



MILLTRONICS USA®
LET'S INVENT

VM25IL C Mechanical

11-18-2015
Rev 3

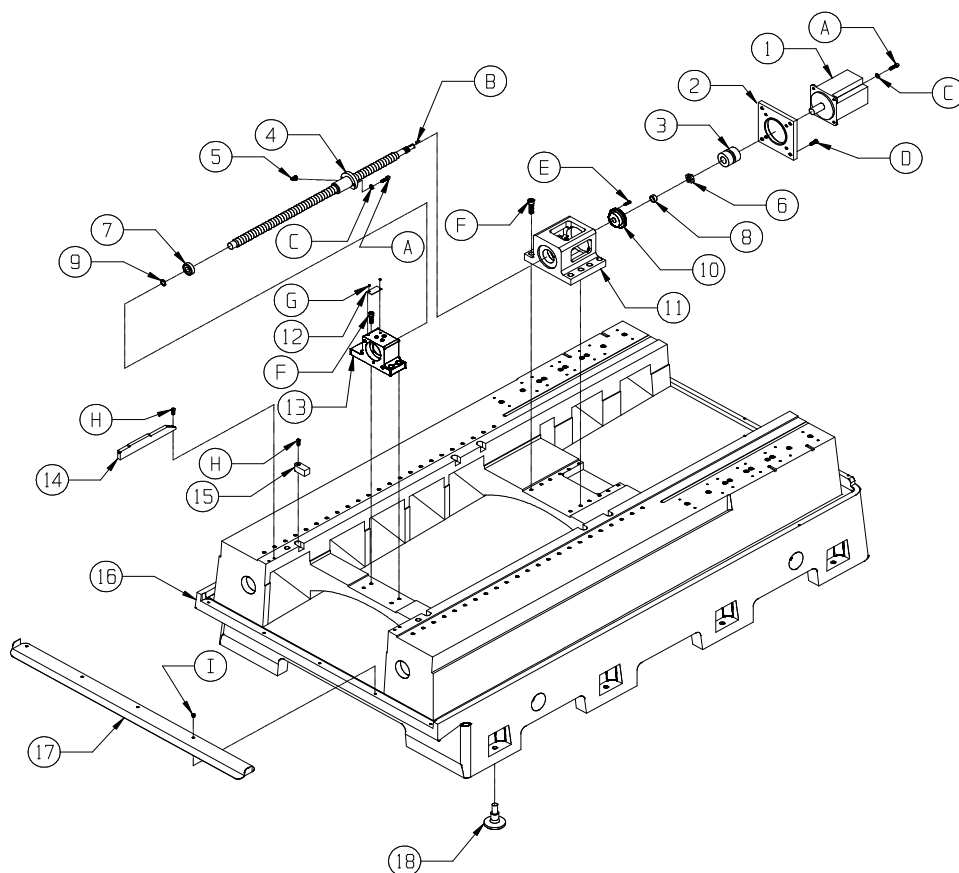
Table Of Contents

Table Of Contents	iii
Manual Discrepancy Sheet	1
Machine Base Assembly	2
Machine Saddle Assembly – 50"	4
Machine Saddle Assembly – 60"	6
Saddle & Way Cover Assembly – 50"	8
Saddle & Way Cover Assembly – 60"	10
Milling Table Assembly – 50"	12
Milling Table Assembly – 60"	14
Machine Head Assembly.....	16
Inline Spindle Assembly	18
Machine Column Assembly.....	20
Thrust Bearing Cup Assembly (25TAC62)	22
Power Drawbar Cylinder Assembly	24
Coolant Tank Assembly	26
Flood Coolant Valve Handle Assembly	29
X & Y Axis Autolube Manifold Assembly – 50"	30
X & Y Axis Autolube Manifold Assembly – 60"	32
Z-Axis Autolube Manifold Assembly.....	35
X & Y Axis Air/Oil Manifold Assembly – 50"	36
X & Y Axis Air/Oil Manifold Assembly – 60"	38
Z Axis Air/Oil Manifold Assembly.....	40
50" Travel X-axis Oil Line Update	42
Waylube Pump MA00458.....	43
Machine Lubrication Instructions.....	44
Chip Pan Door Assembly	46
Chip Pan Assembly.....	48
Chip Pan Swivel Monitor Assembly.....	50
Control Box Assembly #01018838	52
Chip Auger Assembly.....	54
Thermal Compensation Assembly	55
Air Filter / Regulator / Lubricator Assembly	56
Retention Knob Chart.....	57

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 17 cable track part numbers are as shown.
4. On page 19 #21 is 160mm long as shown.
5. On page 27, quantity is adjusted for item #9.
6. On page 33, oil meter part numbers corrected.
7. On page 51, item #8 is 01018838 as shown.

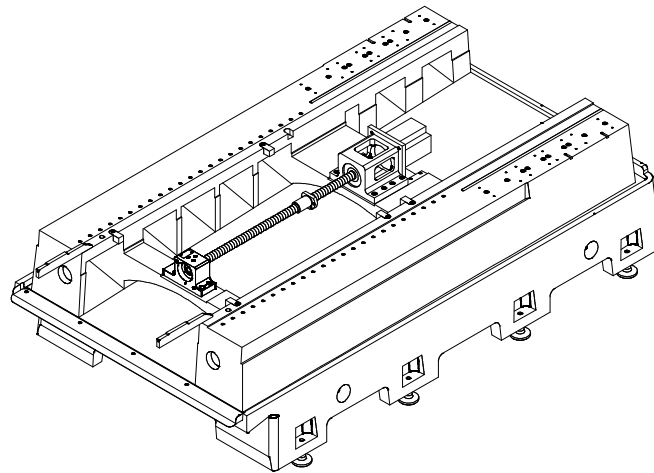
Machine Base Assembly



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.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 45mm 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. 1 OF 2			
ANGLE +/-				

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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	B600002	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)	8Nm A06B-0227-B200	11Nm 1FK7063-5AF71-1EAO	MD00185 (3.5kW)
	MD00144 (2.0kW)	12Nm A06B-0243-B200	18Nm 1FK7100-5AF71-1EAO	MD00187 (5.0kW)
	MD00146 (3.0kW)			
2	- (1.5kW)	MP60231	- (11Nm)	MP60231
	MP60231 (2.0kW/3.0kW)		SMN0009 (18Nm)	
3	MA00240 (1.5kW)	MA00239 (8Nm)	MA00262 (11Nm)	MA00249
	MA00249 (2.0kW/3.0kW)	MA00249 12(Nm)	MA00288 (18Nm)	

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, 11Nm & 18Nm MOTOR USES:
M12-1.75 x 35mm SHCS WITH M12 LOCK WASHER.

** NOT USED WITH 1.5kW or 11Nm MOTOR.
18Nm 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.O. No.	APP'D BY	DATE
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MATERIAL/FINISH

STOCK/ASSY No.

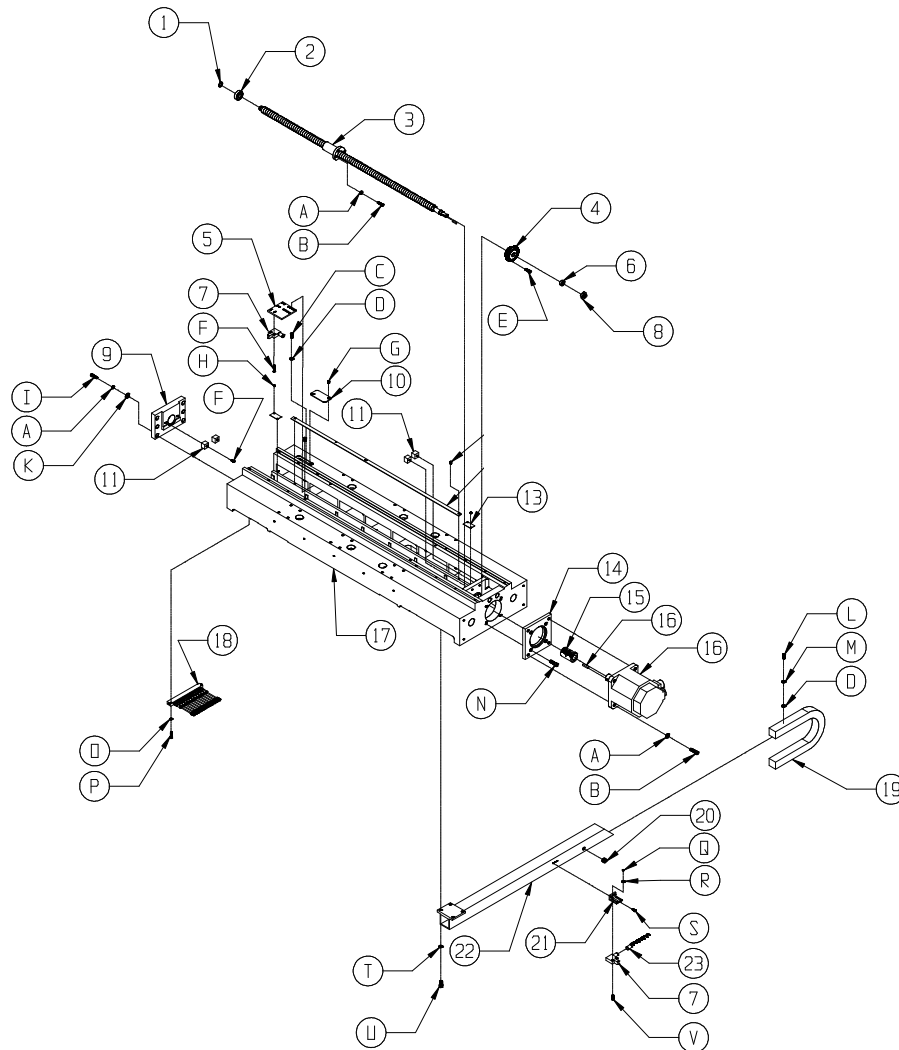
TOLERANCE UNLESS SPECIFIED
X.XXX +/-
X.XX +/-
X.X +/-
ANGLE +/-



TITLE	VM25 45mm PEDESTAL SUB-ASSEMBLY
APPLICATION	PARTNER VI
SCALE	16:1
DWG No.	6-10-027-040
SIZE	B
DATE	05 JAN 06
DRAWN BY	DAHLKE
SHEET No.	2 OF 2

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Machine Saddle Assembly – 50"



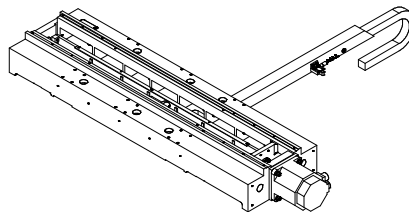
C	UPDATE TO 25TAC62 BEARING	7453	N.M.	03/12
B	CHANGE MOTOR PLATE	6944	N.M.	12/10
A	ADD MITSUBISHI TO LIST	6279	N.M.	02/07
REV.	DESCRIPTION OF CHANGE	E.C.O. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE VM25 45mm x 50" SADDLE SUB-ASSEMBLY		
X. XXX +/-		APPLICATION PARTNER VI		
X. XX +/-		SCALE 20:1	ENG No. 6-10-027-041	SIZE B
X. X +/-		DATE 06 JAN 06		
ANGLE +/-		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
	(1.5kW)	(8Nm)	(11Nm)
14	MP10453 (2.0kW/3.0kW)	MP10453 (12Nm)	SMN0081 (18Nm)
	MA00240 (1.5kW)	MA00239 (8Nm)	MA00262 (11Nm)
15	MA00249 (2.0kW/3.0kW)	MA00249 (12Nm)	MA00263 (16Nm)
	MD00127 (1.5kW)	8Nm A06B-0227-B200	11Nm 1FK7063-5AF71-1EA0
16	MD00144 (2.0kW)	12Nm A06B-0243-B200	16Nm 1FK7083-5AF71-1EA0
	MD00146 (3.0kW)		MD00185 (3.5kW)
			MD00187 (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	+/-



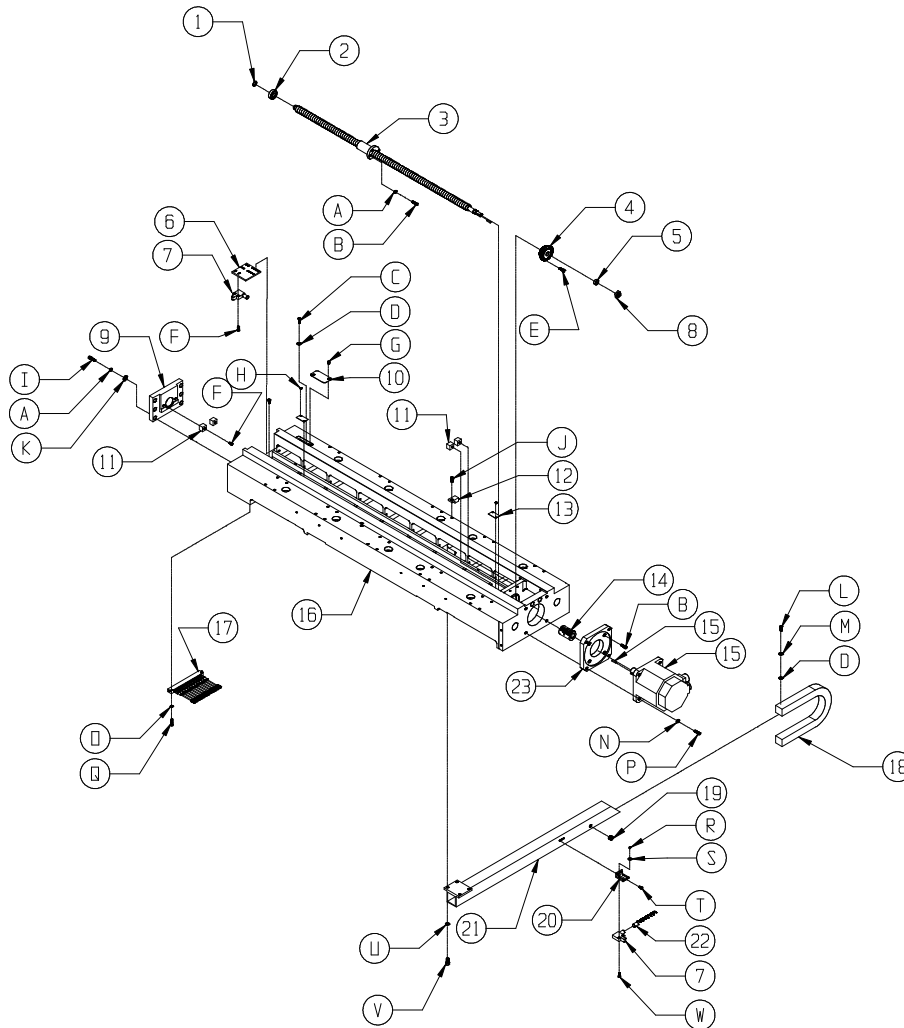
TITLE VM25 45mm x 50" SADDLE SUB-ASSEMBLY

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

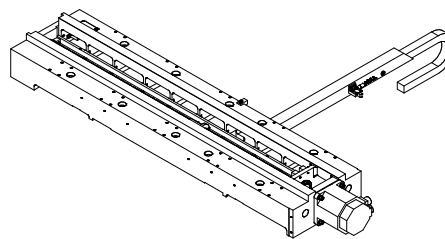
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Machine Saddle Assembly – 60"



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 X.XX X.X ANGLE	+/- +/- +/- +/-	APPLICATION PARTNER VI		SCALE 20:1
		DWG No. 6-10-027-042		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	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.

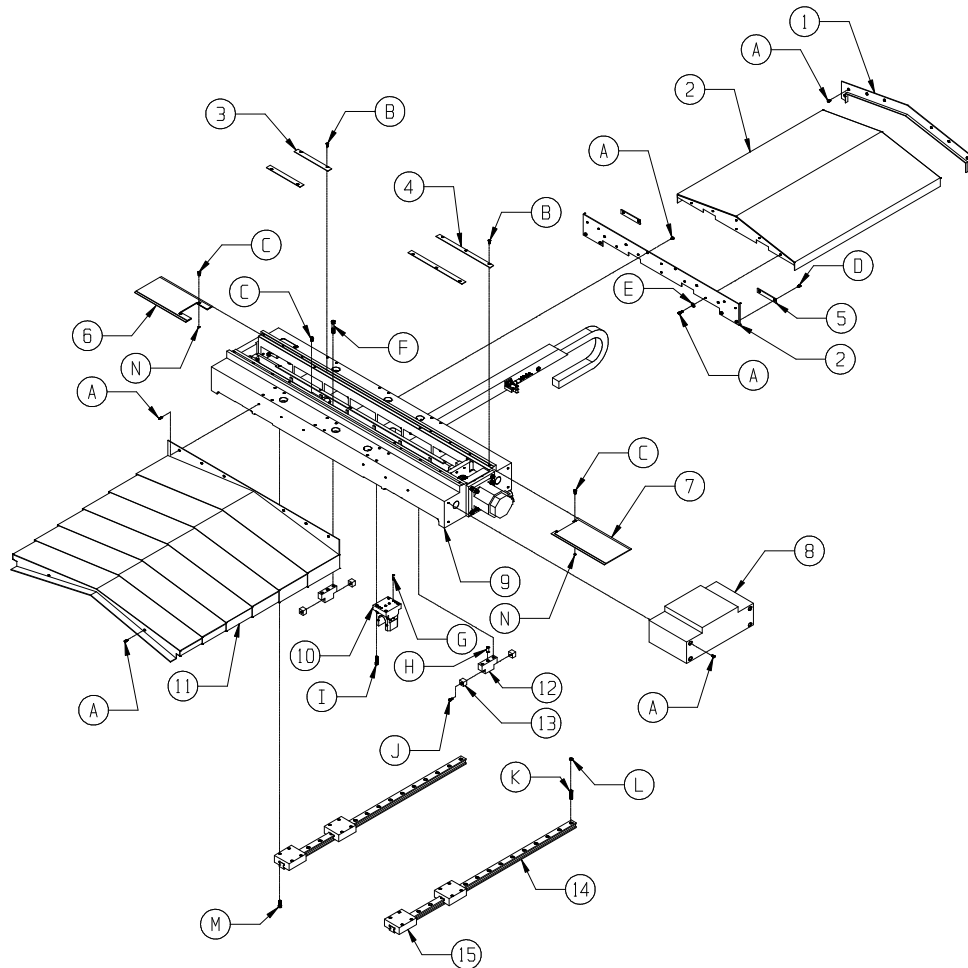
** SIEMENS 16Nm MOTOR USES (4) M10-1.5 x 50mm SHCS & (4) M10 LOCK WASHERS.

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 45mm 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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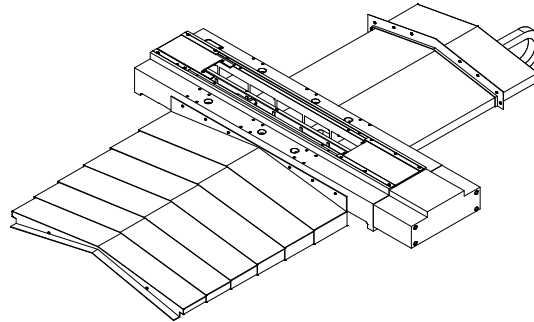


Saddle & Way Cover Assembly – 50"



B	UPDATE BALLSCREW AND RAIL		7465		03/12
A	ADD MITSUBISHI TO LIST		6290	N.M.	02/07
REV.	DESCRIPTION OF CHANGE		E.C.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 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. 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	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

* 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

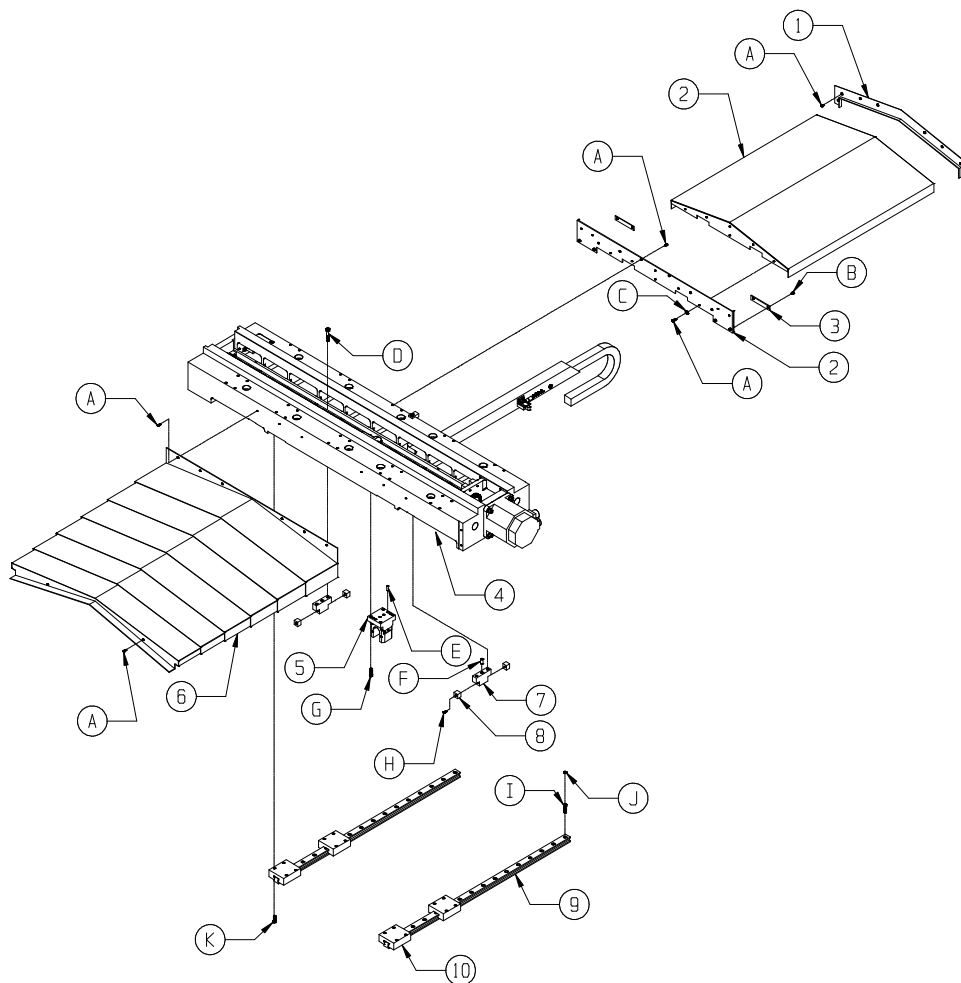
MACHINED CARRIER TABLE		
No.	DESCRIPTION	PART No.
10	STANDARD RAPID	MX00039
	HIGH SPEED RAPID	MX60044

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

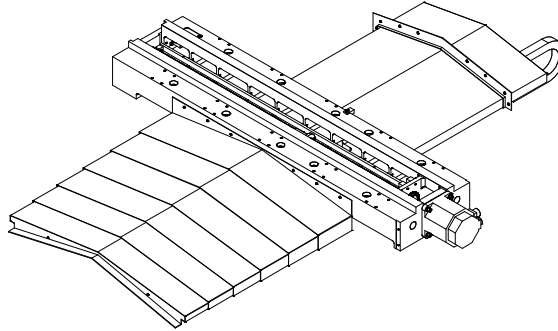
B	UPDATE BALLSCREW AND RAIL	7465		03/12
A	ADD MITSUBISHI TO LIST	6290	N.M.	02/07
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE VM25 45mm x 50" SADDLE ASSEMBLY		
X, XXX +/-		APPLICATION PARTNER VI		
X, XX +/-		SCALE 20:1		DWG No. 6-10-027-043
X, X +/-		DATE 1 JAN 06		SIZE B
ANGLE +/-		DRAWN BY DAHLKE		SHEET No. 2 OF 2

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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 APPLICATION PARTNER VI		
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.		SCALE 20:1	DWG No. 6-10-027-044	SIZE B
		DATE 11 JAN 06	DRAWN BY DAHLKE	SHEET No. 1 OF 2
		TOLERANCE UNLESS SPECIFIED X.XXX +/- X.XX +/- X.X +/- ANGLE +/-		



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	PDM 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

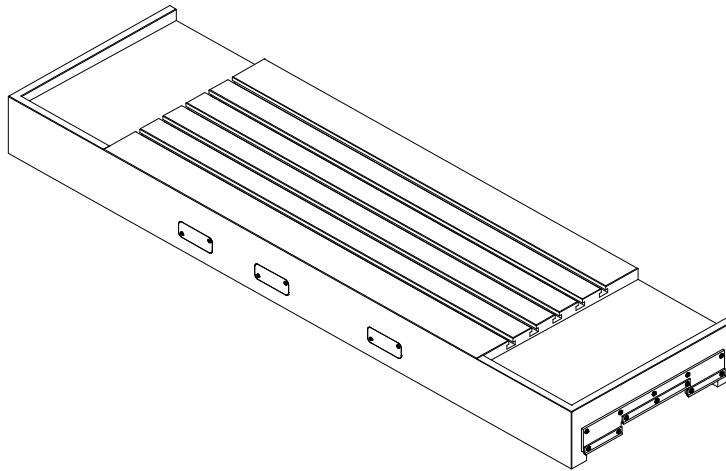
MACHINED CARRIER TABLE		
No.	DESCRIPTION	PART No.
5	STANDARD RAPID	MX00039
	HIGH SPEED RAPID	MX60044

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 +/-		

This exploded view diagram illustrates the assembly of a unit. The main components are labeled with circled numbers 1 through 11 and letters A through J. The assembly consists of a base structure (1) with a central channel (2) and side rails (3). A top plate (4) is shown with a central slot (5) and side rails (6). A vertical support (7) is attached to the base. A horizontal support (8) is attached to the vertical support. A horizontal support (9) is attached to the horizontal support. A horizontal support (10) is attached to the horizontal support. A horizontal support (11) is attached to the horizontal support. The letters A through J indicate specific assembly points or features.

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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

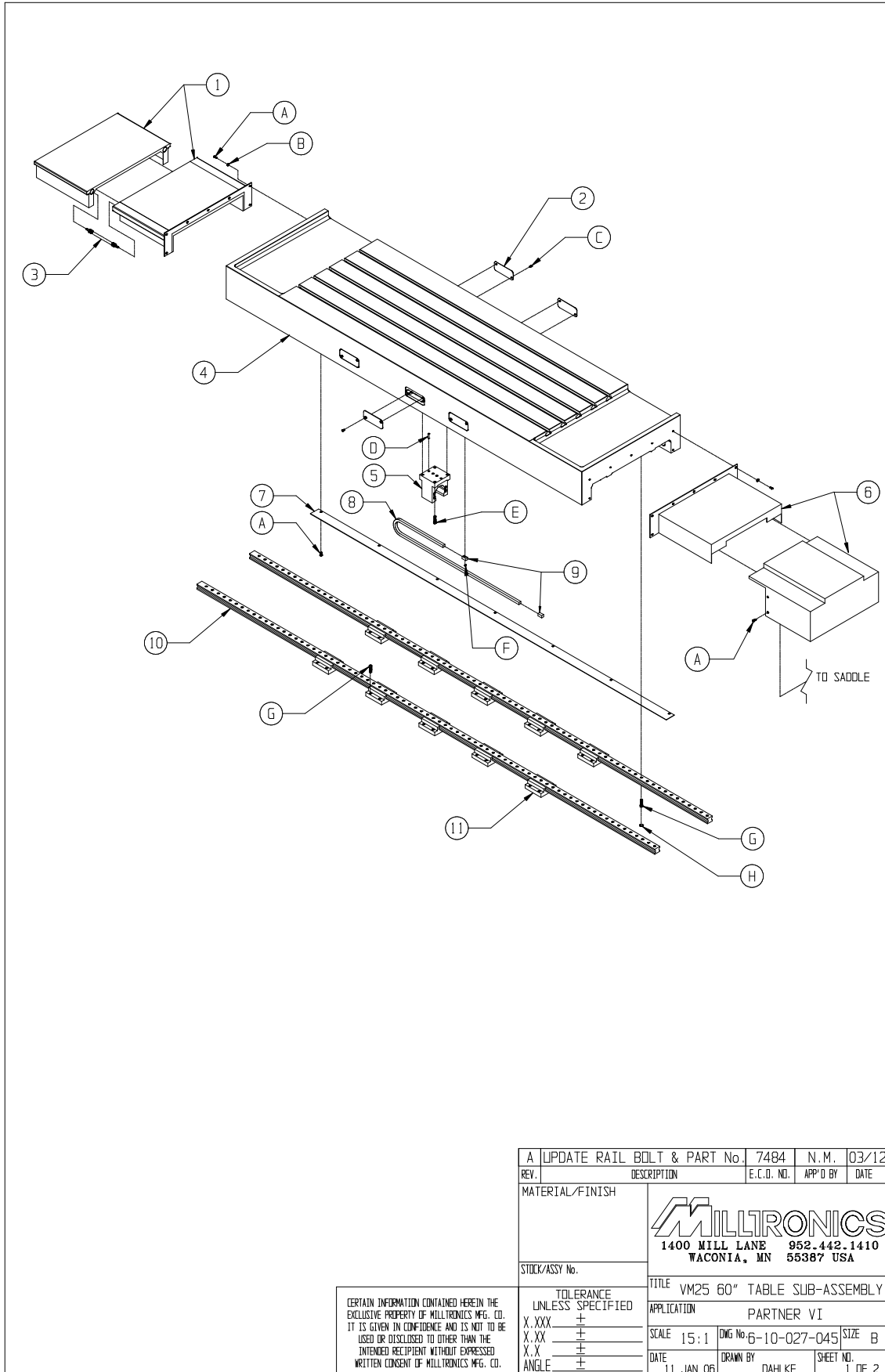
RAIL & BLOCK TABLE

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

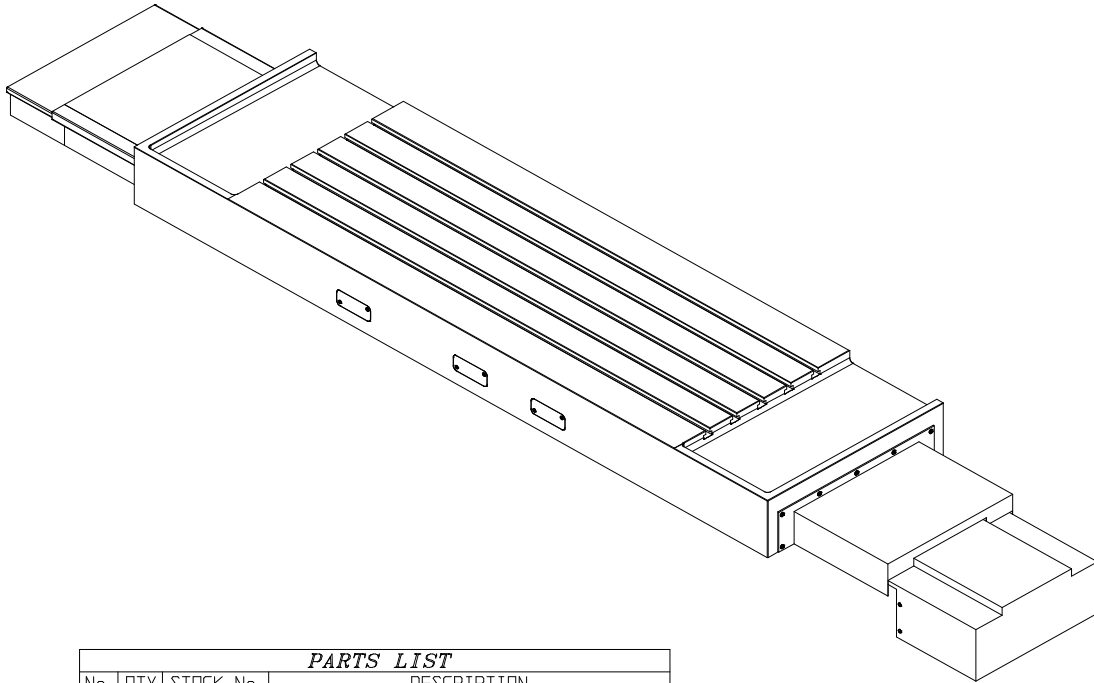
A	UPDATE RAIL BOLT & PART No.	7483	N.M.	03/12	
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE	
MATERIAL/FINISH		 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA			
STOCK/ASSY No.					
TOLERANCE UNLESS SPECIFIED		TITLE VM25 (2Kw) 50" TABLE SUB-ASSEMBLY			
X.XXX ±		APPLICATION PARTNER VI			
X.XX ±		SCALE 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"



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				
X.XXX	±	TITLE VM25 60" TABLE SUB-ASSEMBLY		
X.XX	±	APPLICATION PARTNER VI		
X.X	±	SCALE 15:1 DWG No. 6-10-027-045		SIZE B
ANGLE	±	DATE 11 JAN 06 DRAWN BY DAHLKE		SHEET NO. 1 OF 2


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

STOCK/ASSY No.



TITLE VM25 60" TABLE SUB-ASSEMBLY

APPLICATION PARTNER VI

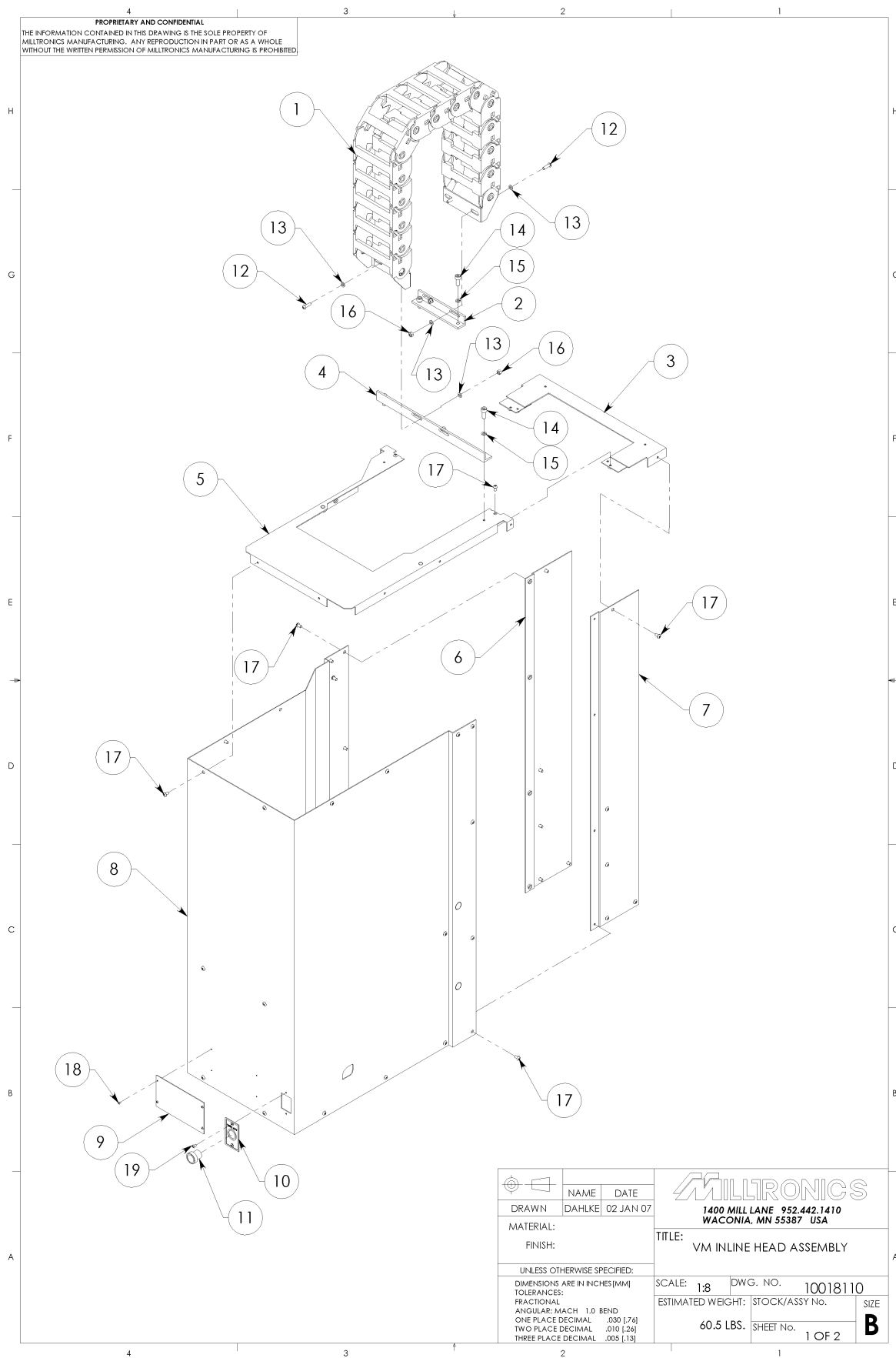
SCALE 12:1 DWG No. 6-10-027-045 SIZE B

DATE 11 JAN 06 DRAWN BY DAHLKE SHEET NO. 2 OF 2

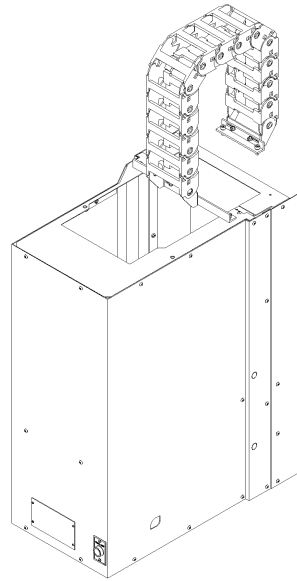
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TOLERANCE UNLESS SPECIFIED	
X.XXX	±
X.XX	±
X.X	±
ANGLE	±

Machine Head Assembly



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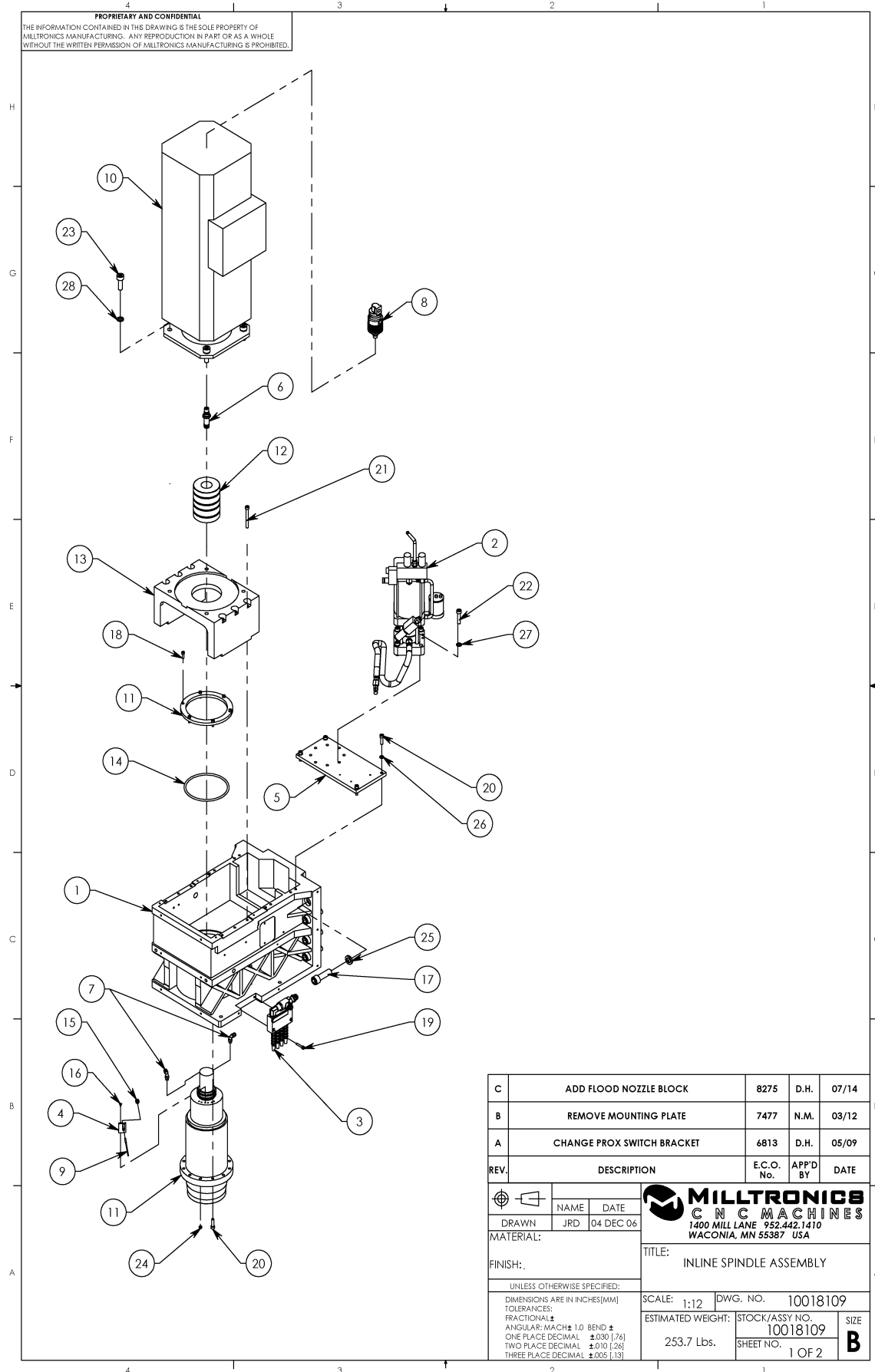
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	SEE TABLE	SPINDLE CABLE TRACK
2	1	MP00316	SPINDLE CABLE SUPPORT BRACKET
3	1	SEE TABLE	VM HEAD COVER - TOP
4	1	MP00664	VM SPINDLE CABLE SUPPORT BRACKET
5	1	MP00639	UNIVERSAL HEADCOVER - TOP
6	1	SEE TABLE	VM HEAD COVER - LEFT
7	1	SEE TABLE	VM HEAD COVER - RIGHT
8	1	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	SEE CABLE TRACK TABLE BELOW			
3	MP10461	MP60218	MP00633	MP00638
6	MP10459	MP60219	MP00634	MP00637
7	MP10460	MP60217	MP00632	MP00636

Item #1 Cable Track		
Model (s)	Links	Brackets
VM20 IL	18 x MP-1163	1 set MP-1164
VM22-30 IL	21 x MP-1163	1 set MP-1164
VM22-30 XP	22 x MP-1163	1 set MP-1164

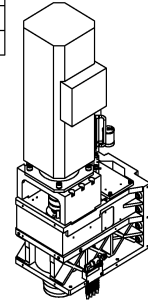
	NAME	DATE	
	DRAWN DAHLKE	02 JAN 07	
MATERIAL:		TITLE: VM INLINE HEAD ASSEMBLY	
FINISH:		SCALE: 1:12 DWG. NO. 10018110	
UNLESS OTHERWISE SPECIFIED:		ESTIMATED WEIGHT: STOCK/ASSY No.	
DIMENSIONS ARE IN INCHES (MM)		60.5 LBS. SHEET No. 2 OF 2	
TOLERANCES:		SIZE	
FRACTIONAL		B	
ANGULAR: MACH 1.0 BEND			
ONE PLACE DECIMAL .030 (.76)			
TWO PLACE DECIMAL .010 (.25)			
THREE PLACE DECIMAL .005 (.13)			

Inline Spindle Assembly



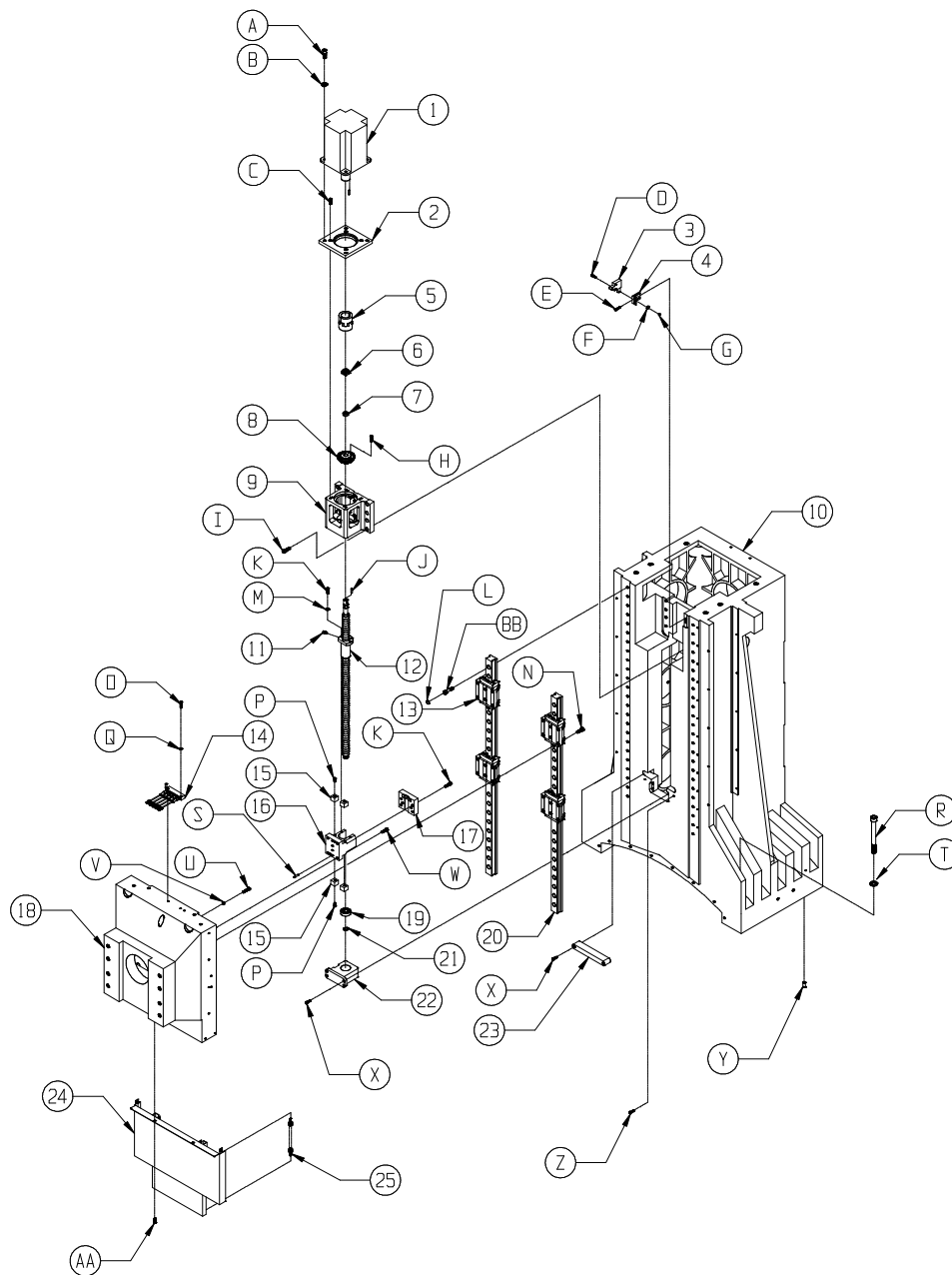


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21	6	M8-1.25x160mm SHCS	M8-1.25x160mm SHCS With M8 flat washer and M8 split-ring lockwasher																																																																																																																				
22	4	SHCS M10-1.5 x 45	M10-1.5 x 45mm SHCS																																																																																																																				
23	4	SHCS M14-2.0 x 45	M14-2.0 x 45mm SHCS																																																																																																																				
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25	8	WASHER LOCK .75	3/4 LOCK WASHER																																																																																																																				
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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.O. 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

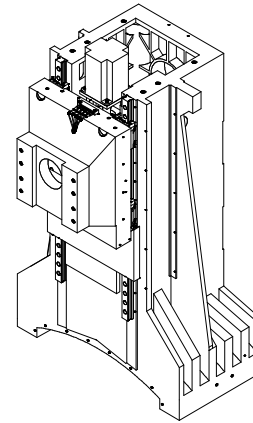
SCALE 20:1 DWG No. 6-10-027-039 SIZE B

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 1FK7100-5AF71-1E80 27Nn 1FK7101-5AF71-1E80	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.

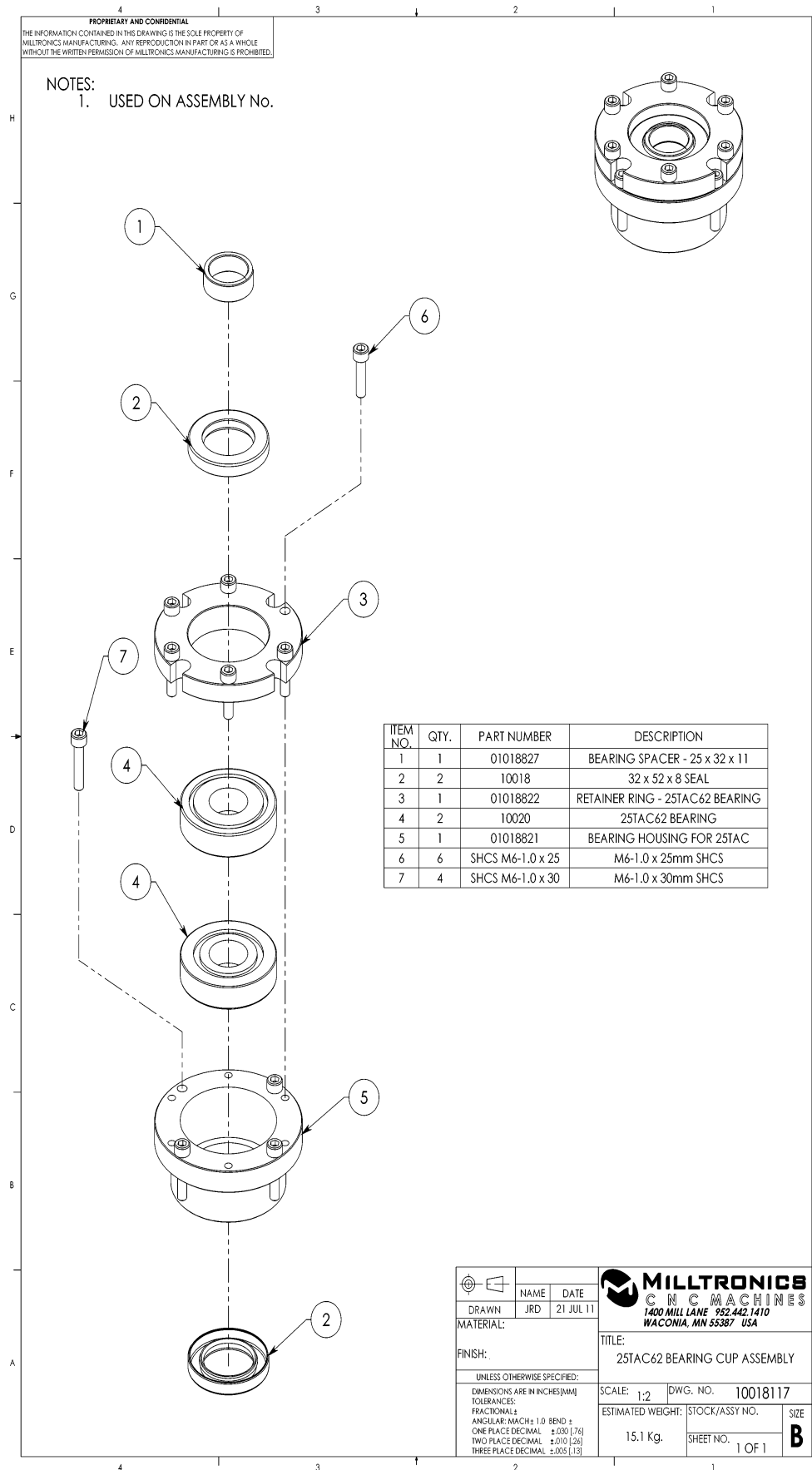
TOLERANCE
UNLESS SPECIFIED
X.XXX +/-
X.XX +/-
X.X +/-
ANGLE +/-



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

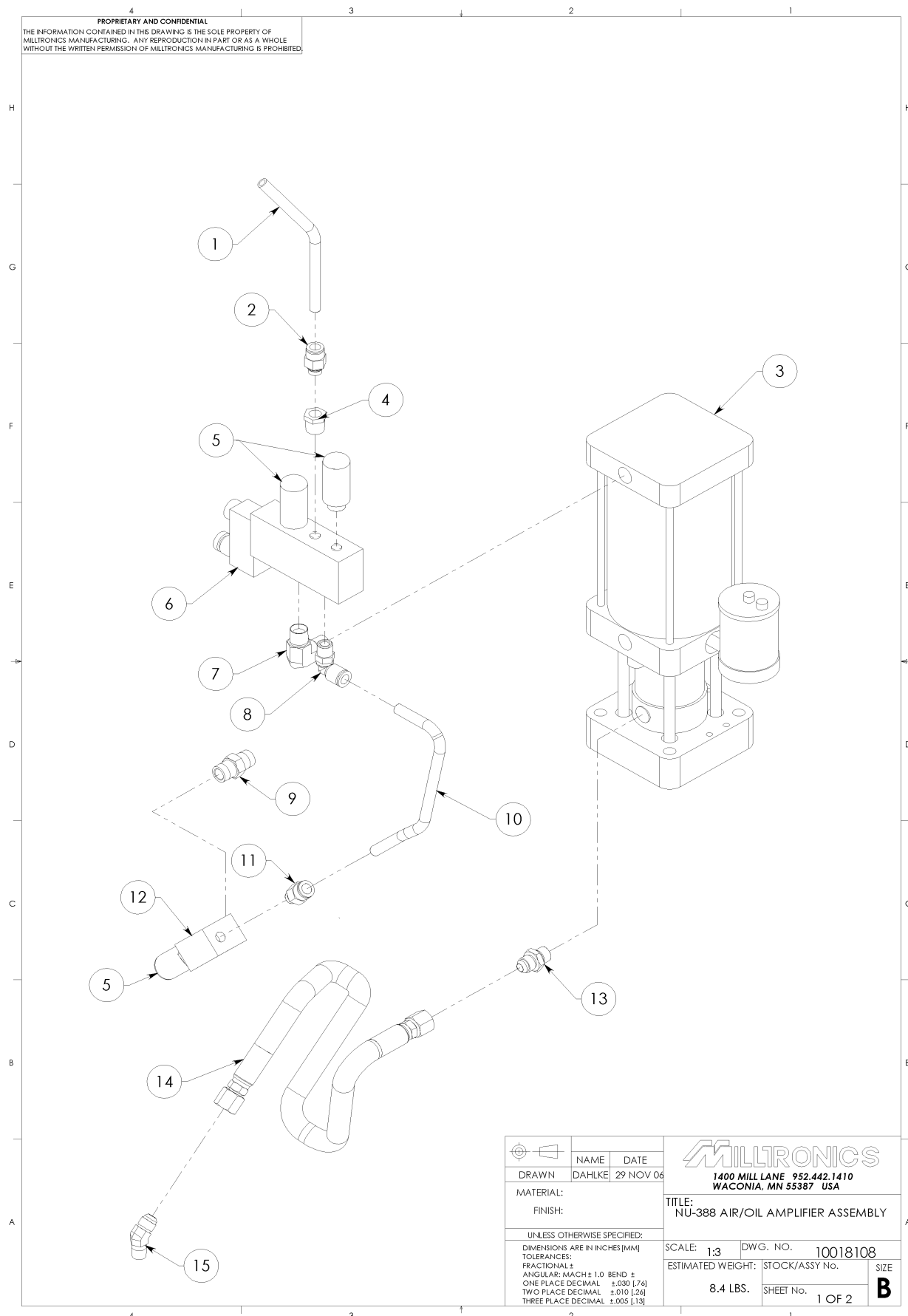
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Thrust Bearing Cup Assembly (25TAC62)



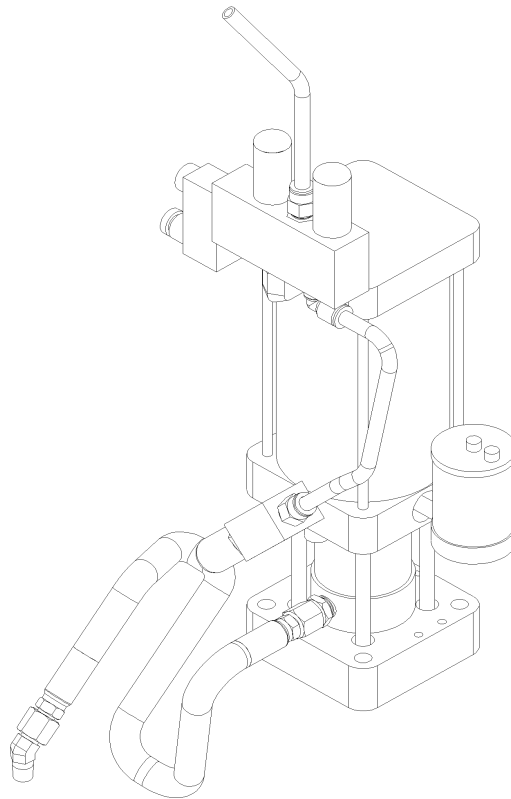
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Power Drawbar Cylinder Assembly



4 3 2 1

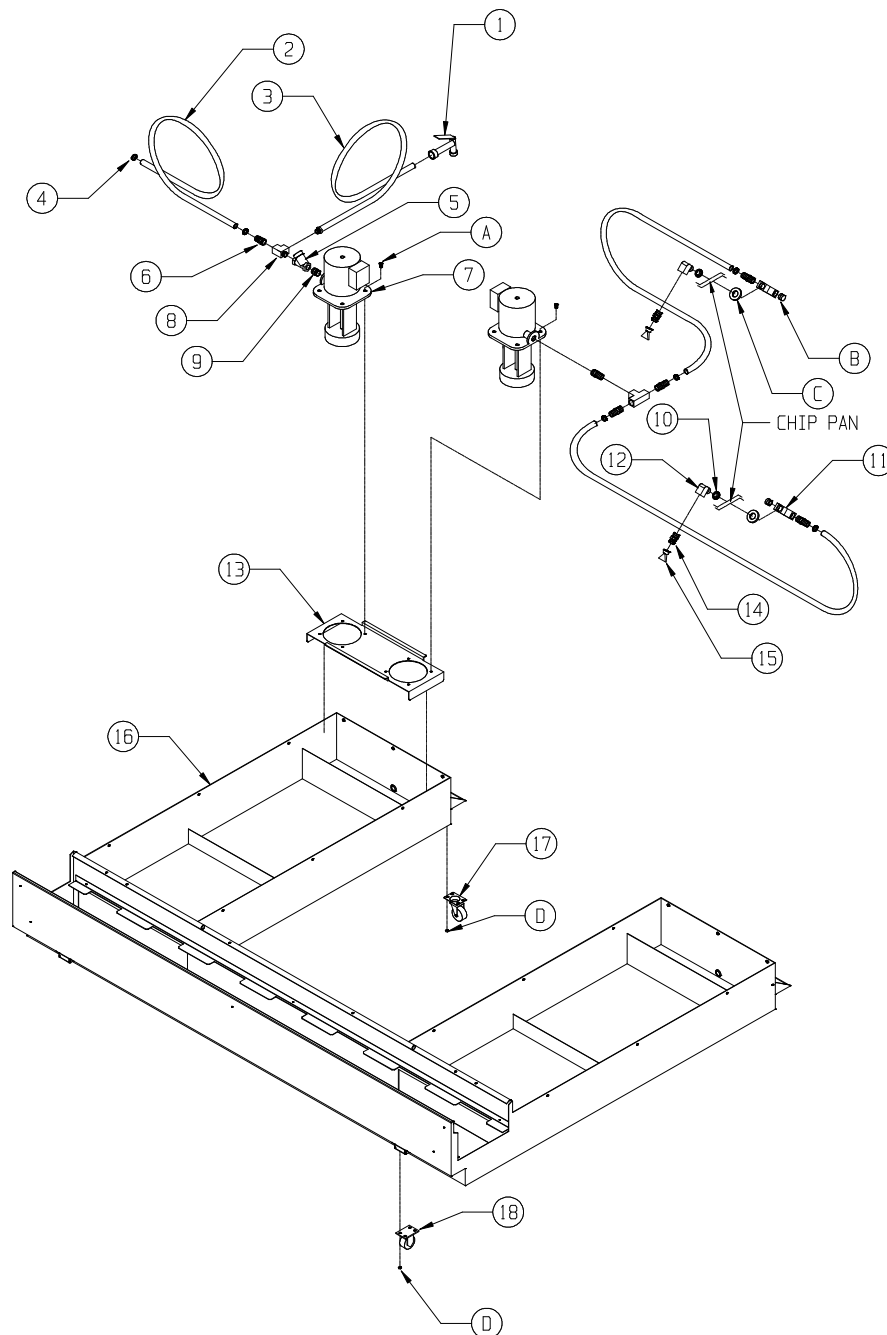
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ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	NU00078	3/8 AIR LINE
2	1	NU00095	TUBE CONNECTOR - M/S 3/8 TUBE 1/4NPT
3	1	NU00408	AIR/OIL AMPLIFIER SYSTEM
4	1	NU00027	REDUCER - 3/8 x 1/4NPT
5	3	NU00375	MUFFLER
6	1	NU00293	SOLENOID VALVE
7	1	NU00292	MALE ELBOW - 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°

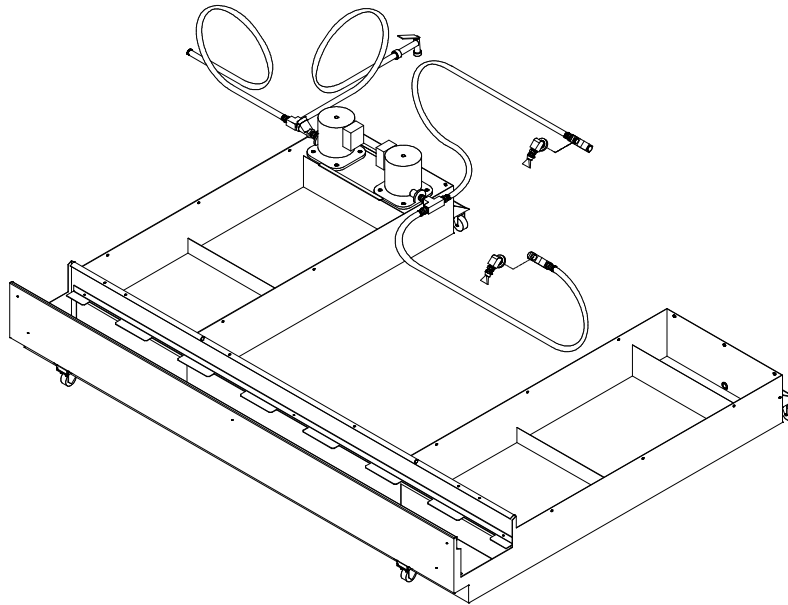
	NAME	DATE	 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA
	DAHLKE 29 NOV 06		
MATERIAL:		TITLE: NU-388 AIR/OIL AMPLIFIER ASSEMBLY	
FINISH:		SCALE: 1:3 DWG. NO. 10018108	
UNLESS OTHERWISE SPECIFIED:		ESTIMATED WEIGHT: 8.4 LBS.	
DIMENSIONS ARE IN INCHES [MM]		SHEET No. 2 OF 2	
TOLERANCES:		SIZE B	
FRACTIONAL ±			
ANGULAR: MACH ± 1.0 BEND ±			
ONE PLACE DECIMAL ±.030 [.76]			
TWO PLACE DECIMAL ±.010 [.25]			
THREE PLACE DECIMAL ±.005 [.13]			

Coolant Tank Assembly



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

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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

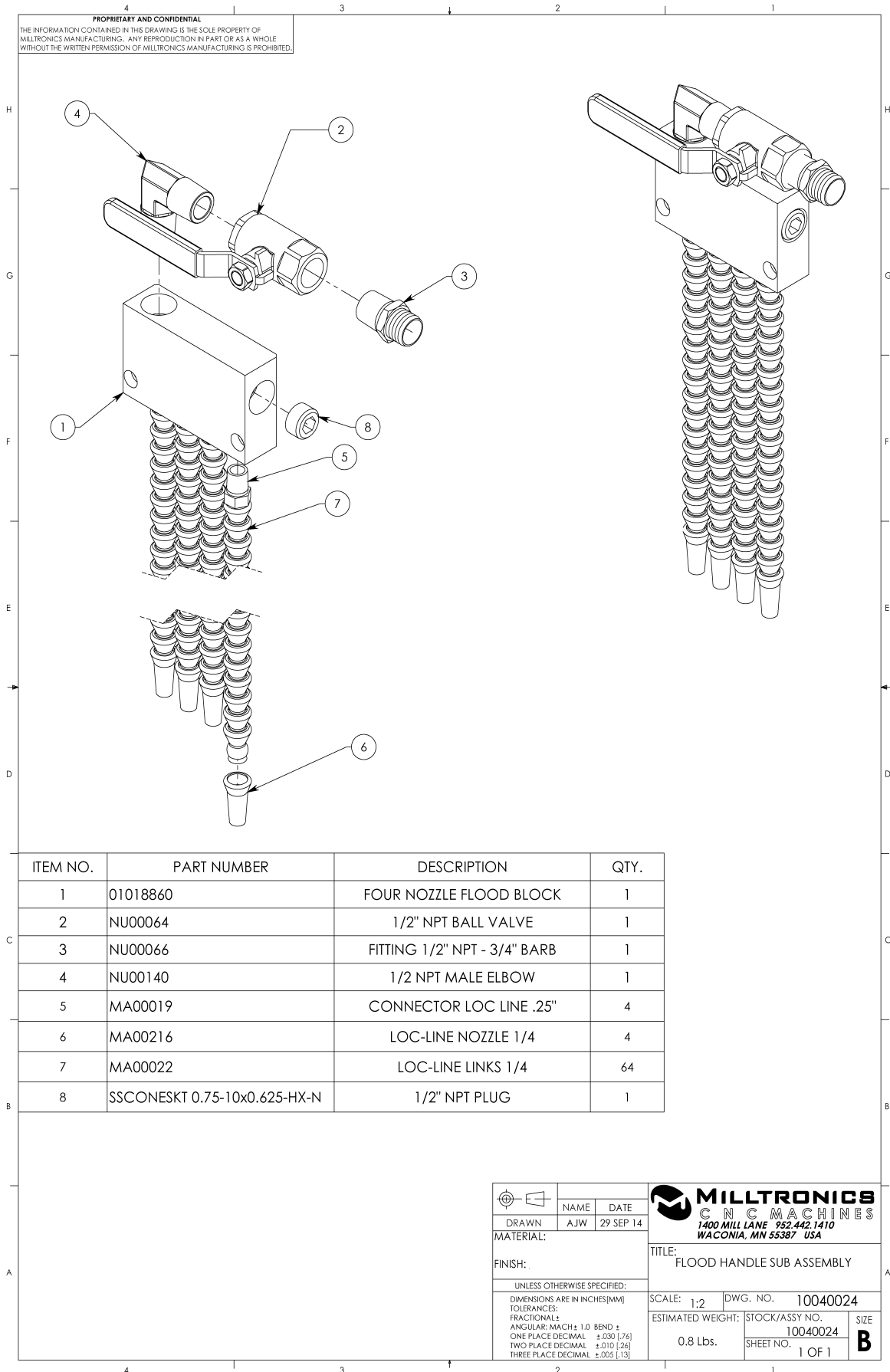
No.	QTY	DESCRIPTION
A	8	M6-1 x 12mm BHCS
B	2	1/2-14 NPT SHPP
C	2	7/8 FLAT WASHER 3/8 THICK
D	12	M6-1 NYLOCK HEX NUT

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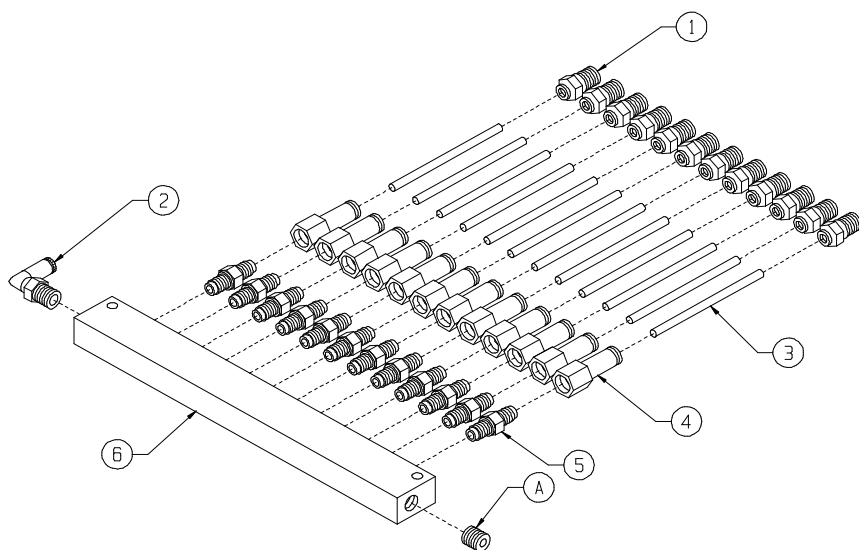
A	ONE PIECE COOLANT TANK	6017		11/05
REV.	DESCRIPTION OF CHANGE	E.C.O. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE VM22,25,30 FLOOD TANK W/WASHDOWN ASSEMBLY		
X .XXX ±		APPLICATION GENERAL PRODUCTS		
X .XX ±		SCALE 15:1		DWG No 6-10-018-104
X .X ±		DATE 18 DEC 03		SHEET No 2 OF 2
ANGLE ±		DRAWN BY DAHLKE		

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Flood Coolant Valve Handle Assembly

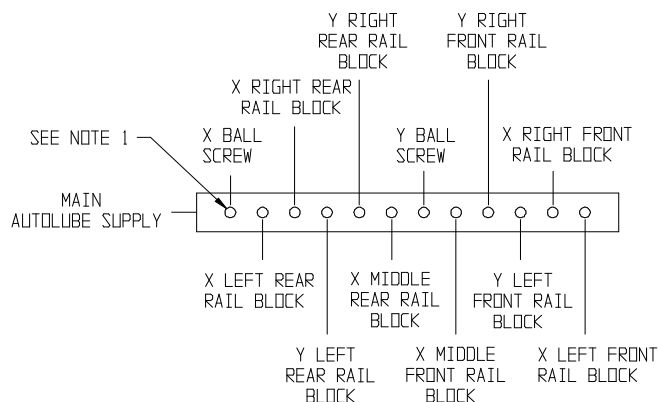


X & Y Axis Autolube Manifold Assembly – 50”



NOTES:

1. X MIDDLE RAILBLOCK PORTS, FRONT AND REAR ARE PLUGGED IF NOT USED.

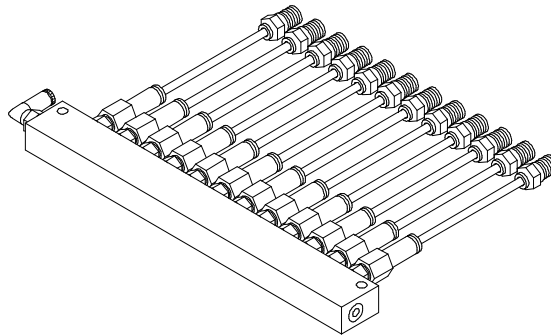


AUTOLUBE LINE DESTINATIONS

B	UPDATE OIL METER FITTINGS	6760		03/09
A	ADD FRAMES TO CHART	5996	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 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. 1 OF 2
ANGLE ±				

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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

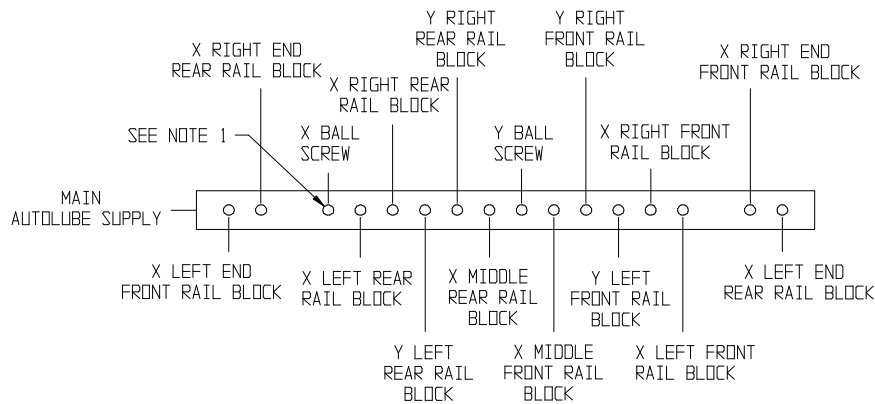
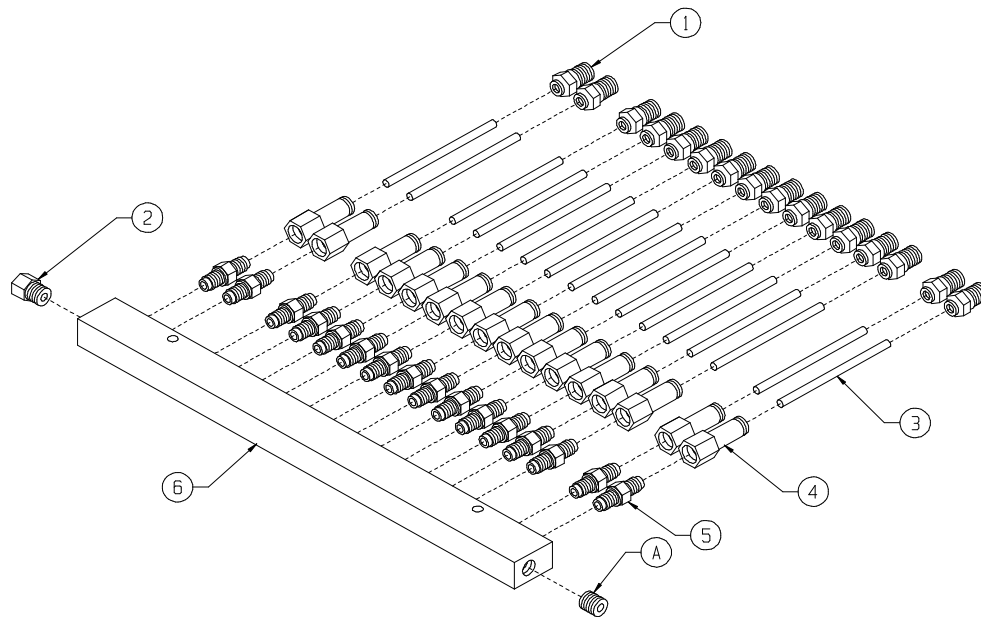
HARDWARE LIST

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

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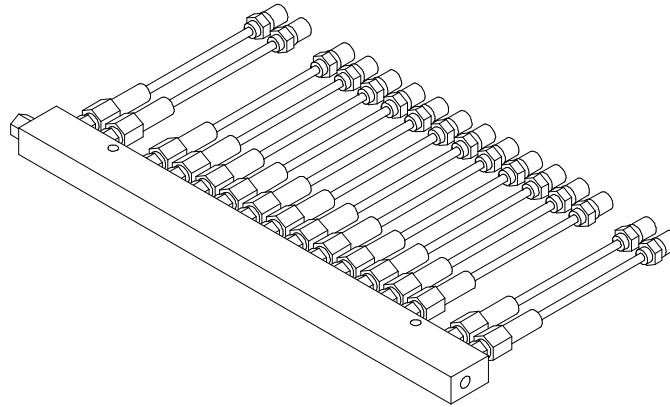
B	UPDATE OIL METER FITTINGS	6760		03/09
A	ADD FRAMES TO CHART	5996	N.M.	08/05
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TOLERANCE UNLESS SPECIFIED		TITLE X & Y AXIS AUTOLUBE MANIFOLD ASSEMBLY		
X .XXX ±		APPLICATION 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 ±				

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
ANGLE ±				SHEET NO. 1 OF 2



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		OIL METER	
CONNECTION	VM25/30(60)		
X LEFT REAR END RAIL BLOCK	18	#3	Oil meter Part numbers #2=NU-155 #3=NU-156
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	

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.		TITLE X & Y AXIS 16 PORT AUTOLUBE MANIFOLD ASSEMBLY		
TOLERANCE UNLESS SPECIFIED		APPLICATION GENERAL PRODUCTS		
X .XXX ±		SCALE 2:1 DWG No 6-10-018-106 SIZE B		
X .XX ±		DATE 17 JUN 05		
X .X ±		DRAWN BY DAHLKE		
ANGLE ±		SHEET NO. 2 OF 2		

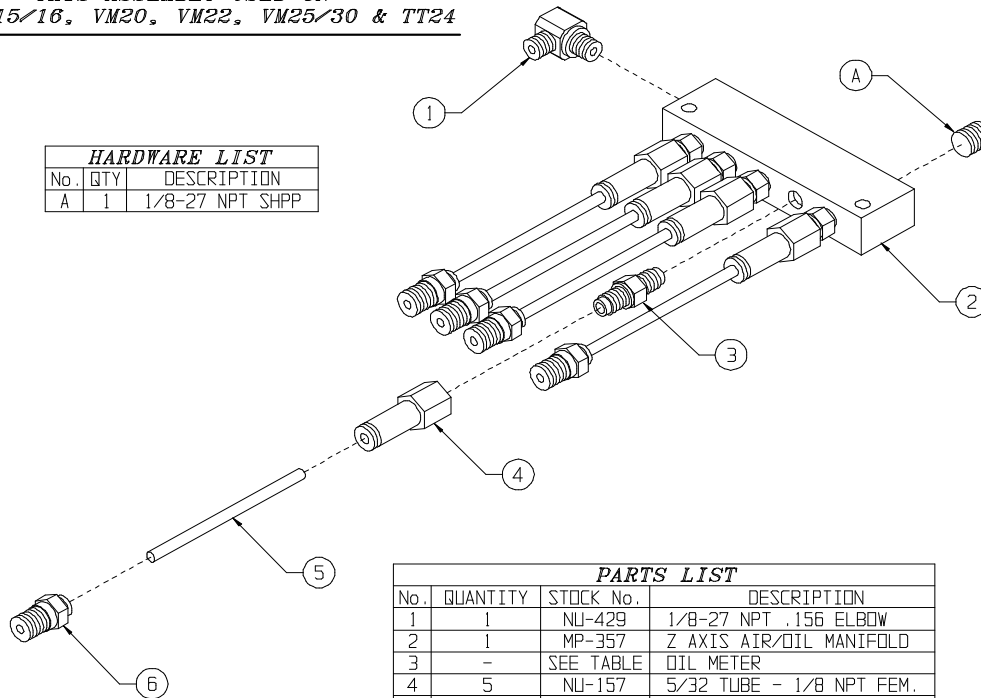
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Z-Axis Autolube Manifold Assembly

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

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



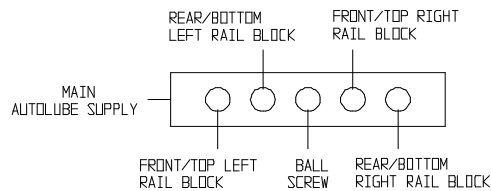
PARTS LIST			
No.	QUANTITY	STOCK No.	DESCRIPTION
1	1	NU-429	1/8-27 NPT .156 ELBOW
2	1	MP-357	Z AXIS AIR/OIL MANIFOLD
3	-	SEE TABLE	OIL METER
4	5	NU-157	5/32 TUBE - 1/8 NPT FEM.
5	SEE TABLE	NU-117	5/32 NYLON TUBING
6	5	SEE TABLE	5/32 TUBE-1/8 NPT M/S

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



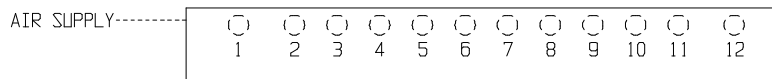
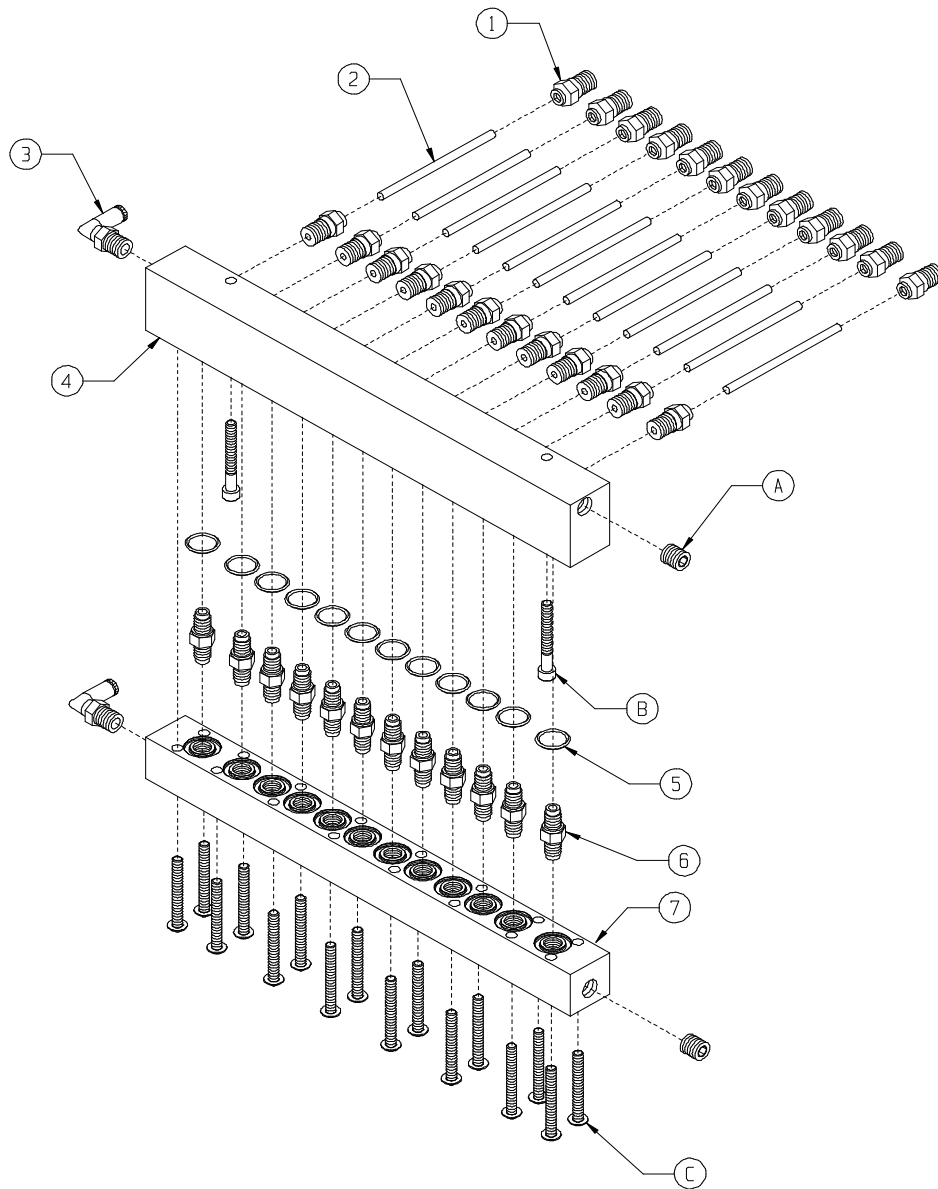
NOTES:

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 DRAWN BY THOMPSON SHEET NO. 1 OF 1		
ANGLE ±				

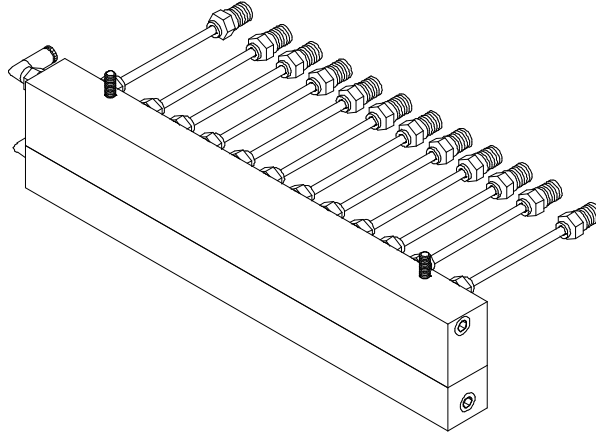
X & Y Axis Air/Oil Manifold Assembly – 50"



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

F	CHANGE TO METRIC HARDWARE	7984	N.M.	10/13
E	CHANGE TABLE	6060	N.M.	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.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		DATE 10 JUN 99		
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:

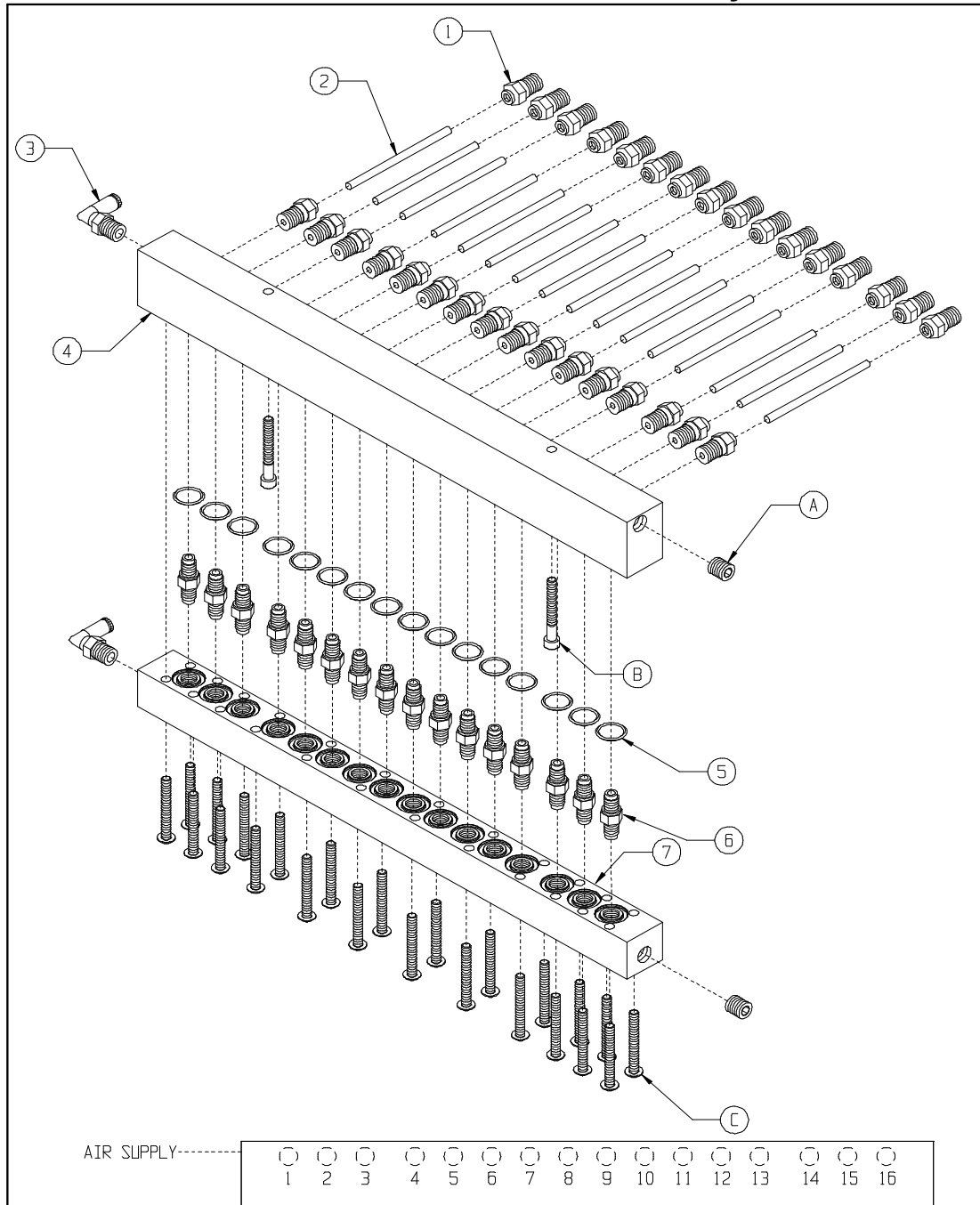
- IF REFERENCED WITH A (-) PLUG AIR/OIL LINE HOLE AND OIL METER HOLE IN MANIFOLD WITH 1/8 NPT PLUG.

HARDWARE LIST

No.	QTY	DESCRIPTION
A	2	1/8-27 NPT SHPP
B	2	M5-.8 x 30 SHCS
C	20	M5-.8 x 30 SHCS

F	CHANGE TO METRIC HARDWARE	7984	N.M.	10/13
E	CHANGE TABLE	6060	N.M.	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		
X.X	+/- .030	DWG No. 6-10-008-058		
ANGLE	+/- 1.0°	SIZE B		
		DATE 10 JUN 99	DRAWN BY HERME	SHEET No. 2 OF 2

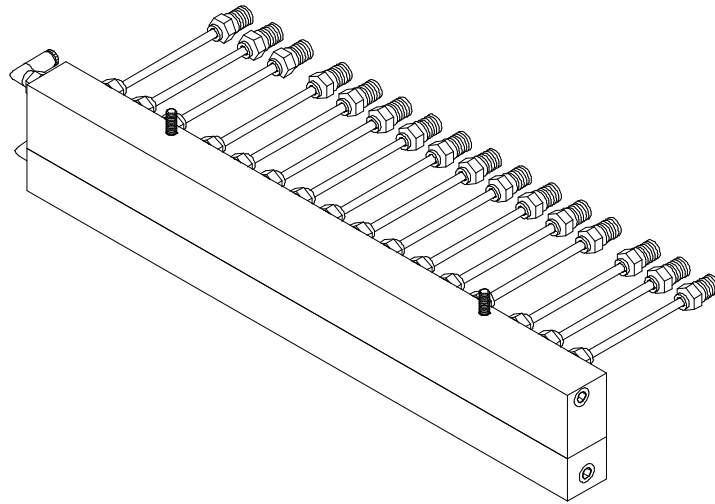
X & Y Axis Air/Oil Manifold Assembly – 60"



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

A	CHANGE TO METRIC HARDWARE	7983	NM	10/13
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 VII		
X .XX	+/- .010	SCALE 2:1	DWG No. 6-10-020-027	SIZE B
X .X	+/- .030			
ANGLE	+/- 1.0°	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:

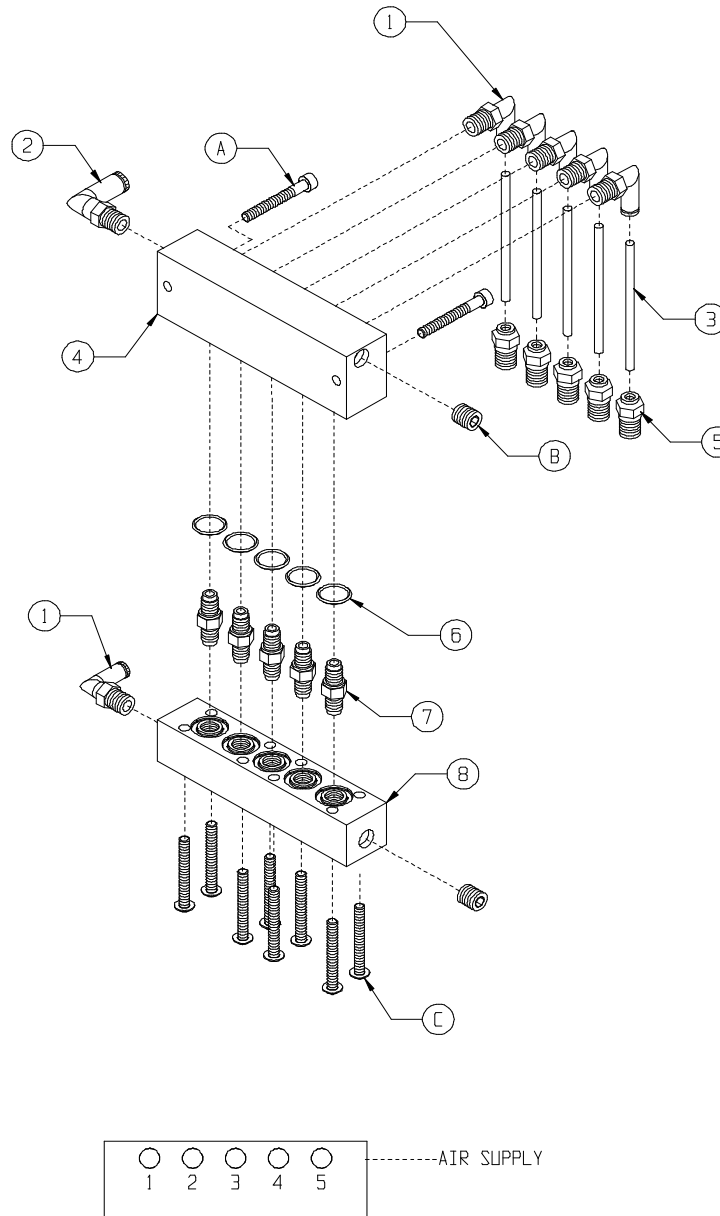
- IF REFERENCED WITH A (-) PLUG
AIR/OIL LINE HOLE AND OIL METER
HOLE IN MANIFOLD WITH 1/8 NPT PLUG.

HARDWARE LIST

No.	QTY	DESCRIPTION
A	2	1/8-27 NPT SHPP
B	2	M5-.8 x 30 SHCS
C	20	M5-.8 x 30 SHCS

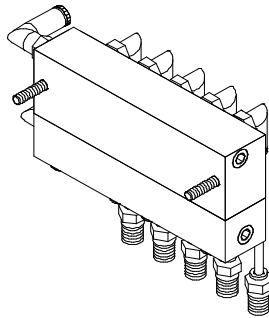
A	CHANGE TO METRIC HARDWARE	7983	NM	10/13
REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE X & Y AXIS AIR/OIL MANIFOLD ASSEMBLY APPLICATION PARTNER VII		
TOLERANCE UNLESS SPECIFIED		SCALE 2:1 DRG No 6-10-020-027 SIZE B		
X.XXX	+/- .005	DATE 07 SEP 05 DRAWN BY DAHLKE SHEET No. 2 OF 2		
X.XX	+/- .010			
X.X	+/- .030			
ANGLE	+/- 1.0°			

Z Axis Air/Oil Manifold Assembly



AIR/OIL LINE DESTINATIONS	
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

E	CHANG TO METRIC HARDWARE	7985	N.M.	10/13
D	CHANGE TO ALL FRAMES	6002	N.M.	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		
X. XXX +/- .005		APPLICATION PARTNER I		
X. XX +/- .010		SCALE 2:1		
X. X +/- .030		DWG No. 6-10-008-059		
ANGLE +/- 1.0°		SIZE B		
DATE 11 JUN 99		DRAWN BY HERME		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	M5-.8 x 25 SHCS
B	2	1/8-27 NPT SHPP
C	8	M5-.8 x 25 SHCS

E	CHANG TO METRIC HARDWARE	7985	N.M.	10/13
D	CHANGE TO ALL FRAMES	6002	N.M.	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		
X.XXX +/- .005		APPLICATION PARTNER I		
X.XX +/- .010		SCALE 2:1		
X.X +/- .030		DATE 11 JUN 99		
ANGLE +/- 1.0°		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

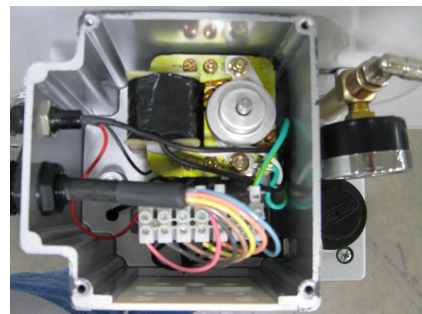
	Old style	New style
Model #	CESD	CEN01
Part #	MA00219	MA00458
Timer function ON/OFF	Built-in controls	Via CNC #66
Audible alarm	YES	NO
Oil pressure gauge	NO	YES
Manual override button	YES	YES

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.

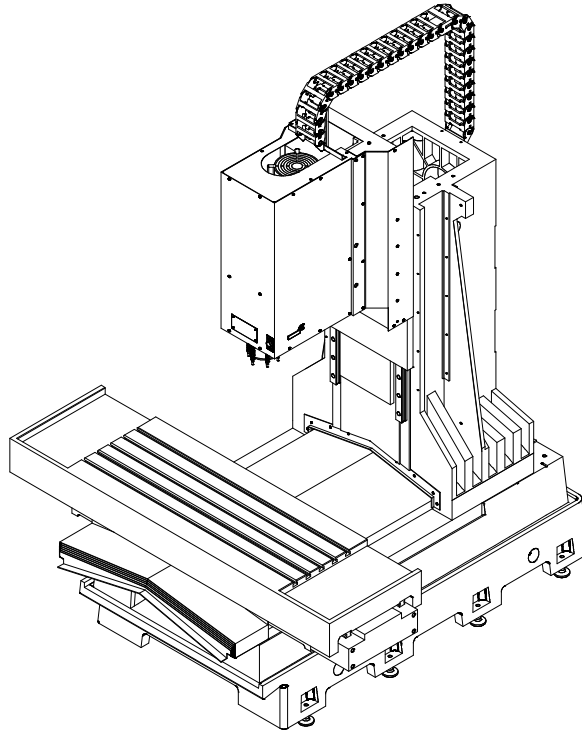
Pictures of MA00458



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		TITLE LUBRICATION DRAWING		
X.XXX ±		APPLICATION PARTNER VI		
X.XX ±		SCALE 20:1	DWG No 6-11-027-003	SIZE B
X.X ±		DATE 03 MAY 99	DRAWN BY DAHLKE	SHEET NO. 1 OF 2
ANGLE ±				



The grease detailed below has been superseded by:
Mobilgrease XHP221, Product Code 642454-00, 3-7-2014.

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

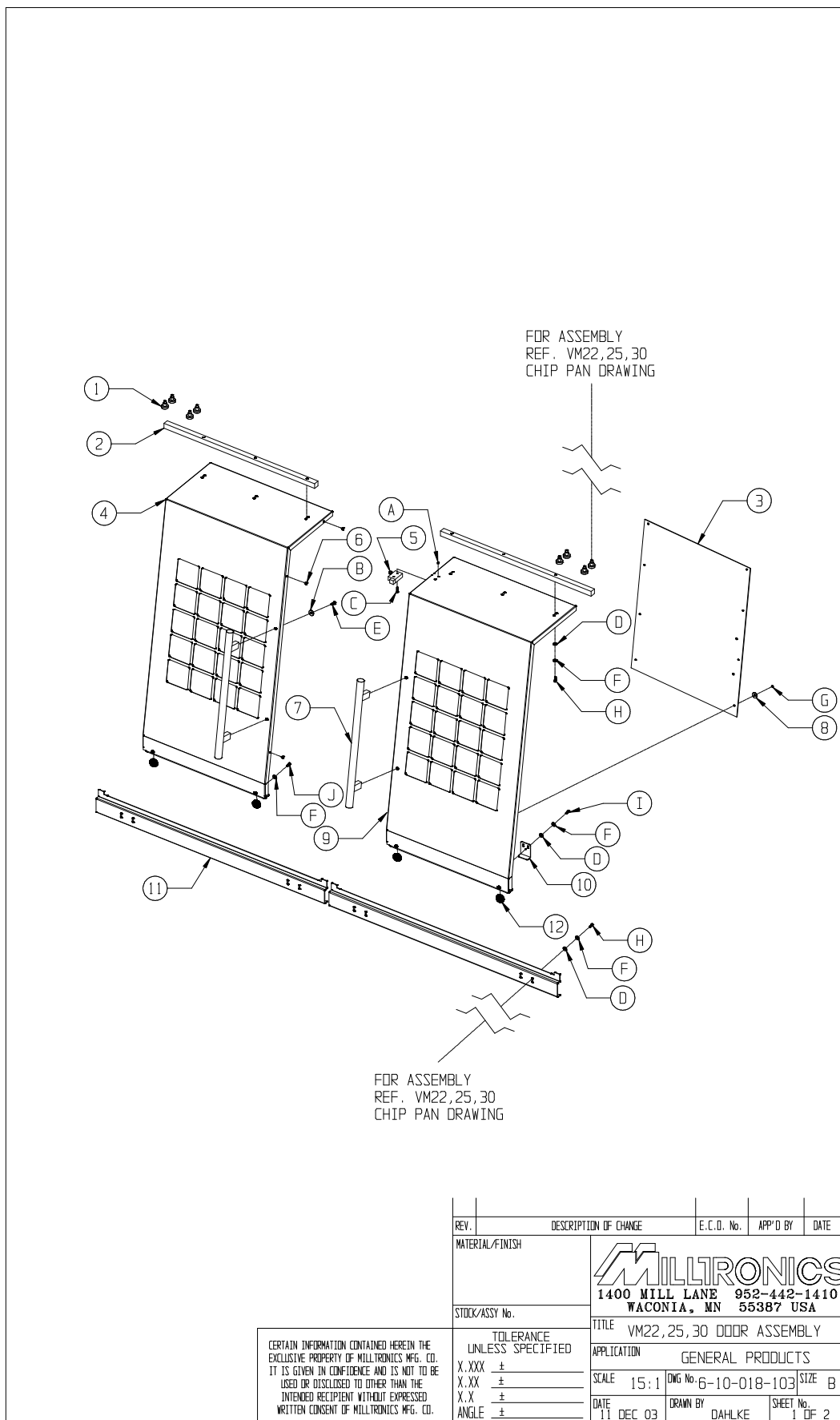
PRODUCT NUMBER	60049-4
SPECIFIC GRAVITY, 60/60F	0.88
POUR POINT, °C (°F), max.	-9 (16)
FLASH POINT, °C (°F), min.	244 (472)
VISCOSITY	
cST AT 40°C	68
cST AT 100°C	8.6
SUS AT 100°F	356
SUS AT 210°F	55
VISCOSITY INDEX	97
ISO VG	68
COLOR, ASTM D 1500	4
FZG, PASS STAGES	11
4 BALL WELD, kg, ASTM D 2783	160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

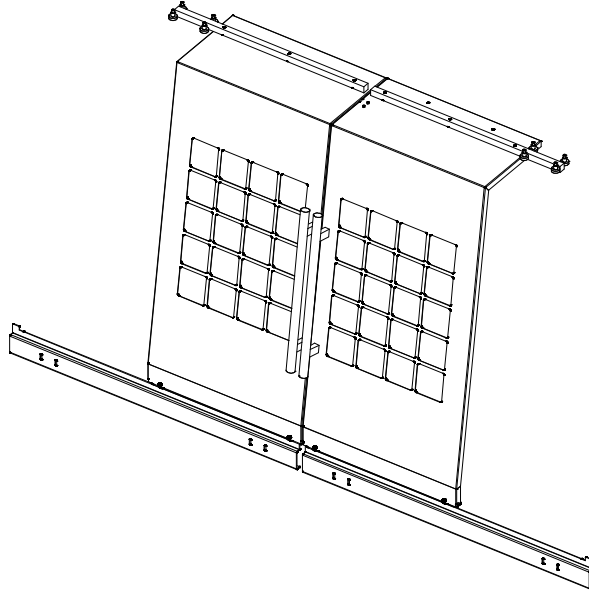
MOBIL DTE 24

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	±			
X.X	±	DATE 03 MAY 99	DRAWN BY DAHLKE	SHEET NO. 2 OF 2
ANGLE	±			

Chip Pan Door Assembly





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

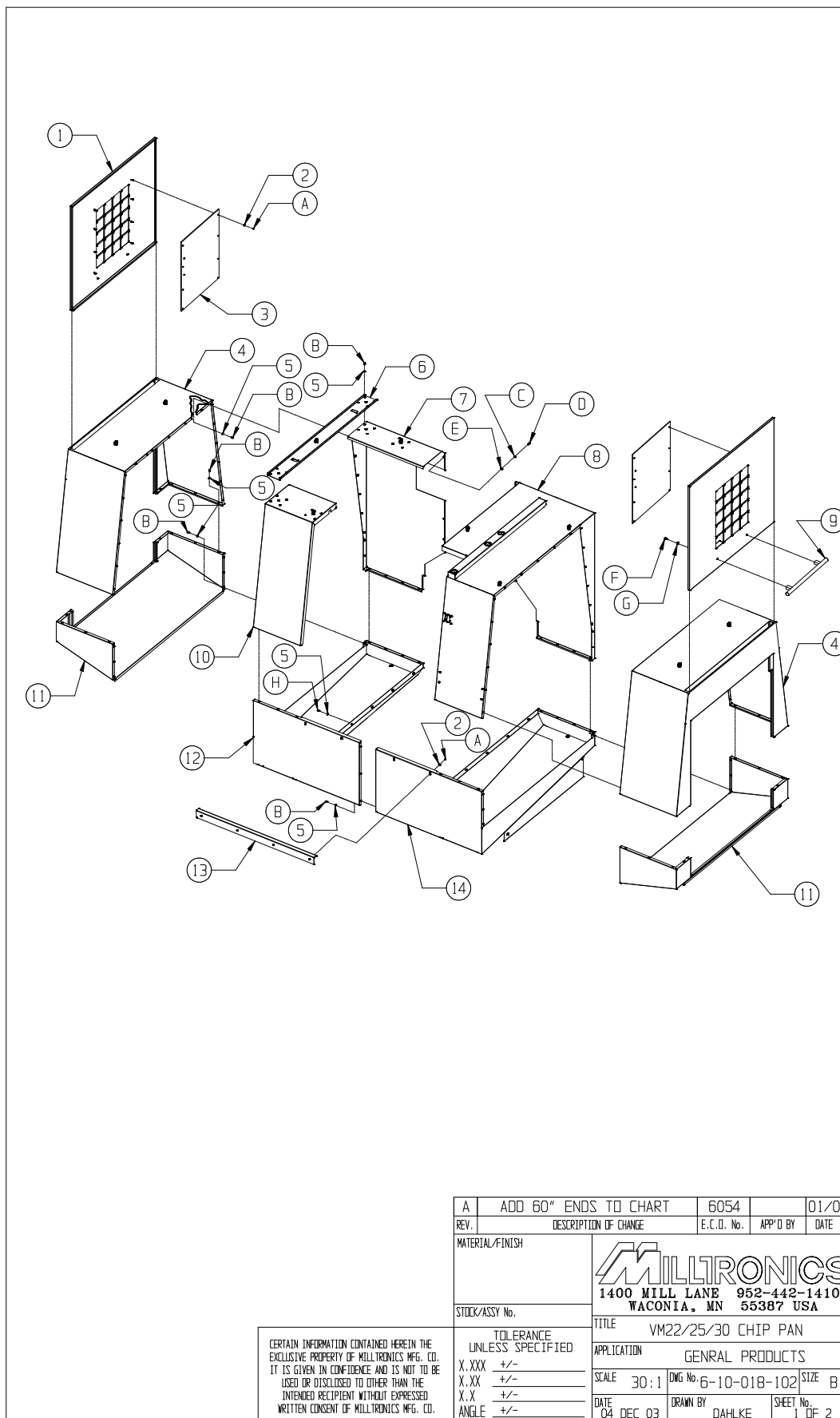
No.	QTY	DESCRIPTION
A	2	M4 NYLOCK NUT
B	4	M8 FLAT WASHER
C	2	M4-.7 x 30mm BHCS
D	26	M6 FLAT WASHER
E	4	M8-1.25 x 20mm BHCS
F	30	M6 LOCK WASHER
G	16	M5 NYLOCK NUT
H	14	M6-1 x 20mm SHCS
I	12	M6-1 x 16mm BHCS
J	4	M6-1 x 20mm BHCS

REV.	DESCRIPTION OF CHANGE	E.C.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 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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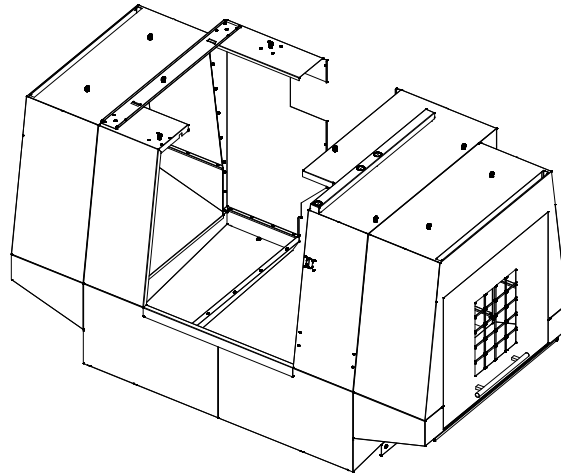
TOLERANCE UNLESS SPECIFIED
X.XXX ±
X.XX ±
X.X ±
ANGLE ±

Chip Pan Assembly



A	ADD 60" ENDS TO CHART	6054		01/06
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 VM22/25/30 CHIP PAN		
X .XXX +/-		APPLICATION GENRAL PRODUCTS		
X .XX +/-		SCALE 30:1		DWG No. 6-10-018-102
X .X +/-				SIZE B
ANGLE +/-		DATE 04 DEC 03		DRAWN BY DAHLKE
				SHEET No. 1 OF 2

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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

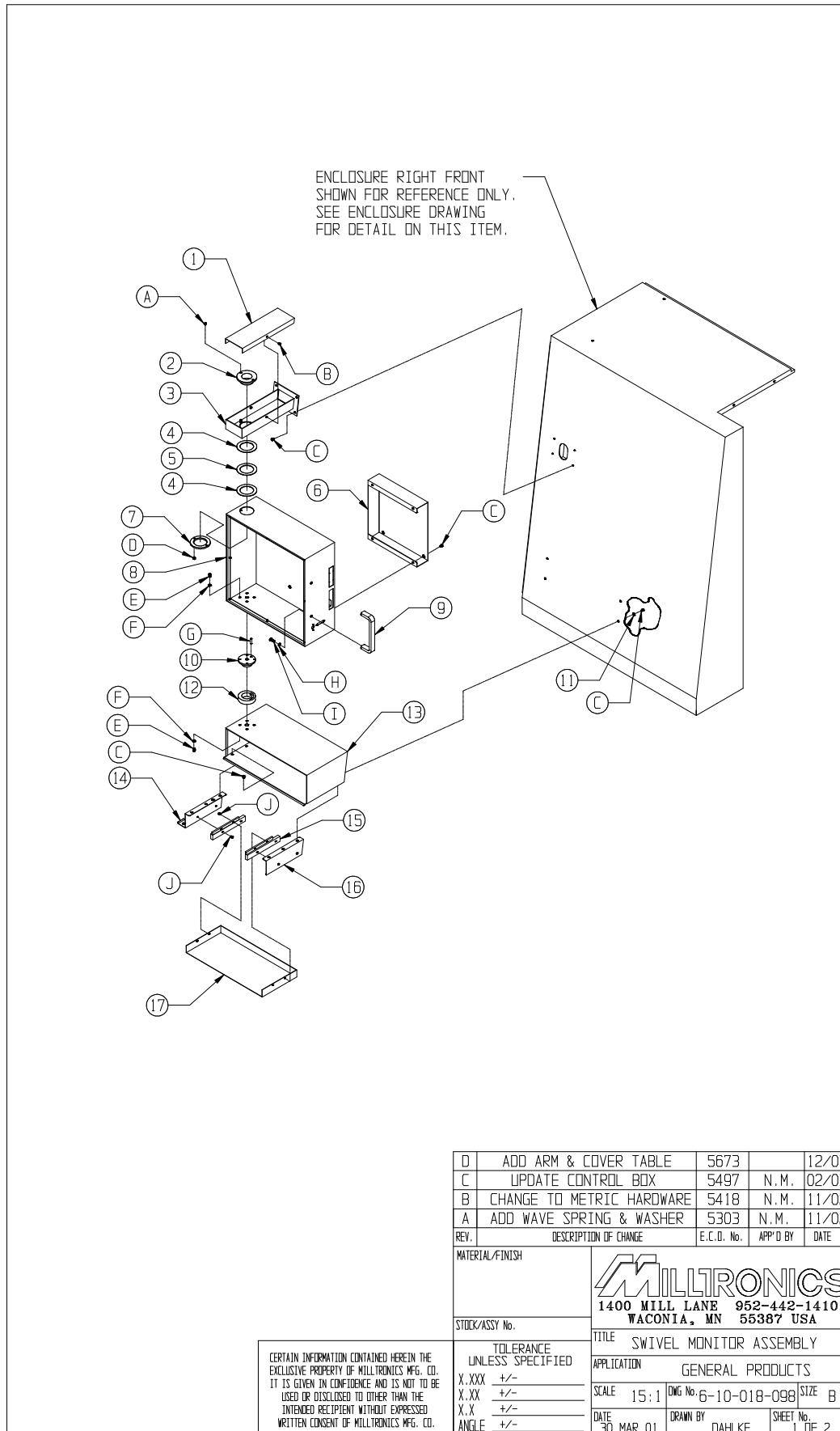
No.	VM22	VM25/30 (50"X)	VM25/30 (60"X)			
4	MP6-235	MP-744	TOP	LEFT	RIGHT	END
			MP7-88	MP7-90	MP7-91	MP7-92
11	MP6-236	MP-743	MP7-89			

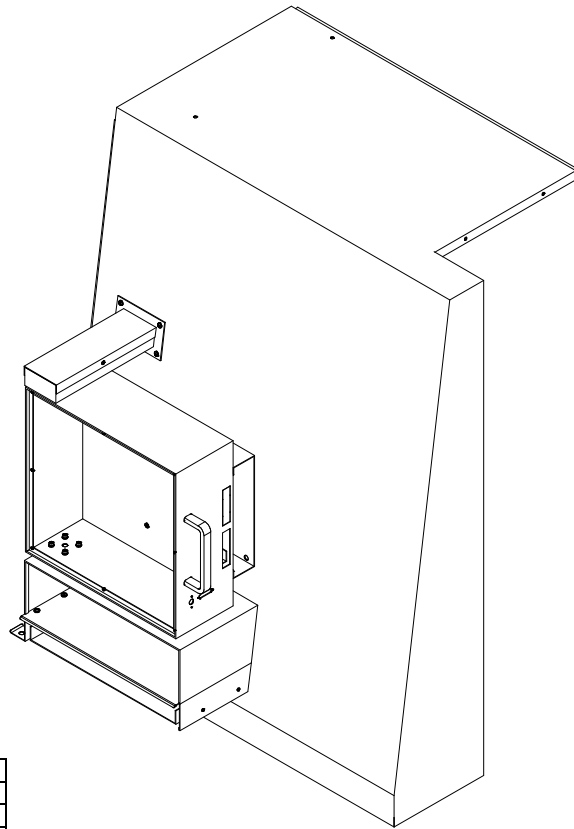
A	ADD 60" ENDS TO CHART	6054		01/06
REV.	DESCRIPTION OF CHANGE	E.C.O. No.	APP'D BY	DATE
MATERIAL/FINISH		 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.		TITLE VM22/25/30 CHIP PAN		
TOLERANCE UNLESS SPECIFIED		APPLICATION GENRAL PRODUCTS		
X .XXX +/-		SCALE 30:1 DWG No. 6-10-018-102 SIZE B		
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





Not Shown		
Qty	Part #	Description
1	MA-495	Cycle light
2	MA-494	LED work light

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	#01018838	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

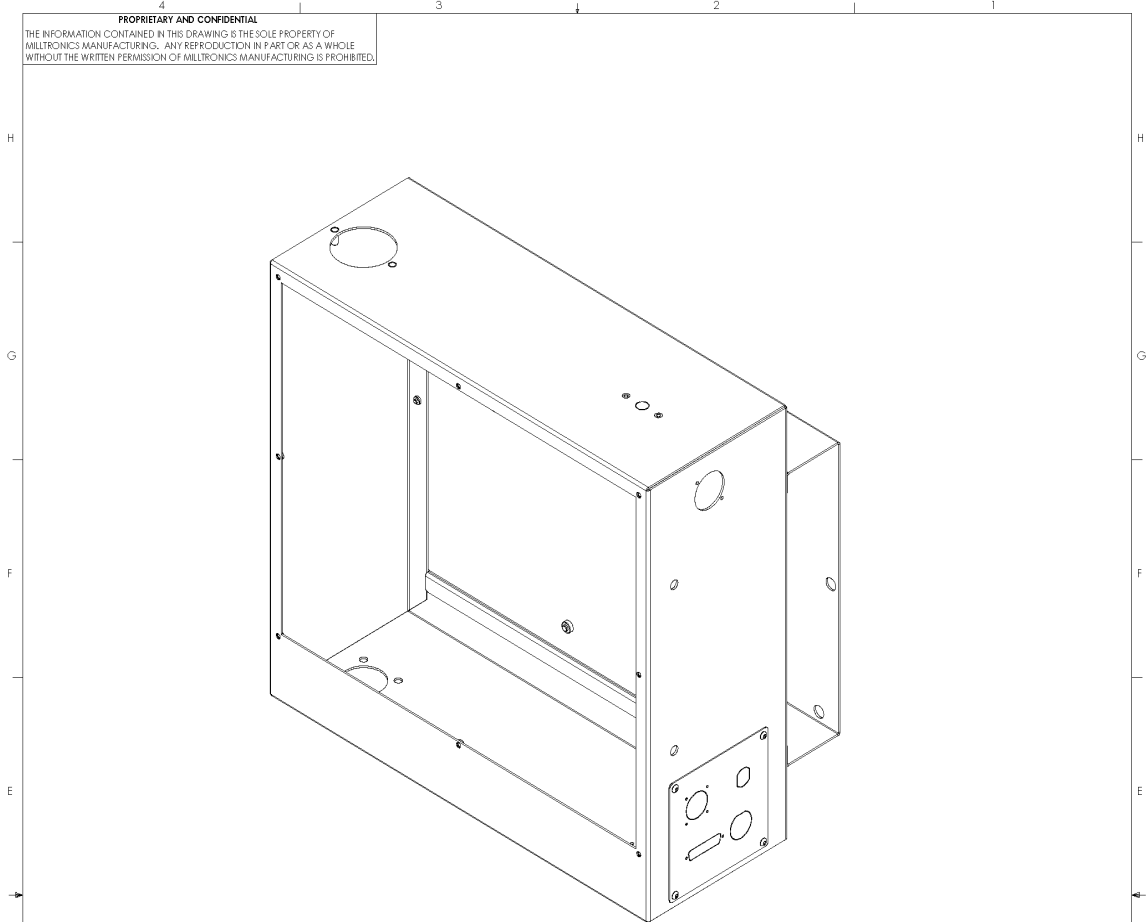
SWIVEL BOX TABLE	
No.	
8	#01018838

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.O. No.	APP'D BY	DATE
MATERIAL/FINISH				
STOCK/ASSY No.				
 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

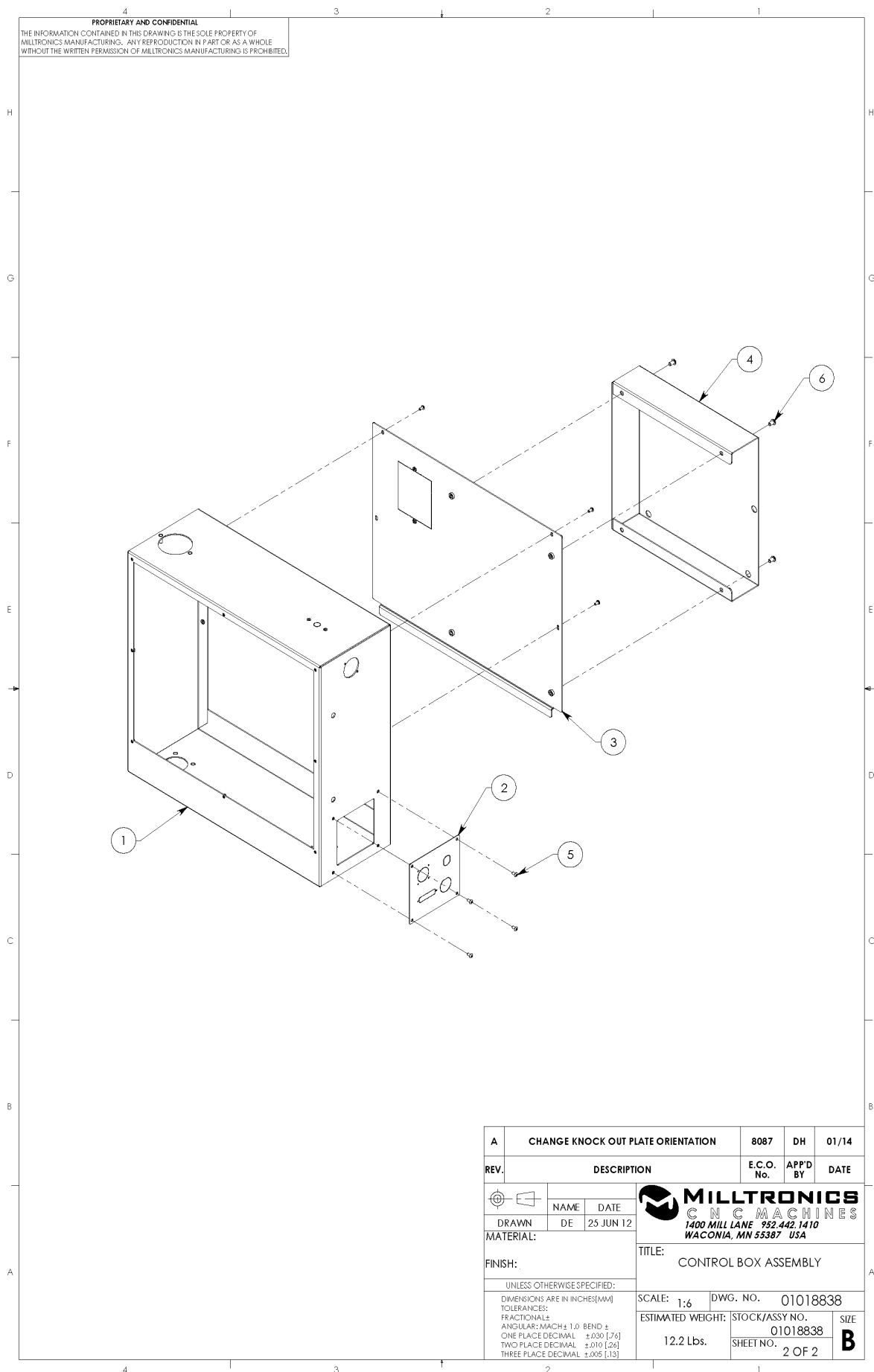
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Control Box Assembly #01018838



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	01018836	CONTROL BOX - ONE PIECE CONSTRUCTION
2	1	01018855	CONTROL BOX ACCESS PANEL WITH USB
3	1	01040054	CONTROL PANEL- BACK COVER
4	1	MP00653	3 RING BINDER POCKET-SWIVEL MONITOR
5	8	BHCS M4-0.7 x 8	M4-0.7 x 8mm BHCS
6	4	BHCS M6-1.0 x 10	M6-1.0 x 10mm BHCS

A	CHANGE KNOCK OUT PLATE ORIENTATION	8087	DH	01/14
REV.	DESCRIPTION	E.C.O. No.	APP'D BY	DATE
	NAME	DATE		
DRAWN	DE	25 JUN 12	1400 MILL LANE 952.442.1410 WACONIA, MN 55387 USA	
MATERIAL:		TITLE:		
FINISH:		CONTROL BOX ASSEMBLY		
UNLESS OTHERWISE SPECIFIED:		SCALE: 1:4 DWG. NO. 01018838		
DIMENSIONS ARE IN INCHES[MM]		ESTIMATED WEIGHT: 12.2 Lbs.		
TOLERANCES:		STOCK/ASSY NO. 01018838		
FRACTIONAL ± 1/16 BEND ± 1/16		SHEET NO. 1 OF 2		
ANGULAR: MACH ± 1.0 BEND ± 1.0		SIZE B		
ONE PLACE DECIMAL ± 0.03 [.76]				
TWO PLACE DECIMAL ± 0.01 [.25]				
THREE PLACE DECIMAL ± 0.005 [.13]				



PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	2	MP6-251	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

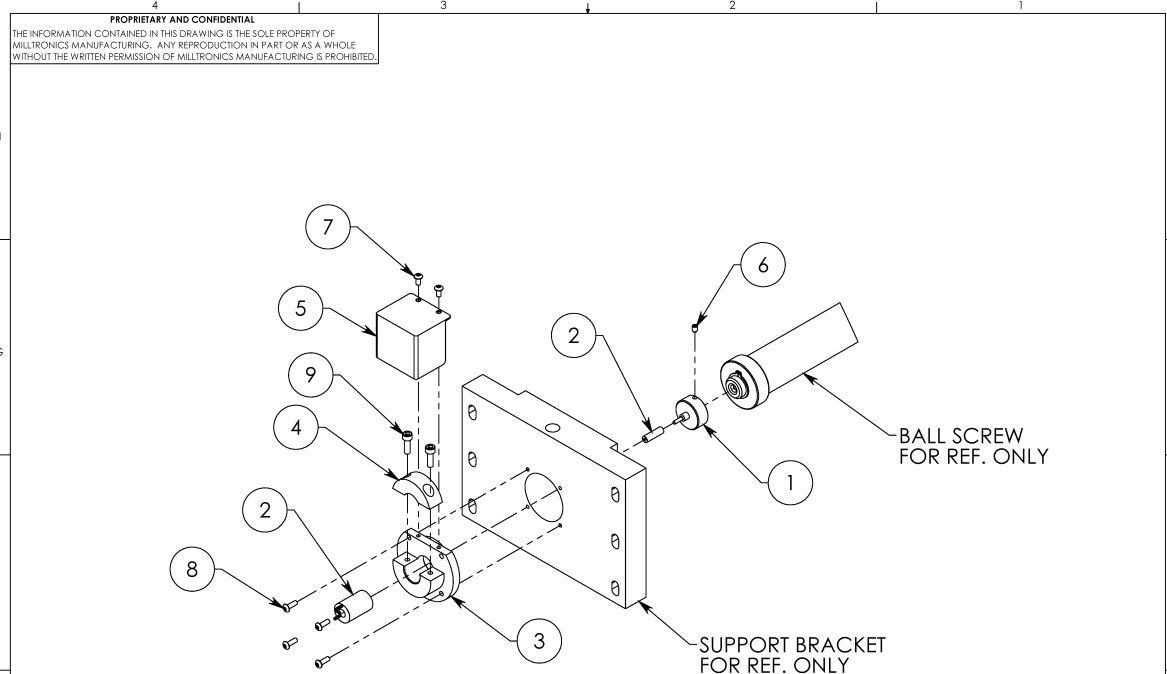
HARDWARE LIST

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

D	CHANGE AUGER BOLTS	6754		03/05
C	CHANGE AUGER BOLTS SIZE	6752	N.M.	03/05
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 +/-		DATE .01 DEC 03	DRAWN BY DAHI KE SHEET No. 1 OF 1
X.X +/-			
ANGLE +/-			

Thermal Compensation Assembly



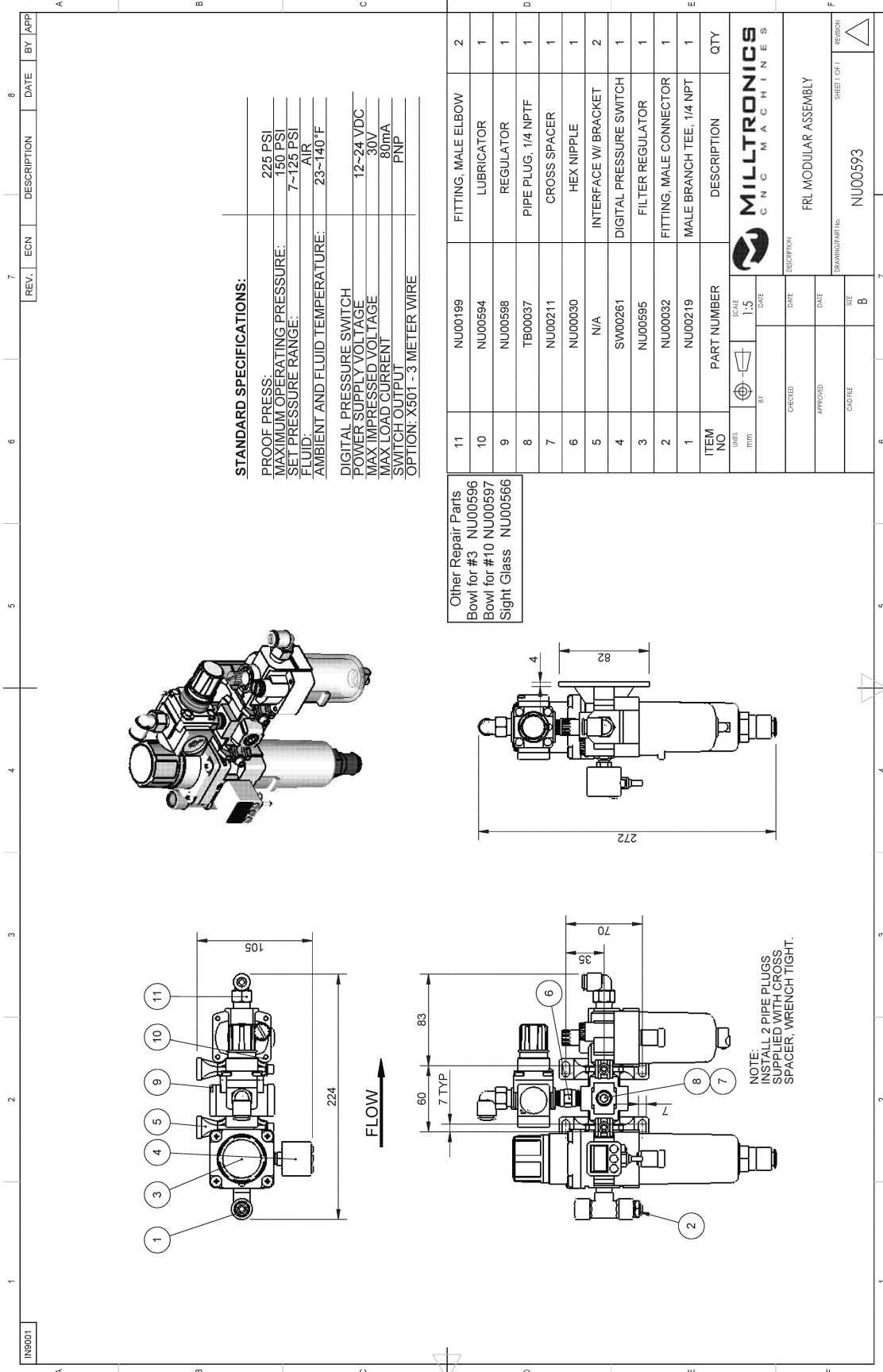
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	MP00858	THERMAL BALL SCREW CAP
2	1	PR00043	THERMAL COMP SENSOR
3	1	MP00848	THERMAL SENSOR RING
4	1	MP00849	THERMAL SENSOR - CLAMP
5	1	MP00886	X AXIS THERMAL COVER
6	1	SHSST 10-32 x .188	10/32 x 3/16 BRASS TIPPED SHSS
7	2	BHCS M4-0.7 x 8	M4-0.7 x 8mm BHCS
8	4	BHCS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

- ITEMS 3 & 4 ARE REVERSED ON SOME AXES
- ITEMS 5 & 7 ARE NOT USED ON SOME AXES

		MILLTRONICS CNC MACHINES 1400 MILL LANE 552.442.1410 WACONIA, MN 55387 USA	
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



Retention Knob Chart

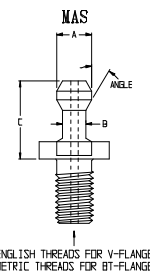
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES

NAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

DIMENSIONS				MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTINE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
59	39	17	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, VM14, VM20, VM22, VM25, VM30, VM3224, VM4224, VMHC20, VMHC35, 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	KENAMETAL	VALNITE	LYNDEX
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE	PART No.	PART No.	PART No.	PART No.
.581	39	138	60°	BR50, BR60, BR80, MM18, RH20, RH30, RH33, RH35, RW15, V016, VMC10, VMC22, VMC35, VMC30, VMC2016, VMC15, VMC16, VMC20, VMC22, VMC25, VMC30,	BR50, BR60, BR80, MC20, MC35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VMC10, VMC22, VMC35, VMC30, VMC24, VMC20, MC10, MC35, TT24, TT40, TT60, TT80, VMC22, VMC25, VMC30,	RB4M-0002	RK31113A	PT-444-60	B40-6000



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

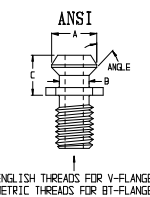
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES

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°	HBH110, RH330P, RH35P, TT40XP, VM220P, VM25XP, VM30XP, TT40XP, VM22XP, VM25XP, VM30XP,	RCE-0001	DWG RK11144	N/A	C50-STD

ANSI RETENTION KNOBS STYLE BT-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°	HBM10, RH33XP, RH35P, T140XP, VM22XP, VM25XP, VM30XP, T1440XP, VMC22XP, VMC25XP, VMC30P.	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	KENNAMETAL	VALENTE	LYNDEX
A	B	C	ANGLE	60mm SPINDLE										PART No.	PART No.	PART No.	PART No.
				70mm SPINDLE													
.74	.49	.64	45°	SELECTION NOT AVAILABLE										RC4E-0001	RK11122	PT-475C	C40-STD
				BR50, BR60, BR80, HXC0, HXC5, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM324, VM424, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30													

ANSI RETENTION KNOBS STYLE BT-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				
.74	.49	.75	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HMC0, HMC2, HMC35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, VM420, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30	RS4M-0115	RK11125A	N/A	B40-FADALD

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

DIMENSIONS				MILLTRENICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
.59	.39	1.27	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HW20, HW35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VW16, VM20, VM22, VK25, VM30, VK3224, VM4224, HMC20, HMC35, TTC24, TTC40, TTC60, TTC80, VM16, VM20, VM22, VM25, VM30	RB4E-0001	RC11314	PT-532-45	C40-4500

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

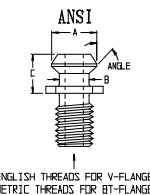
DIMENSIONS				MILLTRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
59	39	1	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HW20, HW35, RH20, RH30, RH35, RH39, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, VM20, VM35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30	RB4M-0001	RK3113	PT-444-45	B40-4500

DIN 89872 RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

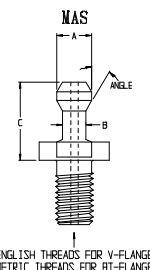
DIMENSIONS				MILL/TRONICS MACHINE								COMMAND	KENNAMETAL	VALENITE	LYNDEX
A	B	C	ANGLE	60mm SPINDLE				70mm SPINDLE				PART No.	PART No.	PART No.	PART No.
.75	.55	1.02	75°	SELECTION NOT AVAILABLE				BR50, BR60, BR80, HM20, HM35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM32, VM42, VM44, VM20, HM35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30	RS4E-014-C		DWG RK71125	N/A	C40-1500		

DIN 69872 RETENTION KNOBS STYLE DIN-FLANGE 40 TAPER

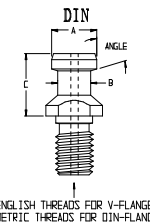
DIMENSIONS				MILL/TURNICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
.75	.55	1.02	75°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH35, RH45, TT24, TT40, TT60, TT80, WM16, VM20, VM22, VK25, VM30, VK324, VM424, HKM20, HKM35, TT124, TT140, TT160, TT180, VM16, VM20, VM22, VM25, VM30	RS4M-014-C	DWG RK71124	N/A	B40-1500



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



ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR RT-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, RH3XP 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.D. NO.	APP'D BY	DATE
 MILITRONICS 2480 WELLS LANE WACHTON, IA 50485-1410 (515) 281-1111 FAX (515) 281-1410		TITLE RETENTION KNOB CHART SCALE 1.75:1 ENG No. 6-11-018-054 SIZE B		
APPLICATION		GENERAL PRODUCTS		DATE 30 APR 99 DRAWN BY DAHLKE SHEET NO. 1 OF 1

