



4/27/12 Cannot no
longer get parts
per Catherine

ML15 Mechanical Manual And Parts Lists

June 27, 2003



Chuck guard limit
switch SW-74

Worklight(Ver H)
MPS-438

Spindle pressure
switch MPL0337



PREVENTIVE MAINTENANCE

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ML15

Preventive Maintenance Schedule

Daily checks

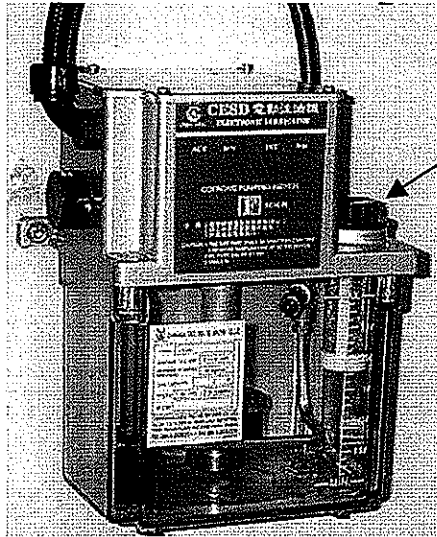
- Ensure the waylube reservoir level is maintained (figure 1).
- Ensure the spindle lubrication pump is running whenever the spindle is running. Oil should be visible in the sight glass on the headstock whenever the spindle is running (figure 2).
- Ensure the spindle oil reservoir level is correct. Oil should be visible to the top of the reservoir sight glass when the spindle is not running.
- Ensure that all guards are in place and functioning properly.
- Remove excess chips or swarf from the machine

Semi-annual service

- Replace spindle oil. See location of drain plug and filler cap (figure 3).

Annual Checks

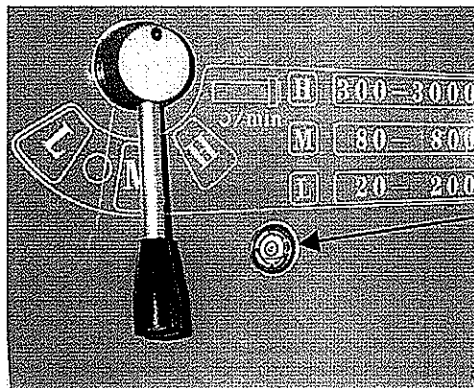
- Check backlash.
- Push pull test on the Y and Z axis
- Replace spindle lubricant.
- Remove all way covers and clean excess oil, chips and debris from castings.
- Inspect all wires, cables switches for condition and wear. Replace where needed.
- Run each axis throughout the entire travel and check for proper setting of overtravel switches.
- Use a standard 3 1/2" 1.44 MB floppy disk drive cleaner.
- Back up parameters on parameter disk.
- Replace turret gearbox oil as outlined in the Pragati turret manual (if equipped).



Filler cap and filter screen

Keep the waylube pump topped off with one of the following oils or equivalent.

Mobil	Shell	Castrol
Vactra #2	Tonna T68	Magna BD68



Ensure oil is covering the sight glass whenever the spindle is running

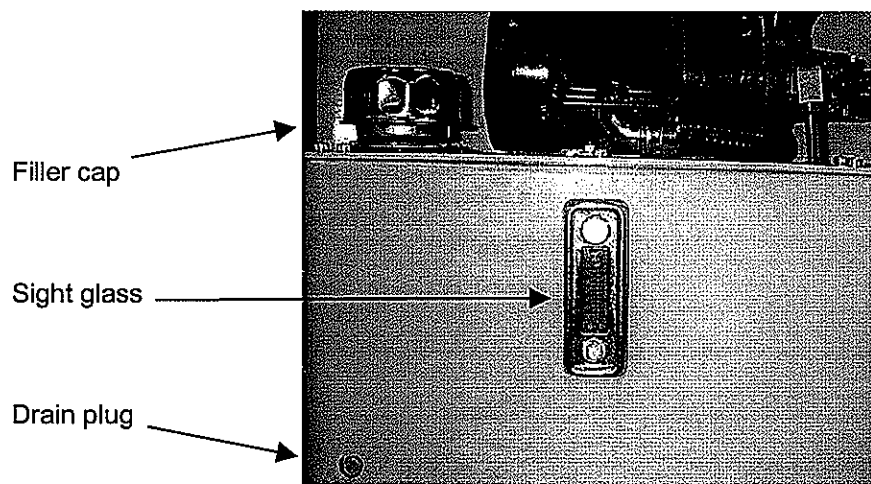
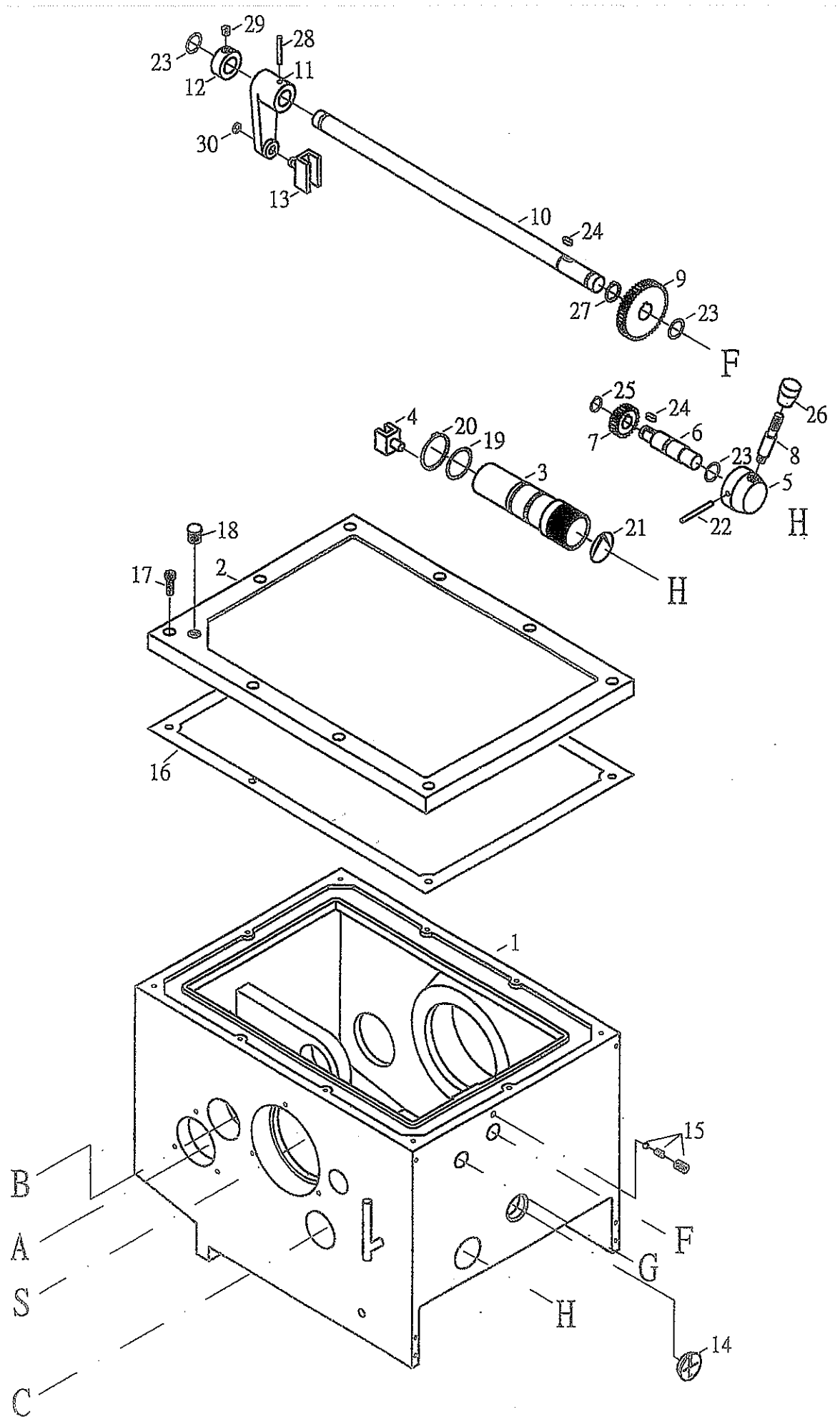


Figure 3 – Headstock Oil Tank

Recommended headstock Lubricant for ML15

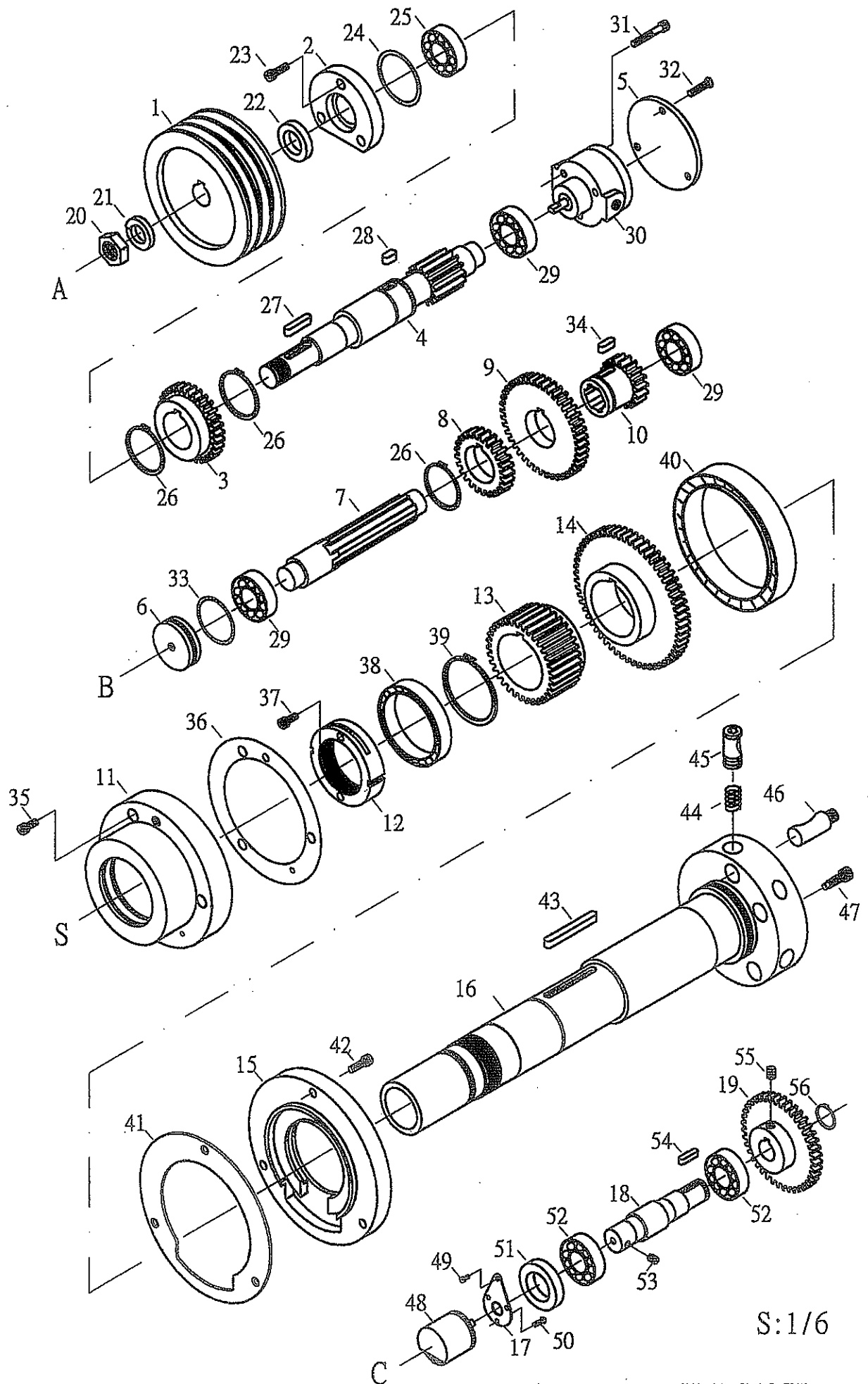
Quantity	Mobil	Shell	Castrol
12 Liter/12.6 Qt	D.T.E. 25	Tellus C46	Hyspin VG46

Use oil from the table above or equivalent



ML-15 SPINDLE HEAD(II) PARTS LIST

item	description	q'ty	remarks
1	Head stock	1	
2	Head stock cover	1	
3	Shaft	1	
4	Fork shifter	1	
5	Knob	1	
6	Shaft	1	
7	Gear	1	
8	Lever	1	
9	Gear	1	
10	Shaft	1	
11	Link	1	
12	sleeve	1	
13	Fork shifter	1	
14	Oil level gauge	1	
15	Steel ball & screw	1	Dia.6
16	Packing	1	
17	Screw	10	M8x20l
18	Plug	1	5/8"
19	O-Ring	1	P34
20	C-Snap	1	S40
21	Indicator plate	1	
22	Pin Roll Pin	1	Dia.5x50l
23	O-Ring	3	P16
24	Key	1	5x5x12l
25	C-Snap	1	S15
26	Knob	1	
27	C-Snap	1	S20
28	Pin Roll pin	1	Dia.5x36
29	Set screw	1	M8x8l



S:1/6

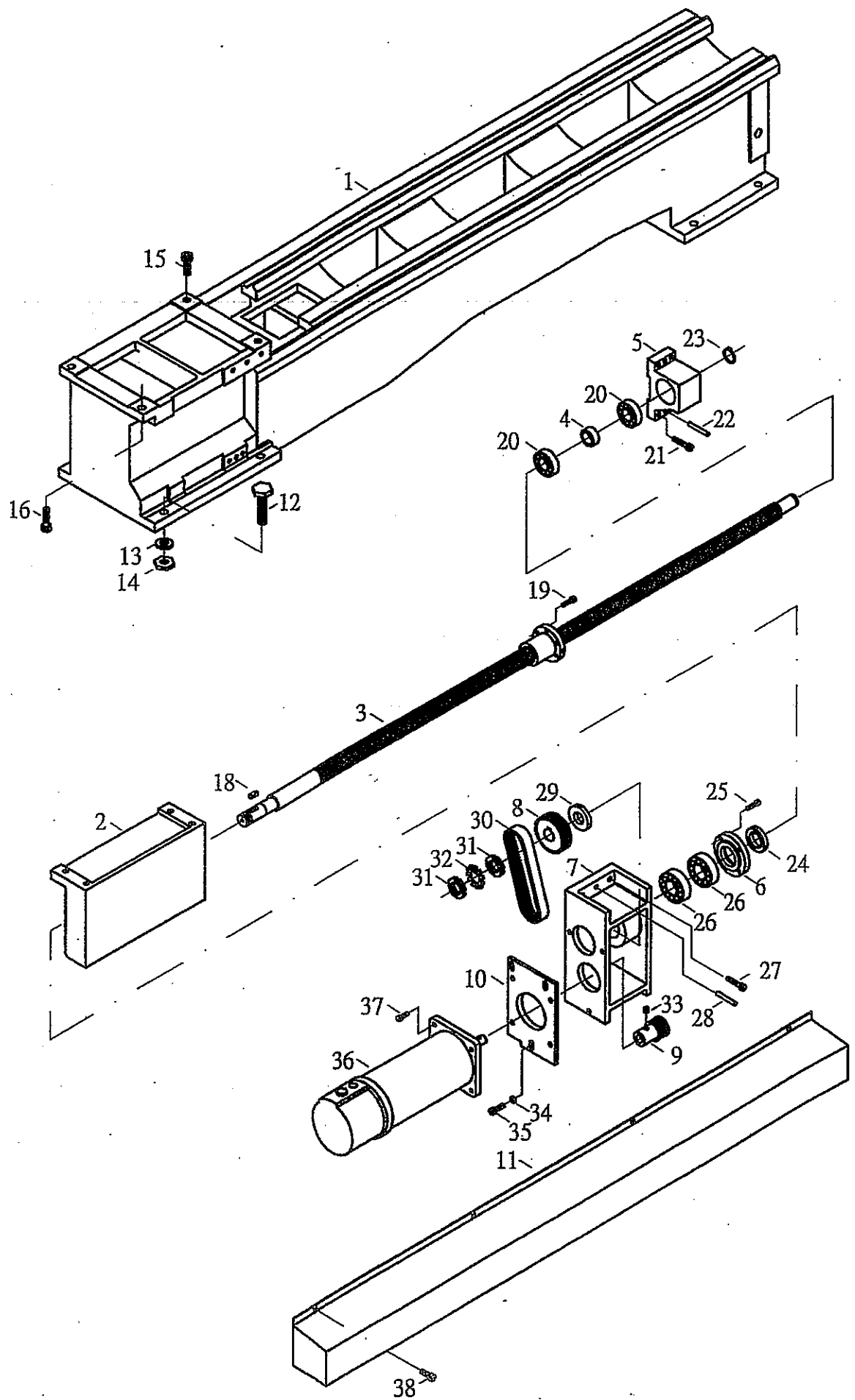
HEADSTOCK

ML-15 SPINDLE HEAD (I) PARTS LIST

item	description	q'ty	remarks
1	Spindle pulley	1	MLH-116
2	Bearing cap	1	
3	Gear	1	
4	A Shaft	1	
5	Cap	1	MPL-112
6	Cover	1	
7	B Shaft	1	
8	Gear	1	
9	Gear	1	
10	Gear	1	
11	Rear cap	1	
12	Nut	1	
13	Gear	1	
14	Gear	1	
15	Front bearing cap	1	
16	Main spindle	1	MLH-131
17	Plate	1	
18	C Shaft	1	
19	Gear	1	MLH-134
20	Nut	1	M24
21	Spring washer	1	M24
22	Oil seal	1	MLH-137
23	Screw	3	M8x25l
24	O-ring	1	
25	Ball bearing	1	BG-14
26	C-Snap	3	S40
27	Key	1	8x7x35l
28	Key	1	8x7x16l
29	Ball bearing	3	BG-24
30	Pump	1	
31	Screw	3	M6x65l
32	Screw	3	M6x10l
33	O-ring	1	P46
34	Key	1	8x7x24l
35	Screw	3	M8x20l

item	description	q'ty	remarks
36	Packing	1	
37	Screw	2	M6x18l
38	Taper roller bearing	1	BG-136
39	C-Snap	1	S72
40	Taper roller bearing	1	BG-137
41	Packing	1	
42	Screw	4	M8x25l
43	Key	1	8x7x70l
44	Spring	6	
45	D1-5 cam	6	
46	D1-5 pin	6	
47	Screw	6	
48	Block	1	
49	Screw	1	M4x10l
50	Screw	3	
51	Oil seal	1	25x47x8
52	Ball bearing	2	BG-162
53	Set screw	1	M6x10l
54	Key	1	6x6x24l
55	Set screw	1	M8
56	C-Snap	1	S22

BT-64 (3 belt set)
Rev H



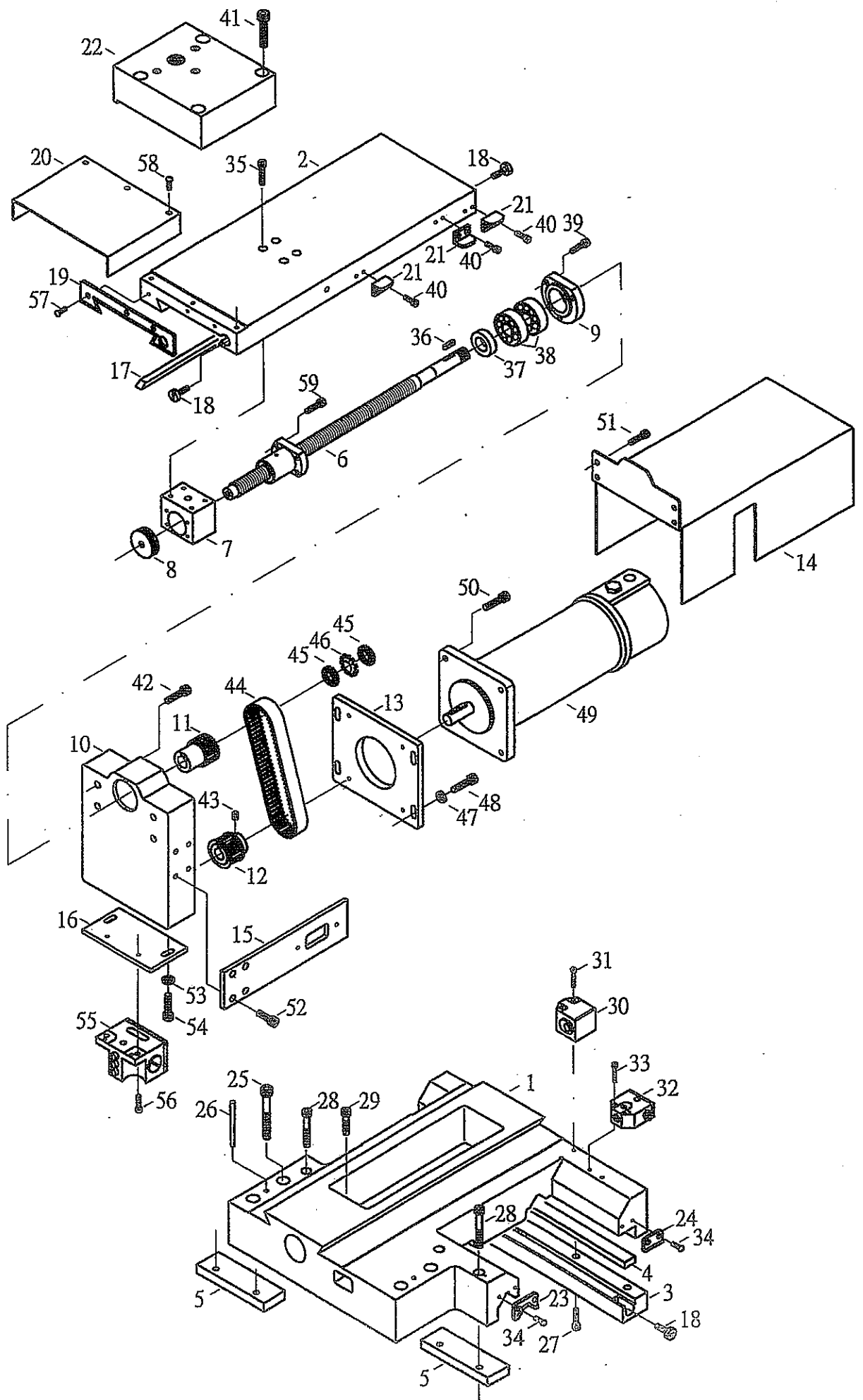
ML-15 BED PARTS LIST

item	description	q'ty	remarks
1	Bed	1	
2	Block	1	
3	Ball screw	1	
4	Spacer	1	
5	Bearing seat	1	
6	Bearing cap	1	
7	Bearing housing	1	
8	Pulley	1	
9	Motor pulley	1	
10	Motor plate	1	
11	Cover	1	
12	Screw	8	M14x50l
13	Spring washer	8	M14
14	Nut	8	M14
15	Screw	2	M12x40l
16	Screw	2	M12x40l
18	Key	1	5x5x20l
19	Screw	6	M6x20l
20	Ball bearing	2	BG-24
21	Screw	4	M8x38l
22	Pin	2	Dia.7x38l
23	C-Snap	1	S25
24	Oil seal	1	MLB-70 32x52x8
25	Screw	4	M6x15l
26	Ball bearing	2	BG-89
27	Screw	4	M8x38l
28	Pin	2	Dia.7x38l
29	Oil seal	1	
30	Belt	1	BT-49
31	Nut	2	AN05 BG-84
32	Washer	2	AW05 BG-192
33	Set screw	1	M8
34	Washer	3	M8
35	Screw	3	M8x20l
36	Servo motor	1	SEE TO RIGHT
37	Screw	4	M6x28l

Z axis cabletrack
MLE-622

BG-13 is
bearing inside

Item #36 Servo motor selection:
Models ML15A - ML15E use DC motor
part number MO-02.
Models ML15F - ML15J use AC Sigma2
motor part number MO-125.



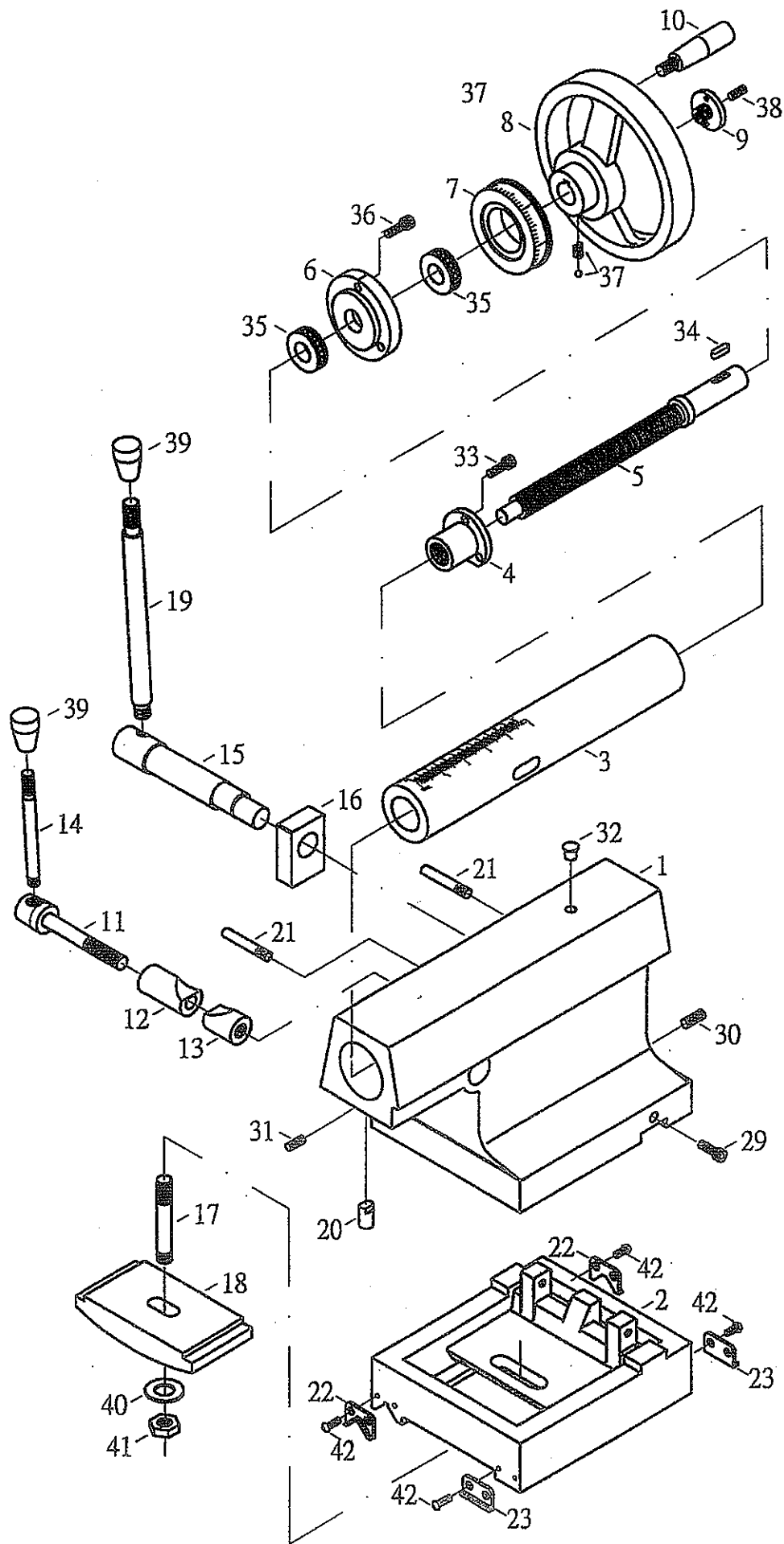
ML-15 SADDLE & CROSS SLIDER PARTS LIST

item	description	q'ty	remarks
1	Saddle	1	
2	Cross slide	1	
3	Rear clamp plate	1	
4	Gib	1	
5	Front clamp plate	1	
6	X-ballscrew	1	
7	Nut bracket	1	
8	Cap	1	
9	Bearing cap	1	
10	Gear box	1	
11	Pulley	1	
12	Motor pulley	1	
13	Motor plate	1	
14	Cover	1	
15	Bracket-Flexible track	1	
16	Bracket-Limit switch	1	
17	Gib	1	
18	Adjust screw	4	
19	Wiper	1	MLA-22
20	Chip guard	1	
21	Dog	3	
22	QCT set	1	
23	Wiper	2	MLA-22
24	Wiper	2	
25	Screw	4	M10x75l
26	Pin	2	Dia.5x90l
27	Screw	4	M8x35l
28	Screw	3	M8x75l
29	Screw	1	M8x90l
30	Limit switch	1	
31	Screw	2	M5
32	Limit switch	1	
33	Screw	2	M5
34	Screw	8	M5x8l
35	Screw	4	M6x30l

item	description	q'ty	remarks
36	Key	1	5x5x20l
37	Oil seal	1	MLT-88
38	Ball bearing	2	BG-88 or BG-103/104
39	Screw	3	M6x15l
40	Screw	6	M5x15l
41	Screw	4	
42	Screw	4	M8x15l
43	Set screw	1	M6x5l
44	Timing belt	1	BT-23
45	Nut	2	AN03 MLT-96
46	Washer	1	AW03 BG-74
47	Washer	4	M8
48	Screw	4	M8x20l
49	Servo motor	1	SEE BELOW
50	Screw	4	M6x15l
51	Screw	4	M6x10l
52	Screw	4	M8x15l
53	Washer	2	M8
54	Screw	2	M8x15l
55	Limit switch	1	SW-202/SW-284/SW-200
56	Screw	2	M6x15l
57	Screw	3	M6x10l
58	Screw	3	M6x10l
59	Screw	4	M6x15l

Oil line (Oiler to cross feed MPL-796)

Item #49 Servo motor selection:
Models ML15A - ML15E use DC motor part number MO-02.
Models ML15F - ML15J use AC Sigma2 motor and seal #'s MO-125 with BG-116.



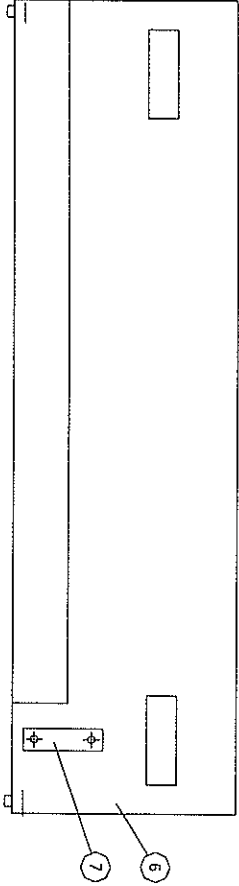
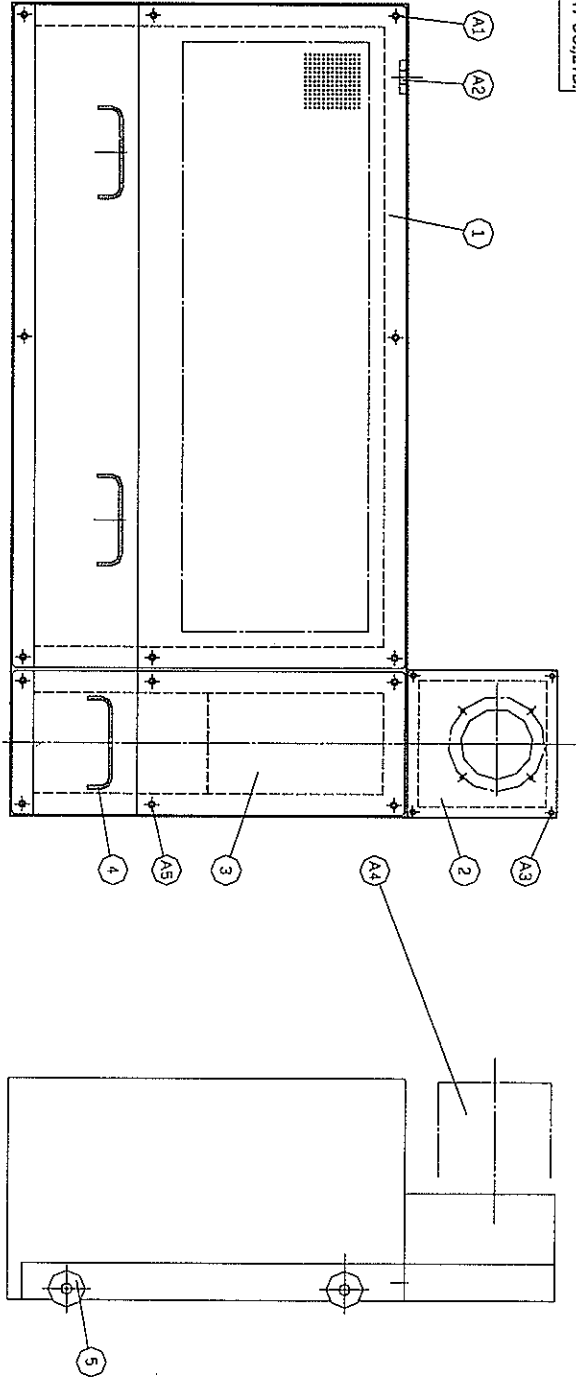
ML-15 TAILSTOCK PARTS LIST

item	description	q'ty	remarks
1	Tailstock	1	MLA-01
2	Base	1	
3	Quill	1	MLA-03
4	Nut	1	
5	Lead screw	1	MLA-05
6	Bearing cap	1	MLA-06
7	Graduated ring	1	MLA-07
8	Handwheel	1	MLA-08
9	Nut	1	MLA-09
10	Lever	1	MLA-10
11	Bolt	1	MLA-11
12	Cam sleeve	1	MLA-12
13	Cam lock	1	MLA-13
14	Lever	1	MLA-14
15	Clamp shaft	1	MLA-15
16	Adjust block	1	MLA-16
17	Bolt	1	MLA-17
18	Clamp block	1	MLA-18
19	Lever	1	MLA-19
20	Key	1	MLA-20
21	Stopping lever	1	MLA-21
22	Wiper	2	MLA-22
23	Wiper	2	MLA-22
29	Screw	2	MLA-24
30	Set screw	1	M10
31	Set screw	1	M6x14l
32	Plug	1	
33	Screw	3	M6x20l
34	Key	1	5x5x18l
35	Thrust bearing	2	BG-103
36	Screw	3	MLA-28
37	Spring & steel ball	1	Dia.6
38	Set screw	1	M6
39	Handle	2	
40	Washer	1	M12
41	Nut	1	M12
42	Screw	8	M5x8l

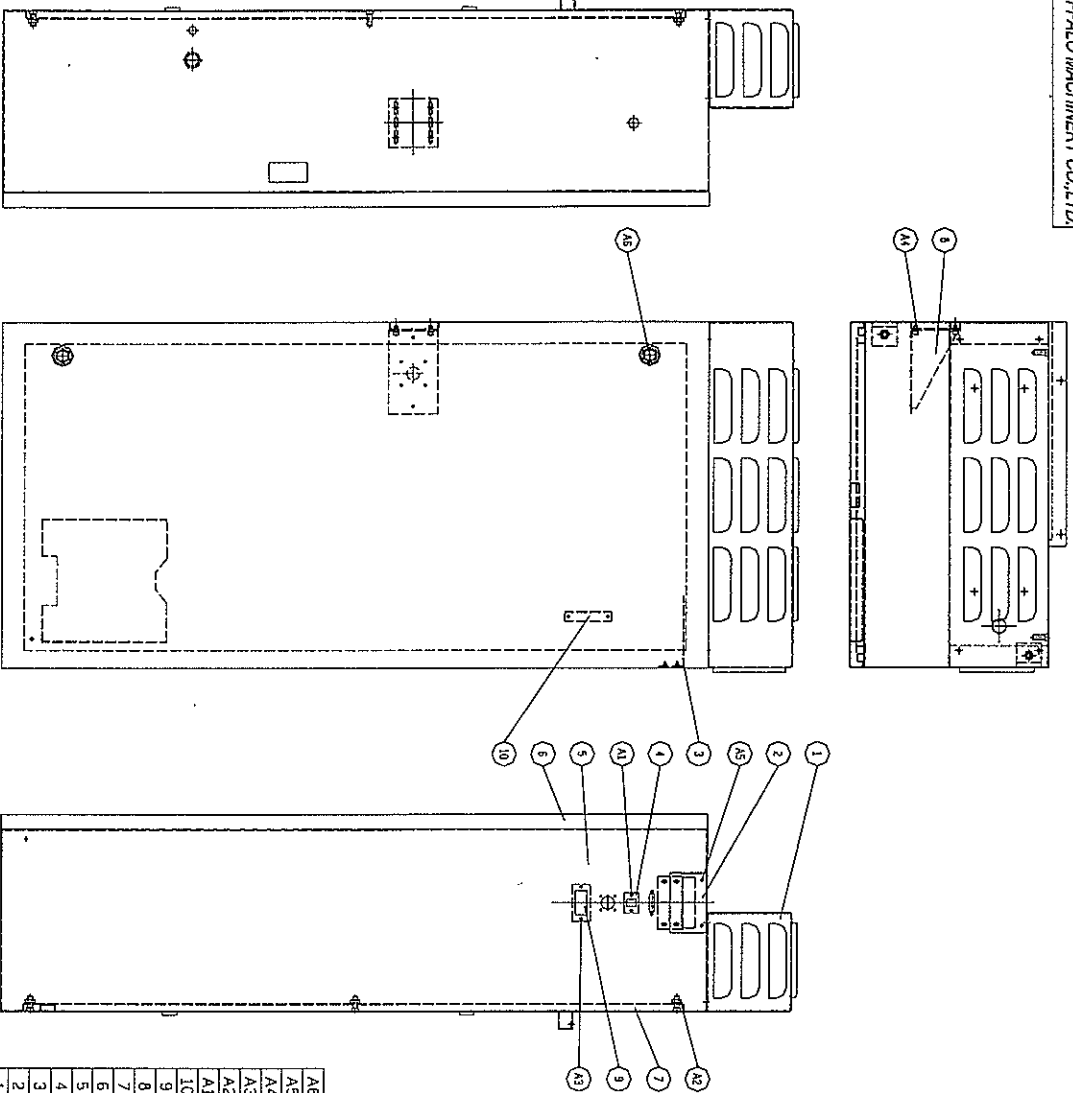
A46	Washer	-	Coated Fltch 5 #5		A16 Cop Bolt		Coated Fltch 2 M6XP1.0		29 Supporting Pkts	E-ARAD-70111-01	SPPC	2	
A47	Cop Bolt	-	Coated flatch 5 M5XP0.8	-	A15 Washer	-	Coated Fltch 4 #5	-	26 Bld Bechnys	L-0401-00001	S45G	12	508Z2
A46	Washer	-	Coated flatch 5 #6	-	A14 Cop Bolt	-	Coated Fltch 4 M6XP1.25	-		E-ARAD-70114-01	S45G	28	
A45	Cop Bolt	-	Coated flatch 5 M6XP1.0	-	A13 Washer	-	Coated flatch 5 #6	-	26 Plate	E-ARAD-70283-01	SPPC	2	
A44	Washer	-	Coated flatch 5 #5	-	A12 Cop Bolt	-	Coated flatch 5 M6XP1.0	-	25 Side Wty	E-ARAD-70115-01	S541	2	
A43	Cop Bolt	-	Coated flatch 5 V5XP0.8	-	A11 Washer	-	Coated flatch 8 #6	-	24 Weat Menetl	E-ARAD-70113-01	S45G	12	
A42	Protecting Pipe	-	Coated flatch 1 -	-	A10 Cop Bolt	-	Coated flatch 8 M6XP1.0	-	23 Fnsng Pltte	E-ARAD-70130-01	SPPC	1	
A41	Washer	-	Coated flatch 2 #5	-	A9 Cop Screw	-	Coated flatch 14 M5SX70.8	-	22 Base Site Cover	E-ARAD-70131-01	SPPC	1	
A40	Cop Screw	-	Coated flatch 2 M5XP0.8X12L	-	A8 Washer	-	Coated flatch 4 #6	-	21 Fnsng Sect	E-ARAD-70131-01	SPPC	1	
A39	Cop Bolt	-	Coated flatch 4 M4XP0.7X12L	-	A7 Cop Bolt	-	Coated flatch 4 M6XP1.0	-	20 Rng Guard	E-ARAD-70109-01	SPPC	1	
A38	Washer	-	Coated flatch 2 #5	-	A6 Washer	-	Coated flatch 18 #6	-	19 Frng Pltte	E-ARAD-70265-01	SPPC	2	
A37	Cop Screw	-	Coated flatch 2 M5XP0.8X10L	-	A5 Cop Bolt	-	Coated flatch 16 M6XP1.0	-	18 Brnd Cover	E-ARAD-70262-01	SPPC	1	
A36	Washer	-	Coated flatch 5 M6XP10X12L	-	A4 Washer	-	Coated flatch 1 #5	-	17 Operation Box	E-ARAD-70261-01	SPPC	1	
A35	Cop Bolt	-	Coated flatch 4 #6	-	A3 Cop Screw	-	Coated flatch 2 #5	-	16 Brnd Cover	E-ARAD-70261-01	SPPC	1	
A34	Washer	-	Coated flatch 3 #6	-	A2 Washer	-	Coated flatch 2 M6XP0.8	-	15 U4 Ebow Hordle	Q-0172-00204	Coated flatch 2		
A33	Cop Bolt	-	Coated flatch 3 M6XP10X12L	-	A1 Cop Bolt	-	Coated flatch 2 SPPC	-	14 Good Guidng Pltte	E-ARAD-70266-01	SPPC	1	
A32	Washer	-	Coated flatch 3 M6XP10X12L	-	A4 Stoppo	-	Coated flatch 6	-	13 Frng Pltte	E-ARAD-95002-01	SPPC	4	
A30	Washer	-	Coated flatch 6 #8	-	A3 Stoppo	-	Coated flatch 4	-	12 Side Wty	E-ARAD-70276-01	SPPC	1	
A29	Cop Bolt	-	Coated flatch 6 M6XP1.25X20L	-	A2 Cover	-	Coated flatch 1	-	11 Lower Wire Slot	E-ARAD-70277-01	SPPC	1	
A28	Washer	-	Coated flatch 6 #8	-	Bd Shes Ad Mt Cvr	-	SPPC	1	10 Cover	E-ARAD-70276-01	SPPC	1	
A27	Washer	-	Coated flatch 8 #8	-	40 Cover	-	SPPC	1	9 Motor Cover	-	SPPC	1	
A26	Nut	-	Coated flatch 8 M6XP1.25	-	39 Pkte	-	E-ARAD-70129-01	SPPC	8 Protection Expcure	E-ARAD-70284-01	SPPC	1	
A25	Washer	-	Coated flatch 4 #6	-	38 Lower Cover	-	E-ARAD-70282-01	SPPC	7 Right Side Door	E-ARAD-70286-01	SPPC	1	
A24	Cop Bolt	-	Coated flatch 4 M6XP10X12L	-	37 Cover Pkte	-	E-ARAD-70126-01	SPPC	6 Door Lock Pkte	E-ARAD-70119-01	SPPC	1	
A23	Washer	-	Coated flatch 7 #6	-	36 X-Lbs Protection Pkte	-	E-ARAD-70128-01	SPPC	5 Left Side Door	E-ARAD-70285-01	SPPC	1	
A22	Cop Bolt	-	Coated flatch 7 M6XP10X20L	-	35 STgpper	-	E-ARAD-70127-01	SPPC	4 Door Horde	E-ARAD-70287-01	Coated flatch 2		
A21	Nut	-	Coated flatch 8 M6XP1.25	-	34 Fixng Pltte	-	E-ARAD-03001-01	SPPC	3 Door dices	E-ARAD-70105-01	Sscas/P/C	2	
A20	Washer	-	Coated flatch 2 M6XP10	-	33 Protection Cover	-	E-ARAD-00012-01	SPPC	2 Clamping Pltte	E-ARAD-70106-01	SPPC	4	
A19	Cop Bolt	-	Coated flatch 2 M6XP10	-	32 Beam Set Hacton Cw	-	E-ARAD-53021-01	SPPC	1 Clamping Pltte	E-ARAD-70107-01	SPPC	4	
A18	Washer	-	Coated flatch 2 #6	-	31 -	-	-	-					
A17	Washer	-	Coated flatch 2 #6	-	30 Pkte	-	E-ARAD-70112-01	SPPC	1				
Item	Description	Port no.	Material	Qty	Rem ctk	Item	Description	Port no.	Material	SPCC	Qty	Rem ctk	

Door roller bearing
BG-117(6001ZZ)
BG-174 (6072RS)

Flood coolant hose
MPL-335



A5	Cop. Screw	-	Imperial Plate	6	M6X1.0X12L
A4	PUMP	-	Imperial Plate	1	Submerged
A3	Cop. Screw	-	Imperial Plate	4	M5X0.8X12L
A2	Plug	-	Imperial Plate	1	PT3/8-19
A1	Cop. Screw	-	Imperial Plate	8	M6X1.0X12L
7	Oil Glass	L-0701-00001	Imperial Plate	1	3"
6	Codent Tank	E-ARAD-41011-01	SPCC	1	
5	Wheel	-	-	4	
4	Handle	-	-	3	
3	Codent Cover Plate	E-ARAD-41012-01	SPCC	1	
2	PUMP Flange Plate	E-ARAD-41014-01	SPCC	1	
1	Codent Plate	E-ARAD-41013-01	SPCC	1	
Item Description Part no. Material Qty Rem ch					
Appr	Check	Draw	Scale	1:4	Drawn by
		JWC	100%	100%	100%
					100%



A6	Basic Cabinet Door Lock	Control Panel	2	
A5	Nut	Control Panel	6	M4XP0.7
A4	Cap Bolt	Control Panel	4	M6XP1.0X12L
A3	Nut	Control Panel	2	M4XP0.7
A2	Nut	Control Panel	6	M10XP1.5
A1	Nut	Control Panel	2	M4XP0.7
10	Power Supply Switch Bracket	Control Panel	1	
9	Timer Switch Cover	Control Panel	1	
8	Power Supply Switch Bracket	Control Panel	1	
7	Electrical Panel	Control Panel	1	
6	Electric Cabinet Door	Control Panel	1	
5	Electric Cabinet	Control Panel	1	
4	Side Cover Plate	Control Panel	1	
3	Bracket	Control Panel	1	
2	Cover Plate	Control Panel	1	
1	Resistance Net	Control Panel	1	
Item	Description	Part no.	Material	Qty
Rev	Drawn	Checked	Scale	1:5
DATE	1980	1980	1980	1980
Drawn	1980	1980	1980	1980
Checked	1980	1980	1980	1980
Scale	1:5	1:5	1:5	1:5
1/1	1/1	1/1	1/1	1/1

Headstock Oil Pump Assembly
Model : ML15

Item No.	Parts No.	Description	Q'ty	Remarks
1	ML15801	Oil tank	1	
2	ML15802	Cover - tank	1	
3	ML15803	Pump	1	MA-277
4	ML15804	Elbow fitting	2	
5	ML15805	Nylon line	1	Dia. 8mm
6	ML15806	Straight fitting	2	
7	ML15807	Filter	1	MF-02
8	ML15808	Screw	10	M6 x 16
9	ML15809	4-way fitting	1	
10	ML15810	Rod	1	Stainless steel
11	ML15811	Elbow fitting	1	
12	ML15812	Pressure gauge	1	MPL-336
13	ML15813	Nylon line	1	Dia. 8mm
14	ML15814	Distributor	1	
15	ML15815	Screw	2	M10 x 20
16	ML15816	Detector	1	M6
17	ML15817	Cord grip	1	HY-08
18	ML15818	Screw	4	HY-08
19	ML15819	Spacer	4	HY-08
20	ML15820	Nut	4	M6
21	ML15821	Filter	1	
22	ML15822	Asbestos paper	1	
23	ML15823	Cover - filter	1	
24	ML15824	Nut	6	
25	ML15825	Screw	6	
26	ML15826	Oil lens	1	
27	ML15827	Screw	2	
28	ML15828	Screw	1	
29	ML15829	Straight fitting	3	1/2
30	ML15830	Elbow fitting	2	1/2
31	ML15831	Straight fitting	1	1/2
32	ML15832	Oil line	1	
33	ML15833	Motor	1	MO-142

[illegible]

CT 164800
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