



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

RH30K Mechanical

2-7-2013
Rev 3

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Manual Discrepancy Sheet

1.

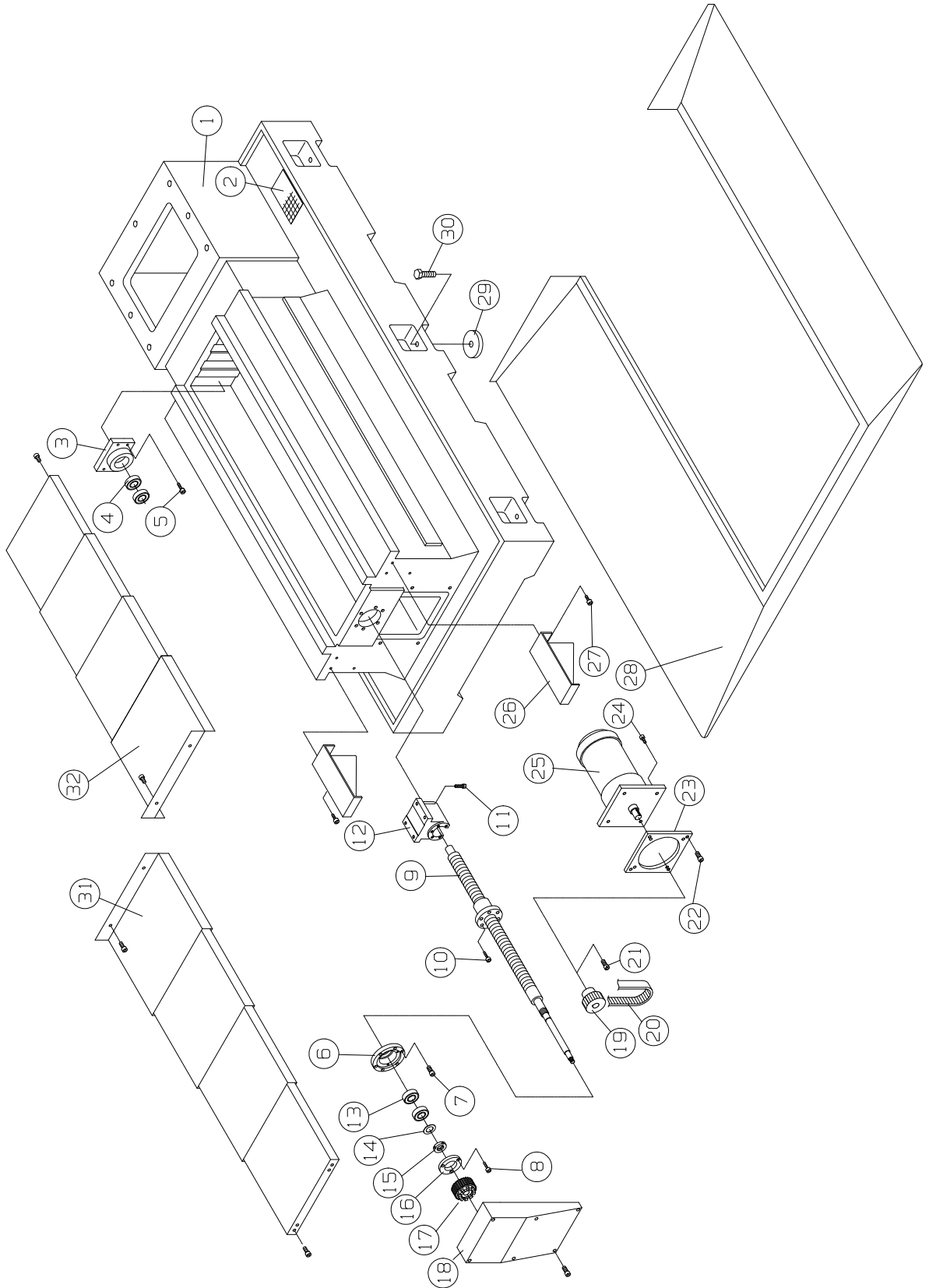
Machine Base Assembly

Y-axis assembly

Item	Description	Q'ty	Remarks	Item	Description	Q'ty	Remarks
1	Base	1		29	Leveling block	6	
2	Filter plate	2		30	Leveling bolt	6	
3	Bearing bracket	1		31	Telescopic cover - front	1	MBB-089
4	Bearing	2	BG-24	32	Telescopic cover - rear	1	MBB-090
5	Screw	4					
6	Bearing seat	1					
7	Screw	4		*	Way Wiper Set	1	MBT-123
8	Screw	3					
9	Ball screw	1	MBB-67				
10	Screw	6					
11	Screw	1					
12	Yoke	1					
13	Bearing	2	BG-89				
14	Sleeve	1					
15	Nut	1	MPS-548				
16	Cap	1					
17	Pulley, TB28L100	1	PY-48				
	Bushing, 20mm ID 1610	1	PY-122				
18	Cover	1					
19	Pulley, 14L100SPx22MM	1	PY-211				
20	Belt, 210L100	1	BT-15 **				
21	Screw	4					
22	Screw	4					
23	Motor bracket	1					
24	Screw	4					
25	Servo motor *	1	See below *				
26	Bracket - telescopic cover	2					
27	Screw	6					
28	Chip tray	1					

** RH25A - Always verify belt data

* #25 Motor change	1kw	1.5 kw	
RH25A	MO-118 DC Servo		
RH25B-E RH30A-E	MO-94 Sigma1		
RH25F 1-4 RH30F 1-6	MO-125 Sigma2		Either MO-125 or MO-127 will work, (Check pulley ID vs shaft OD)
RH25F5 RH30F7 – RH30K 3		MO-127 Sigma2	



MB-25 a1

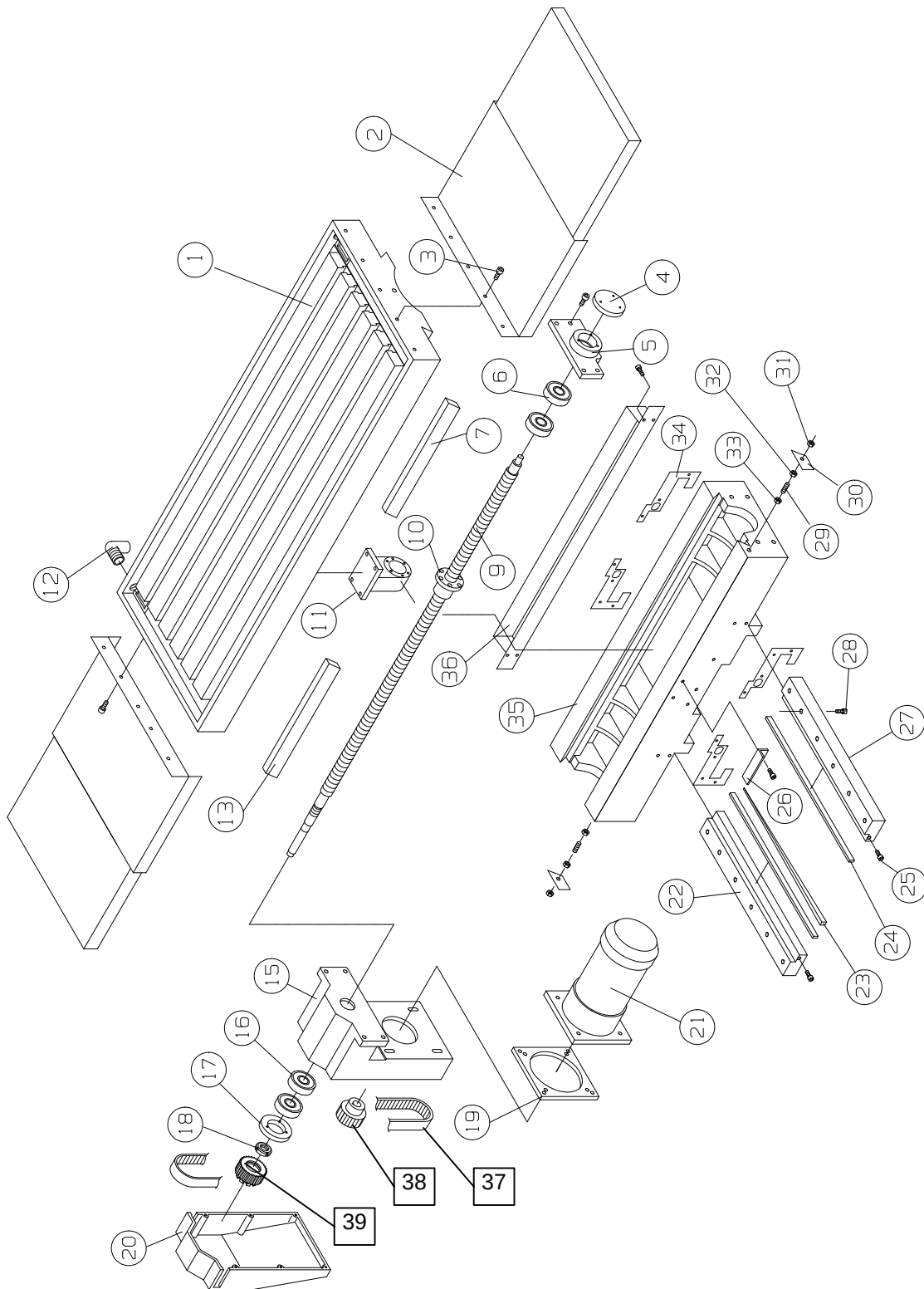
Machine Table and Saddle Assembly

X-Axis assembly

Item	Description	Q'ty	Remarks	Item	Description	Q'ty	Remarks
1	Table	1		25	Screw	2	
2	Tool Tray, Left	1	MBB-140	26	Limit switch bracket	1	
	Tool Tray, Right	1	MBB-141	27	Clamp plate	1	
3	Screw	10		28	Screw	12	
4	Cap	1		29	Screw	2	
5	Bearing bracket	1	MBC-106	30	Fixed plate	2	
6	Bearing	2	BG-24	31	Nut	2	
7	Gib, Right	1	MBT-95	32	Nut	2	
8	---	---	---	33	Nut	2	
9	Ball screw	1	MBT-97	34	Wiper	2	MPS-651
10	Ball screw nut	1		35	Saddle	1	
11	Yoke	1		36	Coolant trough	1	MPS-447
12	Elbow joint	2		37	Drive Belt **	1	See below
13	Gib, Left	1	MBT-101	38	Pulley, motor	1	PY-174
14	---	---	---	39	Pulley, Ballscrew	1	PY-48
15	Gear box	1	MBT-103		Bushing, Ballscrew	1	PY-122
16	Bearing	2	BG-89				
17	Cap	1					
18	Nut	1			Not shown		
19	Motor bracket	4	MPS-06	40	Spring, Way Cover		MPS-532
20	Cover	1	MPS-168	41	Bumper, Way Cover		WX-364
21	Servo motor *	1	See below				
22	Clamp plate	1		43	Oil line	--	NU-325
23	Gib	1		44	Home/Limit Switch	1	SW-203
24	Gib	2	MBT-112				

* #21 Motor change			
RH25A	MO-118	DC	
RH30A-E	MO-94	Sigma1	
RH30F-K 3	MO-125	Sigma2	

** #37 Belt change			
RH25A	BT-11 or BT-13		Verify belt number
RH25B-G	BT-13		
RH30	BT-13		



MB-25a3

Machine Column Assembly

Z-axis assembly

[15MB-25a2]

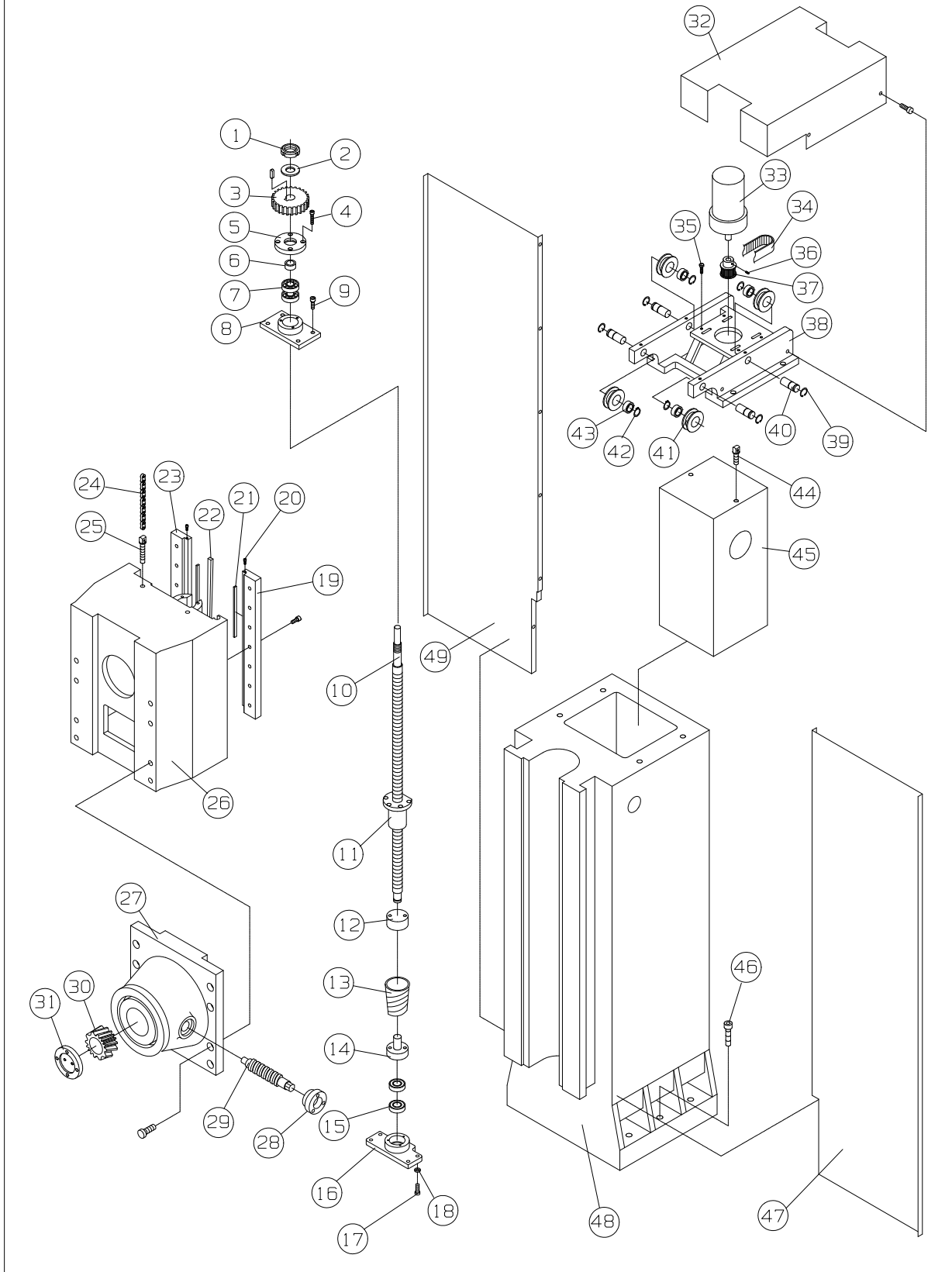
Item	Description	Q'ty	Remarks
1	Nut	1	
2	Washer	1	
3	Pulley	1	PY-165
4	Screw	4	
5	Bearing cap	1	
6	Spacer	1	
7	Bearing	2	BG-89
8	Bearing bracket	1	MBC-106
9	Screw	4	
10	Ballscrew	1	MBC-100
11	Ballscrew nut	1	
12	Bracket - spring hood	1	
13	Spring hood	1	MPS-646
14	Bracket - spring hood	1	
15	Bearing	2	BG-24
16	Bearing bracket	1	
17	Screw	4	
18	Washer	4	
19	Clamp plate	1	
20	Screw	2	
21	Gib	2	
22	Gib	1	
23	Clamp plate	1	
24	Chain	2	MP6-27
25	Bolt	2	
26	Sliding block	1	
27	Connecting block	1	
28	Cap	1	
29	Worm	1	
30	Worm wheel (MB only)	1	MBC-120

Item	Description	Q'ty	Remarks
31	Block	1	
32	Top cover	1	MPS-391
33	Servo motor *	1	See below
34	Belt **	1	See below
35	Screw	4	
36	Set screw	1	
37	Pulley, TB18L100 1008	1	PY-135
	Bushing, 19mmID 1008	1	PY-95
38	Bracket	1	
39	C-snap	4	
40	Shaft - chain wheel	4	MBC-67
41	Chain wheel	4	MBC-72
42	C-snap	4	
43	Bearing	4	BG-24
44	Bolt	2	
45	Counter weight	1	
46	Screw	7	
47	Splash guard - right	1	
48	Column	1	
49	Splash guard - left	1	
	Not Shown		
50	Wiper Set	1	MBT-122
51	Oil Line	---	NU-325
52	Home/Limit Switch	1	SW-203

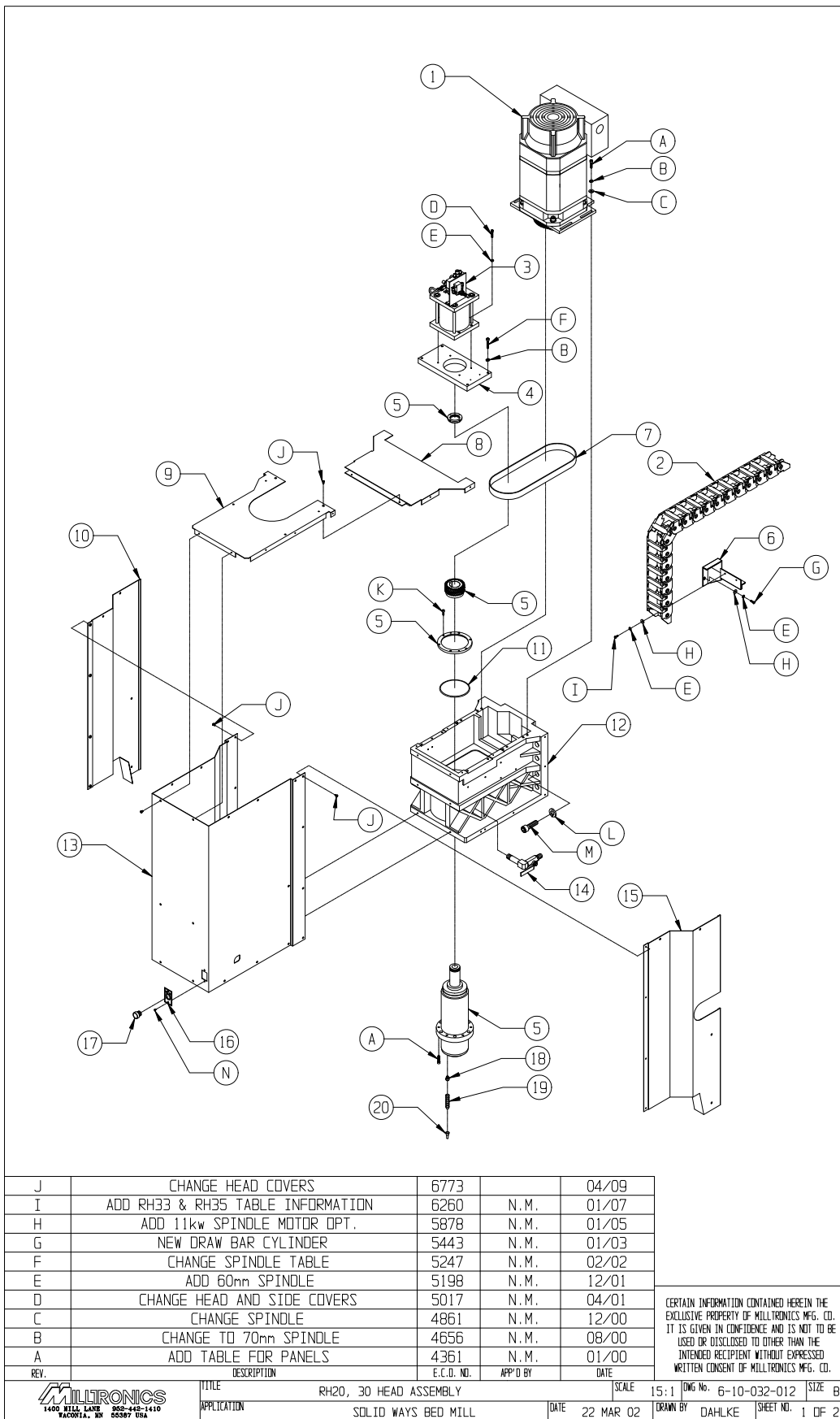
* #33 Motor change			
RH25A	MO-70	DC Servo	
RH25B-E RH30A-E	MO-95	Sigma1	
RH25F RH30F-K 3	MO-126	Sigma2	

** #34 Belt change			
RH25/30A-C	BT-02 or BT-44		Verify belt number
RH25/30D-J 2	BT-02		

MB-25a2

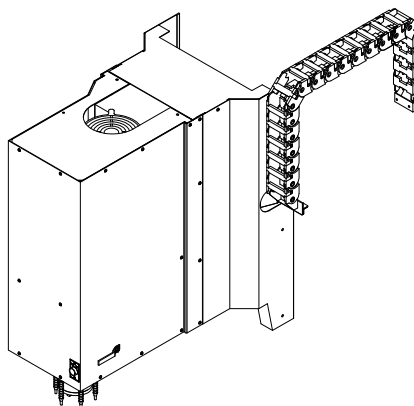


Machine Head Assembly



PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	6-10-018-089	SPINDLE MOTOR ASSEMBLY
2	1	SEE TABLE	SPINDLE CABLE TRACK
3	1	6-10-018-114	NU-418 DRAWBAR CYLINDER ASSEMBLY
4	1	MP-284	PDB AIR CYLINDER MOUNT PLATE
5	1	SEE TABLE	SPINDLE ASSEMBLY
6	1	SEE TABLE	CABLE TRACK BRACKET
7	1	SEE TABLE	SPINDLE BELT
8	1	SEE TABLE	RH HEAD COVER - TOP
9	1	MP-639	UNIVERSAL HEAD COVER TOP
10	1	SEE TABLE	RH HEAD COVER - LEFT
11	1	SEE TABLE	O' RING REAR SEAL
12	1	SEE TABLE	HEAD - MACHINED
13	1	MP-635	UNIVERSAL FRONT HEAD COVER
14	1	6-10-008-039	VM 17 FLOOD HANDLE SUB-ASSEMBLY
15	1	SEE TABLE	RH HEAD COVER - RIGHT
16	1	LB-181	TOOL OUT LABEL
17	1	SW-67	TOOL OUT SWITCH
18	6	NU-111	1/4 LOCKLINK 1/8 NPT
19	24	MA-22	LOCKLINK HOSE
20	6	MA-216	1/4 NOZZLE


PANELS LIST

No.	RH20	RH30	RH33	RH35
8	MPS-275	MPS-283	MPS-394	MPS-426
10	MPS-343	MPS-345	MPS-393	MPS-427
15	MPS-342	MPS-344	MPS-392	MPS-428

SPINDLE CABLE TRACK

No.	RH20,30,33,35	RH33/35 XP'S
2	MP-534	MP-760

SPINDLE BELT

No.	STOCK No.	DESCRIPTION
7	BT-62	W-896 SPINDLE BELT
	BT-70	800-5GT-30 SPINDLE BELT

O' RING REAR SEAL

No.	SPINDLE	STOCK No.	DESCRIPTION
11	60mm	WX-182	O' RING REAR SEAL
	70mm	WX-270	O' RING REAR SEAL

HARDWARE LIST

No.	QTY	DESCRIPTION
A	14	M8-1.25 x 30mm SHCS
B	12	8mm LOCK WASHER
C	8	8mm HARDENED FLAT WASHER
D	4	M6-1 x 30mm SHCS
E	10	M6 LOCK WASHER
F	4	M8-1.25 x 45mm SHCS
G	2	M6-1 x 20mm BHCS
H	6	M6 FLAT WASHER
I	4	M6-1 x 16mm BHCS
J	39	M6-1 x 10mm BHCS
K	6	M6-1 x 20mm SHCS
L	8	3/4 LOCK WASHER
M	8	3/4-10 x 2 1/2 SHCS
N	2	M4-.7 x 8mm BHCS

SPINDLE ASSEMBLY

No.	SPINDLE	7.5kw		11kw		7.5kw		11kw	
		SINGLE WINDING		SINGLE WINDING		DUAL WINDING		DUAL WINDING	
5	60mm	9897	9897-1	9899-4	9899-5	9900	9900-1	9899-4	9899-5
	70mm	9897-2	9897-3	9899-2	9899-3	9900-2	9900-3	9899-2	9899-3

HEADS

No.	STOCK No.	DESCRIPTION
12	MX-54	60mm HEAD MACHINED
	MX-43	70mm HEAD MACHINED

CABLE TRACK BRACKET

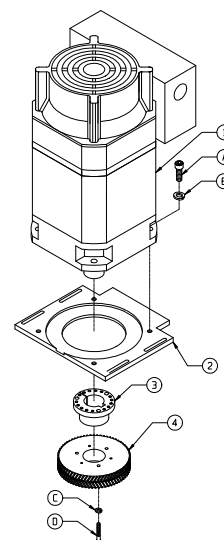
No.	STOCK No.	DESCRIPTION
6	BR-146	RH20 CABLE TRACK BRACKET
	BR-147	RH30 CABLE TRACK BRACKET
		RH33 CABLE TRACK BRACKET
		RH35 CABLE TRACK BRACKET

J	CHANGE HEAD COVERS	6773		04/09
I	ADD RH33 & RH35 TABLE INFORMATION	6260	N.M.	01/07
H	ADD 11kw SPINDLE MOTOR OPT.	5878	N.M.	01/05
G	NEW DRAW BAR CYLINDER	5443	N.M.	01/03
F	CHANGE SPINDLE TABLE	5247	N.M.	02/02
E	ADD 60mm SPINDLE	5198	N.M.	12/01
D	CHANGE HEAD AND SIDE COVERS	5017	N.M.	04/01
C	CHANGE SPINDLE	4861	N.M.	12/00
B	CHANGE TO 70mm SPINDLE	4656	N.M.	08/00
A	ADD TABLE FOR PANELS	4361	N.M.	01/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
 TITLE RH20, 30 HEAD ASSEMBLY SCALE 15:1 DWG No. 6-10-032-012 SIZE B APPLICATION SOLID WAYS BED MILL DATE 22 MAR 02 DRAWN BY DAHLKE SHEET NO. 2 OF 2				

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Spindle Motor and Pulley Assembly

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



MOTOR PLATES		
No.	STOCK No.	DESCRIPTION
2	MP00548	M000121 & M000131 & M000132 - YASKAWA 12 kW & 22 kW - FANUC
	MP00587	M000114 & M000150 - YASKAWA (8 kW - FANUC)
	MPB0045	M000114 & M000150 - YASKAWA (BRIDGE MILL ONLY)
	MPB0040	M000131 & M000132 - YASKAWA (BRIDGE MILL ONLY)
	SMN0008	11 kW - SIEMENS
	SMN0061	7.5 kW - SIEMENS & 8 kW - FANUC
	SMN0062	11 kW & 18.5 kW - SIEMENS
	MPTT045	15 kW - FANUC

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

SPINDLE MOTOR PULLEYS								
No.	RPM	7.5 kW M000114	11 kW M000150	7.5 kW M000131	11 kW M000132	18 kW M000121	FANUC	SIEMENS
4	6K/8K	PY00201	PY00201	PY00192	PY00192	PY00192	PY00192	PY00192
	12K/15K	PY00188	PY00188	PY00188	PY00188	PY00188	PY00188	PY00281

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

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

J	ADD 50 TAPER TO CHART	7078		05/11
I	ADD FANUC/SIEMENS TO CHART	6314	N.M.	03/07
H	EDIT CHART	5953	N.M.	05/05
G	ADD M000150	5826	N.M.	11/04
F	MODIFY CHART	5697	N.M.	01/04
E	ADD M000121 MOTOR	5509	N.M.	03/03
D	CHANGE 15 HP SPINDLE MOTOR	5257	N.M.	02/02
C	CHANGE MOTOR/PULLEY CHARTS	5251	N.M.	02/02
B	CHANGE 6K & 8K MOTOR PULLEY	5197	N.M.	12/01
A	ADD MOTOR PLATE TO CHART	5058	N.M.	04/01

REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
	MATERIAL/FINISH			
	STOCK/ASSY No.			
	TITLE			
	APPLICATION			
	SCALE			
	DATE			
	DRAWN BY			
	SHEET NO.			

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

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

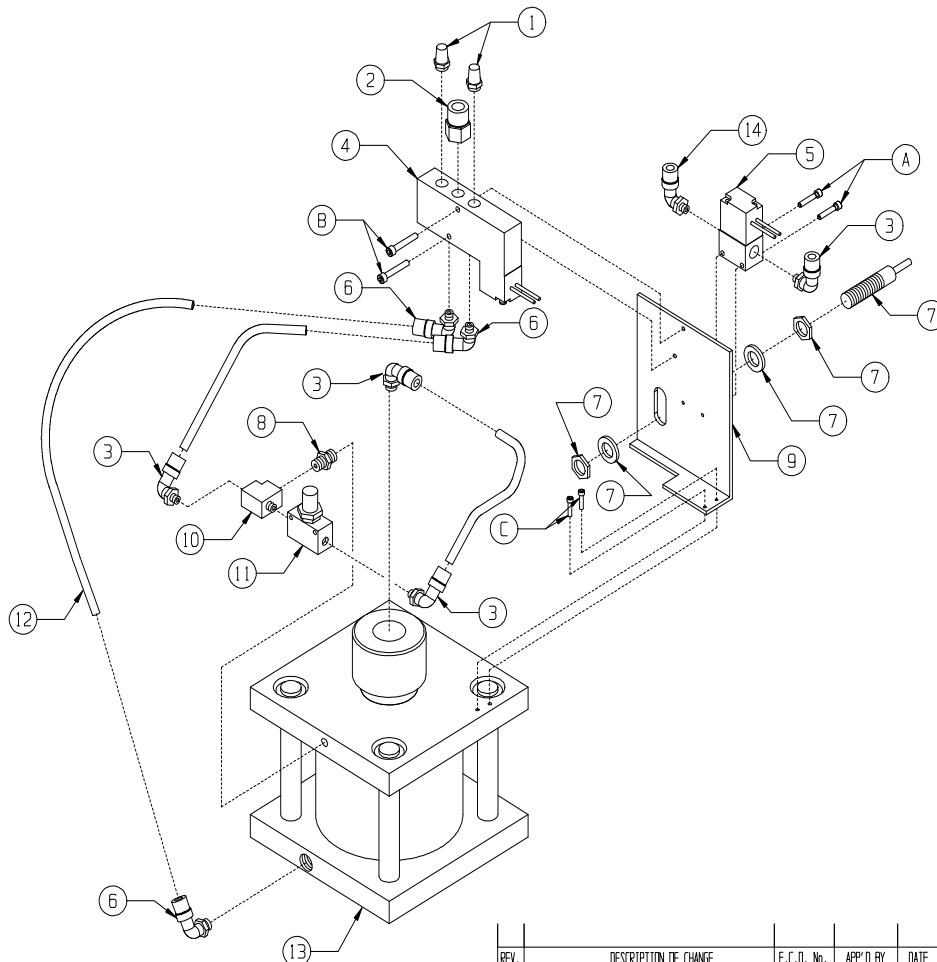
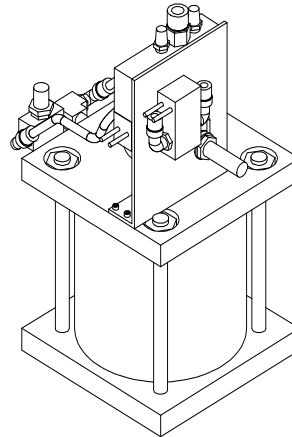
Power Drawbar Cylinder Assembly

PARTS LIST

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

HARDWARE LIST

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

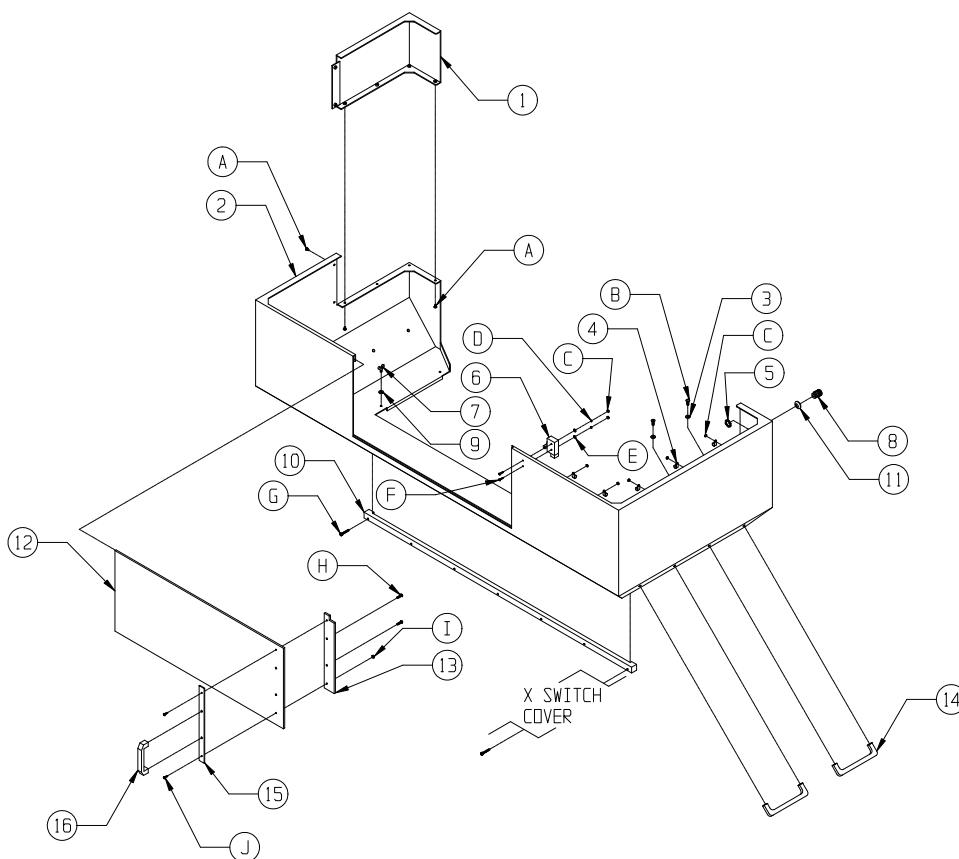


REV.	DESCRIPTION OF CHANGE	E.C.D. No.	APP'D BY	DATE
MATERIAL/FINISH		 MILLTRONICS 1400 MILL LANE 952-442-1410 WACONIA, MN 55387 USA		
STOCK/ASSY No.				
TITLE		NU-418 DRAW BAR ASSEMBLY		
APPLICATION		GENERAL PRODUCTS		
SCALE		3:1	DWG No. 6-10-018-114	SIZE B
DATE		14 OCT 08	DRAWN BY	DAHLKE
			SHEET No.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

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

Table Guard Assembly



HARDWARE LIST

No.	QTY	DESCRIPTION
A	6	1/4-20 x 1/2 BHCS
B	8	M8-1.25 x 20mm BHCS
C	7	8-32 HEX NUT
D	2	#8 LOCK WASHER
E	2	#8 FLAT WASHER
F	2	8-32 x 1 1/4 BHCS
G	7	M6-1 x 50mm SHCS
H	2	1/4-20 x 1 BHCS
I	2	10-32 HEX NUT
J	2	10-32 x 5/8 BHCS

TABLE GUARD LIST

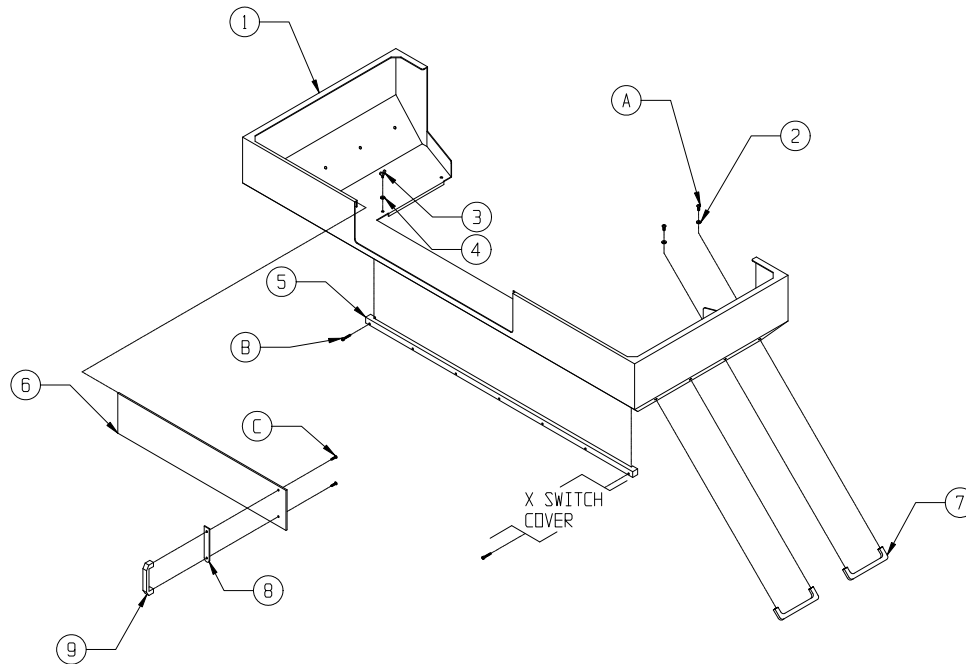
No.	QTY	MB/RH19	MB/RH20	MB/RH25	MB/RH30
1	1	N/A	MPS-179	MPS-220	MPS-217
2	1	MPS-222	MPS-177	MPS-219	MPS-216
10	1	MPS-223	MPS-178	MPS-221	MPS-218

PARTS LIST

No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	TABLE GUARD CORNER
2	1	SEE TABLE	TABLE GUARD
3	8	HD-80	M8 BONDED WASHER
4	5	WX-82	TIE DOWN
5	1	WX-96	1/2" LOCKING NUT
6	1	SW-194	LIMIT SWITCH
7	4	WX-284	WINGED THUMB SCREW
8	1	WX-23	1/2" CORD GRIP
9	4	HD-12	M6 BONDED WASHER
10	1	SEE TABLE	MOUNTING BAR
11	1	WX-38	1/2" O-RING
12	1	MPS-212	LEXAN DOOR
13	1	MPS-211	BACK DOOR PLATE
14	4	WX-230	DOOR HANDLE 8"
15	1	MPS-210	FRONT DOOR PLATE
16	1	WX-142	HANDLE

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 TABLE GUARD 2000 APPLICATION SOLID WAYS BED MILL SCALE 15:1 DWG No. 6-10-032-015 SIZE B DATE 30 MAY 00 DRAWN BY DAHLKE SHEET No. 1 OF 1			
TOLERANCE UNLESS SPECIFIED	X.XXX +/- X.XX +/- X.X +/- ANGLE +/-			

Table Guard Assembly W/20 Pocket ATC



HARDWARE LIST		
No.	QTY	DESCRIPTION
A	8	M8-1.25 x 20mm BHCS
B	7	M6-1 x 50mm SHCS
C	2	1/4-20 x 1 BHCS

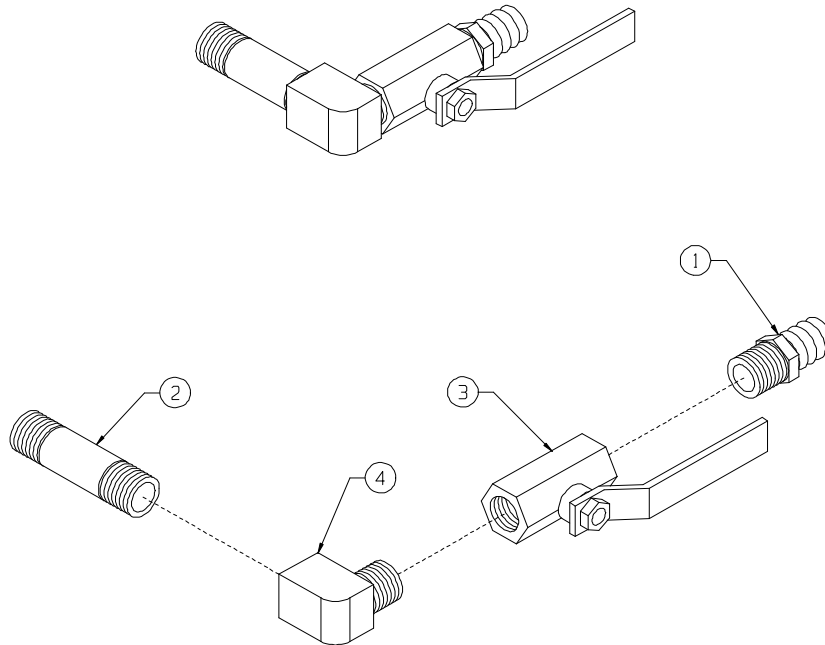
TABLE GUARD LIST				
No.	QTY	RH20	RH25	RH30
1	1	MPS-243	MPS-244	MPS-245
5	1	MPS-178	MPS-221	MPS-218

PARTS LIST			
No.	QTY	STOCK No.	DESCRIPTION
1	1	SEE TABLE	TABLE GUARD
2	8	HD-80	M8 BONDED WASHER
3	4	WX-284	WINGED THUMB SCREW
4	4	HD-12	M6 BONDED WASHER
5	1	SEE TABLE	MOUNTING BAR
6	1	MPS-241	LEXAN DOOR
7	4	WX-230	DOOR HANDLE 8"
8	1	MPS-242	FRONT DOOR PLATE
9	1	WX-142	HANDLE

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 TABLE GUARD 2000 W/20 ATC		
TOLERANCE UNLESS SPECIFIED		APPLICATION SOLID WAYS BED MILL		
X.XXX	+/-	SCALE 15:1 DWG No. 6-10-032-017 SIZE B		
X.XX	+/-	DATE 28 SEP 00 DRAWN BY DAHLKE SHEET No. 1 OF 1		
X.X	+/-			
ANGLE	+/-			

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.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 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,	PASS
ASTM D 665, A & B	
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, SUNDOL 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, mg D 2882 (MOD)	-
CMCO, P-SPEC, APPROVAL	P-47
BIJUR PT 37-1 APPROVAL	PASS
OKUMA APPROVAL	PASS

CLEAN AND FILL AIR FILTER / REGULATOR / OILER 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	MILLTRONICS MB/RH LUBRICATION DRAWING	SCALE 15:1	DWG No. 6-10-032-016	SIZE B
APPLICATION	SOLID WAYS BED MILL	DATE 20 SEP 00	DRAWN BY DAHLKE	SHEET NO. 1 OF 1

Retention Knob Chart

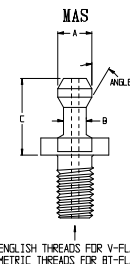
NOTE: STANDARD RETENTION KNOBS FOR 40 TAPER SPINDLES

MAS RETENTION KNOBS STYLE CT-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	1.27	60°	BR50, BR60, BR80, MM18, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, VM2016, VM15, VM16, VM20, VM22, VM25, VM30.	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RB4E-0002	RK31114A	PT-532-60	C40-6000

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	1.39	60°	BR50, BR60, BR80, MM18, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, VM2016, VM15, VM16, VM20, VM22, VM25, VM30.	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH35, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RB4H-0002	RK31113A	PT-444-60	B40-6000



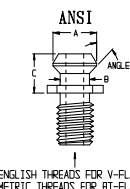
NOTE: STANDARD RETENTION KNOBS FOR 50 TAPER SPINDLES

ANSI RETENTION KNOBS STYLE CT-FLANGE 50 TAPER

DIMENSIONS				MILLTRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
1.14	.83	1.00	45°	HBM110, RH33XP, RH35XP, TT40XP, VM25XP, VM30XP, TT40XP, VM22XP, VM25XP, VM30XP.		RCBE-0001	DWG RK11144A	N/A	C50-STD

ANSI RETENTION KNOBS STYLE BT-FLANGE 50 TAPER

DIMENSIONS				MILLTRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
1.14	.83	1.00	45°	HBM110, RH33XP, RH35XP, TT40XP, VM25XP, VM30XP, TT40XP, VM22XP, VM25XP, VM30XP.		R5BH-0105	DWG RK11144A	N/A	N/A



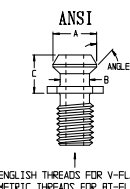
NOTE: OPTIONAL RETENTION KNOBS FOR 40 TAPER SPINDLES

ANSI RETENTION KNOBS STYLE CT-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				
.74	.49	.64	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RL4E-0001	RK11122	PT-475C	C40-STD

ANSI 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				
.74	.49	.75	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RS4H-0115	RK11125A	N/A	B40-FADAL

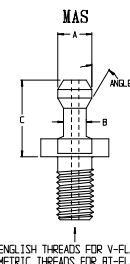


MAS RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

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	1.27	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RB4E-0001	RK31114	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	1.39	45°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RB4H-0001	RK31113	PT-444-45	B40-4500

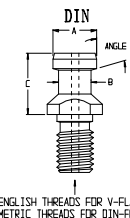


DIN 69872 RETENTION KNOBS STYLE CT-FLANGE 40 TAPER

DIMENSIONS				MILLTRONICS MACHINE		COMMAND PART No.	KENNAMETAL PART No.	VALENITE PART No.	LYNDEX PART No.
A	B	C	ANGLE	60mm SPINDLE	70mm SPINDLE				
.75	.55	1.02	75°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RS4E-0114-C	DWG RK71125	N/A	C40-1500

DIN 69872 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				
.75	.55	1.02	75°	SELECTION NOT AVAILABLE	BR50, BR60, BR80, HK20, HK35, RH20, RH30, RH33, RH35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30, VM3224, VM4224, HMC20, HMC35, TT24, TT40, TT60, TT80, VM16, VM20, VM22, VM25, VM30.	RS4H-0114-C	DWG RK71125	N/A	B40-1500



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, TT24, TT40, TT40XP, HBM110	7573	N.M.	07/12
H	ADD VM22XP, RH33XP FRAMES TO 50 TAPER	6715	N.M.	01/09
G	ADD MM18 AND MOVE HMC70 FRAMES TO 50 TAPER	6193	N.M.	10/06
F	ADD VMC, TT, AND HMC FRAMES	6175	N.M.	09/06
E	UPDATE CHART	5992	N.M.	08/05
D	ADD RH/RW12 & RH19	5146	N.M.	09/01
C	ADD RETENTION KNOBS TO CHART	4859	N.M.	12/00
B	CHANGE 70mm BT-FLANGE CHART	4730	N.M.	10/00
A	ADD LYNDEX CORP. IN CHART	4351	N.M.	1/00
REV.	DESCRIPTION	E.C.O. NO.	APP'D BY	DATE
	RETENTION KNOB CHART	SCALE 1.75:1	DWG No. 6-11-018-054	SIZE B
	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)

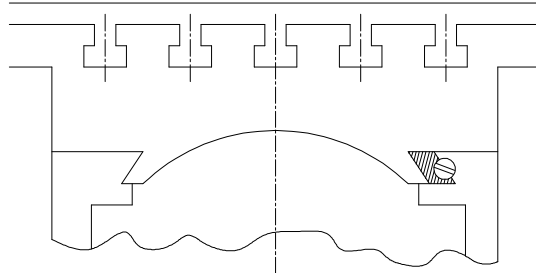


Fig. 1
Table-saddle gib

Adjustment of Saddle Gib

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

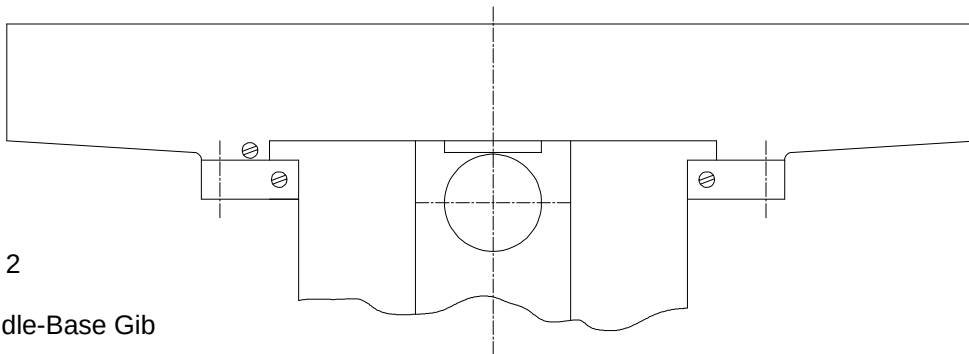


Fig. 2
Saddle-Base Gib

Adjustment of head Bolster gib.

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

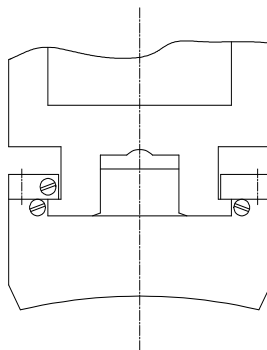


Fig. 3
Bolster Gib

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.)

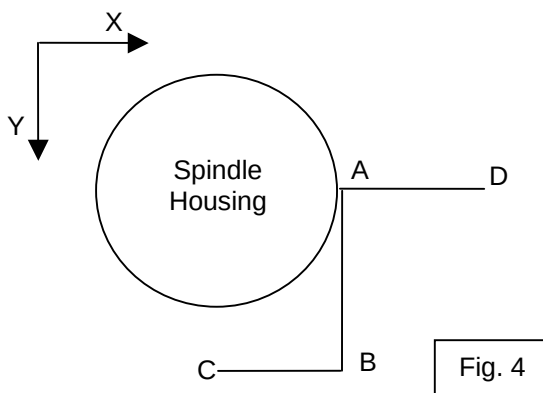


Fig. 4

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



Spindle Start up Procedure

(Excludes MB models)
04-12-02

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 of the procedure 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. 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 of the procedure it was halted.
4. If the temperature is within normal operation parameters, the machine is ready for operation.

