3 (NU-156)
X RIGHT REAR RAIL BLOCK	27	27	44	44	#3 (NU-156)
Y LEFT REAR RAIL BLOCK	13	12	24	24	#3 (NU-156)
Y RIGHT REAR RAIL BLOCK	33	30	44	44	#3 (NU-156)
X MIDDLE REAR RAIL BLOCK	-	-	38	38	#3 (NU-156)
Y BALL SCREW	26	32	39	39	#2 (NU-155)
X MIDDLE FRONT RAIL BLOCK	-	-	38	38	#3 (NU-156)
Y RIGHT FRONT RAIL BLOCK	30	30	44	44	#3 (NU-156)
Y LEFT FRONT RAIL BLOCK	12	12	24	24	#3 (NU-156)
X RIGHT FRONT RAIL BLOCK	27	27	44	44	#3 (NU-156)
X LEFT FRONT RAIL BLOCK	20	20	24	24	#3 (NU-156)
X BALL SCREW	40	40	60	60	#2 (NU-155)

ALL MEASUREMENTS ARE IN INCHES

NOTES:

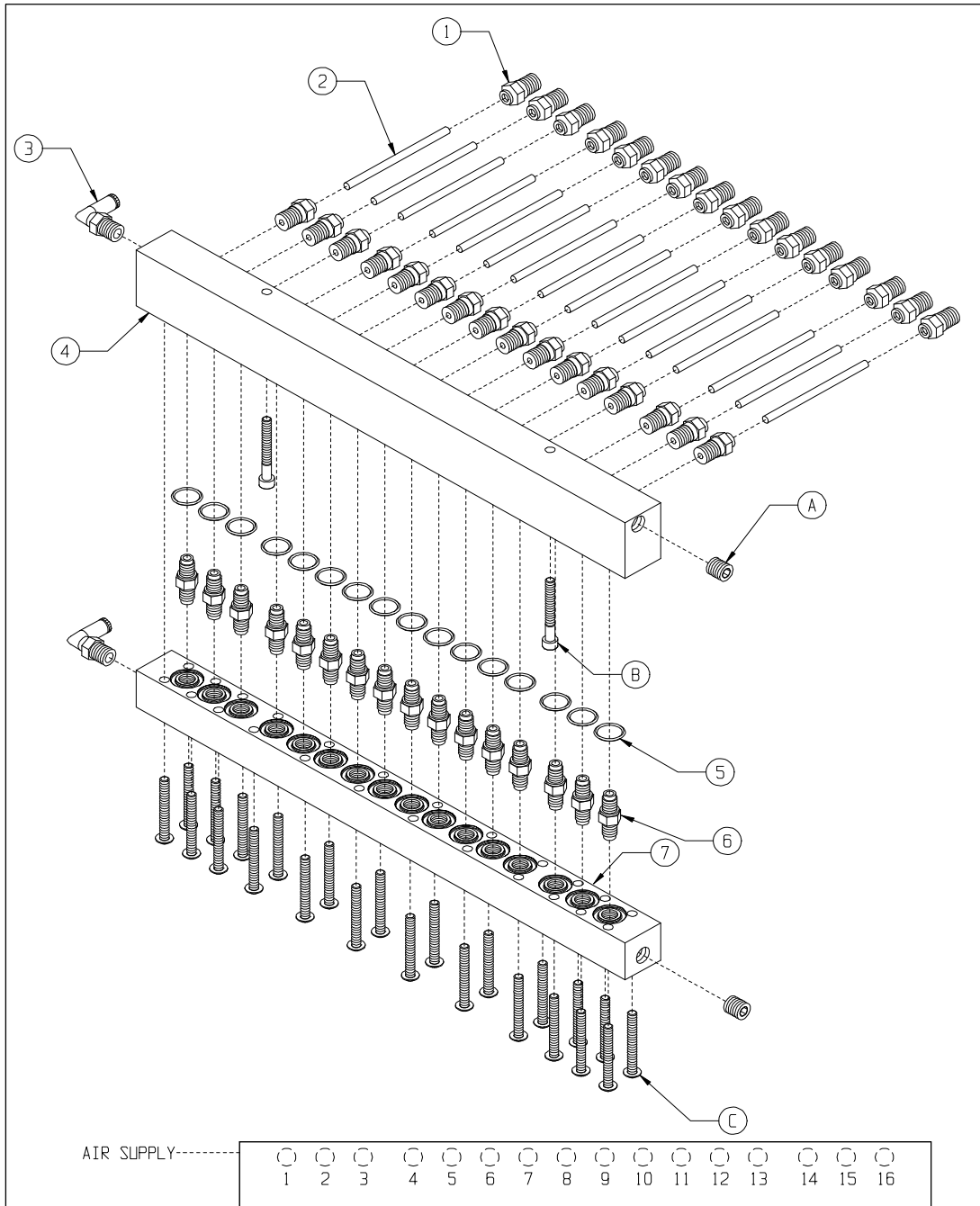
- IF REFERENCED WITH A (-) PLUG AIR/OIL LINE HOLE AND OIL METER HOLE IN MANIFOLD WITH 1/8 NPT PLUG.

HARDWARE LIST

No.	QTY	DESCRIPTION
A	2	1/8-27 NPT SHPP
B	2	10-32 x 1 1/2 SHCS
C	20	10-32 x 1 1/4 BHCS

E	CHANGE TABLE	6060		01/06
D	ADD FRAMES	5995	N.M.	08/05
C	CHANGED METERS	4988	D.H.	02/01
B	ADD VMG17 TO NOTE	4729	N.M.	10/00
A	ADD VMG24 TO NOTE	4327	N.M.	12/99
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: X & Y AXIS AIR/OIL MANIFOLD ASSEMBLY		
X.XXX +/- .005		APPLICATION PARTNER I		
X.XX +/- .010		SCALE 2:1	DWG No. 6-10-008-058	SIZE B
X.X +/- .030				
ANGLE +/- 1.0°		DATE 10 JUN 99	DRAWN BY HERME	SHEET No. 2 OF 2

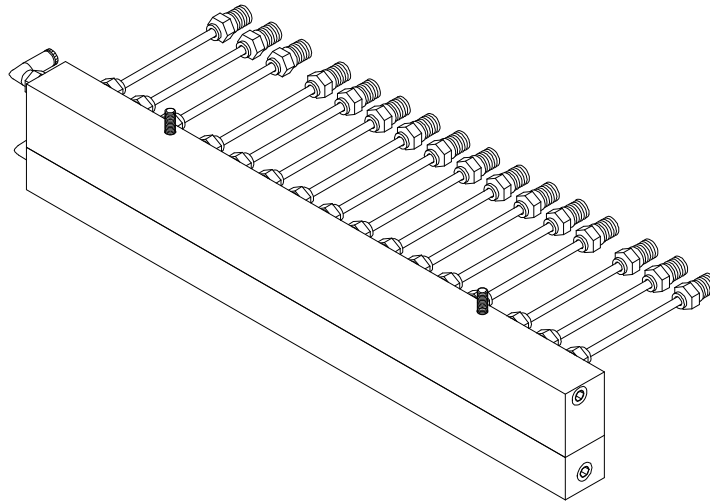
X & Y Axis Air/Oil Manifold Assembly – 60"



AIR/OIL LINE DESTINATIONS	
No.	RAIL BLOCK/BALL SCREW
1	X LEFT END FRONT RAIL BLOCK
2	X RIGHT END FRONT RAIL BLOCK
3	X BALL SCREW
4	X LEFT REAR RAIL BLOCK
5	X RIGHT REAR RAIL BLOCK
6	Y LEFT REAR RAIL BLOCK
7	Y RIGHT REAR RAIL BLOCK
8	X MIDDLE REAR RAIL BLOCK
9	Y BALL SCREW
10	X MIDDLE FRONT RAIL BLOCK
11	Y RIGHT FRONT RAIL BLOCK
12	Y LEFT FRONT RAIL BLOCK
13	X RIGHT FRONT RAIL BLOCK
14	X LEFT FRONT RAIL BLOCK
15	X RIGHT END FRONT RAIL BLOCK
16	X LEFT END FRONT RAIL BLOCK

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 X & Y AXIS AIR/OIL MANIFOLD ASSEMBLY		
TOLERANCE UNLESS SPECIFIED X.XXX +/- .005 X.XX +/- .010 X.X +/- .030 ANGLE +/- 1.0°		APPLICATION PARTNER VII		
		SCALE 2:1	DWG No 6-10-020-027	SIZE B
		DATE 07 SEP 05	DRAWN BY DAHLKE	SHEET No. 1 OF 2

THIS ASSEMBLY IS USED ON VM25/30(60) WITH 60" TRAVEL



PARTS LIST

No.	QUANTITY	STOCK No.	DESCRIPTION
1	32	NU-154	5/32 TUBE 1/8 NPT M/S
2	SEE TABLE	NU-117	5/32 NYLON TUBING
3	2	NU-161	ELBOW - SWIVEL 5/32 TUBE 1/8 NPT
4	1	MP7-098	X & Y AIR/OIL MANIFOLD - AIR
5	16	WX-248	O-RING BUNA 1/2 ID x 5/8 OD
6	-	SEE TABLE	OIL METER
7	1	MP7-099	16 PORT 1/8 NPT MANIFOLD - OIL

NU-117 TUBING LENGTH

	VM25/30(60)	OIL METER
X LEFT REAR END RAIL BLOCK	18	#3 (NU-156)
X RIGHT REAR END RAIL BLOCK	73	#3 (NU-156)
X LEFT REAR RAIL BLOCK	32	#3 (NU-156)
X RIGHT REAR RAIL BLOCK	60	#3 (NU-156)
Y LEFT REAR RAIL BLOCK	25	#3 (NU-156)
Y RIGHT REAR RAIL BLOCK	55	#3 (NU-156)
X MIDDLE REAR RAIL BLOCK	46	#3 (NU-156)
Y BALL SCREW	42	#2 (NU-155)
X MIDDLE FRONT RAIL BLOCK	46	#3 (NU-156)
Y RIGHT FRONT RAIL BLOCK	55	#3 (NU-156)
Y LEFT FRONT RAIL BLOCK	25	#3 (NU-156)
X RIGHT FRONT RAIL BLOCK	60	#3 (NU-156)
X LEFT FRONT RAIL BLOCK	32	#3 (NU-156)
X BALL SCREW	60	#2 (NU-155)
X LEFT FRONT END RAIL BLOCK	73	#3 (NU-156)
X RIGHT FRONT END RAIL BLOCK	18	#3 (NU-156)

ALL MEASUREMENTS ARE IN INCHES

NOTES:

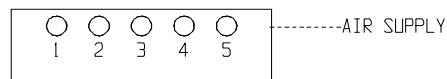
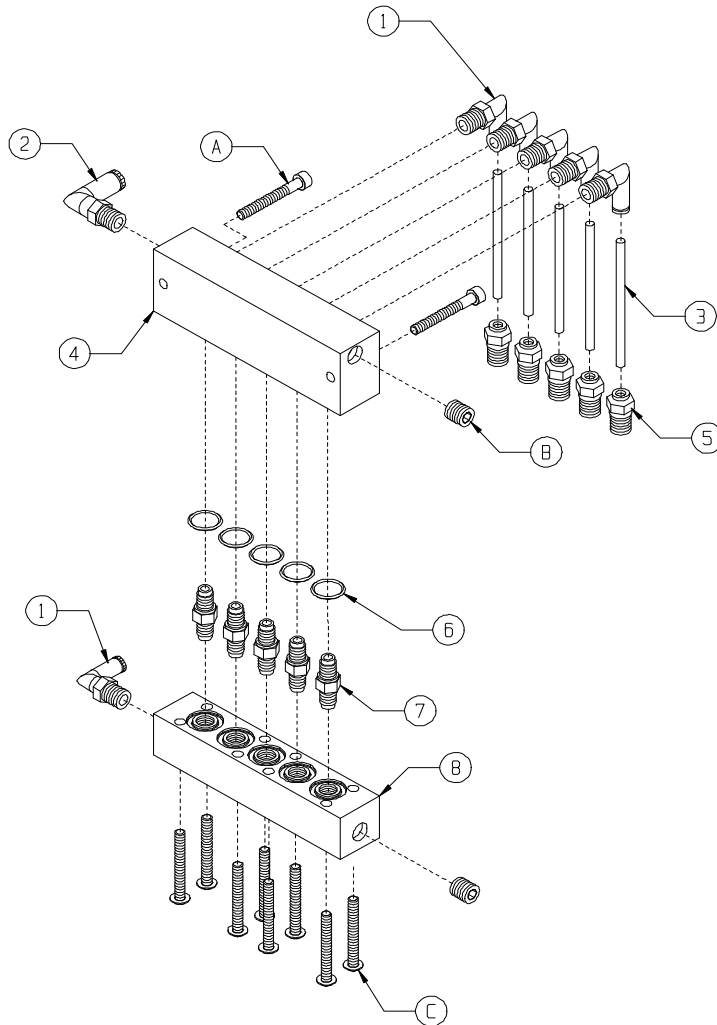
- IF REFERENCED WITH A (-) PLUG
AIR/OIL LINE HOLE AND OIL METER
HOLE IN MANIFOLD WITH 1/8 NPT PLUG.

HARDWARE LIST

No.	QTY	DESCRIPTION
A	2	1/8-27 NPT SHPP
B	2	10-32 x 1 1/2 SHCS
C	20	10-32 x 1 1/4 BHCS

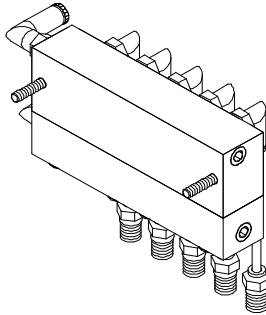
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE X & Y AXIS AIR/OIL MANIFOLD ASSEMBLY		
X.XXX +/- .005		APPLICATION PARTNER VII		
X.XX +/- .010		SCALE 2:1	DWG No. 6-10-020-027	SIZE B
X.X +/- .030		DATE 07 SEP 05	DRAWN BY DAHLKE	SHEET No. 2 OF 2
ANGLE +/- 1.0°				

Z Axis Air/Oil Manifold Assembly



<i>AIR/OIL LINE DESTINATIONS</i>	
No.	RAIL BLOCK/BALL SCREW
1	Z RIGHT UPPER RAIL BLOCK
2	Z RIGHT LOWER RAIL BLOCK
3	Z BALL SCREW
4	Z LEFT LOWER RAIL BLOCK
5	Z LEFT UPPER RAIL BLOCK

D	CHANGE TO ALL FRAMES	6002		11/05	
C	REMOVED VMG24	4987	N.M.	2/01	
B	ADD VMG24 NOTE	4338	N.M.	1/00	
A	UPDATED TUBE LENGTHS	4077	N.M.	7/99	
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 Z AXIS AIR/OIL MANIFOLD ASSEMBLY			
TOLERANCE UNLESS SPECIFIED		APPLICATION PARTNER I			
X. XXX	+/- .005	SCALE	2:1	DWG No 6-10-008-059	SIZE B
X. XX	+/- .010	DATE	11 JUN 99	DRAWN BY	HERME
X. X	+/- .030				
ANGLE	+/- 1.0°	SHEET No.		1 OF 2	



PARTS LIST

No.	QUANTITY	STOCK No.	DESCRIPTION
1	6	NU-161	ELBOW-SWIVEL 5/32 TUBE 1/8 NPT
2	1	NU-171	ELBOW - SWIVEL 1/4 TUBE 1/8 NPT
3	SEE TABLE	NU-117	5/32 NYLON TUBING
4	1	MP1-301	Z AIR/OIL MANIFOLD - AIR
5	5	NU-154	5/32 TUBE 1/8 NPT M/S
6	5	WX-248	O-RING BUNA 1/2 ID x 5/8 OD
7	-	SEE TABLE	OIL METER
8	1	MP-660	Z AIR/OIL MANIFOLD - OIL

NU-117 TUBING LENGTH

CONNECTION	ALL FRAMES	OIL METER
Z LEFT UPPER RAIL BLOCK	37	#3 (NU-156)
Z LEFT LOWER RAIL BLOCK	31	#3 (NU-156)
Z RIGHT UPPER RAIL BLOCK	29	#3 (NU-156)
Z RIGHT LOWER RAIL BLOCK	23	#3 (NU-156)
Z BALL SCREW	26	#2 (NU-155)

ALL MEASUREMENTS ARE IN INCHES

HARDWARE LIST

No.	QTY	DESCRIPTION
A	2	10-32 x 1 1/2 SHCS
B	2	1/8-27 NPT SHPP
C	8	10-32 x 1 1/2 BHCS

D	CHANGE TO ALL FRAMES	6002		11/05	
C	REMOVED VMG24	4987	N.M.	2/01	
B	ADD VMG24 NOTE	4338	N.M.	1/00	
A	UPDATED TUBE LENGTHS	4077	N.M.	7/99	
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 Z AXIS AIR/OIL MANIFOLD ASSEMBLY			
		APPLICATION PARTNER I			
X.XXX	+/- .005	SCALE 2:1		DWG No. 6-10-008-059	SIZE B
X.XX	+/- .010				
X.X	+/- .030				
ANGLE	+/- 1.0°	DATE 11 JUN 99		DRAWN BY HERME	SHEET No. 2 OF 2

50" Travel X-axis Oil Line Update



Part List for 9800-264 Oil Line update Kit

Item	Qty	Part #	Description
1	8 ft	NU00117	Tubing-.156" UN2-025-N-500 5/32 .156" Nylon
2	2	NU00154	Fitting-.156"*2" C6510-53-02 push to connect, straight
3	2	NU00429	.125"NPT .156"Swivel Elbow W/Longer Thread 6520-53-02
4	5	NU00036	Clamp-5/32" Oiler A-2435
5	1	NU00558	.125"NPT Oil Junction W/Mounting Hole
6	1	01018840	X Axis Oil line re-routing manifold
7	1	NU00560	Hose Assembly - 3' HBL02 & 101CY-2-2
8	2	NU00559	.125"NPT Hose Fitting - 1404-02-02

Hardware List for 9800-264 Oil Line update Kit

Item	Qty	Description
1	1	M6-1x20mm SHCS
2	1	M6-1x25mm SHCS
3	5	M6-1x10mm SHCS
4	2	M6 Flat washer
5	7	M6 Split ring lock washer
6	2	1/8" MNPT Plug

Waylube Pump MA00458

The on time and off time can be adjusted using MISC control parameters “Way Lube ON time (sec)”, and “Way Lube OFF time (min)”.

Oiler Comparison

	Old style	New style
Model #	CESD	CEN01
Part #	MA00219	MA00458
Timer function ON/OFF	Built-in controls	Via CNC #66
Audible alarm	YES	NO
Oil pressure gauge	NO	YES
Manual override button	YES	YES

Software & control

All 8200 versions have the functionality. 7200 version 77401 or higher is required to have the functionality.

The oiler timer is functional only when the “Grease Cycle Time” parameter is set to Zero, and the Way Lube ON and OFF time parameters are non-zero.

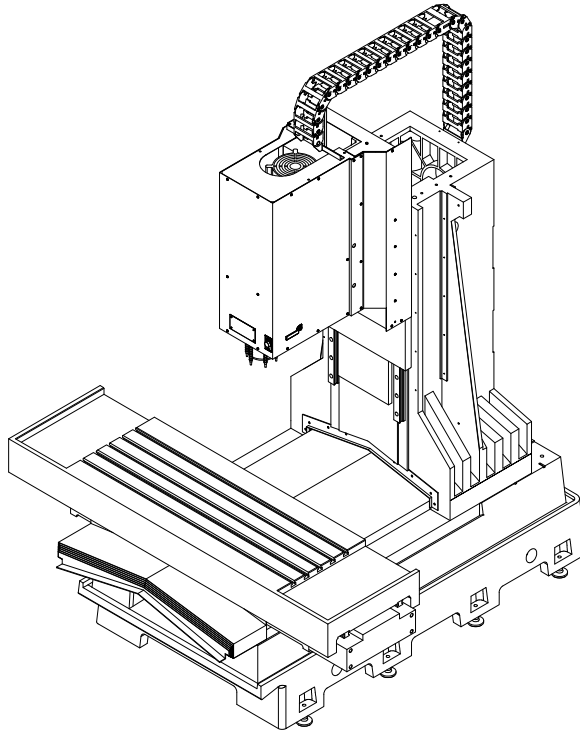
Pictures of MA00458



Machine Lubrication Instructions

NOTES:

1. USE MOBILITH AW SERIES MULTIPURPOSE EP GREASE OR OTHER EQUIVALENT FOR ALL LUBE POINTS. MACHINE SHOULD BE SERVICED ONCE A MONTH FOR PROPER OPERATION AND ACCURACY OF MACHINE. SEE PAGE TWO FOR SPECIFICATIONS.
2. CLEAN AND FILL AIR FILTER / REGULATOR / OILER EVERY WEEK FOR PROPER OPERATION OF ALL PNEUMATIC PARTS FILL WITH MARVEL No. 085, MOBIL VELOCITE No. 10 OR OTHER EQUIVALENT QUALITY AIR TOOL OIL. SEE PAGE TWO FOR SPECIFICATIONS.
3. MACHINES WITH AUTOLUBE OPTION USE MOBIL OIL VACTRA 2, AMOCO WAYTAC No. 68, SUNOCO SUNWAY LUBE No. 1180, OR EQUIVALENT QUALITY WAY OIL SEE PAGE TWO FOR SPECIFICATIONS.
4. MACHINES WITH 15,000 RPM AIR/OIL OPTION USE MOBIL OIL DTE 24, OR EQUIVALENT QUALITY SPINDLE OIL.



C	CHANGE FRAME	5680		12/03
B	CHANGED HEAD COVERS	5027	N.M.	3/01
A	ADD DTE 24 TABLE	4706	N.M.	10/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH				
 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA				
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED X.XXX ± X.XX ± X.X ± ANGLE ±				
TITLE LUBRICATION DRAWING				
APPLICATION PARTNER VI				
SCALE 20:1 DWG No 6-11-027-003 SIZE B				
DATE 03 MAY 99 DRAWN BY DAHLKE SHEET NO. 1 OF 2				

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

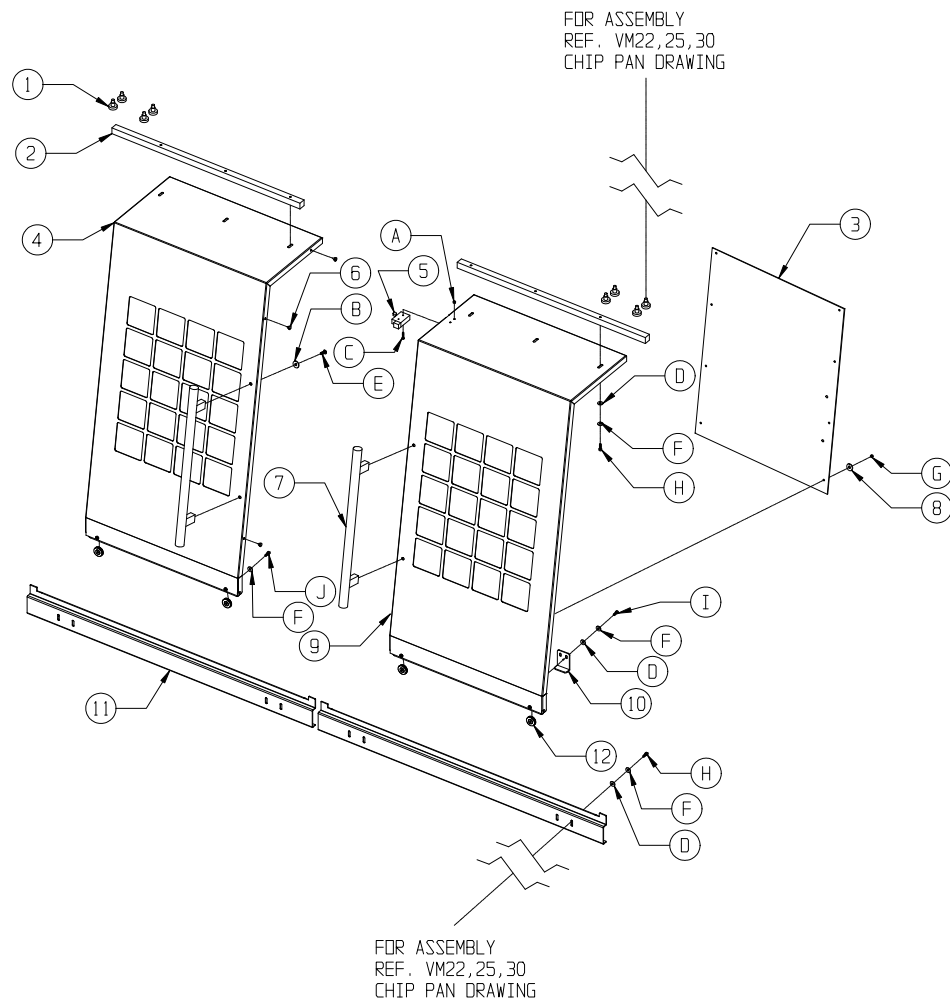
PRODUCT NUMBER	60049-4
SPECIFIC GRAVITY, 60/60F	0.88
POUR POINT, °C (°F), max.	-9 (16)
FLASH POINT, °C (°F), min.	244 (472)
VISCOSITY	
cST AT 40°C	68
cST AT 100°C	8.6
SUS AT 100°F	356
SUS AT 210°F	55
VISCOSITY INDEX	97
ISO VG	68
COLOR, ASTM D 1500	4
FZG, PASS STAGES	11
4 BALL WELD, kg, ASTM D 2783	160
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)	-
CMCO, 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	

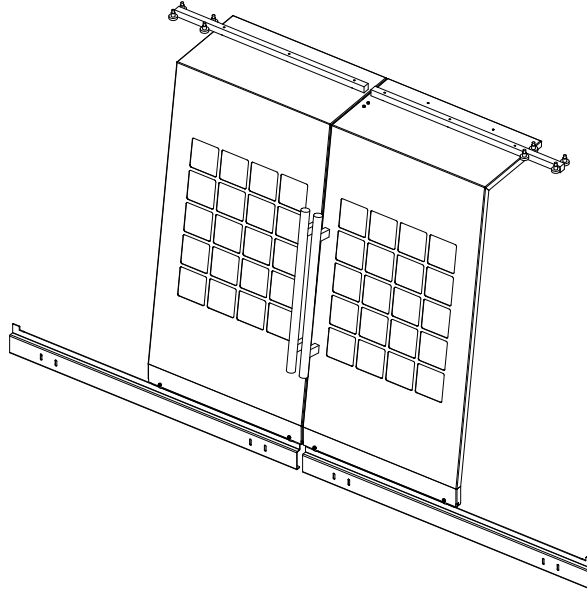
C	CHANGE FRAME	5680		12/03
B	CHANGED HEAD COVERS	5027	N.M.	3/01
A	ADD DTE 24 TABLE	4706	N.M.	10/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WAICONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE LUBRICATION DRAWING		
TOLERANCE UNLESS SPECIFIED		APPLICATION PARTNER VI		
X.XXX	±	SCALE 15:1	DWG No. 6-11-027-003	SIZE B
X.XX	±	DATE 03 MAY 99	DRAWN BY DAHLKE	SHEET NO. 2 OF 2
X.X	±			
ANGLE	±			

Chip Pan Door Assembly



CERTAIN INFORMATION CONTAINED HEREIN THE EXCLUSIVE PROPERTY OF MILLTRONICS MFG. CO. IT IS GIVEN IN CONFIDENCE AND IS NOT TO BE USED OR DISCLOSED TO OTHER THAN THE INTENDED RECIPIENT WITHOUT EXPRESSED WRITTEN CONSENT OF MILLTRONICS MFG. CO.

REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		MILLTRONICS 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE VM22,25,30 DOOR ASSEMBLY		
X.XXX ±		APPLICATION GENERAL PRODUCTS		
X.XX ±		SCALE 15:1 DWG No 6-10-018-103 SIZE B		
X.X ±		DATE 11 DEC 03 DRAWN BY DAHLKE		
ANGLE ±		SHEET No. 1 OF 2		


PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	8	BG-100	CHIP PAN BEARING
2	2	MP6-224	UPPER DOOR RAIL
3	2	MP6-163	LEXAN
4	1	MP-746	LEFT FRONT DOOR
5	1	SW-194	NON-LOCKING AUGER SWITCH
6	3	WX-310	BUMPER
7	2	WX-297	HANDLE
8	16	HD-58	M5 RUBBERIZED WASHER
9	1	MP-745	RIGHT FRONT DOOR
10	4	MP-748	DOOR STOP
11	2	MP-747	LOWER TRACK
12	4	BG-56	ROLLER BEARING

HARDWARE LIST

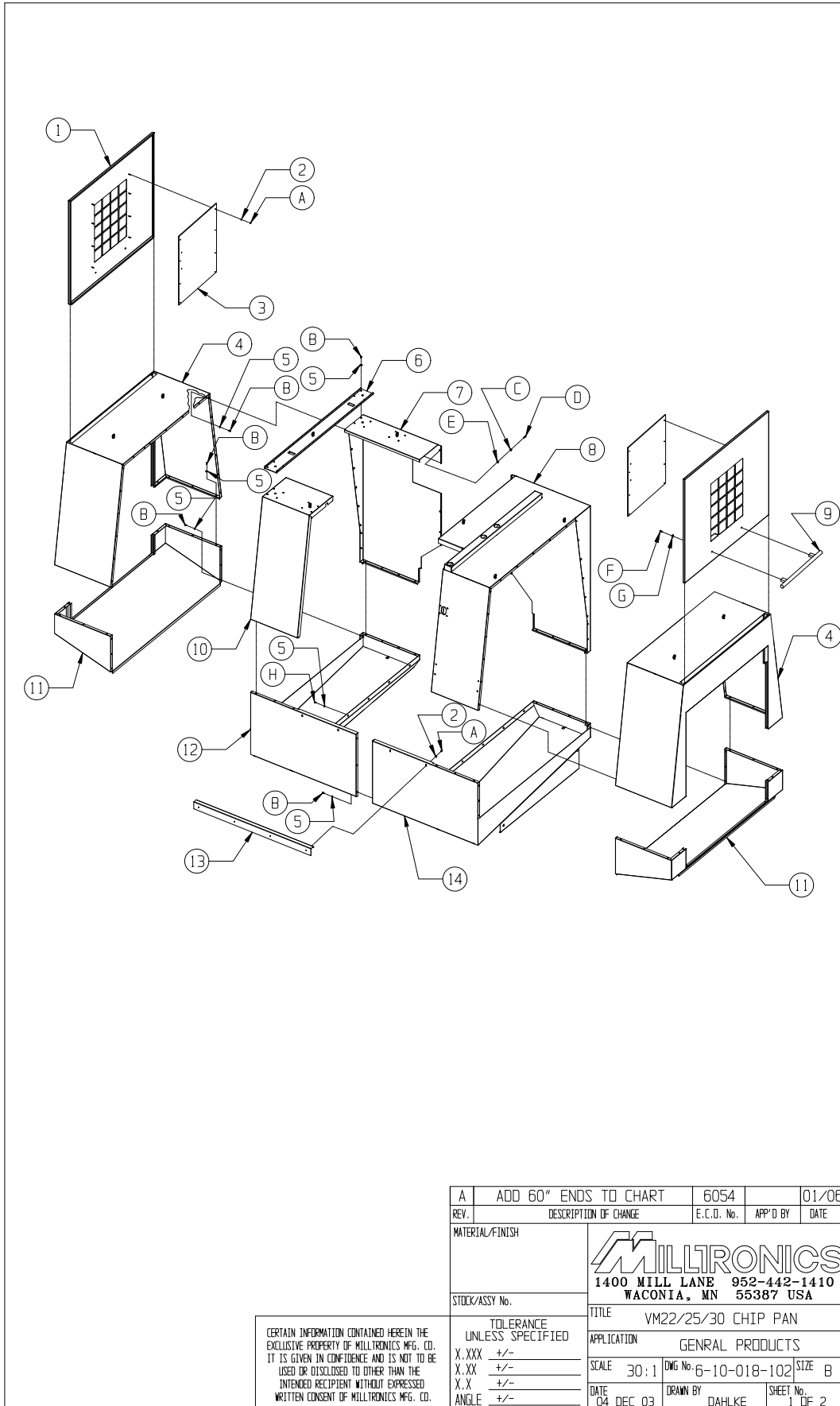
No.	QTY	DESCRIPTION
A	2	M4 NYLOCK NUT
B	4	M8 FLAT WASHER
C	2	M4-.7 x 30mm BHCS
D	26	M6 FLAT WASHER
E	4	M8-1.25 x 20mm BHCS
F	30	M6 LOCK WASHER
G	16	M5 NYLOCK NUT
H	14	M6-1 x 20mm SHCS
I	12	M6-1 x 16mm BHCS
J	4	M6-1 x 20mm BHCS

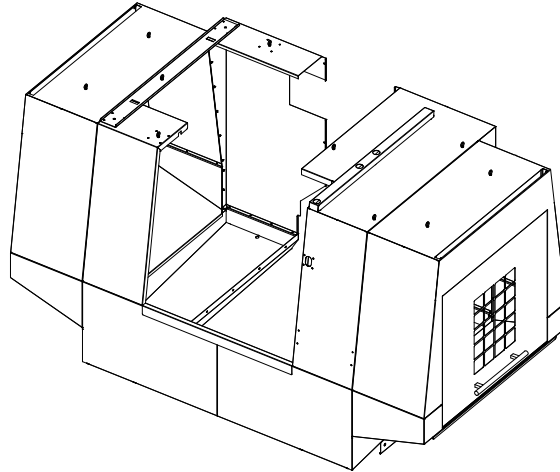
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE VM22,25,30 DOOR ASSEMBLY		
X .XXX ±		APPLICATION GENERAL PRODUCTS		
X .XX ±		SCALE 15:1		
X .X ±		DWG No. 6-10-018-103		
X . ±		SIZE B		
ANGLE ±		DATE 11 DEC 03		
		DRAWN BY DAHLKE		
		SHEET No. 2 OF 2		

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TOLERANCE UNLESS SPECIFIED
X.XXX ±
X.XX ±
X.X ±
ANGLE ±

Chip Pan Assembly




PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	2	MP-749	SIDE DOOR
2	20	HD-58	M5 RUBBERIZED WASHER
3	2	MP6-163	LEXAN
4	2	SEE TABLE	ENCLOSURE END - TOP
5	97	HD-12	M6 RUBBERIZED WASHER
6	1	MP-742	TOP STIFFENER
7	1	MP-741	REAR PANEL - LEFT
8	1	MP-738	TOP PAN - RIGHT
9	2	WX-297	HANDLE
10	1	MP-740	FRONT PANEL - LEFT
11	2	SEE TABLE	ENCLOSURE END - BOTTOM
12	1	MP-739	BOTTOM PAN - LEFT
13	1	MP-754	FRONT DOOR LEDGE
14	1	MP-737	BOTTOM PAN - RIGHT

HARDWARE LIST

No.	QTY	DESCRIPTION
A	20	M5-.8 NYLOCK NUT
B	87	M6-1 x 12mm BHCS
C	8	M6 LOCK WASHER
D	8	M6-1 x 20mm SHCS
E	8	M6 FLAT WASHER
F	4	M8-1.25 x 20mm BHCS
G	4	M8 FLAT WASHER
H	10	M6-1 x 16mm BHCS

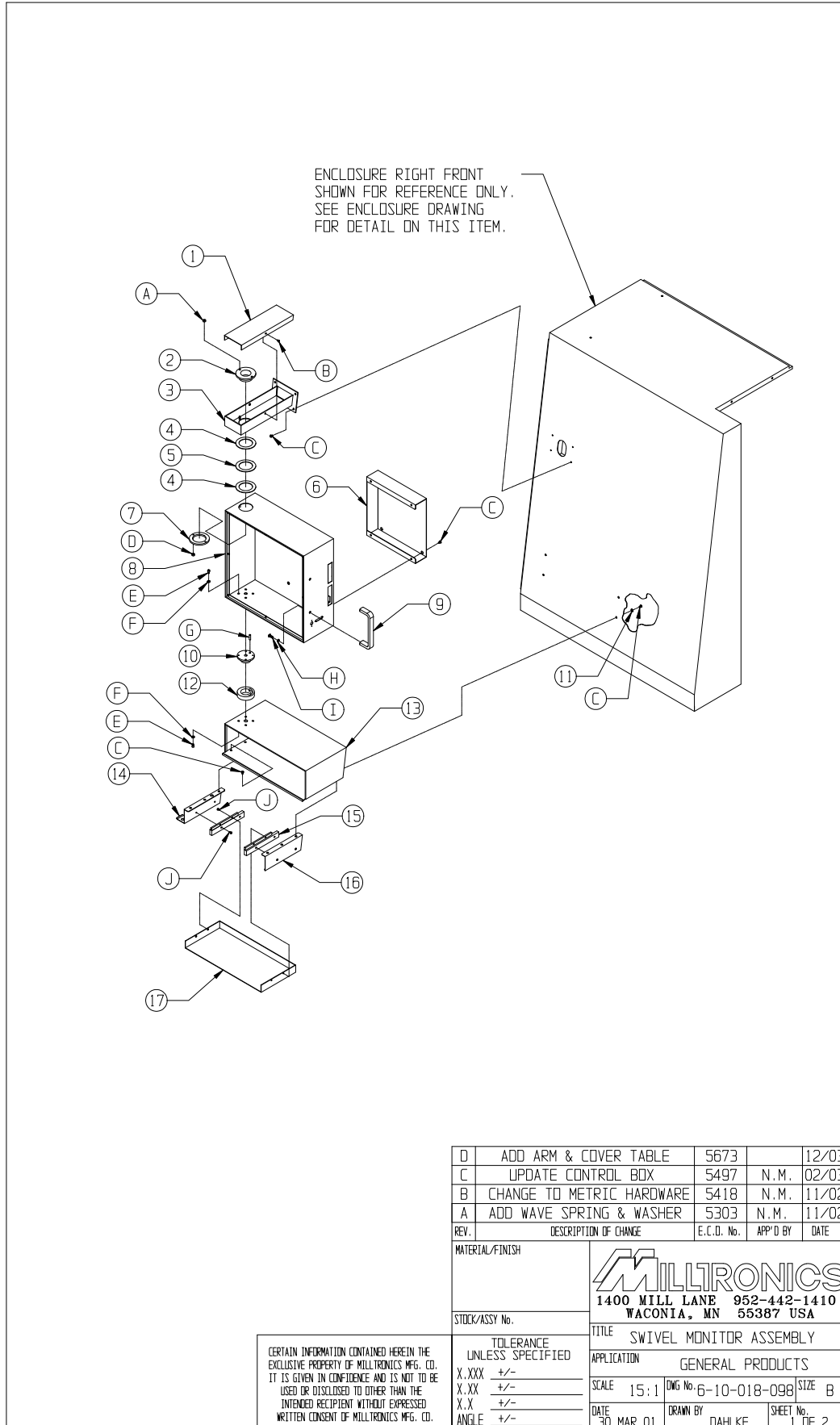
ENCLOSURE END TABLE

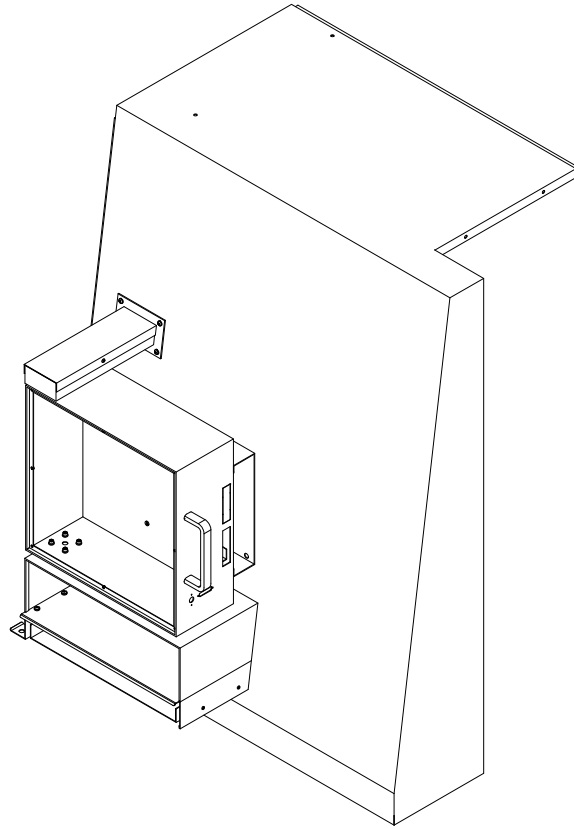
No.	VM22	VM25/30 (50"X)	VM25/30 (60"X)			
4	MP6-235	MP-744	TOP	LEFT	RIGHT	END
			MP7-88	MP7-90	MP7-91	MP7-92
11	MP6-236	MP-743	MP7-89			

A	ADD 60" ENDS TO CHART	6054		01/06
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 VM22/25/30 CHIP PAN		
TOLERANCE UNLESS SPECIFIED		APPLICATION GENRAL PRODUCTS		
X .XXX +/-		SCALE 30:1		
X .XX +/-		DATE 04 DEC 03		
X .X +/-		DRAWN BY DAHLKE		
ANGLE +/-		SHEET No. 2 OF 2		

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Chip Pan Swivel Monitor Assembly




PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	COVER SWIVEL MONITOR UPPER SUPPORT ARM
2	1	MP-663	FLANGED BUSHING - SWIVEL MONITOR
3	1	SEE TABLE	UPPER SUPPORT ARM - SWIVEL MONITOR
4	2	WX-295	WASHER - SWIVEL MONITOR
5	1	MP3D-12	WAVE WASHER
6	1	MP-653	3-RING BINDER POCKET - SWIVEL MONITOR
7	1	MP-647	COLLAR - SWIVEL MONITOR
8	1	SEE TABLE	SWIVEL MONITOR BOX
9	1	WX-230	HANDLE
10	1	MP-648	SWIVEL PIVOT BUSHING
11	4	HD-12	RUBBERIZED WASHER
12	1	MP-649	SWIVEL PIVOT BASE
13	1	MP-624	SWIVEL MONITOR BASE
14	1	MP-651	UTILITY TRAY - SWIVEL MONITOR
15	1	MP-654	8" FULL EXTENSION ACCURIDE SLIDE
16	1	MP-652	BRACKET - SWIVEL MONITOR DRAWER OPTION
17	1	MP-626	TRAY - KEYBOARD PULL-OUT

PARTS LIST

No.	QTY	DESCRIPTION
A	2	M6-1 NYLOCK NUT
B	2	M5-.8 X 10mm BHCS
C	18	M6-1 X 10mm BHCS
D	2	M5-.8 NYLOCK NUT
E	8	M6-1 X 10mm SHCS
F	8	M6 LOCK WASHER
G	1	1/4 x .5 DOWEL PIN
H	2	M8 FLAT WASHER
I	2	M8-1.25 x 20mm BHCS
J	8	M3-.5 X 10mm BHCS

UPPER SUPPORT ARM & COVER TABLE

No.	VM15, 16, 17	VM22, 25, 30	INT. CONTROL
1	MP-650	MP-650	MPIC-01
3	MP-646	MP6-232	MPIC-02

SWIVEL BOX TABLE

No.	CENT. 7	INT. CONTROL
8	MM-80	MPIC-03

D	ADD ARM & COVER TABLE	5673		12/03
C	UPDATE CONTROL BOX	5497	N.M.	02/03
B	CHANGE TO METRIC HARDWARE	5418	N.M.	11/02
A	ADD WAVE SPRING & WASHER	5303	N.M.	05/02

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	+/-		

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

TITLE SWIVEL MONITOR ASSEMBLY

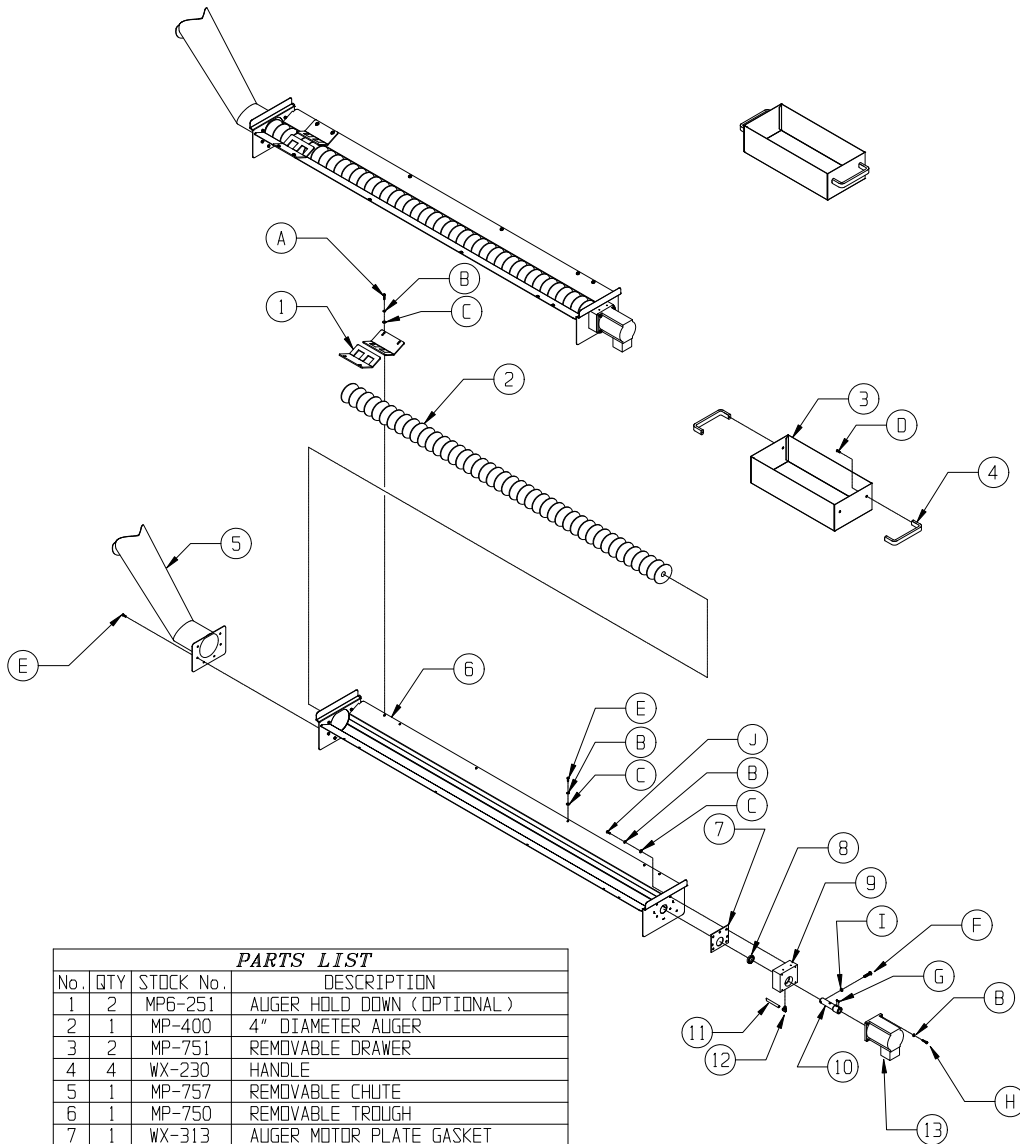
APPLICATION GENERAL PRODUCTS

SCALE 10:1 DWG No. 6-10-018-098 SIZE B

DATE 30 MAR 01 DRAWN BY DAHLKE SHEET No. 2 OF 2

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Chip Auger Assembly



PARTS LIST

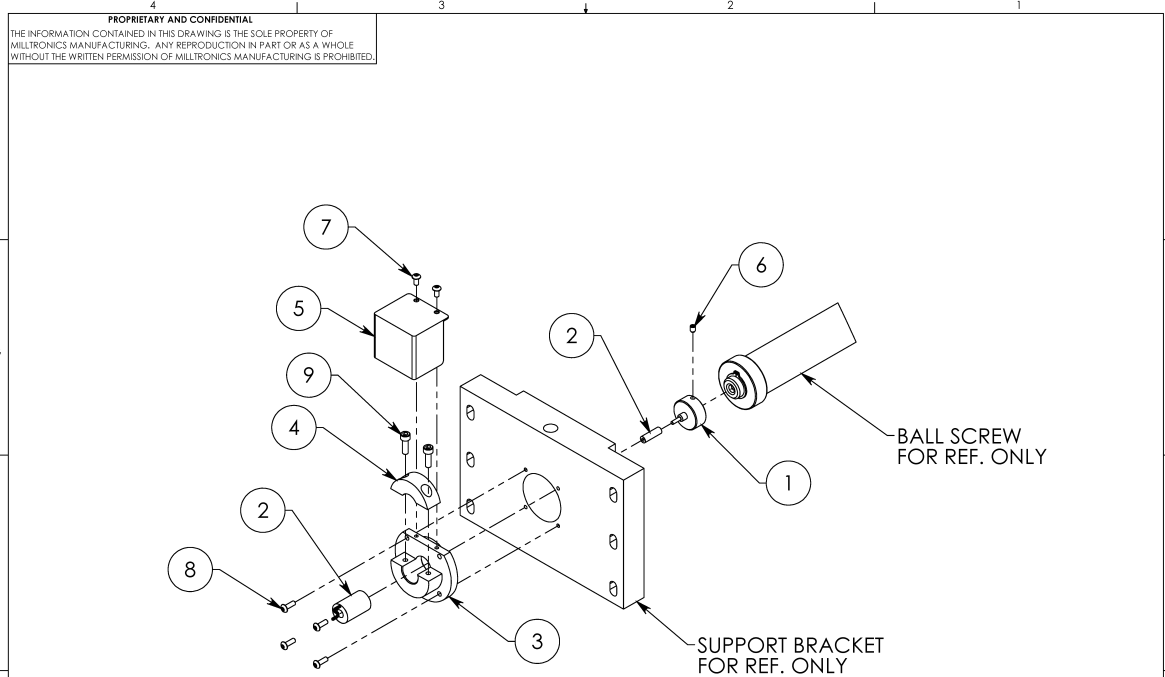
<i>PARTS LIST</i>			
No.	QTY	STOCK No.	DESCRIPTION
1	2	MPB-251	AUGER HOLD DOWN (OPTIONAL)
2	1	MP-400	4" DIAMETER AUGER
3	2	MP-751	REMOVABLE DRAWER
4	4	WX-230	HANDLE
5	1	MP-757	REMOVABLE CHUTE
6	1	MP-750	REMOVABLE TROUGH
7	1	WX-313	AUGER MOTOR PLATE GASKET
8	1	BG-69	BEARING CUP OIL SEAL
9	1	MP-440	BROTHER AUGER MOTOR MTG BRACKET
10	1	MP-441	BROTHER AUGER DRIVE SHAFT
11	1'	NU-25	1/4" NYLON TUBING
12	1	NU-171	MALE ELBOW 1/8 NPT 1/4 TUBE
13	1	MD-120	AUGER MOTOR

HARDWARE LIST

<i>HARDWARE LIST</i>		
No.	QTY	DESCRIPTION
A	4	M6-1 x 16nn BHCS
B	20	M6 LOCK WASHER
C	16	M6 FLAT WASHER
D	8	M8-1.25 x 16nn BHCS
E	14	M6-1 x 12nn BHCS
F	2	M10-1.5 x 40nn BHCS
G	2	10-32 x 1/4 SHSS
H	4	M6-1 x 25nn SHCS
I	2	M10 LOCK WASHER
J	4	M6-1 x 20nn SHCS

D	CHANGE AUGER BOLTS	6754	03/09
C	CHANGE AUGER BOLTS SIZE	6752	N.M. 03/09
B	UPDATE HARDWARE LIST	6257	N.M. 01/07
A	ADD AUGER HOLD DOWN	6141	N.M. 07/06
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY DATE
MATERIAL/FINISH		 MILLTRONICS 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA	
STOCK/ASSY No.		TITLE VM22,25,30 DRAWER/AUGER ASSEMBLY	
TOLERANCE UNLESS SPECIFIED		APPLICATION GENERAL PRODUCTS	
X .XXX	+/-	SCALE 20:1	DWG No 6-10-018-101 SIZE B
X .XX	+/-		
X .X	+/-		
ANGLE	+/-	DATE 01 DEC 03	DRAWN BY DAHLKE SHEET No. 1 OF 1

Thermal Compensation Assembly



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	MP00858	THERMAL BALL SCREW CAP
2	1	PR00043	THERMAL COMP SENSOR
3	1	MP00848	THERMAL SENSOR RING
4	1	MP00849	THERMAL SENSOR - CLAMP
5	1	MP00886	X AXIS THERMAL COVER
6	1	SHSSBT 10-32 x .188	10/32 x 3/16 BRASS TIPPED SHSS
7	2	BHCS M4-0.7 x 8	M4-0.7 x 8mm BHCS
8	4	BHCS M4-0.7 x 12	M4-0.7 x 12mm BHCS
9	2	SHCS M5-0.8 x 16	M5-0.8 x 16mm SHCS

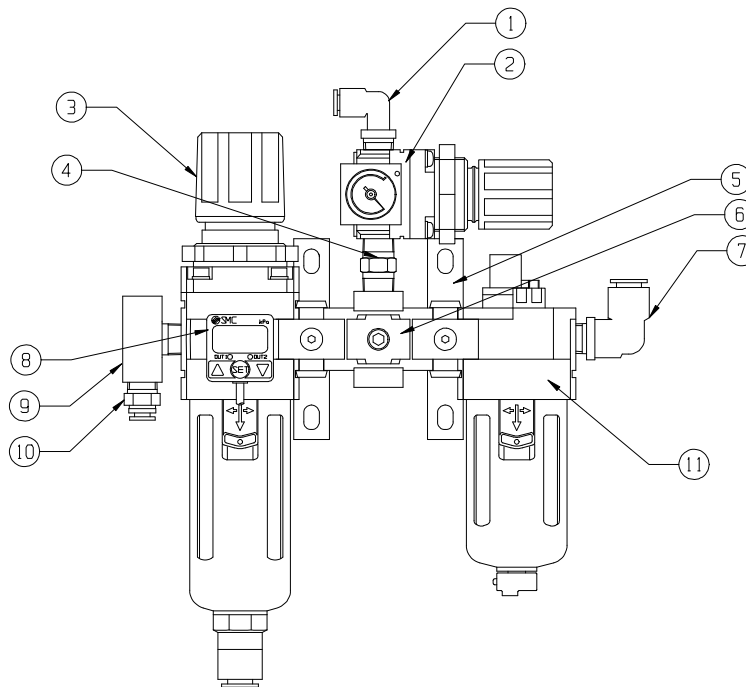
NOTES:

1. ITEMS 3 & 4 ARE REVERSED ON SOME AXES
2. ITEMS 5 & 7 ARE NOT USED ON SOME AXES

	
DRAWN: JRD MATERIAL: FINISH:	NAME: JRD DATE: 24 JAN 07 TITLE: THERMAL COMP 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 [.26] THREE PLACE DECIMAL ±.005 [.13]	SCALE: 1:4 DWG. NO. 10018111 ESTIMATED WEIGHT: 16.0 Lbs. STOCK/ASSY NO. SHEET NO. 1 OF 1 SIZE B

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.O. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
CERTAIN INFORMATION CONTAINED HEREIN THE EXCLUSIVE PROPERTY OF MILLTRONICS MFG. CO. IT IS GIVEN IN CONFIDENCE AND IS NOT TO BE USED OR DISCLOSED TO OTHER THAN THE INTENDED RECIPIENT WITHOUT EXPRESSED WRITTEN CONSENT OF MILLTRONICS MFG. CO.		TITLE		
		NU-417 FRL ASSEMBLY		
		APPLICATION		
		GENERAL PRODUCTS		
		SCALE		
X. XXX +/-		3:1	DWG No. 6-10-018-112	SIZE B
X. XX +/-				
X. X +/-				
X. +/-				
ANGLE				
		DATE 14 APR 08	DRAWN BY DAHLKE	SHEET NO. 1:1

Retention Knob Chart

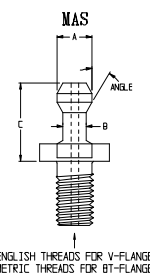
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

DIMENSIONS				MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
59.	39.	1.27	60°	BR50, BR60, BR80, MM18, RH20, RH30, RH33, RH35, RW15, VM15, VM16, VM20, VM22, VM25, VM30, VM2016, VM15, VM16, VM20, VM22, VM25, VM30.	BR50, BR60, BR80, MH20, MH35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, VM160, VMH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RB4E-0002	RK31114A	PT-532-60	C40-6000

NAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

DIMENSIONS				MILLTRONICS MACHINE		COMMAND	KENNA/METAL	VALENITE	LYNDEX
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE	PART No.	PART No.	PART No.	PART No.
.59	.39	1.38	60°	BR50, BR60, BR80, MM18, RH20, RH30, RH33, RH35, RW15, VM15, VM16, VM20, VM22, VM25, VM30, VM2016, VMC15, VMC16, VMC20, VMC22, VMC25, VMC30,	BR50, BR60, BR80, HM20, HM35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HM20, HM35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30,	RB4M-0002	RC31113A	PT-444-60	B40-6000



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

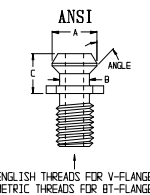
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES

ANSI RETENTION KNOBS STYLE CT-FLANGE 50 TAPER

DIMENSIONS				MILLITRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE					
1.14	.83	1.00	45°	HBM110, RH33XP, RH35XP, TT40XP, VM22XP, VM25XP, VM30XP, TT40XP, VMC22XP, VMC25XP, VMC30XP,	RCE-0001	DK RW11144	N/A	CSO-STO

ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER

DIMENSIONS				MILLITRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
A	B	C	ANGLE					
1.14	.83	1.00	45°	HBM110, RH33XP, RH35XP, T140XP, VM22XP, VM25XP, VM30XP, TT440XP, VM22XP, VM25XP, VM30XP.	RSEM-0105	DWG K11144A	N/A	N/A



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

NOTE: OPTIONAL RETENTION KNOBS FOR 40 TAPER SPINDLES

ANSI RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

DIMENSIONS				MILL/TURNICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
.74	.49	.64	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HMC0, HMC5, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM324, VM424, HMC20, HMC35, TTIC24, TTIC40, TTIC60, TTIC80, VMC16, VMC20, VMC22, VMC25, VMC30	RC4E-0001	RK11122	PT-475C	C40-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

DIMENSIONS				MILL/TRONICS MACHINE		COMMAND	KENNA/METAL	VALENITE	LYNDEX
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE	PART No.	PART No.	PART No.	PART No.
.74	.49	.75	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HM20, HM35, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM324, VM4224, HM20, HM35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30	RS4M-0115	RK11125A	N/A	B40-FADAL

NAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

DIMENSIONS				MILL/TURNICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
.59	.39	1.27	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HM20, HM35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, WM16, WM20, VM22, VM25, VM90, VM324, VM424, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30	RB4E-0001	RK3114	PT-532-45	C40-45000

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

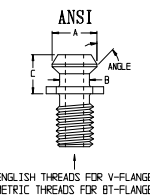
DIMENSIONS				MILLITRONICS MACHINE		COMMAND	KENAMETAL	VALENTE	LYNDEX
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE	PART No.	PART No.	PART No.	PART No.
.50	.39	1.39	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM324, VM424, HKC20, HKC35, TTC24, TTC40, TTC60, TTC80, VM16, VM20, VM22, VM25, VM30	RB4M-0001	RK3113	PT-444-45	B40-45000

DIN 69872 RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

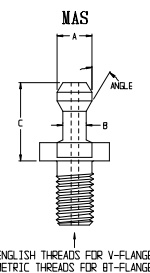
DIMENSIONS				MILL/TRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
.75	.55	1.02	75°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HM20, HM35, RH20, RH30, RH35, RH38, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM35, VM30, VM324, VM424, HM20, HM35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM35, VM30	RS4E-0114-C	DWG RK71125	N/A	C40-1500

DIN 69872 RETENTION KNOBS STYLE DIN-FLANGE 40 TAPER

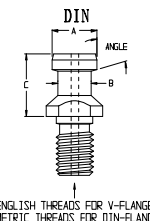
DIMENSIONS			MILL/TURNICS MACHINE		COMMAND PART No.	KEMANMETAL PART No.	VALENTEC PART No.	LYNDEX PART No.
A	B	C	60mm SPINDLE	70mm SPINDLE				
75	55	1.02	75°	SELECTION NOT AVAILABLE	RS4H-0114-C	0WG R071124	N/A	B40-1500



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



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



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. IN-LINE SPINDLES, IN THEIR RESPECTIVE FRAME SIZE, USE THE SAME RETENTION KNOB AS THE NON IN-LINE SPINDLES

I	ADD VM2016, VM3224, VM4224, TT60, TT80, TT40XP, TTC24, TTC40, TTC40XP, HBM110	7573	N.M.	07/12
H	ADD VM22XP, RH33XP FRAMES TO 50 TAPER	6715	N.M.	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
 MILLITRONICS 1400 BILL LANE WACONIA, MN 55397-1210		TITLE		RETENTION KNOB CHART
APPLICATION		GENERAL PRODUCTS	DATE	30 APR 99
DRAWN BY		DAHI KE	SHEET NO.	1 OF 1
SCALE		1.75:1	DWG No.	6-11-018-054
SIZE		B		

