



HM35 A

Mechanical & Parts Manual

Rev 1
9-21-09
1-31-11

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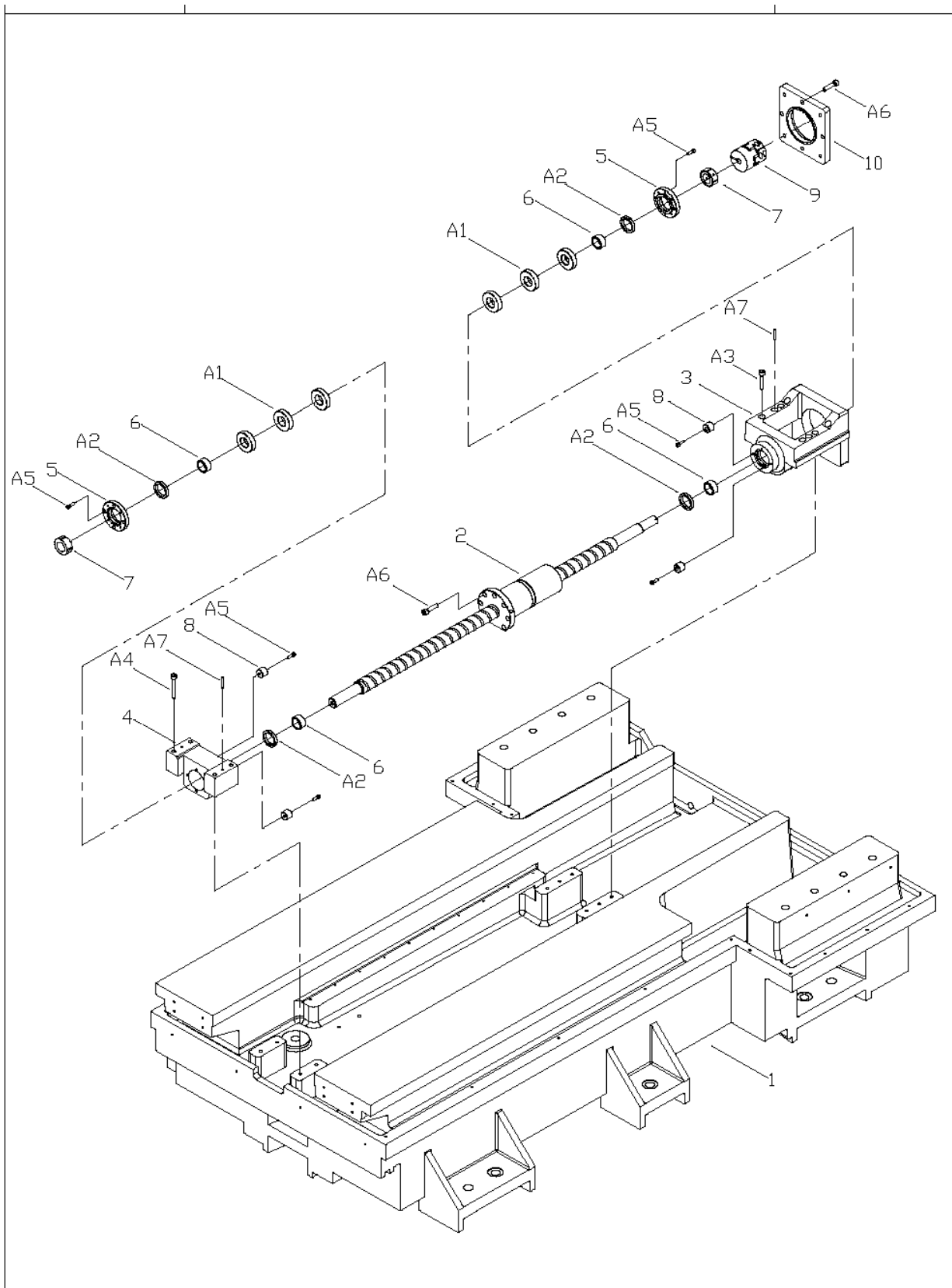
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Pneumatic air over oil intensifier MPS-717
Pneumatic air over oil booster MPS-718

Manual Discrepancy Sheet

1. Machine uses two position blocked center valves for ATC in/out and ATC door open/close.
2. 1-31-11 added spindle belt #s.

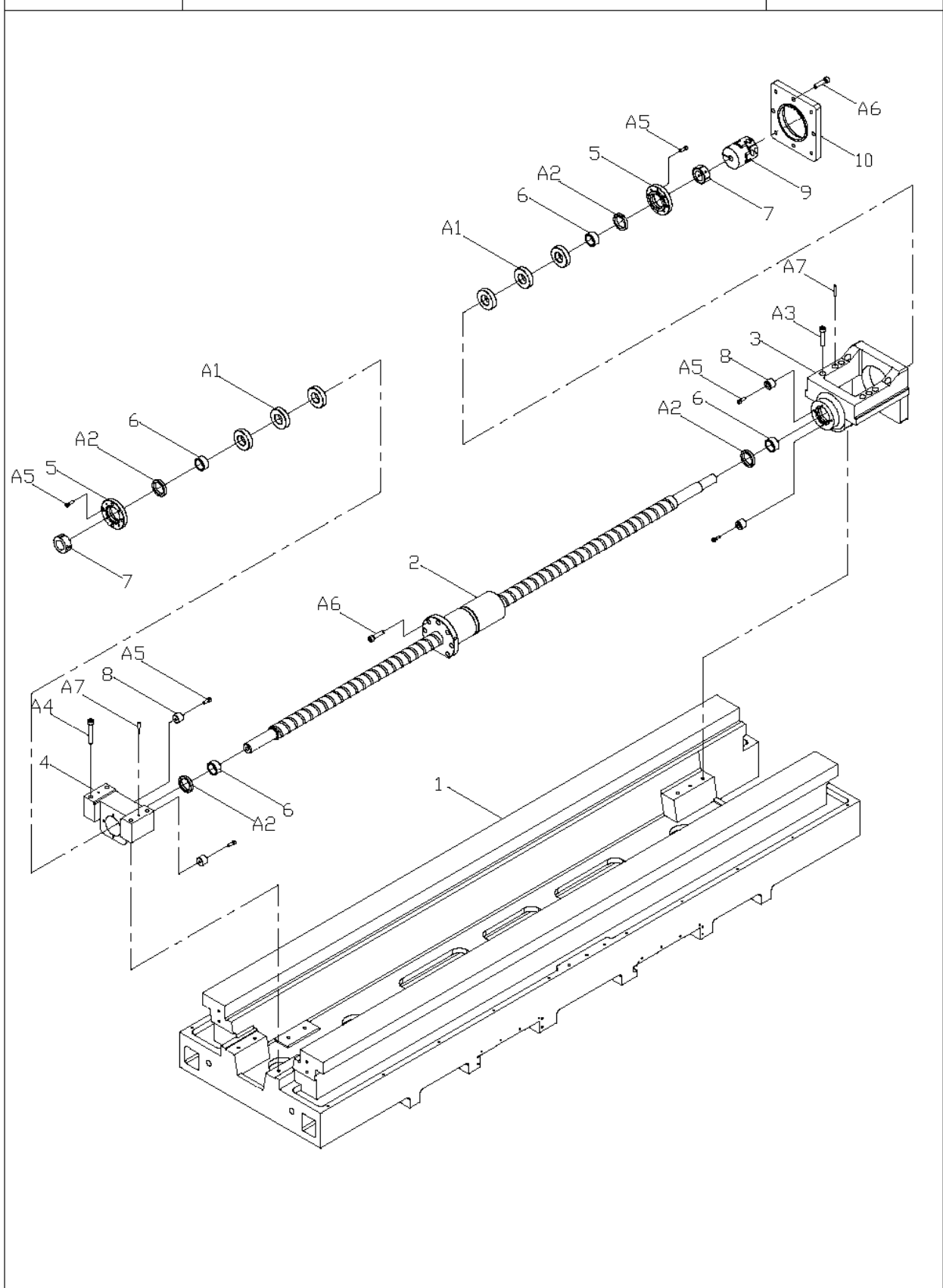
Machine Base (Z-Axis) Assembly



Z-axis Assembly

Item	Part No.	Description	Q'ty	Specification
1		Base	1	
2	43130-52001	Ballscrew	1	
3		Nut Bracket	1	
4		Bearing bracket Housing	1	MPH-137
5	43130-52004	Bearing cap	2	MPH-138
6	43130-52005	Spacer	3	MPH-140
7		Nut	1	
8	43110-51005	Nut	2	MPH-139
9	43130-52011	Coupling	1	
10	43130-52008	Motor mounting plate	1	
A1		Bearing	2	
A2		Oil seal	4	
A3		Hex. Socket screw	2	
A4		Hex. Socket screw	4	
A5		Hex. Socket screw	4	
A6		Screw	14	
A7			8	

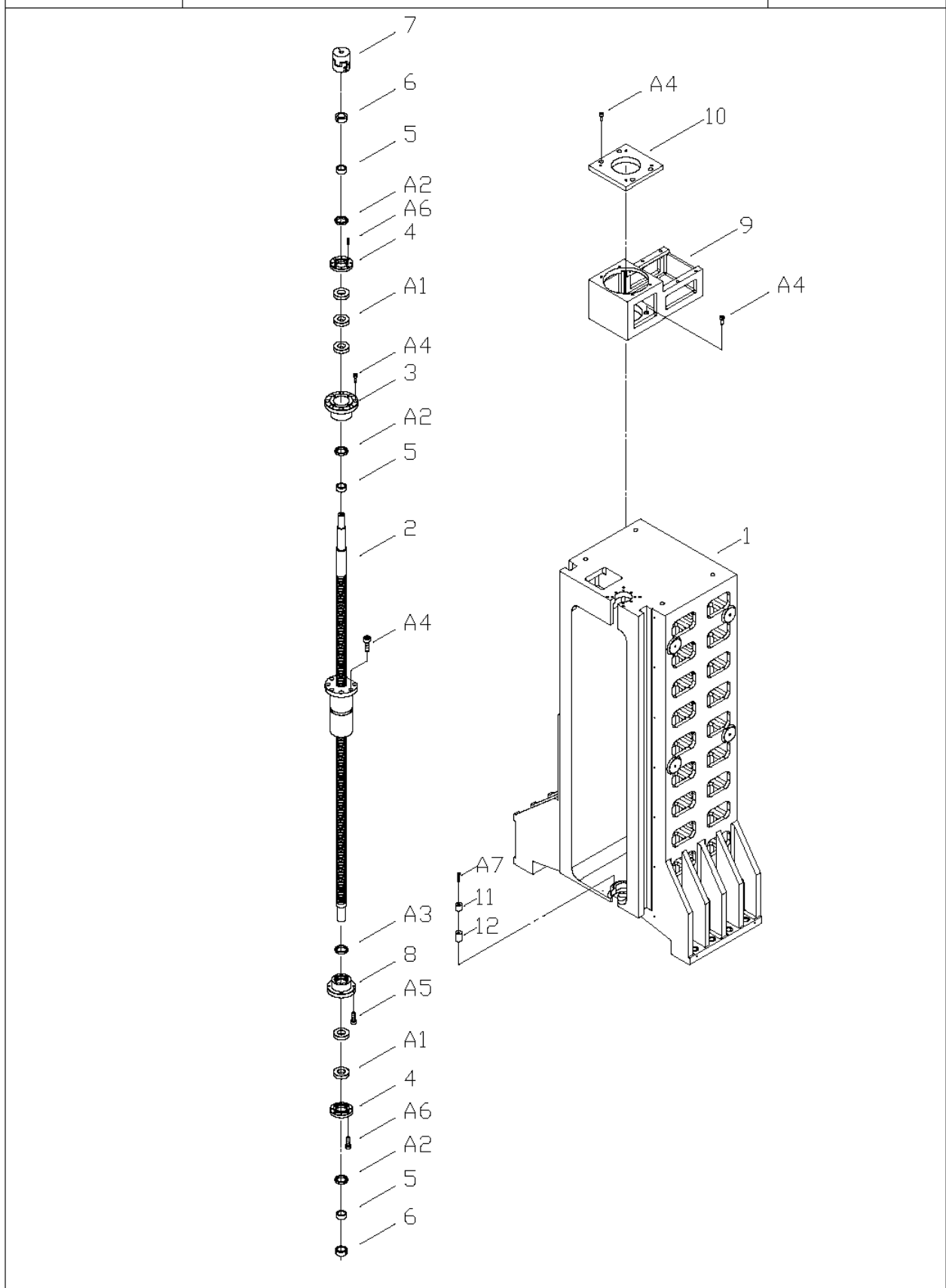
Machine Table/Saddle (X-Axis) Assembly



X-axis Assembly

Item	Part No.	Description	Q'ty	Specification
1		Saddle	1	
2	43110-51501	Ballscrew	1	MPH-23
3		Nut bracket	1	
4		Bearing bracket	1	
5	43130-52004	Bearing cap	2	MPH-138
6	43130-52005	Spacer	3	MPH-140
7		Nut	1	
8		Nut	2	
9	43130-52011	Coupling	1	MA-238
10	43130-52008	Motor mounting plate	1	
A1		Bearing	2	
A2		Oil seal	4	
A3		Hex. Socket screw	2	
A4		Hex. Socket screw	4	
A5		Hex. Socket screw	4	
A6		Screw	14	
A7			8	

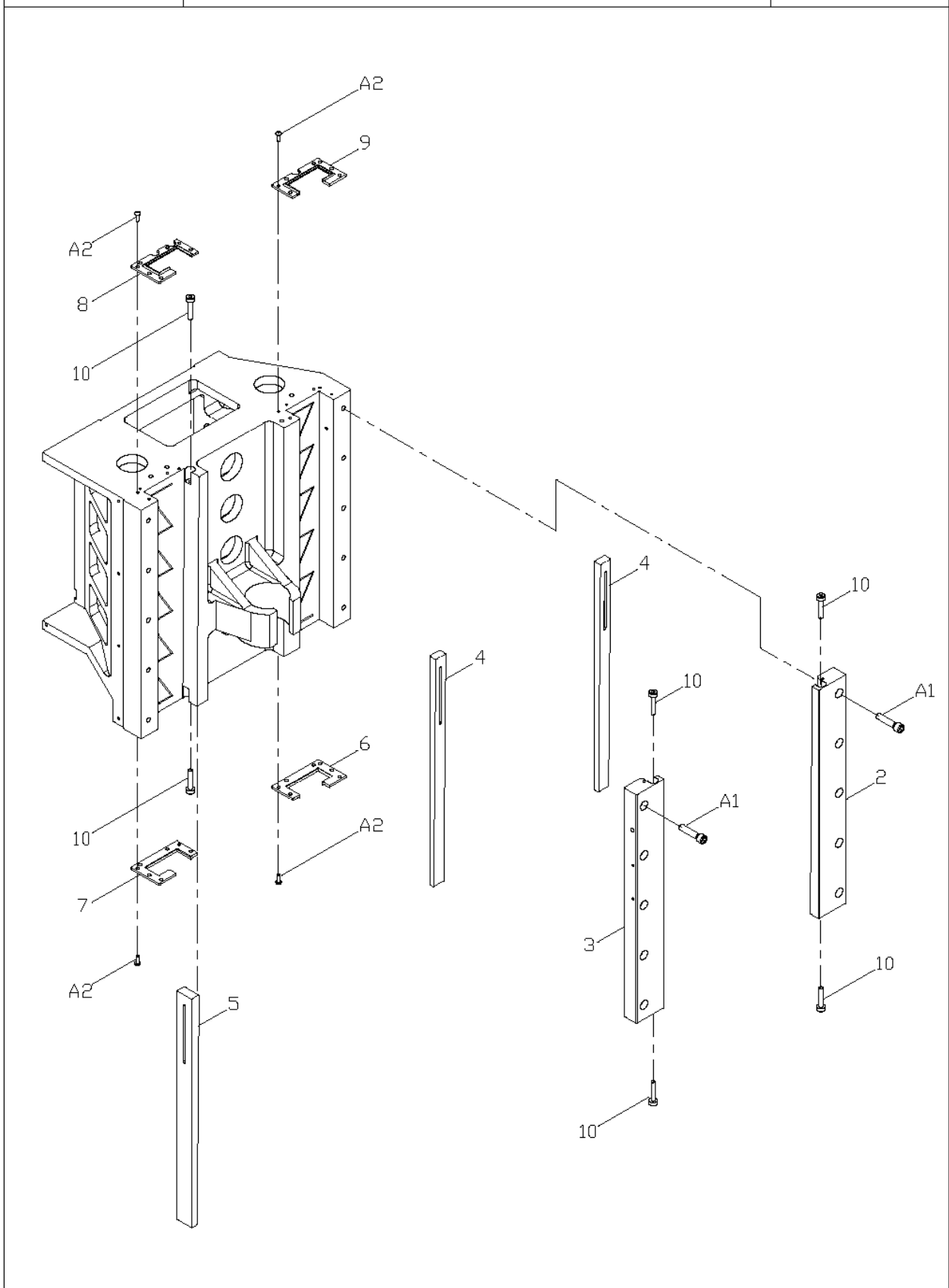
Machine Column (Y-Axis) Assembly



Y-axis Assembly

Item	Parts no.	Description	Q'ty	Specification
1	43130-10001	Column	1	
2	43130-52001	Ballscrew MPH-121	1	Dia.40mm P12
3	43130-52002	Bearing housing	1	MPH-137
4	43130-52004	Bearing cap	2	MPH-138
5	43130-52005	Spacer	3	MPH-140
6	43116-51005	Nut	2	YSF 30XP1.5
7	43130-52011	Coupling	1	MA-238
8	43130-52010	Bearing housing	1	
9	43130-52007	Motor housing	1	
10	43130-52008	Motor mounting plate	1	
11	43061-51006	Hard stop	1	
12	43130-52006	Bracket	1	
A1	BG-47	Bearing	5	30TAC 62B
A2	MPH-135	Oil seal	3	38x50x8
A3	MPH-257	Oil seal	1	40x50x8
A4		Hex. Socket screw	23	M10x25L
A5		Hex. Socket screw	4	M8x25L
A6	MPH-134	Hex. Socket screw	8	M6x20L
A7		Hex. Socket screw	1	M6x50L

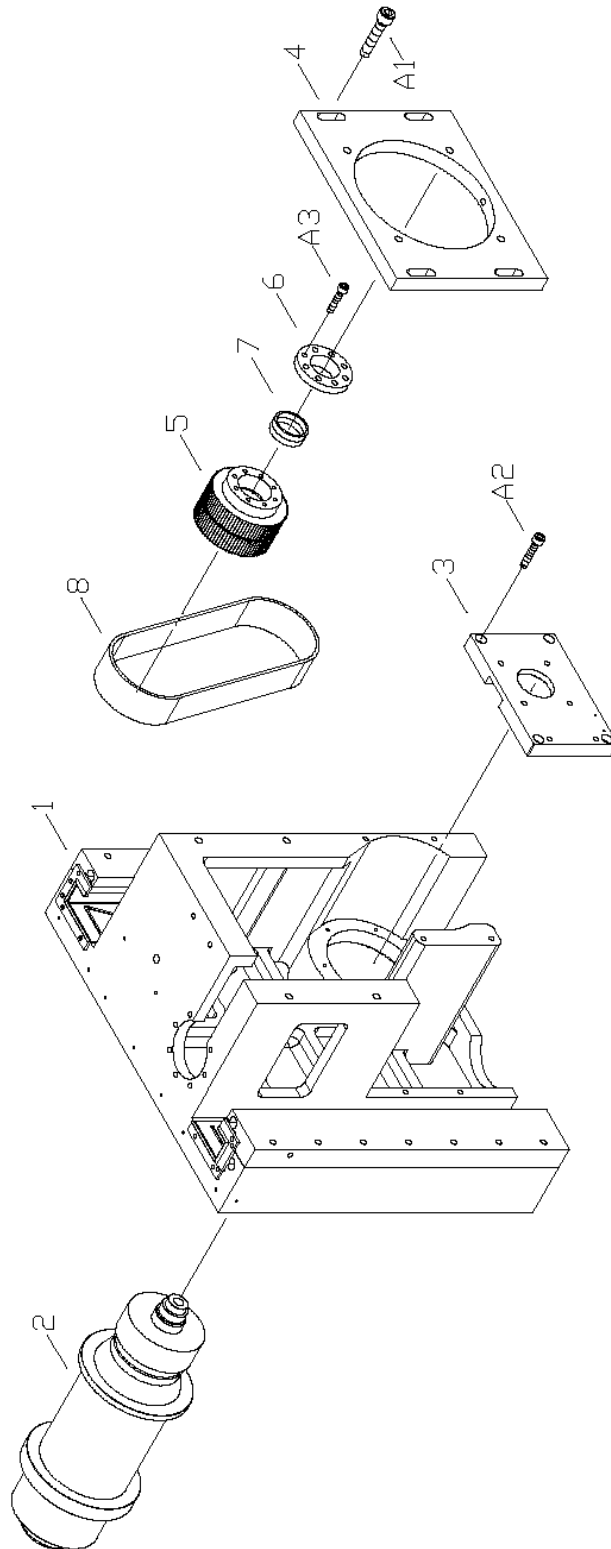
Machine Head Assembly



Head Assembly

Item	Parts no.	Description	Q'ty	Specification
1	43130-00001	Head	1	
2	43130-00011	Clamping plate - left	1	
3	43130-00013	Clamping plate - right	1	
4	43130-00012	Gib	2	
5	43130-00014	Gib	1	
6	43130-00015	Wiper	1	MPH-186
7	43130-00016	Wiper	1	MPH-187
8	43130-00017	Wiper	1	MPH-188
9	43130-00018	Wiper	1	MPH-189
A1		Hex. Socket screw	14	M12x75L
A2	MPS-604	Gib screw	6	M8
A3		Screw	20	M6x16L

Spindle Assembly



Spindle Assembly

Item	Parts no.	Description	Q'ty	Specification
1	43130-00001	Head	1	
2	43130-03001	Spindle	1	
3	43130-03010	Cylinder mounting plate	1	
4	43130-05001	Spindle motor mounting plate	1	
5	43130-05002	Spindle motor pulley	1	
6	43130-05003	Clamping ring	1	
7	43130-05004	Clamping ring	2	
8		Spindle belt, W-896	Or	BT-62
		Spindle belt, W-1000		BT-97
A1		Hex. Socket screw	4	M14x35L
A2		Hex. Socket screw	4	M10x35L
A3		Hex. Socket screw	8	M8x25L

HM / HMC35 Spindle Belt and Pulleys		
	Item	Part number
6-8K RPM	Belt	BT-97
	Spindle motor pulley	PY-192
	Spindle pulley, 70mm	PY-191
	Spindle Pulley, 60mm	PY-197
12-15K RPM	Belt	BT-97
	Spindle motor pulley	PY-188
	Spindle pulley, 70mm	PY-190
	Spindle Pulley, 60mm	PY-189

*Pulley bushings to be selected based on motor size.

Table Assembly

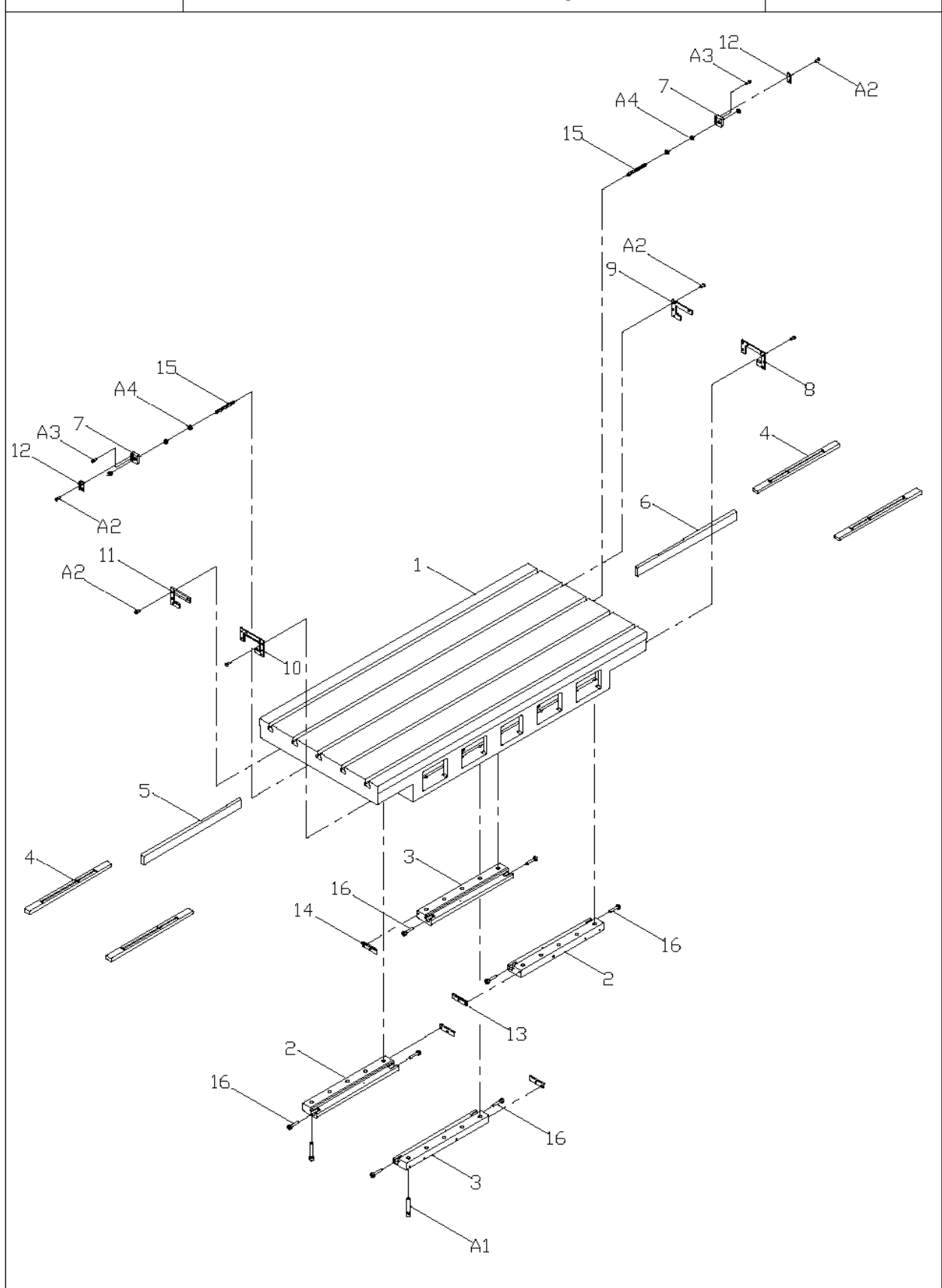
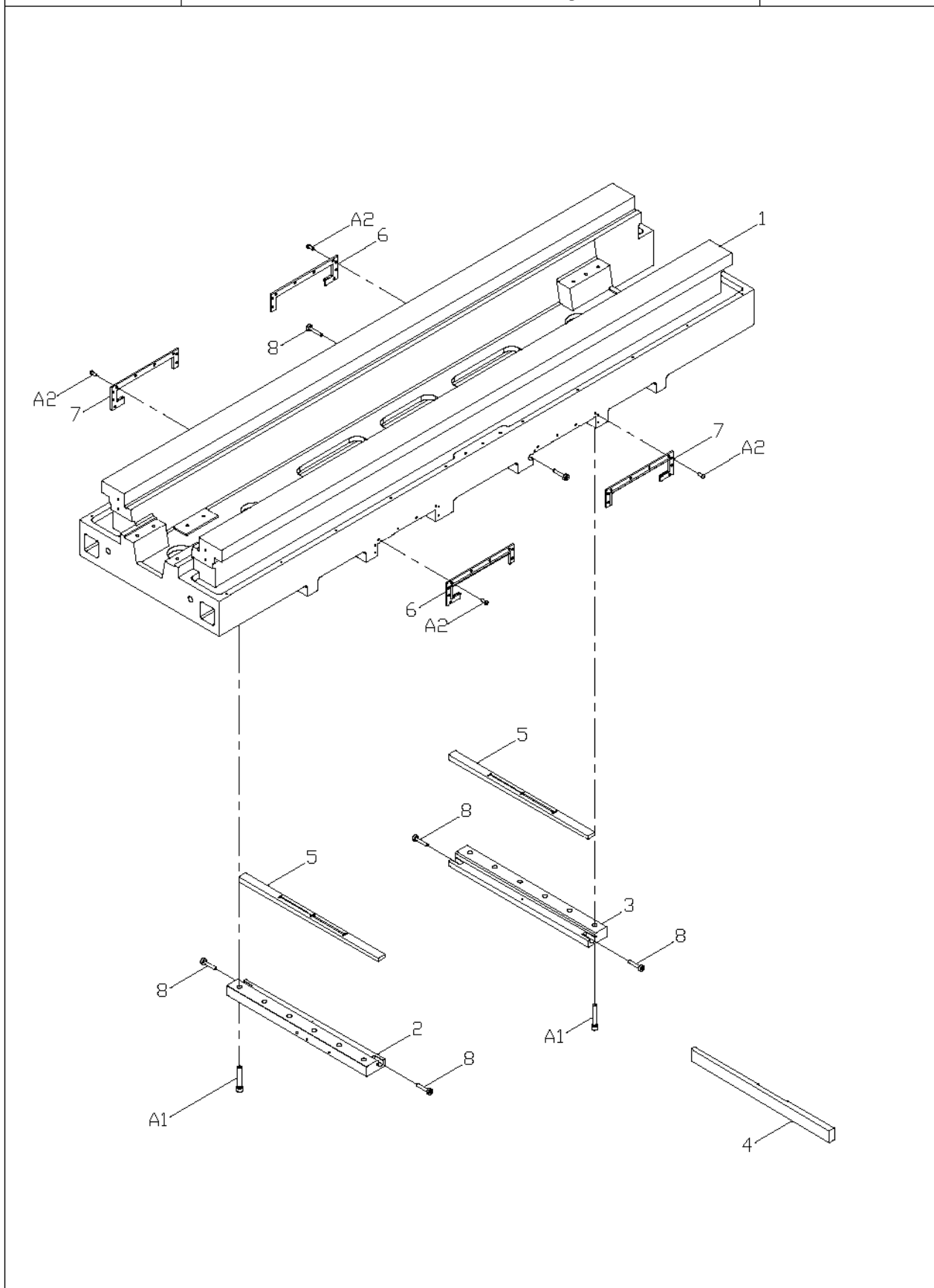


Table Assembly

Item	Part No.	Description	Q'ty	Specification
1		Tale	1	
2		Clamping plate	1	
3		Clamping plate	1	
4		Gib	4	
5		Gib	1	
6		Gib	1	
7		Adjusting block	2	
8	43130-00015	Wiper	1	MPH-186
9	43130-00017	Wiper	1	MPH-188
10	43130-00015	Wiper	1	MPH-186
11	43130-00017	Wiper	1	MPH-188
12		Wiper	2	
13		Wiper	1	
14		Wiper	1	
15		Screw	2	
16		Gib screw	8	
A1		Hex.Socket screw	10	
A2		Hex.Socket screw	22	
A3		Gib screw	2	
A4		Nut	4	

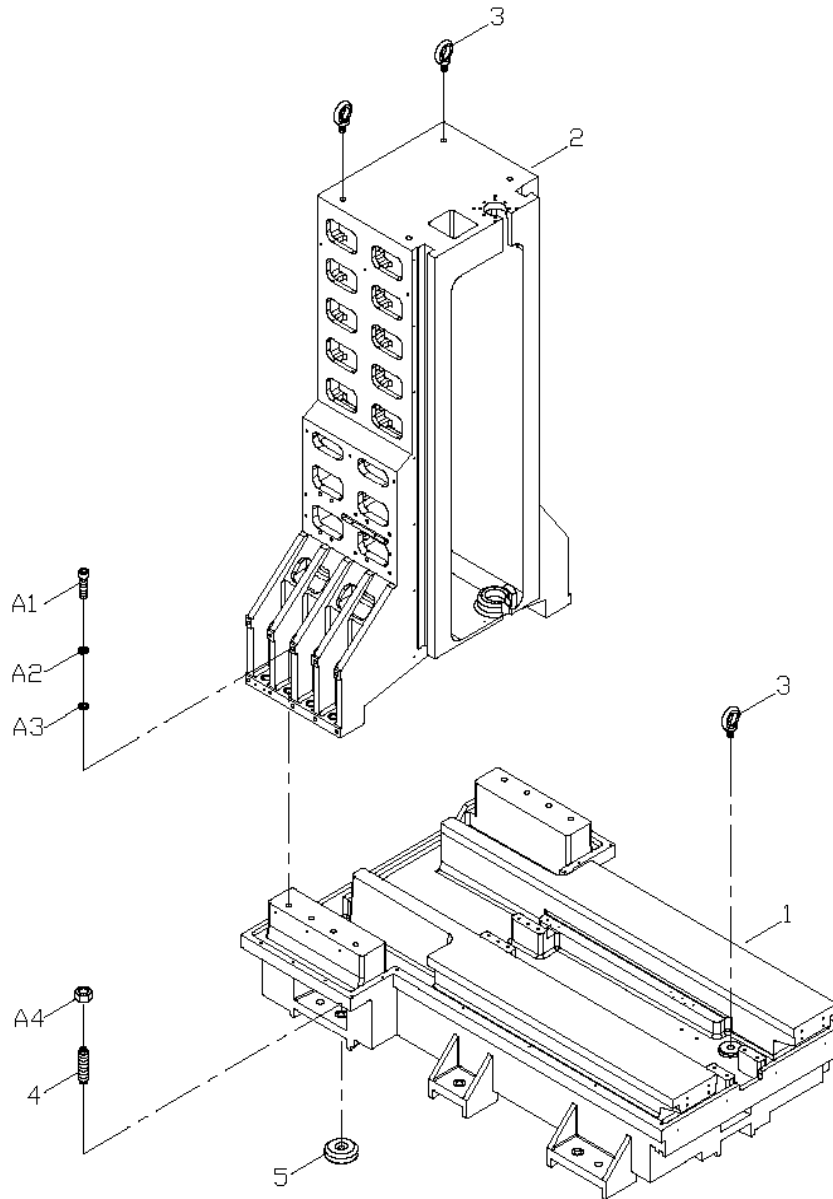
Saddle Assembly



Saddle Assembly

Item	Part No.	Description	Q'ty	Specification
1		Saddle	1	
2		Bracket	1	
3		Bracket	1	
4		Gib	1	
5		Gib	2	
6		Wiper	2	
7		Wiper	2	
8		Hex.Socket screw	6	
A1		Hex.Socket screw	12	
A2		Hex.Socket screw	36	

Base Assembly



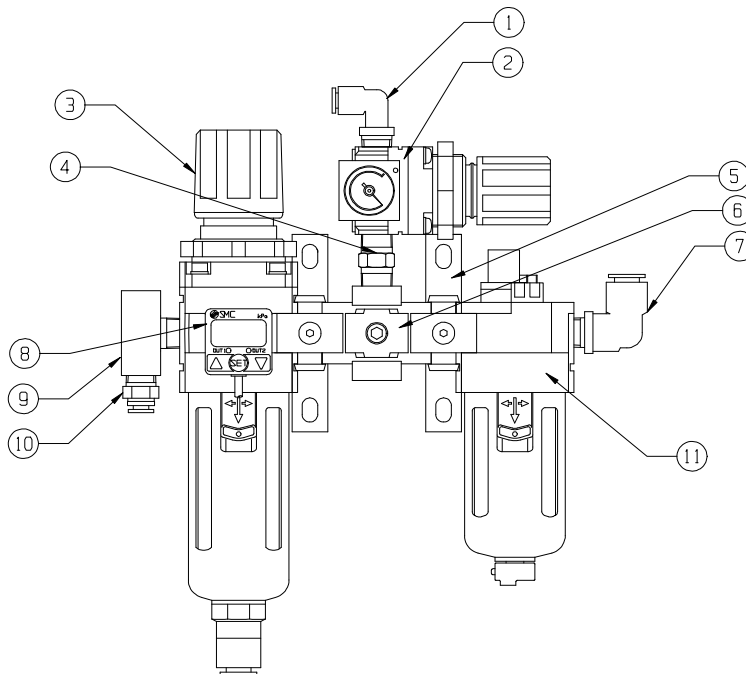
Base Assembly

Item	Part No.	Description	Q'ty	Specification
1		Base	1	
2	43130-10001	Column	1	
3	MP-889	Eye bolt	3	
4		Screw	1	
5	MP-888	Leveling pad	6	
A1		Socket screw	2	
A2		Washer	2	
A3		Washer	2	
A4		Washer	2	

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Air Filter / Regulator / Lubricator Assembly

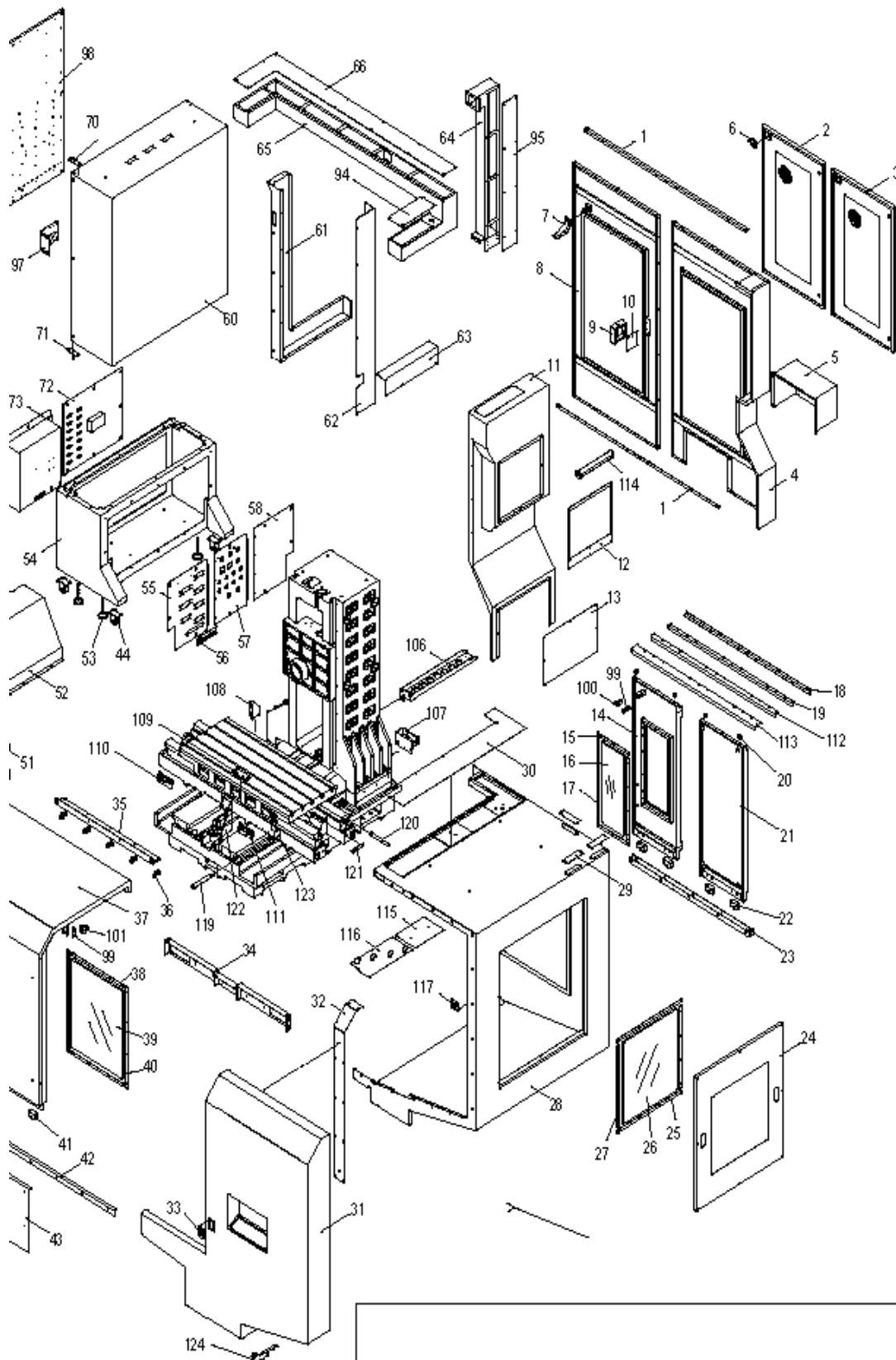
PARTS LIST			
ITEM	QTY	STOCK No.	DESCRIPTION
1	1	NU-199	1/4 NPT 3/8 TUBE SWIVEL ELBOW
2	1	NU-262	LOW PRESSURE REGULATOR W/GAGE
3	1	NU-212	LARGE FILTER/HIGH PRESSURE REGULATOR
4	1	NU-30	1/4 NPT PIPE NIPPLE
5	2	NU-210	LARGE MOUNTING SPACER
6	1	NU-211	LARGE MANIFOLD SPACER
7	1	NU-199	1/4 NPT 3/8 TUBE SWIVEL 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.				
TOLERANCE UNLESS SPECIFIED				
X .XXX	+/-	TITLE NU-417 FRL ASSEMBLY APPLICATION GENERAL PRODUCTS SCALE 3:1 DWG No. 6-10-018-112 SIZE B DATE 14 APR 08 DRAWN BY DAHLKE SHEET NO. 1:1		
X .XX	+/-			
X .X	+/-			
ANGLE	+/-			

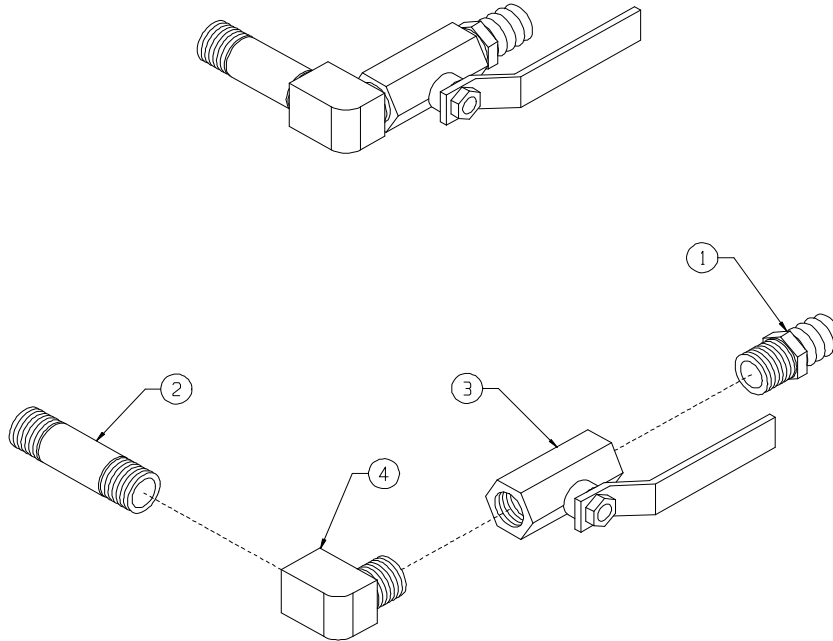
This exploded view diagram illustrates the assembly of a microwave oven. The components are numbered as follows:

- Outer Cabinet and Door:** 24 (Door frame), 25 (Door panel), 26 (Door hinge), 27 (Door latch), 38 (Door panel), 39 (Door hinge), 40 (Door latch), 90 (Cabinet side panel), 41 (Cabinet side panel), 42 (Cabinet side panel), 43 (Cabinet side panel).
- Internal Structure and Mounting:** 29 (Mounting bracket), 44 (Base frame), 45 (Base frame), 46 (Base frame), 47 (Base frame), 48 (Base frame), 49 (Base frame), 50 (Base frame), 51 (Base frame), 52 (Base frame), 53 (Base frame), 54 (Base frame), 55 (Base frame), 56 (Base frame), 57 (Base frame), 58 (Base frame), 59 (Base frame), 60 (Base frame), 61 (Base frame), 62 (Base frame), 63 (Base frame), 64 (Base frame), 65 (Base frame), 66 (Base frame), 67 (Base frame), 68 (Base frame), 69 (Base frame), 70 (Base frame), 71 (Base frame), 72 (Base frame), 73 (Base frame), 74 (Base frame), 75 (Base frame), 76 (Base frame), 77 (Base frame), 78 (Base frame), 79 (Base frame), 80 (Base frame), 81 (Base frame), 82 (Base frame), 83 (Base frame), 84 (Base frame), 85 (Base frame), 86 (Base frame), 87 (Base frame), 88 (Base frame), 89 (Base frame), 91 (Base frame), 92 (Base frame), 93 (Base frame), 94 (Base frame), 95 (Base frame), 96 (Base frame), 97 (Base frame), 98 (Base frame), 99 (Base frame), 100 (Base frame), 101 (Base frame), 102 (Base frame), 103 (Base frame), 104 (Base frame), 105 (Base frame), 106 (Base frame), 107 (Base frame), 108 (Base frame), 109 (Base frame), 110 (Base frame), 111 (Base frame), 112 (Base frame), 113 (Base frame), 114 (Base frame), 115 (Base frame), 116 (Base frame), 117 (Base frame), 118 (Base frame), 119 (Base frame), 120 (Base frame), 121 (Base frame), 122 (Base frame), 123 (Base frame), 124 (Base frame), 125 (Base frame).
- Control Panel and Display:** 102 (Control panel), 103 (Control panel), 104 (Control panel), 105 (Control panel).
- Internal Components:** 106 (Internal component), 107 (Internal component), 108 (Internal component), 109 (Internal component), 110 (Internal component), 111 (Internal component), 112 (Internal component), 113 (Internal component), 114 (Internal component), 115 (Internal component), 116 (Internal component), 117 (Internal component), 118 (Internal component), 119 (Internal component), 120 (Internal component), 121 (Internal component), 122 (Internal component), 123 (Internal component), 124 (Internal component), 125 (Internal component).



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	±			

Lubrication Specifications

USE MOBILITH AW SERIES MULTIPURPOSE EP GREASE OR OTHER EQUIVALENT FOR ALL LUBE POINTS.

MOBILITH AW SERIES, MULTIPURPOSE EP GREASE	
PRODUCT NUMBER	64352-8
NLGI GRADE	1
COLOR	GREEN
STRUCTURE	SMOOTH/TACKY
SOAP TYPE	LITHIUM COMPLEX
MINERAL OIL VISCOSITY	
cST AT 40°C	150
cST AT 100°C	13
SUS AT 100°F	750
SUS AT 210°F	70
ISO VISCOSITY GRADE	150
PENETRATION AT 23°C (77°F), WORKED	325
DROPPING POINT, ASTM D 2265, °F	475
TIMKEN OK LOAD, ASTM D 2509, lb	40
FOUR-BALL EP TEST, ASTM D 2596,	
WELD LOAD, kg	250
LOAD WEAR INDEX	40
FOUR-BALL WEAR TEST, ASTM D 2266,	
SCAR DIAMETER, mm, MAX	0.5
CORROSION PREVENTION, ASTM D 1743	PASS
WHEEL BEARING TEST, ASTM D 4290	
MODIFIED, LEAKAGE, GRAM	5

MACHINES WITH 15,000 RPM AIR/OIL OPTION
 USE MOBIL OIL DTE 24, OR EQUIVALENT
 QUALITY SPINDLE OIL.

MOBIL DTE 24	
PRODUCT NUMBER	60262-3
98 CMCS CODE (DRUM)	98020E
SPECIFIC GRAVITY	0.871
POUR POINT, °C (°F), max	-18 (0)
FLASH POINT, °C (°F), min	200 (392)
VISCOSITY	
cST AT 40°C	32
cST AT 100°C	5.3
SUS AT 100°F	165
SUS AT 210°F	44
ISO VISCOSITY GRADE	32
VISCOSITY INDEX	95
RUST PROTECTION,	
ASTM D 665, A & B	PASS
COLOR, ASTM D1500, max	3.5
FZG GEAR TEST STAGES	12
PASSED DIN 51534	

MACHINES WITH AUTOLUBE OPTION USE MOBIL OIL
 VACTRA 2, AMOCO WAYTAC No. 68, SINDCO SUNWAY
 LUBE No. 1180, OR EQUIVALENT QUALITY WAY OIL.

MOBIL VACTRA OIL No. 2	
PRODUCT NUMBER	60049-4
SPECIFIC GRAVITY, 60/60F	0.88
POUR POINT, °C (°F), max.	-9 (16)
FLASH POINT, °C (°F), min.	244 (472)
VISCOSITY	
cST AT 40°C	68
cST AT 100°C	8.6
SUS AT 100°F	356
SUS AT 210°F	55
VISCOSITY INDEX	97
ISO VG	68
COLOR, ASTM D 1500	4
FZG, PASS STAGES	11
4 BALL WELD, kg, ASTM D 2783	160
4 BALL WEAR, mm, ASTM D 4172	0.22
COPPER CORROSION, ASTM D 130	1B
RUST, D665A	PASS
VICKERS V-104C, ng D 2882 (MOD)	-
CMCO, P-SPEC, APPROVAL	P-47
BIJUR PT 37-1 APPROVAL	PASS
OKUMA APPROVAL	PASS

CLEAN AND FILL AIR FILTER / REGULATOR / DILER EVERY
 WEEK FOR PROPER OPERATION OF ALL PNEUMATIC PARTS
 FILL WITH MOBIL VELOCITE No. 10 OR OTHER EQUIVALENT
 QUALITY AIR TOOL OIL.

MOBIL VELOCITE OIL No. 10	
PRODUCT NUMBER	60068-4
GRAVITY, API	32.0
POUR, °C (°F), max.	-4 (25)
FLASH, °C (°F), min.	182 (360)
VISCOSITY	
cST AT 40° C	22.0
cST AT 100° C	4.0
SUS AT 100° F	115
SUS AT 210° F	40
ISO VG	22
VISCOSITY INDEX	95
COLOR, ASTM D 1500	2.0
RUST PROTECTION, ASTM D 665	PASS
CINCINNATI MILACRON SPECIFICATION	P-45

REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE
1	MB/RH LUBRICATION DRAWING	SCALE 15:1	DRG No. 6-10-032-016	SIZE B
2	SOLID WAYS BED MILL	DATE 20 SEP 00	DRAWN BY DAHLKE	SHEET NO. 1 OF 1

Retention Knob Chart

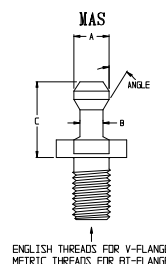
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITHOUT CTS

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART No.	FENMATEL PART No.	VALENTE PART No.	LYNDEX PART No
	A	B	C ANGLE	60mm SPINDLE	70mm SPINDLE				
4833	59.39	1.27	60°	RH19, RH20, RH30, RH33, RH35, RH40, RH42, RH50, RH53, RH55, RH58, RH60, RH62, RH65, RH68, RH70, RH72, RH75, RH78, RH80, RH82, RH85, RH88, RH90, RH92, RH95, RH98, RH100, RH102, RH105, RH108, RH110, RH112, RH115, RH118, RH120, RH122, RH125, RH128, RH130, RH132, RH135, RH138, RH140, RH142, RH145, RH148, RH150, RH152, RH155, RH158, RH160, RH162, RH165, RH168, RH170, RH172, RH175, RH178, RH180, RH182, RH185, RH188, RH190, RH192, RH195, RH198, RH200, RH202, RH205, RH208, RH210, RH212, RH215, RH218, RH220, RH222, RH225, RH228, RH230, RH232, RH235, RH238, RH240, RH242, RH245, RH248, RH250, RH252, RH255, RH258, RH260, RH262, RH265, RH268, RH270, RH272, RH275, RH278, RH280, RH282, RH285, RH288, RH290, RH292, RH295, RH298, RH300, RH302, RH305, RH308, RH310, RH312, RH315, RH318, RH320, RH322, RH325, RH328, RH330, RH332, RH335, RH338, RH340, RH342, RH345, RH348, RH350, RH352, RH355, RH358, RH360, RH362, RH365, RH368, RH370, RH372, RH375, RH378, RH380, RH382, RH385, RH388, RH390, 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MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALVEINTE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
					60mm SPINDLE				
					70mm SPINDLE				
4834	59.38	1.38	60°		RH19, RH20, RH30, RH33, RH35, RH39, RH40, RH50, RH53, RH55, RH59, RH60, RH65, RH69, RH70, RH75, RH79, RH80, RH85, RH89, RH90, RH95, RH99, RH100, RH105, RH109, RH110, RH115, RH120, RH125, RH129, RH130, RH135, RH139, RH140, RH145, RH149, RH150, RH155, RH159, RH160, RH165, RH169, RH170, RH175, RH179, RH180, RH185, RH189, RH190, RH195, RH199, RH200, RH205, RH209, RH210, RH215, RH220, RH225, RH229, RH230, RH235, RH239, RH240, RH245, RH249, RH250, RH255, RH259, RH260, RH265, RH269, RH270, RH275, RH279, RH280, RH285, RH289, RH290, RH295, RH299, RH300, RH305, RH309, RH310, RH315, RH320, RH325, RH329, RH330, RH335, RH339, RH340, RH345, RH349, RH350, RH355, RH359, RH360, RH365, RH369, RH370, RH375, RH379, RH380, RH385, RH389, RH390, RH395, RH399, RH400, RH405, RH409, RH410, RH415, RH420, RH425, RH429, RH430, RH435, RH439, RH440, RH445, RH449, RH450, RH455, RH459, RH460, RH465, RH469, RH470, RH475, RH479, RH480, RH485, RH489, RH490, RH495, RH499, RH500, RH505, RH509, RH510, 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ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR RT-FLANGE

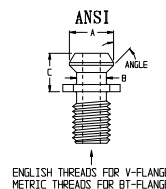
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES WITH CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILLITRONICS MACHINE		COMMAND PART No.	FENAMETAL PART No.	VALVEITE PART No.	LYNDEX PART No.
	A	B	C		60mm SPINDLE	70mm SPINDLE				
4836	74	49	64	45°	RH20, RH30, RH33, RH25, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM16, VM40, VM22, VM25, VM30, TT24, TT40, HW20, HW30		RC4E-0001	RK111224	PT-475C	C40-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTIN PART No.	LYNDEX PART No.
	A	B	C		60mm SPINDLE	70mm SPINDLE				
					4837	.74				



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

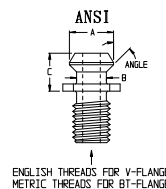
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES WITH OR WITHOUT CTS

ANSI RETENTION KNOBS STYLE CT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILL/STONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
N/A	1.14	.83	1.00	45°	VM22XP, VM25XP, VM30XP, RH33XP, RH35XP, HMC70	RCE-0001	DWG RK11144	N/A	C50-ST0

ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILLITRONICS MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
	A	B	C	ANGLE					
N/A	1.14	.83	1.00	45°	VM22XP, VM25XP, VM30XP, RH33XP, RH55XP, HMC70	RSEM-0105	DWG RK11144A	N/A	N/A



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

NOTE: OPTIONAL RETENTION KNOBS FOR 40 TAPER SPINDLES

MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS				MILL/TRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTINE PART No.	LYNDEX PART No.
	A	B	C	ANGLE	70mm SPINDLE					
					60mm SPINDLE					
						RH20, RH30, RH13, RH25, BR50, BR60, BR80, VM16, VM20, VM22, VM25, VM30, VM18, VM40, VM25, VM30, TT24, TT40, HM35				
4B31	59	39	1.27	45°		SELECTION NOT AVAILABLE	RB4E-0001	RC13114	PT-532-45	C40-45000

MAS RETENTION KNOBS STYLE BT-FLANGE 40 TAPER

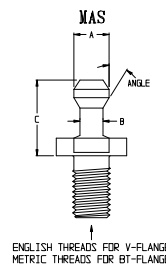
ASSEMBLY SELECTION	DIMENSIONS			MILLITRONICS	MACHINE	COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	LYNDEX PART No.
	A	B	C ANGLE	60mm SPINDLE	70mm SPINDLE				
4B32	59.38	1.38	45°	SELECTION NOT AVAILABLE	R120, R130, R133, R135, R150, R160, R163, R166, Y116, Y120, Y122, Y125, Y130, Y134, Y140, Y142, Y145, Y130, Y136, Y140, Y14				

DIN 69872 RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

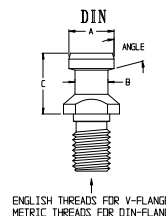
ASSEMBLY SECTION	DIMENSIONS				MILLITRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENTE PART No.	L'INDEX PART No.
	A	B	C	ANGLE	70mm SPINDLE					
4838	75	55	1.02	75°	SELECTION NOT AVAILABLE		R34E-0114-C	DWG RC71125	N/A	C40-150C

DIN 69872 RETENTION KNOBS STYLE DIN-PLANGE 40 TAPER

ASSEMBLY SELECTION	DIMENSIONS			ANGLE	MILLITRONICS	MACHINE	COMMAND PART No.	KERNALMETAL PART No.	VALENTE PART No.	L'INDEX PART No.
	A	B	C		60mm SPINDLE	70mm SPINDLE				
	4839	75.55	1.02		75°	SELECTION NOT AVAILABLE				



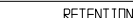
ENGLISH THREADS FOR V-FLANGE
METRIC THREADS FOR BT-FLANGE



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. CHART IS GOOD FOR ALL MACHINE VERSIONS LISTED FROM ECO DATE REV. 6 ON THIS DRAWING.

H	ADD VM22XP, RH33XP FRAMES TO 50 TAPER	6715			01/09
G	ADD MM18 AND MOVE HMC70 FRAMES TO 50 TAPER	6193	N.M.		10/06
F	ADD VMC, TT, AND HMC FRAMES	6175	N.M.		09/06
E	UPDATE CHART	5992	M.N.		08/05
D	ADD RH/RW12 & RH19	5146	N.M.		09/01
C	ADD RETENTION KNOBS TO CHART	4859	N.M.		12/00
B	CHANGE 70mm BT-FLANGE CHART	4730	N.M.		10/00
A	ADD LYNDEX CORP. IN CHART	4351	N.M.		1/00
REV.	DESCRIPTION	E.C.D. NO.	APP'D BY	DATE	
					
TITLE		RETENTION KNOB CHART		SCALE	1.75:1
APPLICATION		GENERAL PRODUCTS		DATE	30 APR 99
				DRAWN BY	DAHLKE
				SHEET NO.	1 OF 1

Maintenance Section

Adjusting Table Gib

The table gibs adjusting screw is on the left side. To take up the gib, tighten the large screw slightly until a slight drag is felt when moving the table by hand. (Fig. 1)

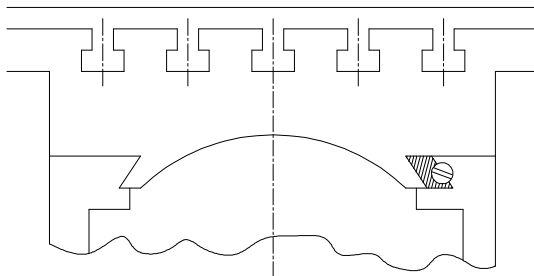


Fig. 1 Table-saddle gib

Adjustment of Saddle Gib

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

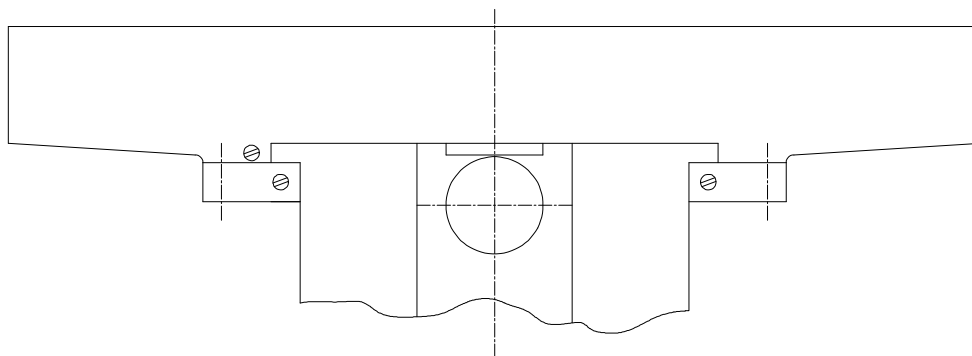


Fig. 2 Saddle-Base Gib

Adjustment of head Bolster gib.

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

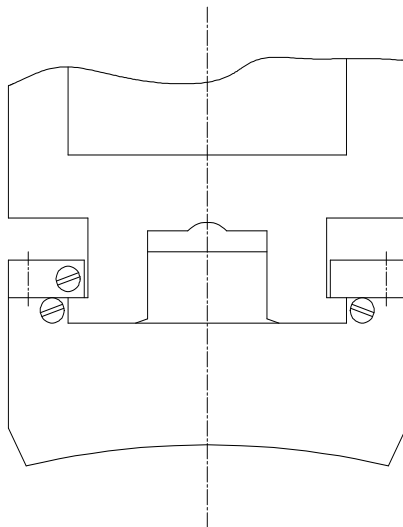


Fig. 3 Bolster Gib

Checking and Adjusting Backlash

Use a good solid magnetic base and a .0005 Inch indicator. Install the magnetic base on the machine table in close proximity to the spindle. Clean the area that the indicator will be in contact with.

Go into PARAMETERS/AXIS arrow down to BACKLASH press F1 EDIT and set X, Y and Z to zero. (*Before setting them to zero note original settings*)

Find the high spot on the spindle by moving the indicator back and forth and set indicator to zero. (*See point a on Fig. 4*)

The next step is easiest if done in jog mode. (*Select distance and 1 inch increments*) You may have to press the jog key several times for the desired direction to clear the spindle.

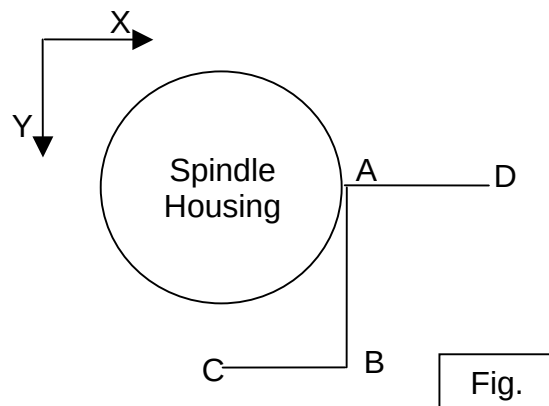
Press the jog key for the desired direction for **A** to move towards **D** (*see Fig. 4*) and then back to **A**, the indicator may have moved, adjust it back to zero and repeat this step until it stays at zero.

Jog the desired axis or tool (*see Fig. 4*) from point **A** to **B** to **C** back to **B** then back to the start point **A**. The reading on the indicator is backlash and should be put into the backlash parameter under PARAMS-SETUP-AXIS.

After putting the backlash into the table, repeat the procedure to ensure the numbers took affect. If the indicated error seems to increase this is addlash, and you may have to subtract the indicated number from the backlash chart.

The X axis procedure is *shown, repeat procedure for Y and Z*. Remember to save these new changes to your parameter disk.

(The diagram below is an example of checking your backlash in the X-axis.)



Procedure to adjust CESD (MA-219) Lubrication Unit

As long as the machine is “reset”, the oiler will be pumping. In the event that the tank falls below the **MIN** line on the tank an audible alarm will sound. The machine will not let a program start with a low lube alarm **(451 Low Lube Fault)**

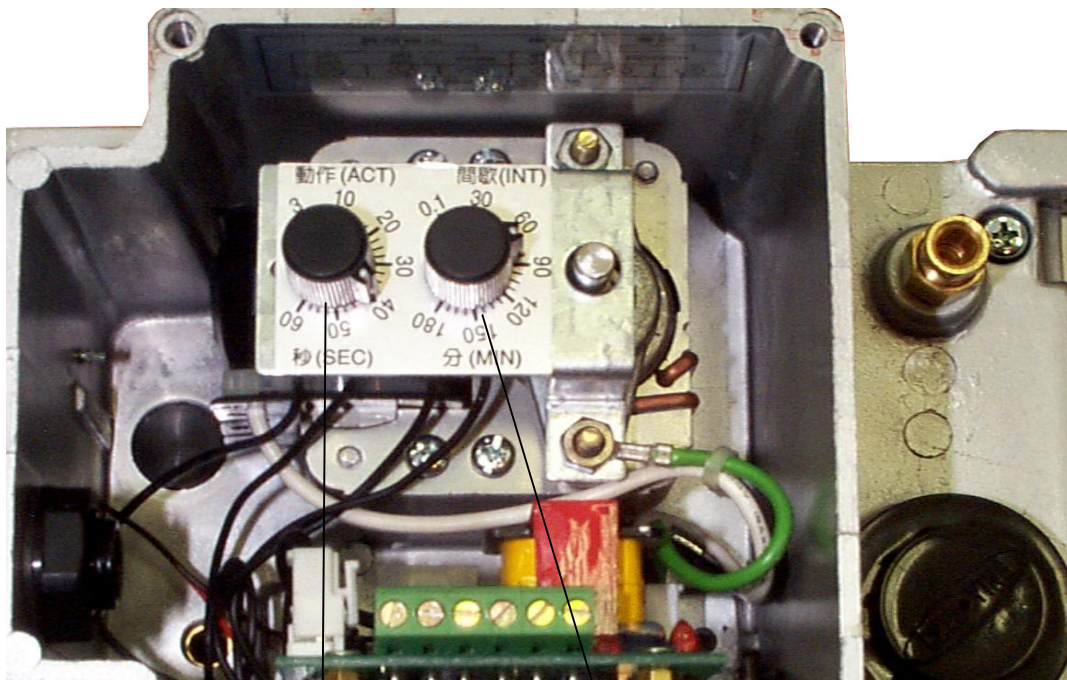
The **MA-219** has the ability to set the time between each pump cycle. It will pump the same amount of way lube **(.13 Liters/Min)** each pump cycle. The amount of oil per pump cycle does not vary, but the interval between each pump cycle. A new machine shipped from Milltronics will have the oiler pumping Aprox. 5 seconds every 25 to 30 minutes. Adjusting the Seconds knob (left) will change the length of time in seconds the pump cycle for (.13 Liters/Min). Adjusting the Minute knob (right) will change the time between each pump interval. It will always pump the same amount

To adjust the intervals between each cycle of the pump:

Remove the 4 screws holding the top cover.

Adjust the two knobs shown below.

The dials are very sensitive. Turn them very slowly.



Turn this dial to vary the seconds that it pumps for each minute interval.

Turn this dial to vary the minutes between each pump cycle.

Spindle Start up Procedure

Daily Run in procedure

1. Start the flood pump or chiller unit (if equipped) and run coolant throughout coolant passages until the temperature stabilizes.
2. Verify that all auxiliary systems are operating properly.
 - a. If equipped with a Spindle air purge system, the system should have approx. 15 PSI.
 - b. If equipped with the optional Vogel Air Oiler System, verify the reservoir tank has adequate oil supply and proper air pressure.
3. Run-in the spindle at 50% of the maximum RPM for 10 minutes.
Measure temperature at various locations on the front of the spindle cartridge.
Be careful as the spindle is running! If at any time during the spindle run-in procedure the temperature reaches 140 degrees Fahrenheit or 60 degrees Celsius, stop the spindle and allow it to cool to room temperature. Resume the procedure at the point it was halted.

The temperature can be measured with a pyrometer. If a pyrometer is not available, a good indication of excessive temperature is if you cannot hold your hand on the spindle for more than 5 seconds.

4. If the temperature is within normal operation parameters, the machine is ready for operation.

Abbreviated Run-in Procedure for Spindle with ½ -2 hours Idle time

1. Follow Steps 1. and 2. listed under the Daily Run-in Procedure.
2. Run-in the spindle at 50% of the maximum RPM for 3 to 5 minutes.
3. Monitor the temperature at various locations on the front of the spindle cartridge.
Be careful as the spindle is running! If at any time during the spindle run-in procedure the temperature reaches 140 degrees Fahrenheit or 60 degrees Celsius, stop the spindle and allow it to cool to room temperature. Resume the procedure at the point it was halted.

If the temperature is within normal operation parameters, the machine is ready for operation.

