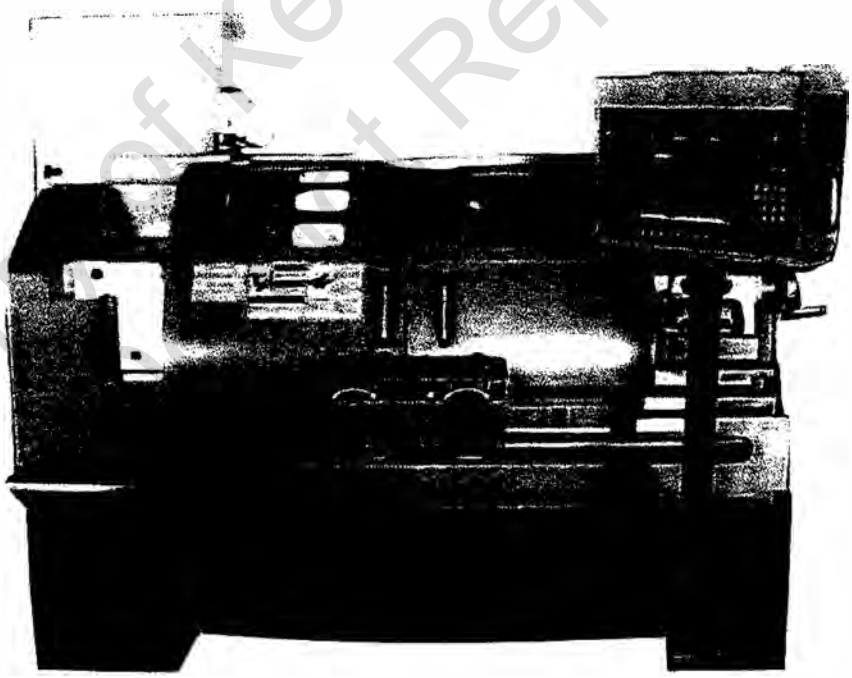
KENT USA
Since 1979

CNL Series
CNC Teach Lathe
Operation Manual

HIGH PERFORMANCE
CNC TEACH-IN LATHE

MODEL : CNL - 1740
CNL - 1760

INSTRUCTION
AND
SPARE PARTS MANUAL



INDEX

MODEL		-1740	-1760
Capacity	No. of control axis	2 AXIS	
	Height of centers	216mm (8.5")	
	Swing over bed	ø435mm (17")	
	Swing over cross slide	ø277mm (10.9")	
	Distance between centers	950mm (38")	1450mm (58")
	Width of bed	305mm (12")	
Headstock & Main spindle	Spindle nose , Internal taper	STD. D1-6 OPT. A1-6 , MT. No.6	
	Spindle center sleeve	MT. No.6 x MT. No.4	
	Spindle bore	ø52.5mm (2.066")	
	Spindle speed : Gear steps / Range	Manual change 2 steps / L 30 ~ 400 R.P.M. H 400 ~ 2800 R.P.M. Infinitely variable	
Cross slide (X-axis) & Carriage (Z axis)	Longitudinal travel (Z-axis)	900mm (35.43")	1400mm (55.11")
	Cross slide travel (X-axis)	230mm (9.05")	
	AC servo motor (X-axis)	0.85kW 5.39N.m	
	AC servo motor (Z-axis)	1.3kW 8.34N.m	
	Dia. of ball screw (X-axis)	ø20mm (0.787") P5 C5	
	Dia. of ball screw (Z-axis)	ø40mm (1.57") P10 C5	
	Rapid traverse speed (X-axis)	5 m/min (196.8 ipm)	
	Rapid traverse speed (Z-axis)	7.5 m/min (295.3 ipm)	
Turret	Tool station	STD . Manual 4 way tool post	OPT. Elec. H4 or Hydraulic P8 turret
	Size of external turning tool	□ 20 mm	□ 20 mm
	Boring bar diameter		ø20mm (0.787")
Tailstock	Quill diameter	ø68mm (2.677")	
	Quill stroke	153mm (6")	
	Taper of center	MT. No.4	
Motor	Main spindle	AC 5.5kW (7.5HP) , Inverter	
	Hydraulic oil pump	OPT. 0.75kW (1HP)	
	Forced lubrication for headstock	1 / 4 HP	
	Coolant pump	1 / 6 HP	
Tank capacity	Hydraulic tank	OPT. 30 Litre (6.6 gal.)	
	Coolant tank	60 L (13.2 gal.)	85 L (18.7 gal.)
Measurement	Weight (Net/Gross) Approx.	2150kgs / 2650kgs	2400kgs / 2900kgs
	Packing sizes: Length	2600mm (102.4 ")	3115mm (122.65 ")
	Packing sizes: Width x Height	Width 1800mm (70.9") x Height 2230mm (87.8")	

Remarks: Machine with Elec. H4 or Hyd. P8 turret, X,Z axis travel will be shorter.

** *Specification subject to change without notice* **

- STANDARD ACCESSORIES :

1. CNC controller
2. Backplate for 9" chuck
3. Dead center MT.4 made of carbon steel
4. Dead center MT.4 with carbide tip
5. Spindle center sleeve MT.6 x MT.4
6. Level pads ------ 6pcs
7. Toolset & Box
8. Operation manual & parts list

- OPTIONAL ACCESSORIES :

1. 3-Jaws scroll 9" chuck
2. 4-Jaws independent 10" chuck
3. Hydraulic P8 turret with
   boring bar holder ..... 2 sets
   facing tool holder ..... 2 sets
4. Boring socket ø5 x ø20 ~ ø12 x ø20
5. Drilling socket MT.1 x ø20
6. Chip conveyor & chip bucket cart
7. Hydraulic hollow chuck 8" with
   Rotary cylinder / bar capacity ø36
8. Steady rest w/ ball bearing
9. Follow rest w/bronze tip
10. Electric H4 turret
11. Quick change tool post
12. Drill chuck & arbor
13. Rotating center MT.4
14. Hydraulic Tailstock quill

MOVING THE MACHINE WITH A FORKLIFT

* PREPARATION:

1. Must move X,Z axises to its original position (zero return) before turning off the power.
2. Turn off the power.
3. Disconnect the power cable and the ground cable.
4. Disconnect the cable and hose of coolant tank and drain the coolant.
5. Disconnect the cable and hose of headstock lubrication tank and drain the oil.
6. Lock the tailstock.
7. Fix lock the silding control cabinet and the silding door.

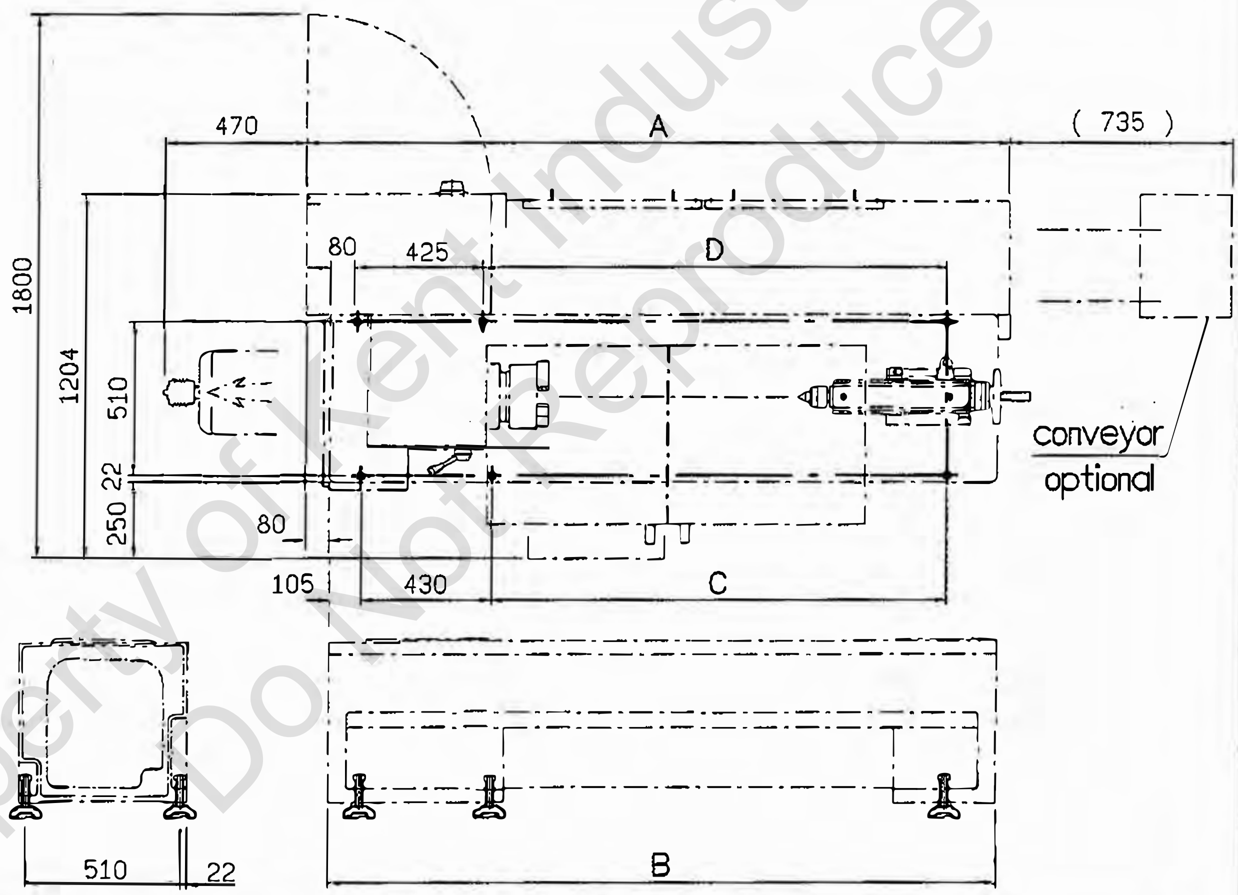
- Machine weight model 1740 about 2150 kgs.
  model 1760 about 2400 kgs.
- Make sure that the minimum forklift capacity is more than 3 tons for secutity.
- Only on outhorized forklift operator should use the forklift.
- Forklift work should be cooperatively done by two persons,that is on operator and a watchman, not to damage projecting on the machine perimeter.
- To put in the fork, use the fork inserting the plinth mid-left.
- Keep the machine's balance of gravity at the center of the forks.

INSTALLATION OF MACHINE

※ NOTICE ITEM :

1 . There must be sufficient power capacity .
2 . The surface where the machine is installed must be smooth and flat.
3 . The machine must not be adjacent to direct sunlight .
4 . Don't pile up things on the floor around the machine and must keep floor dry.
5 . The machine must not adjacent to planing machine , milling molding or punching machine .
6 . Ambient temperature : 0° ~ 40°C
7 . Humidity : ≦ 10 ~ 90 % RH (Room Humidity) – without condensation .
8 . Must reserve enough space for opening of the door of electric panel for maintenance and accessing for operation .

FOUNDATION PLAN



Model	A	B	C	D	Remark
– 1740	2330 mm	2210 mm	1505 mm	1535 mm	
– 1760	2830 mm	2710 mm	2005 mm	2035 mm	

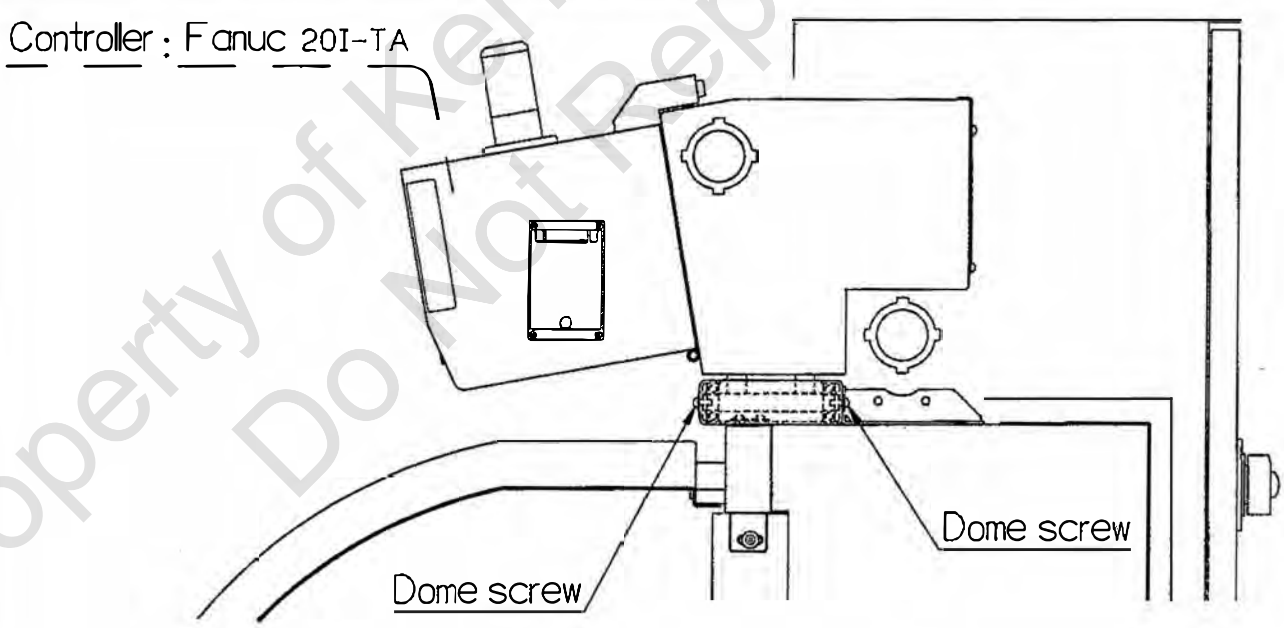
- Position the lathe on bottom and adjust each of the six mounting plinth to equal load .
- Using an engineers' precision level on the badways , adjust the plinth to level up machine .
- Periodically check bed level gravity to ensure continued lathe accuracy .

RC

CLEANING THE MACHINE

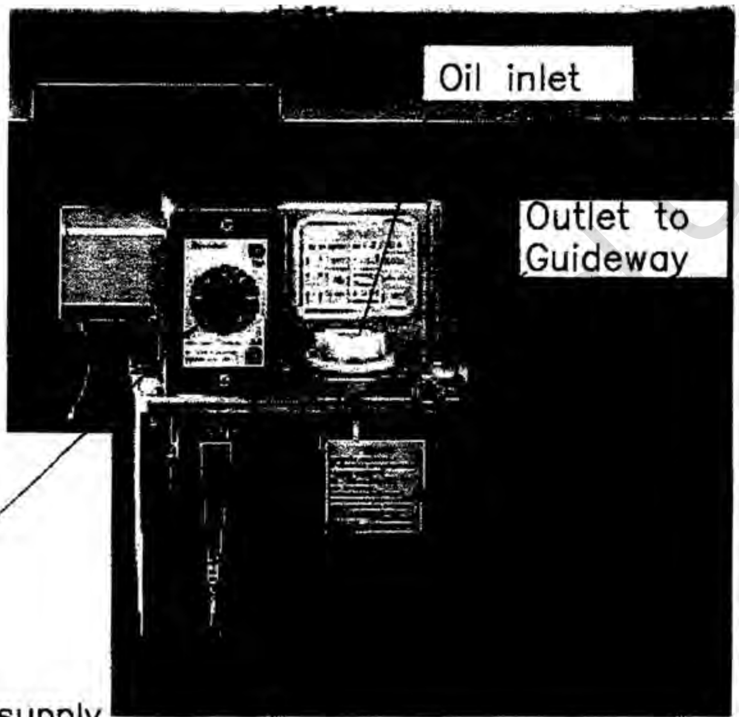
1. Before operating any controls, remove the anti-rust coating on all sildeways and other places.
2. When cleaning, use spirit or kerosene instead of cellulose solvents, which may damage the paint finish.
3. Oil all brightly machined surfaces immediately after cleaning, apply machine oil on guideway and slideway.

THE SLIDING MOVE CONTROL CABINET



- The control cabinet can sliding move right or left, then it should be easy for the operation.
- Before movement, must fix by four M6 x 15 screw.
- After installation, must take off the screw for turning machine.

RESIST TYPE LUBRICATOR
(AUTOMATIC CYCLE TYPE)



Intermittent time adjust knob

- Suggestion: Auto lubricate within 15 minutes once a time at least
- Check oil daily and supply the oil suitable.

Transparent tank capacity 2 L

Lubrication oil table

Suppliers / Service Point	CHINESE PETROLEUM COMPANY	SHELL	CALTEX	MOBIL	ESSO	DAPHNE	NOTE VG/40°C
Guideway Lubrication Pump	Guide Way Lubrication Oil No.68	TONNA 68	CALTEX 68X	VACTRA 2	Febix K68	Daphnc Multiway C68	VG68

MODEL	YES
Oil tank capacity	2 L
Voltage (single)	220 V
Discharge capacity	15c.c/cy
Intermittent time (min)	0~60
Lubrication time (sec)	---------
Max.outlet pressure	7kgf/cm²
Discharge bore	ø6

(Electricity Specification):

MODEL	YES
Consumed power (Max.)	80W
Time Setting Variance	±10%
Contact Output Rated Current	0.5A
Contact Output Rated Voltage	250V
Operating Temperature	0°c~50°c

⏚	POWER		NC	COM	NO
⊗	⊗	⊗	⊗	⊗	⊗
	Red	Red			

110V OR 220V (50/60Hz) unusual alarm

HEADSTOCK (gears & bearings) lubrication with power chuck system

(OPTIONAL)

The connection procedures for the HD. lube tank / hydraulic tank :

1. Connect the high pressure hose – power chuck A & B to manifold on the tank. shown in Photo D1. & D3.
3. Connect the lubricant oil return hose & HD. lube nylon pipe & Hyd. oil return hose to elbow on the tank, shown in Photo D1. & D3.
2. Connect the motor wire connector to motor outlet & solenoid valve connector to solenoid valve outlet that side on the electrical cabinet. shown in Photo D2.

- The nylon pipe is used to transfer the lubrication oil to the headstock.

Contrastive table in oil

Suppliers / Service Point	CHINESE petroleum company	SHELL	CALTEX	MOBIL	ESSO	DAPHNE	NOTE VG/40°C
Hydraulic oil tank	Hydraulic oil No. 32AW	TELLUS 32 (or C32)	RANDO HD32	DTE 24	NUTO H32	Daphne Super hydraulic fluid 32	VG32

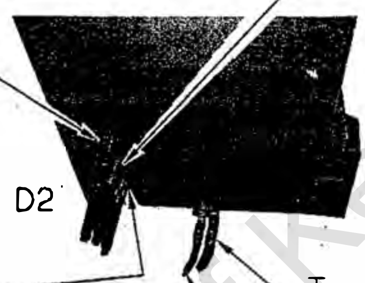


Photo D2

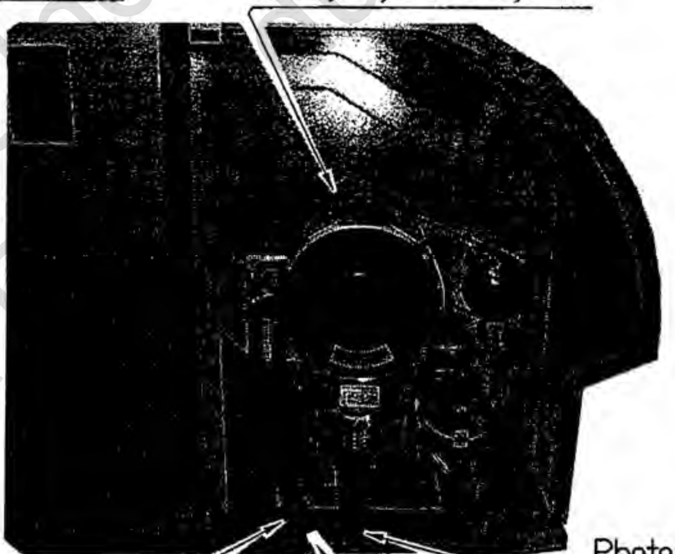


Photo D1

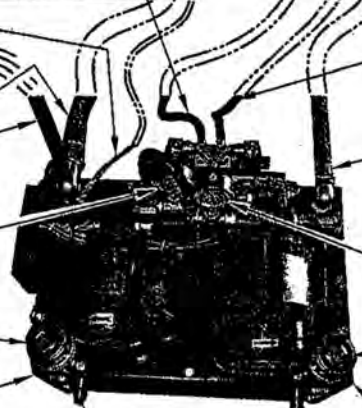
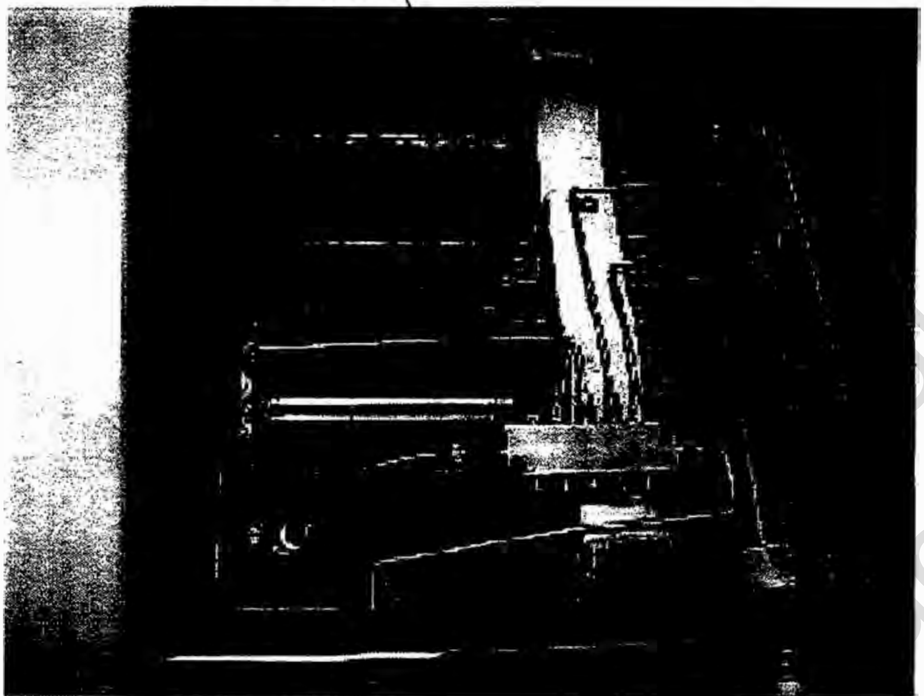


Photo D3

- Check oil weekly and change the oil every six months.

C&T

HEADSTOCK (gears & bearings) Lubrication



Headstock bearings and gears are supplied with oil delivered by a pump attached to a tank on the rear plinth.

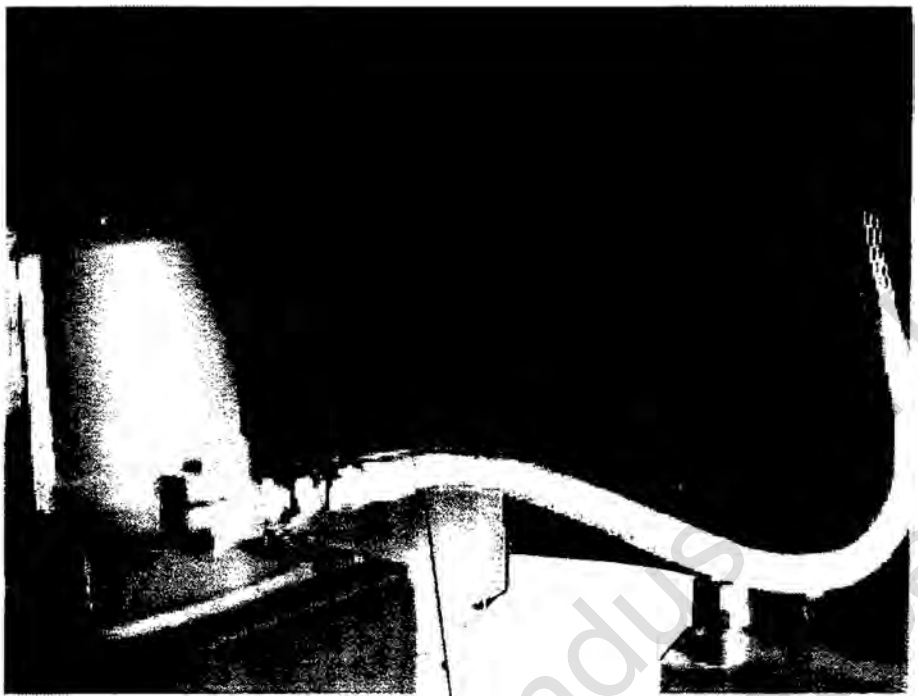
A distributor within the headstock suppliers oil to the drive bearings and gears.

The oil pump is driven from motor,insuring continuous supply whilst the motor is running; evidence of supply is shown through an oil sight window in the headstock front face.

Check oil weekly and change the oil every year.

ATTENTION:

OIL MUST BE VISIBLE WHILE SPINDLE IS ROTATING



Outlet hose 1

Power connector 2

The connection procedures for the Coolant tank

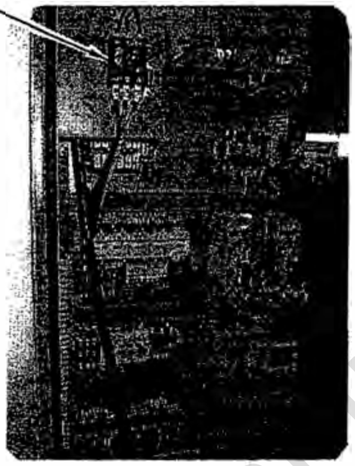
1. Connect the outlet hose to pump.
2. Connect the power connector to electrical box.

CONNECTING THE POWER

1. Before connecting the power, please notice that the power arrangement of the machine for the spindle inverter motor quires 400VAC frequency.

- Please connect input power wire gauge 5.5mm² x 4C (≑10 AWG) for 400V country / local voltage.

Isolate switch



Input Power Wire
Voltage 400 VAC

Input Power Wire
Voltage 400 VAC

transformer
3KVA

FOR SERVO MOTOR & CNC CONTROLLER ......etc.

2. Before power on, check if every equipment is complete and fixed in the proper place.
3. Input the power after everything is checked normal. Press down the emergency button before turning on the power switch on, you can release the button if everything come out OK.
   This is a must procedure for the very first installation.
4. When the power is turned on, press the RESET key to check if the rotating directions of spindle and coolant motor are correct.
5. Check if the lub is functioning and outputing oil to prevent ball screw & slide surface from damage.

CONNECTING THE POWER

6. Do not pile stuff within operating range

7. Before turning the power on , please check :
   a. Inspect if external damage exist on cord .
      If yes, replace cord .
   b. Inspect if any damage on CNC panel or screen, If yes, contact local dealer.
   c. Fill up the lubericant in the lube tank.
   d. Check if any wire dropped off.
   e. Check the accessories against the list.

8. After power, please check :
   a. Make sure that the rotation directions of spindle motor and coolant motor are correct.
   b. Inspect if the lube working properly.
   c. Check if the machine light working.
   d. Check if the servo motors on 2 axes working properly.

9. Voltages required :
   - 220VAC/50A
   - 380VAC/50A
   - 415VAC/50A
   - 440VAC/50A

10. Power rate :
    a. Spindle : 7.5HP
    b. Coolant : 1/6HP
    c. Guideway lub. : 80W
    d. Headstock lub. : 1/4HP
    e. Machine light : 15W
    f. X & Z axes : 2.15kW
    g. Controller : 300W
    h. Fanners : 180W
    i. Hydraulic motor : 0.75kW (OPTIONAL)

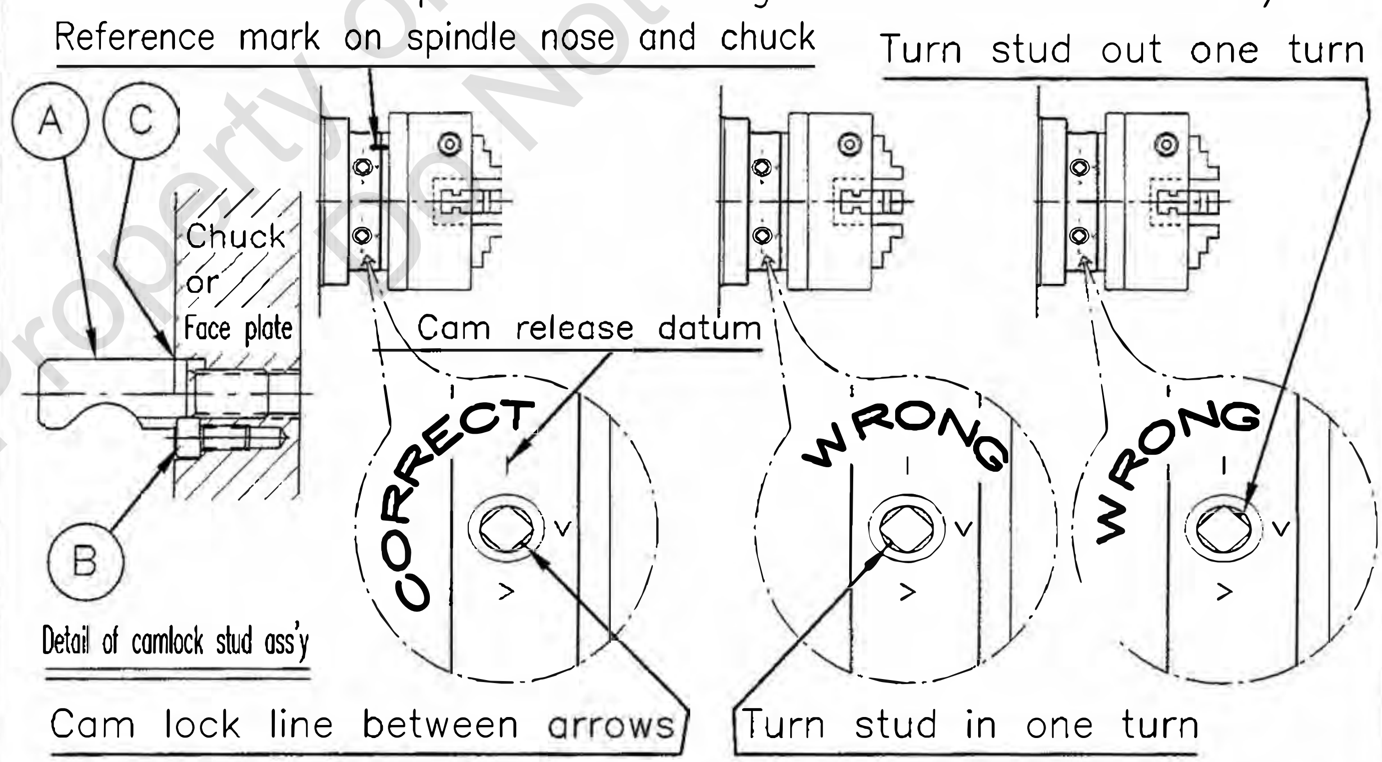
○ CHUCK AND CHUCK MOUNTING (for D1 spindle)

* WARNING: USE ONLY HIGH-SPEED CHUCKS WITH THESE MACHINES.

- When fitting chucks or faceplated, ensure that spindle and chuck tapers are scrupulously clean that all cams lock in the correct positions the first.
- It may be necessary to re-set the camlock studs(A) when mounting a new chuck. To do this, remove the hexagon socket locking screws(B) and set each stud so that the scribed ring(C) is flush with the rear face of the chuck-with the slot-lining up with the locking screw hold.
- Now mount the chuck or faceplate on the spindle nose and tighten the six cams in turn.
- When fully tightened, the cam lock line on each cam should be between the two V marks on the spindle nose.
  If any of the cams do not tighten fully within these limit marks, remove the chuck or faceplate and re-adjust the stud as indicated in the illustration.
- Fit and tighten the locking screw(B) at each stud before remounting the chuck for work. A reference mark should be made on each correctly fitted chuck or faceplate to coincide with the reference scribed on the spindle nose. This will assist subsequent remounting.

DO NOT INTERCHANGE CHUCKS OR FACE PLATES BETWEEN LATHES WITHOUT CHECKING FOR CORRECT CAM LOCKING.

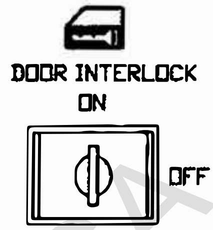
IMPORTANT:
Take careful note of speed limitations when using faceplates; 12 inch faceplates should not be run at speeds higher than 1000 rev/min. and 14 inch faceplates at not higher more than 770 rev/min.



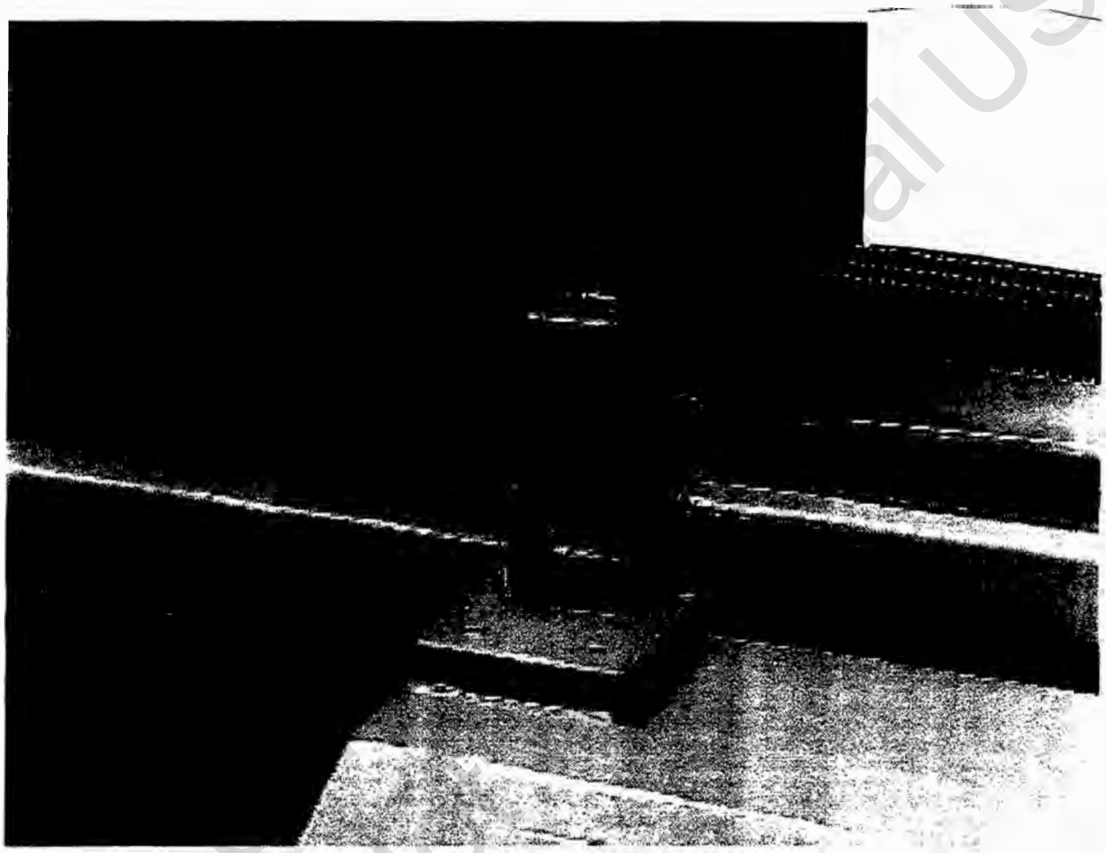
INTERLOCK FUNCTION

CE OPTIONAL

* ON MAIN CONTROL PANELS (FANUC CONTROLLER)



- Check the seletcor switch key locked to ON.



- The machine option interlock function to ensure the safety of operator.
- Before turn on the machine every time, please make sure that the interlock function is valid.
- If turn on the machine without making sure the valid of interlock function, then we have no responsibility for the accident condition.
- The interlock function is described as follows:

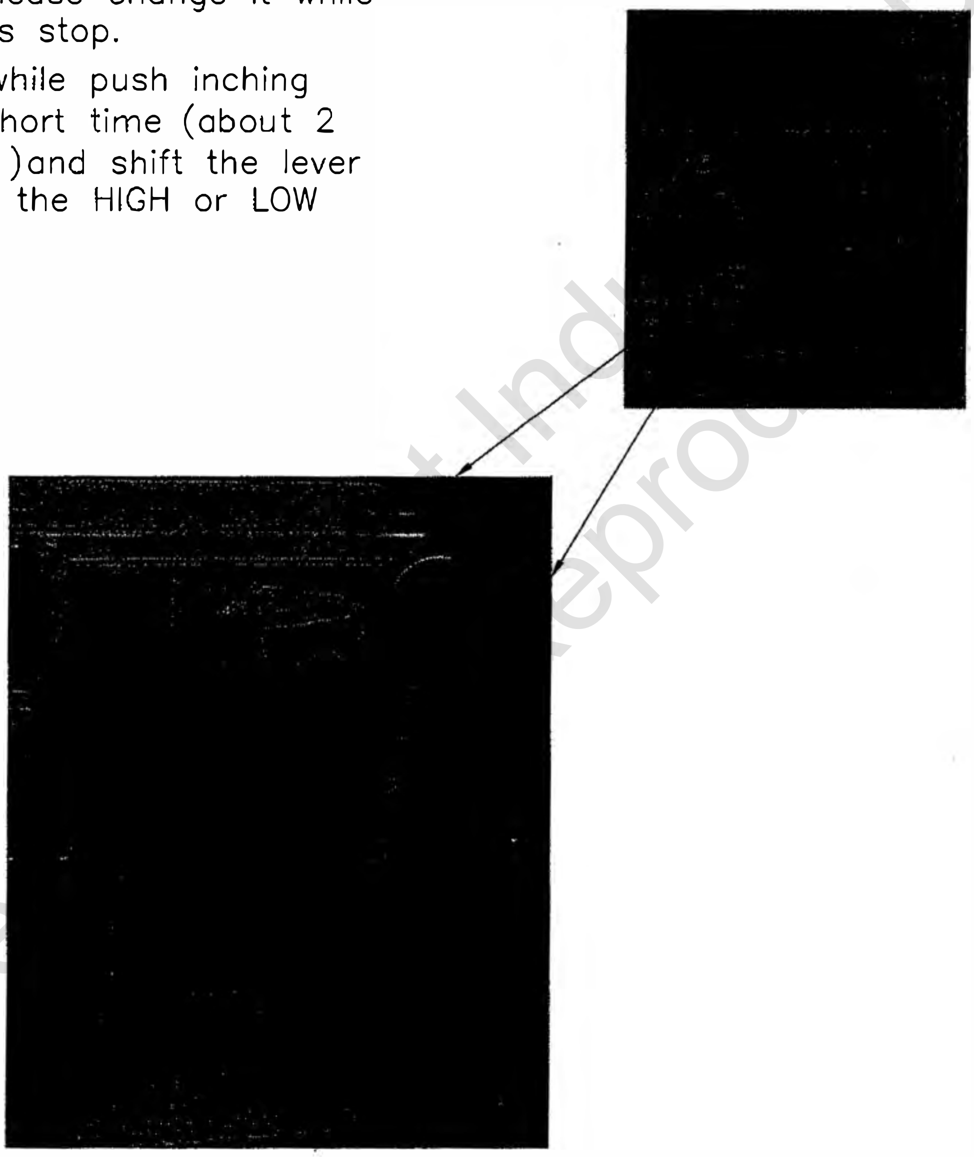
  If the left-front door is not closed, then the spindle can not rotate or cycle operation can not start.

SELECTION OF SPINDLE SPEEDS

- Select the appropriate spindle speed for working from headstock.
  There are 2 steps in the range of spindle speeds.
- 30 ~ 400 r.p.m. for LOW speeds.
  400 ~ 2800 r.p.m. for HIGH speeds.

When change HIGH / LOW range, please change it while spindle is stop.

Meanwhile push inching button short time (about 2 seconds)and shift the lever place at the HIGH or LOW position.



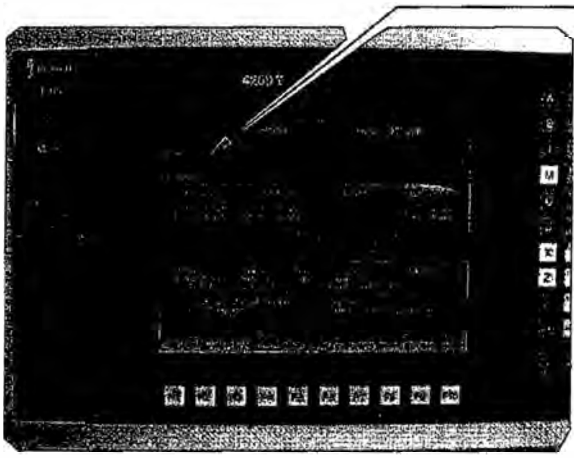
* ON MAIN CONTROL PANELS (FANUC CONTROLLER)

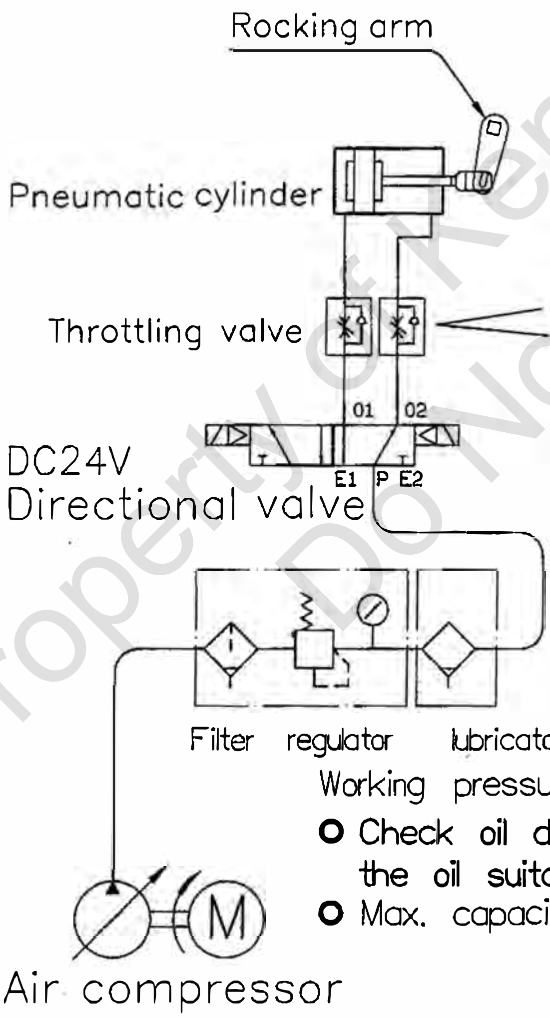
- Check the selector position, if the lamp is light ~ H or L that mean is enter the range.

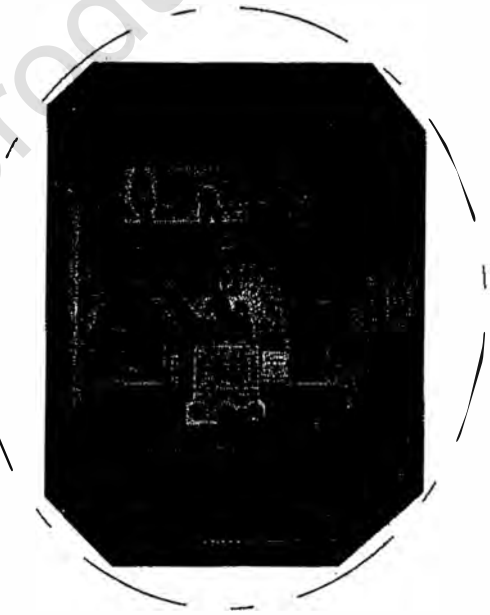
PNEUMATIC SYSTEM FOR SPINDLE H \ L CHANGE (OPTIONAL)

- Select the appropriate spindle speed for working from headstock. There are 2 steps in the range of spindle speeds.
- 30 ~ 400 r.p.m. for LOW speeds, **Manual data input - - - - - - M41.**
  400 ~ 2800 r.p.m. for HIGH speeds, **Manual data input - - - - - - M42.**

When change HIGH / LOW range, please change it while spindle is stop.

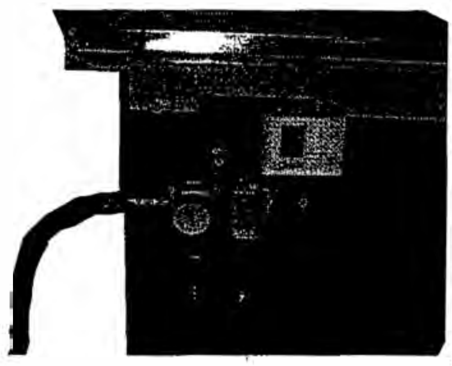




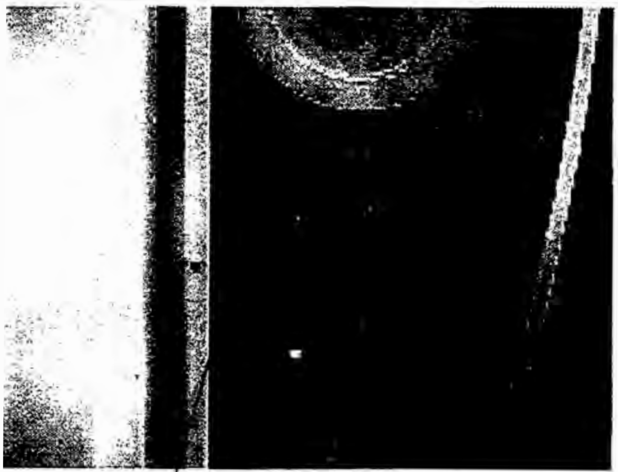


Working pressure : 4 kgf / cm^2

- Check oil daily and supply the oil suitable. (No.32)
- Max. capacity 50c.c.



ALIGNING HEADSTOCK



(I) Fixing screws
&
(K) Adjusting screws

Remove 2 plates

Hex. socket head bolt (J)

LATHE ALIGNMENT:

With the lathe installed & running we recommend verification on machine alignement before commending work,

Check levelling & machine alignment at regular periods to ensure continued lathe accuracy.

HEADSTOCK CHECK:

Take a light cut with a cutting tool over a 6" (152mm) length of 2" dia (50mm) steel bar gripped in the chuck but not supported at the free end.

Micrometer readings at each end of the turned length (at A & B Ref Fig. 16-P) should be the same.

To correct a difference in readings, slacken the four headstock hold-down screws (J) and (I) behind

Headstock shown in picture left then adjust the set-over set-screw (K) beneath the headstock,

After adjustment of (I), tighten all screw (J) first and then screws (K) .

Then repeat the test-cut/micrometer-reading sequence until micrometer reading are identical, i.e.

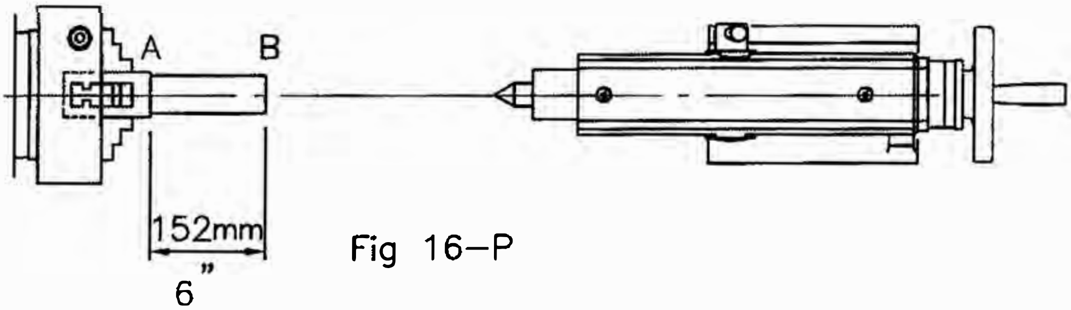
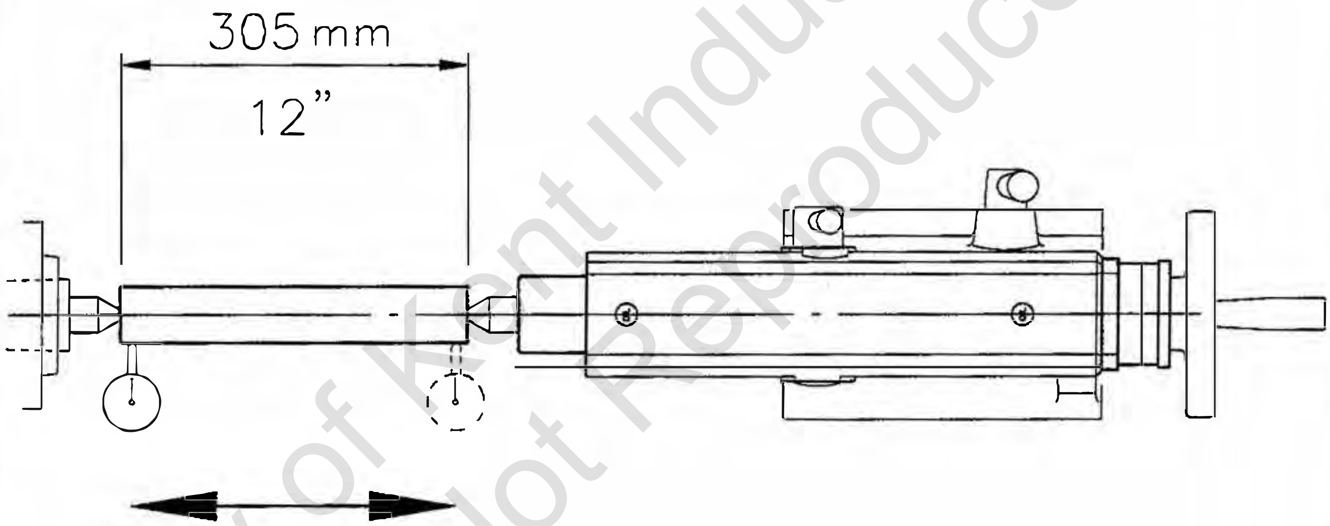


Fig 16-P

ALIGNING HEADSTOCK

TAILSTOCK CHECK:

- Using a 12" (305mm) ground steel bar fitted between headstock and tail stock centers, check the alignment by fitting a dial-test indicator to the toolpost and traversing the center line of the bar.
- To correct error, release the tailstock clamp lever and adjust the set-over screws provided.
- Repeat checking and adjustment until alignment is correct.



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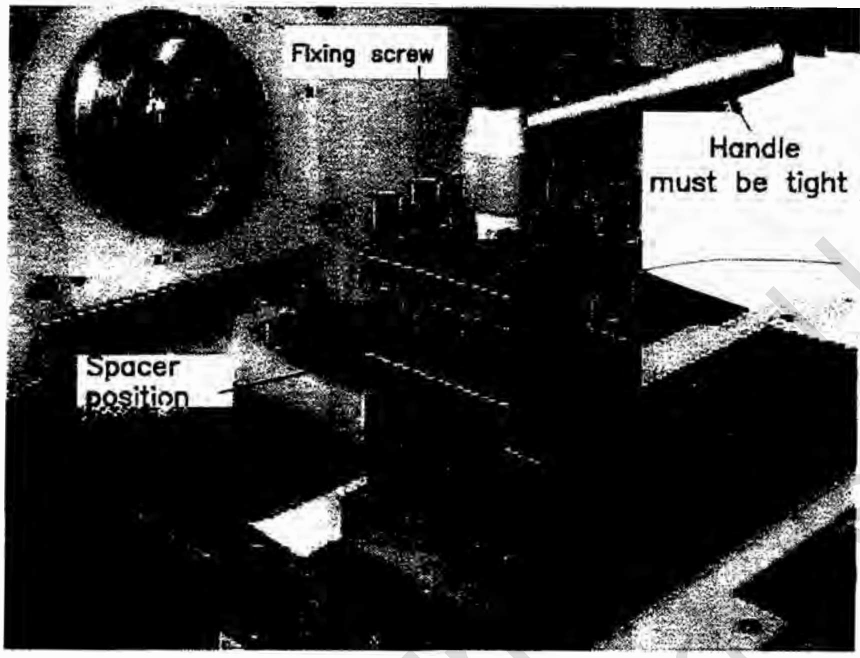
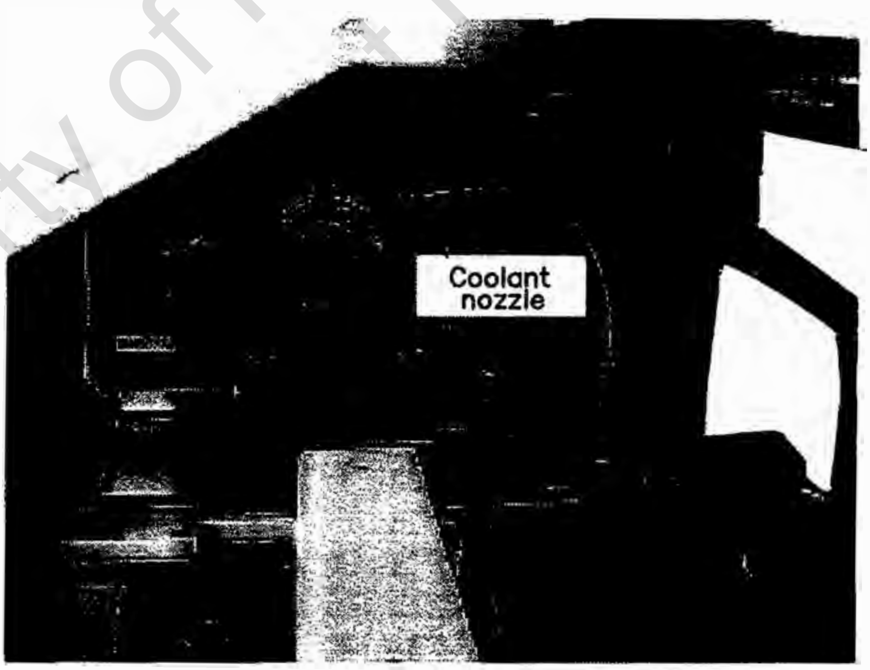
CUTTING & COOLANT OPERATION



On the manual 4—way tool post,the tool shank must be 20mm and the tool space
about 90x22x7mm,(thickness must be grinding check). Make sure the tool can be able to reach Center height.

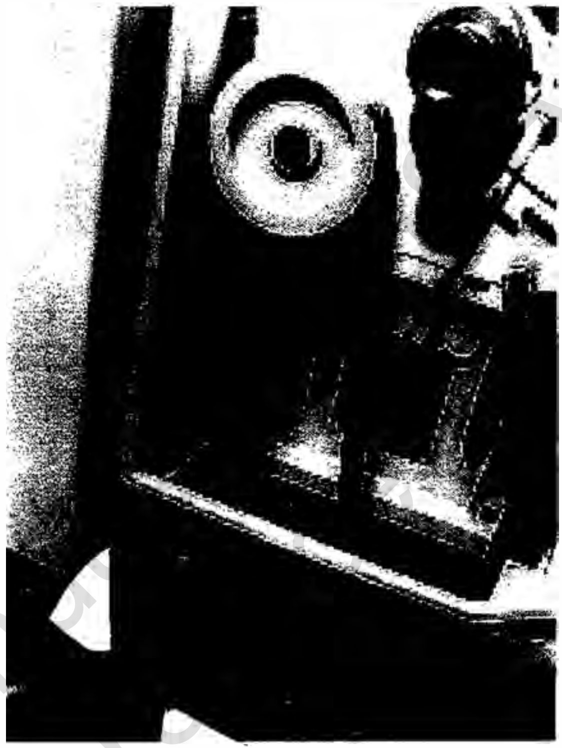
The handles & fixing screw on the tool post must be tight.



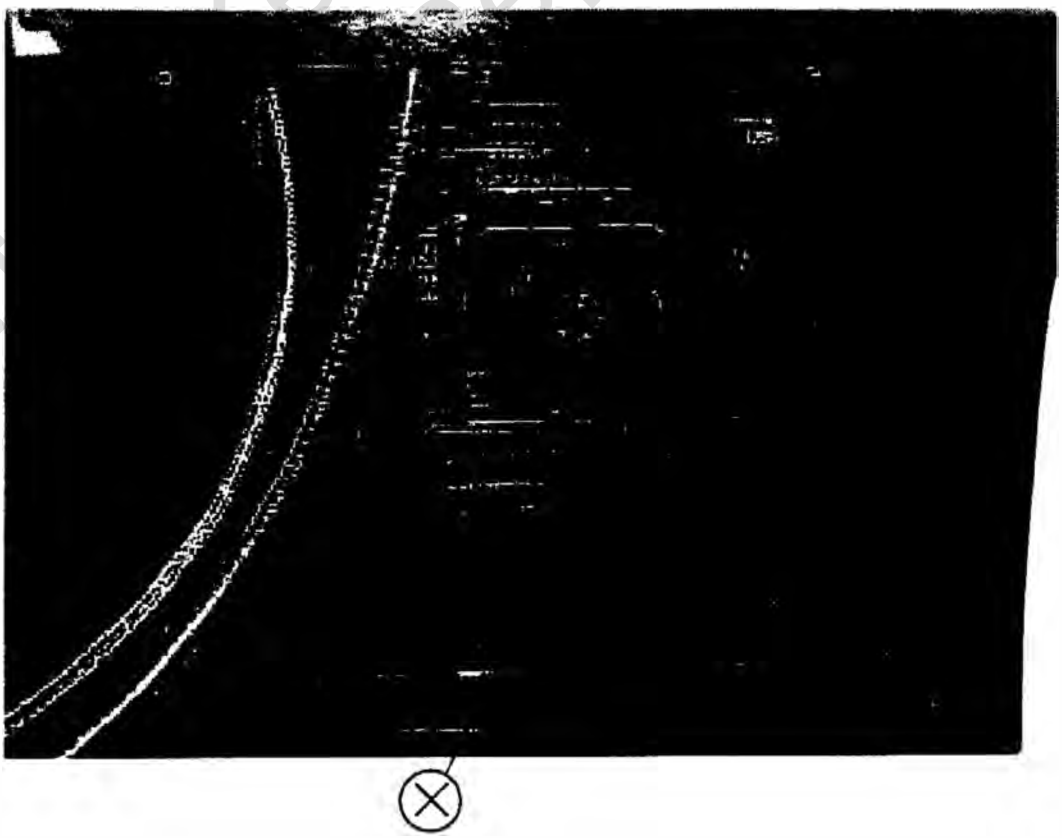
Before cutting, adjust the coolant nozzle towards the tool tip and coolant through tools of the work piece.

MAIN DRIVING BELTS ADJUSTMENT

DRIVING BELTS
To modify belt tension,remove the cover plate on back of the headstock and adjust the screws (X) on the hinged motor platform. Ensure that the motor is correctly aligned with the lathe axis.



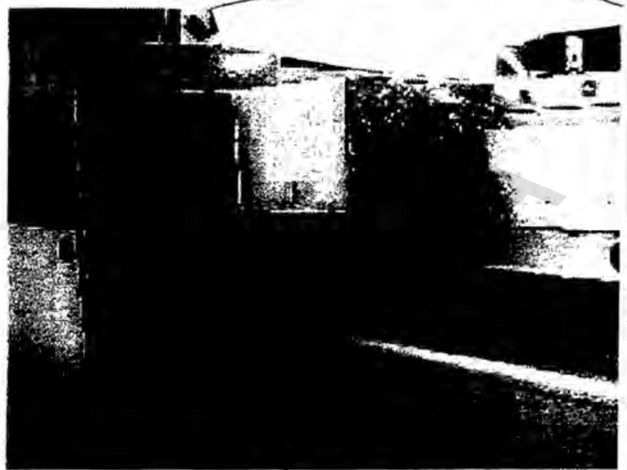
Apply light finger pressure at point midway between motor and head–stock pulleys, the resulted depression will be about 3/4" (19mm) when under tension.



SADDLE GIBS ADJUSTMENT

F1 adjust screw

Saddle front-left side



F2 adjust screw

Saddle front-right side

If the gibs between saddle and bed become loose,it will affect the accuracy of saddle travel.

Check and adjust them every six months according to the following steps.

1. Use flat head screw driver to loosen the adjust screw F1 & R4, about 1/2 circle CCW.
2. Appropriately tighten adjust screw F2 & R3, about 1/2 circle cw.
3. Move saddle left and right to a satisfied smoothness.

R3 adjust screw

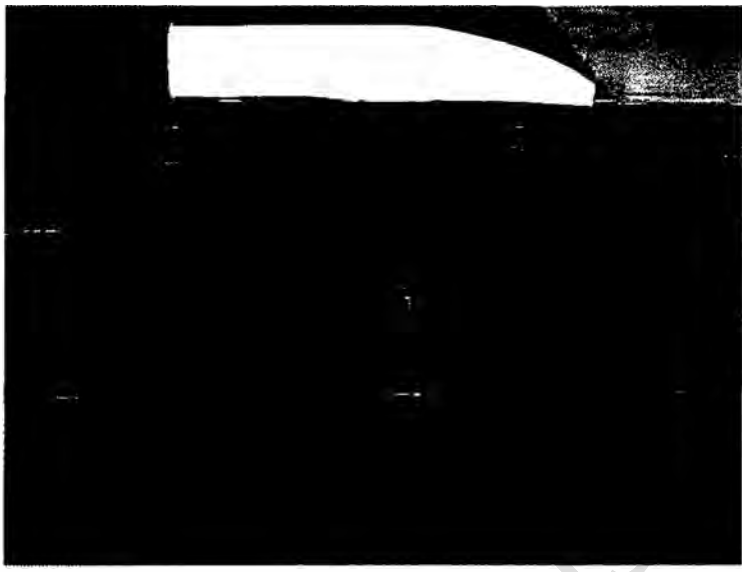
Saddle rear-left side

R4 adjust screw

Saddle rear-right side

CROSS-SLIDE GIB ADJUSTMENT

Cross slide — front



F5

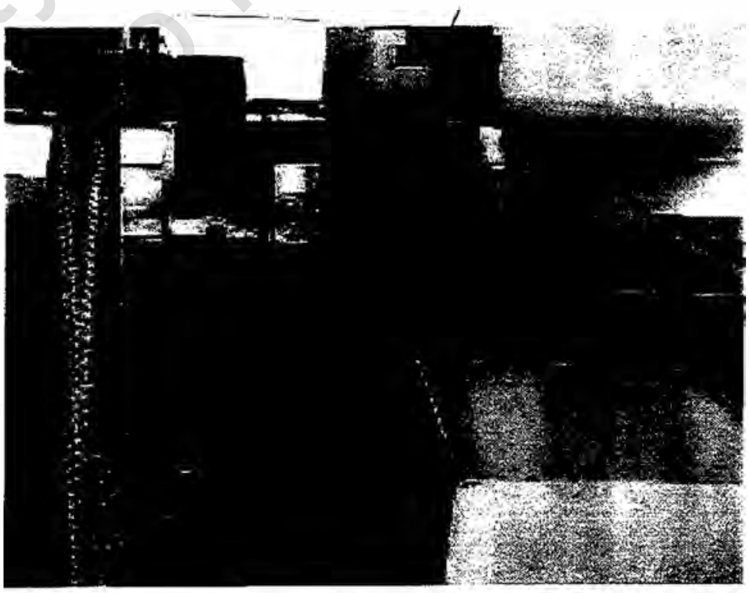
Adjust screw

If the between slide and saddle become loose,it will affect the machining accuracy.

You shoule regularly check and adjust them every six months according to the following step.

1. Remove rear slide cover then the gibs can seen.
2. Use flat head screw driver to release the adjust screw R6 about 1/2 circle CCW.
3. Tighten screw F5 about 1/2 circle CW.
4. Move the slide back and forth to a satisfied smoothness.
5. Reassemble the rear slide cover.

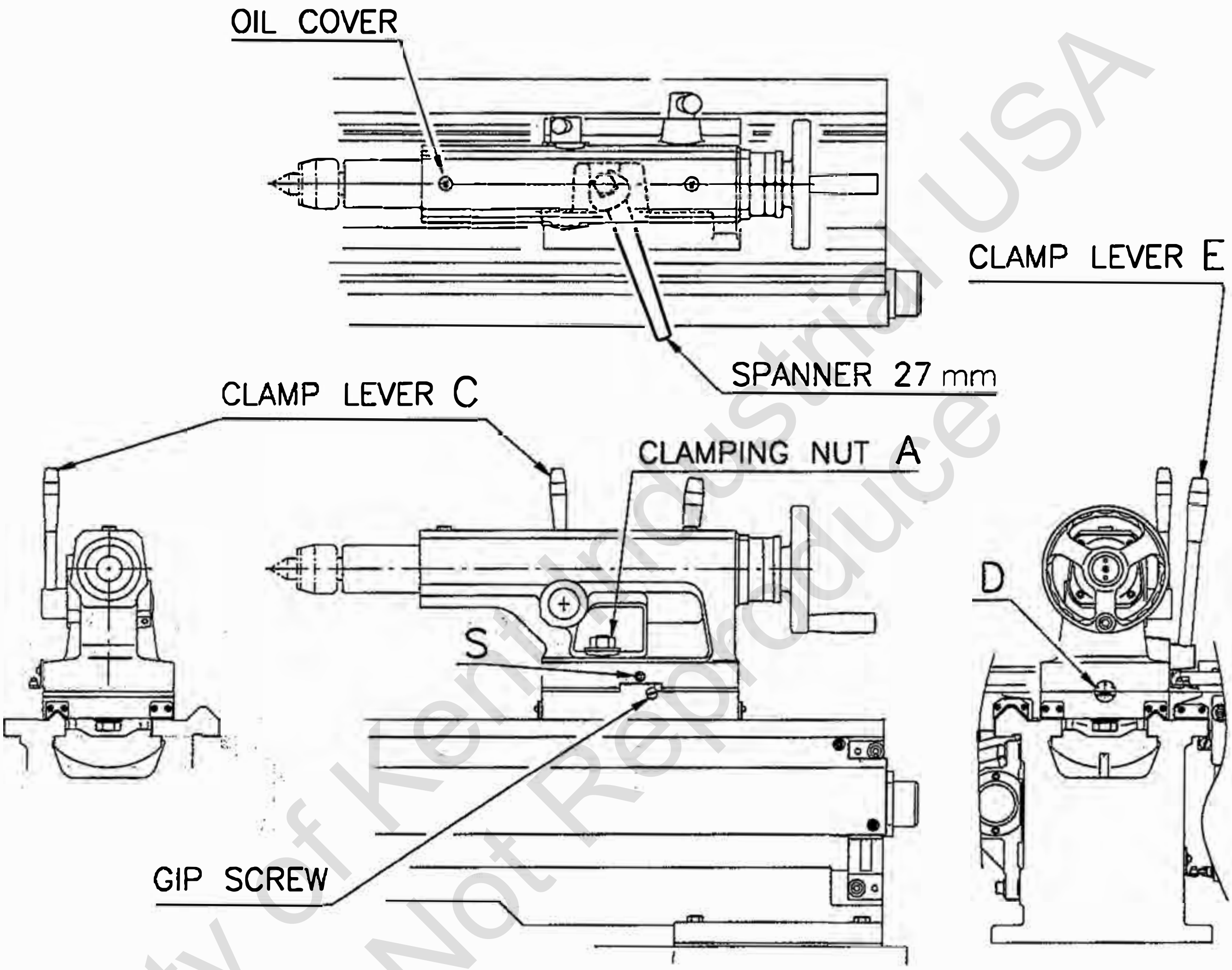
Cross slide — rear   remove rear slide cover



TAILSTOCK MAINTENANCE

There are two oil cover on the tailstock.

- Please add No.68 oil 3 c.c. to them respectively every day before operating to ensure the smoothness of ways.



- The tailstock can be freed for movement along the bed by used spanner unlocking the clamping nut **A**.
- Release this clamping nut/lever E before attempting to move the tailstock after and on completing of the need, lock it again for extra clamping.
- The tailstock quill can be locked by clamp lever **C**. (for manual style only)

RE–ALIGNMENT :

- Release the clamping nut/lever E and adjust screw S at each side of the base to move tail stock laterally across the base.
- An indication of the set–over is given by the datum marked D at the tailstock end face.
- Tight clamping mut/lever E after adjusting set–over.

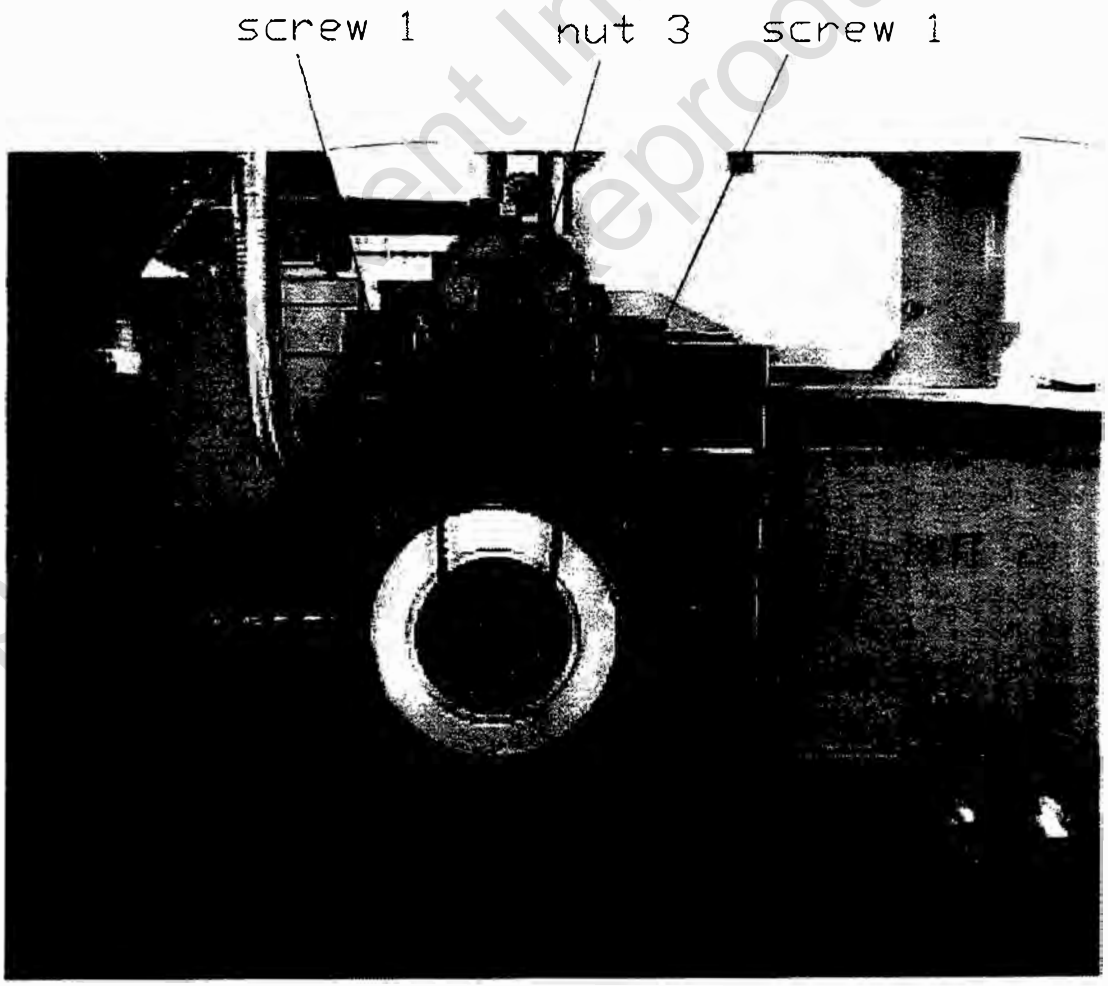
rc

ADJUSTING X-AXIS BELT TENSION

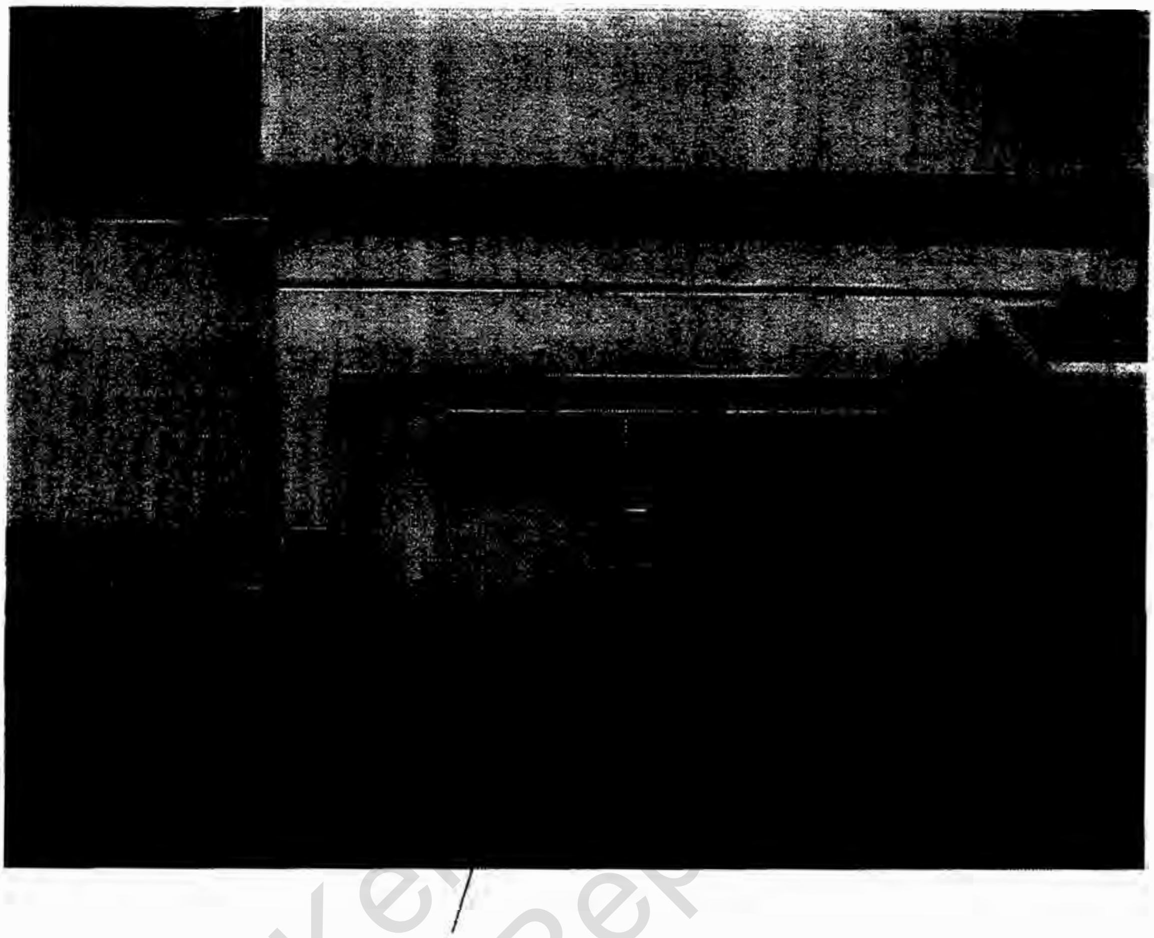
The new tension between servo motor and ball screw should be 2.9mm elastic length when pressed by 0.9kg at the distance center between motor and ball screw.

After a period of time, if belt turned loosen,adjust the following steps

1. Loosen the screw 1.
2. Loosen the nut 2.
3. Tighten the nut 3 on the motor base till the belt tension is 2.9mm by 0.9kg.
4. Re-tighten the screw 1 and nut 2.



CHIP GUARD EXPOUND

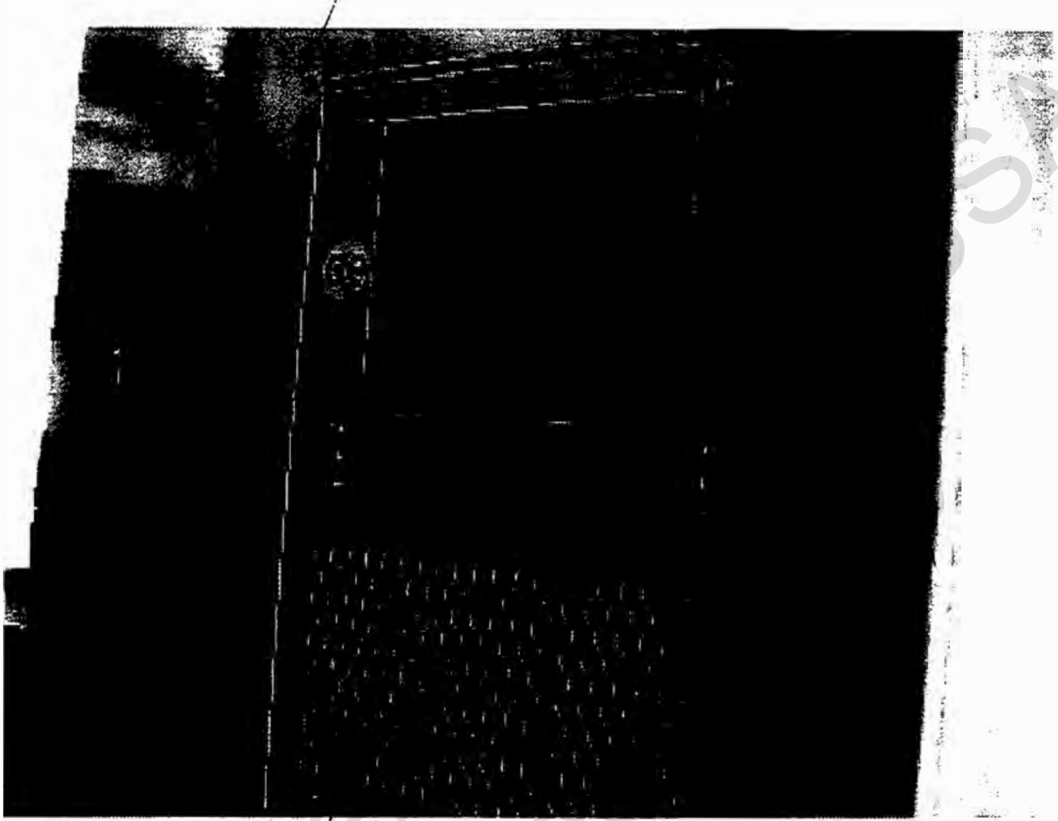


CHIP GUARD

The chip guard can left direction move 50 mm or take off. so that can increase − Z AXIS direction near the spindle.

1. When use test bar inspect the spindle run out ... etc,
2. Or use drive plate for grinding.

CLEANING OF AIR FILTER (OPTIONAL)



1. Be sure to clean it with air gun or water. once a week. at least after dismounting. air filter, then you must dry it.
2. Put the filter back after removing the dust on the fin of the condenser with air gun.
3. Clean air filter regularly to avoid to reduce cooling effect and break down oil cooler.

MACHINING GUIDE

Threading stock removal & frequency comparison table

Metric Threading		Depth h1 = 0.6495P			P = Pitch			
Pitch		1.0	1.5	2.0	2.5	3.0	3.5	4.0
Depth		0.649	0.974	1.299	1.624	1.949	2.273	2.598
Frequency & Amount	x1	0.7	0.7	0.9	1.0	1.2	1.5	1.5
	x2	0.4	0.6	0.6	0.7	0.7	0.7	0.8
	x3	0.2	0.4	0.6	0.6	0.6	0.6	0.6
	x4		0.16	0.4	0.4	0.4	0.6	0.6
	x5			0.1	0.4	0.4	0.4	0.4
	x6				0.15	0.4	0.4	0.4
	x7					0.2	0.2	0.4
	x8						0.15	0.3
	x9							0.2

Imperial Threading		Depth h1 = 0.6403P			P = Pitch			
Threads per inch		20	18	16	14	12	10	8
Pitch		1.27	1.4111	1.5875	1.8143	2.1167	2.5400	3.1750
Depth		0.8248	0.904	1.016	1.162	1.355	1.626	2.033
Frequency & Amount	x1	0.8	0.8	0.8	0.8	0.9	1.0	1.2
	x2	0.4	0.6	0.6	0.6	0.6	0.7	0.7
	x3	0.16	0.3	0.5	0.5	0.6	0.6	0.6
	x4		0.11	0.14	0.3	0.4	0.4	0.5
	x5				0.13	0.21	0.4	0.5
	x6						0.16	0.4
	x7							0.17
	x8							
	x9							

Note: 1. Please do your own calculation, if your requirement is not listed above.

2. Stock removal and frequency can be changed according to the real situation.

3. The numbers in Stock Removal are shown according to diameter.

MACHINING GUIDE

Conditions for using ultra-hard cutter

Material	Code	Feed 0.2~0.5mm/rev		Feed 0.2~0.5mm/rev	
		Cutting Speed Vm/min	Cutter	Cutting Speed Vm/min	Cutter
Carbon & alloy steel for machine structure use	S20C-S30C	140-180	P20	150-230	P10
	S35C-S45C	110-140		120-190	
	S50C	70-100		80-140	
Glossy steel stick	S20CD-S50CD	70-100		80-140	
Alloy steel	SNC1-SNC3	70-100	P10	80-140	M10
Stainless steel	SUS24	60-100	M10	80-140	
	SUS27-SUS33	40-70	M20	80-140	
Heat-resistance steel	SEH1-SEH5	40-70	P40	70-100	
Carbon steel forgings	SF40-SF50	140-180	P20	150-230	P10
	SF55-SF60	100-140	P30	120-190	
Steel castings	SC42-SC49	100-120	P20	120-180	P10
Alloy steel castings	SCA1-SCA23	60-100		70-120	
	SCA31	50-80		70-100	
	SCA41-SCA52	60-100		70-120	
Stainless steel castings	SCS1-SCS15	50-80	M20	70-140	M20
Heat- resistance steel castings	SCH1-SCH2	60-90		70-120	
	SCH11-SCH13	50-80		60-100	
Gray casting	FC20	70-110	K10	80-130	K10
	FC25-FC30	60-100		80-130	
Bronze casting	BC2-BC7	100-200		200-350	
Aluminum	AC3A-F	200-400		300-500	
Alloy castings	AC4A-F-AC7B-T4	800-900		800-1200	
Artificial leather & wood		300-600	K10,K20	350-600	K10,K20

Drilling speed conditions

Matcrial		Speed m/min
Carbon steel	0.4c>	24-33
	0.4c-0.7c	18-24
	0.7c<	12-18
Alloy steel	60kg/mm2	15-18
	60-80kg/mm2	9-15
	80kg/mm2	5-9
Stainlcss steel	Mortensite	10-20
	Ferrite	15-18
	Auslensite	5-15
Manganese steel	12-14%	3.5-4.5
Plastic		30-90

Material	Speed m/min
Aluminum & aluminum alloys	60-90
Bronze	45-75
	22.5-45
Magnesium & magnesium alloys	60-120
Monel metal	9-15
Nickel steel	9-15
Zinc Alloy	45-80
Brass	45-90
Bronze	60-75
Cutting steel	8-22
NIMONIC	6-9

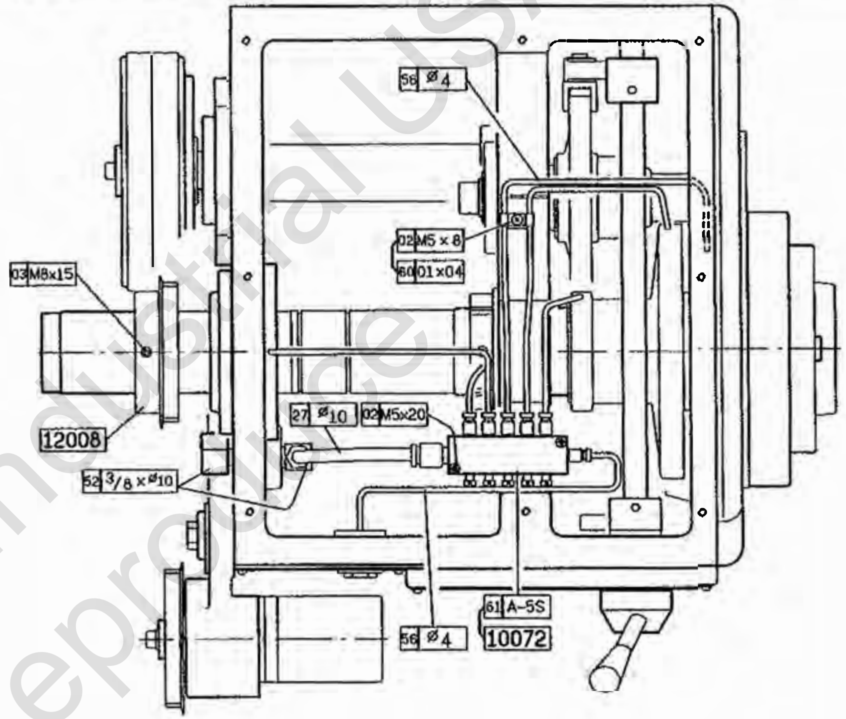
Bit insert feed standard

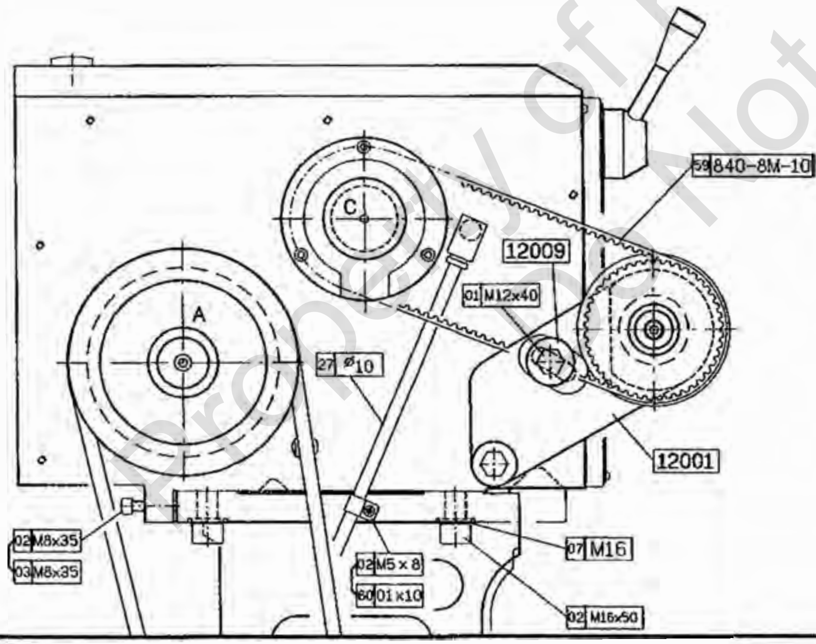
Bit insert diameter mm\	Feed mm/rev	
	Normal steel	Stainless steel
1.6-3	0.05-0.06	0.05-0.08
3-4	0.05-0.1	0.06-0.15
4-5.5	0.08-0.15	0.1-0.23
5.5-8	0.1-0.2	0.13-0.3
8-11	0.15-0.25	0.19-0.35
11-14.5	0.2-0.3	0.25-0.45
14.5-17.5	0.23-0.33	0.28-0.6
17.5-20.5	0.25-0.36	0.31-0.53
20.5-24	0.28-0.38	0.34-0.56
24-28.5	0.3-0.4	0.38-0.6
28.5-38	0.35-0.49	0.44-0.68
38<	0.4-0.5	0.5-0.7

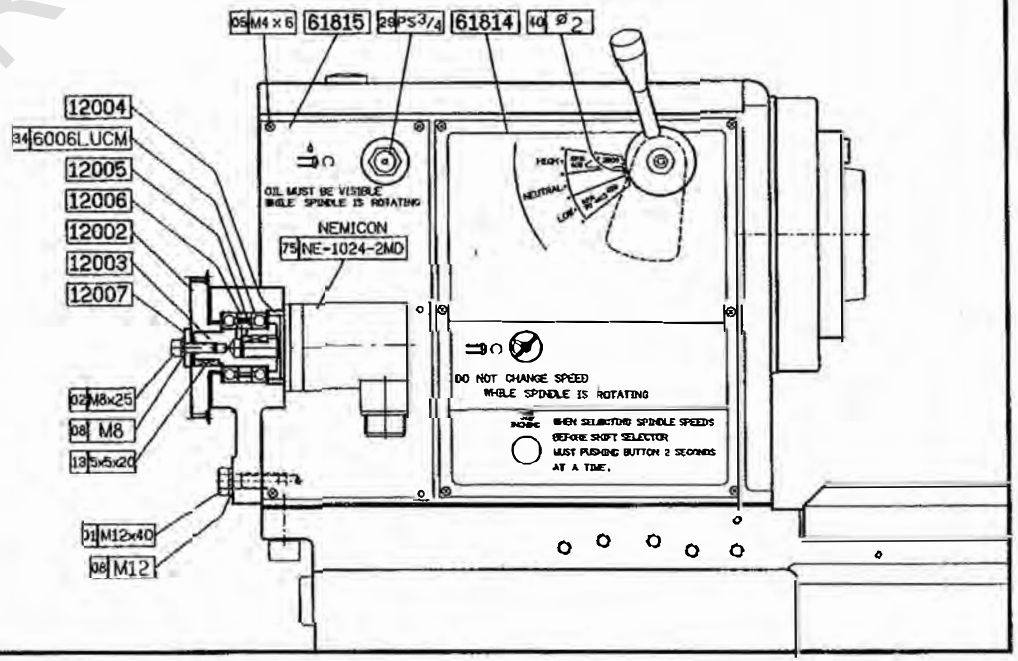
SPARE PARTS (ILLUSTRATED)

- 17

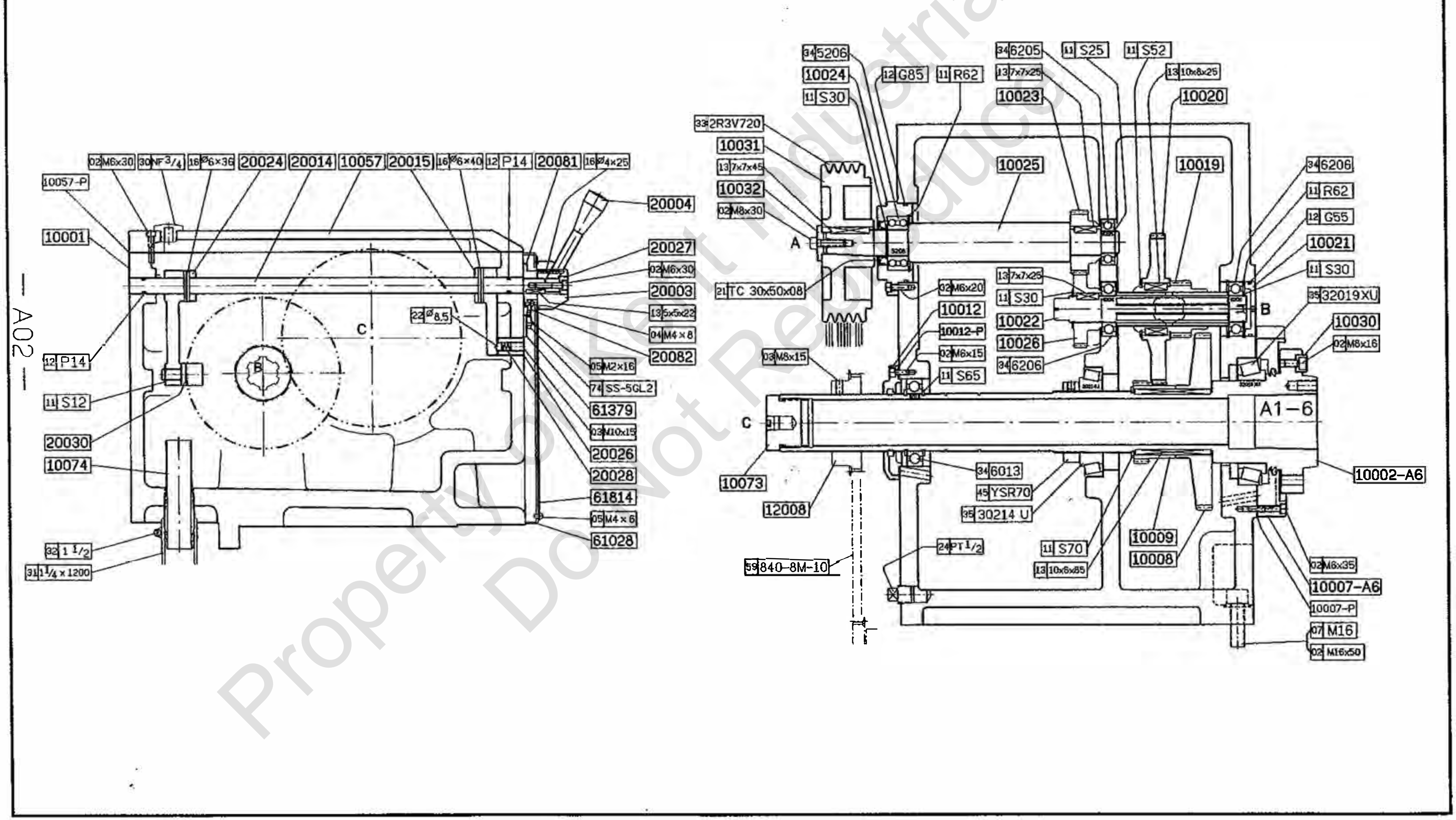
HEADSTOCK ASSEMBLY (I)





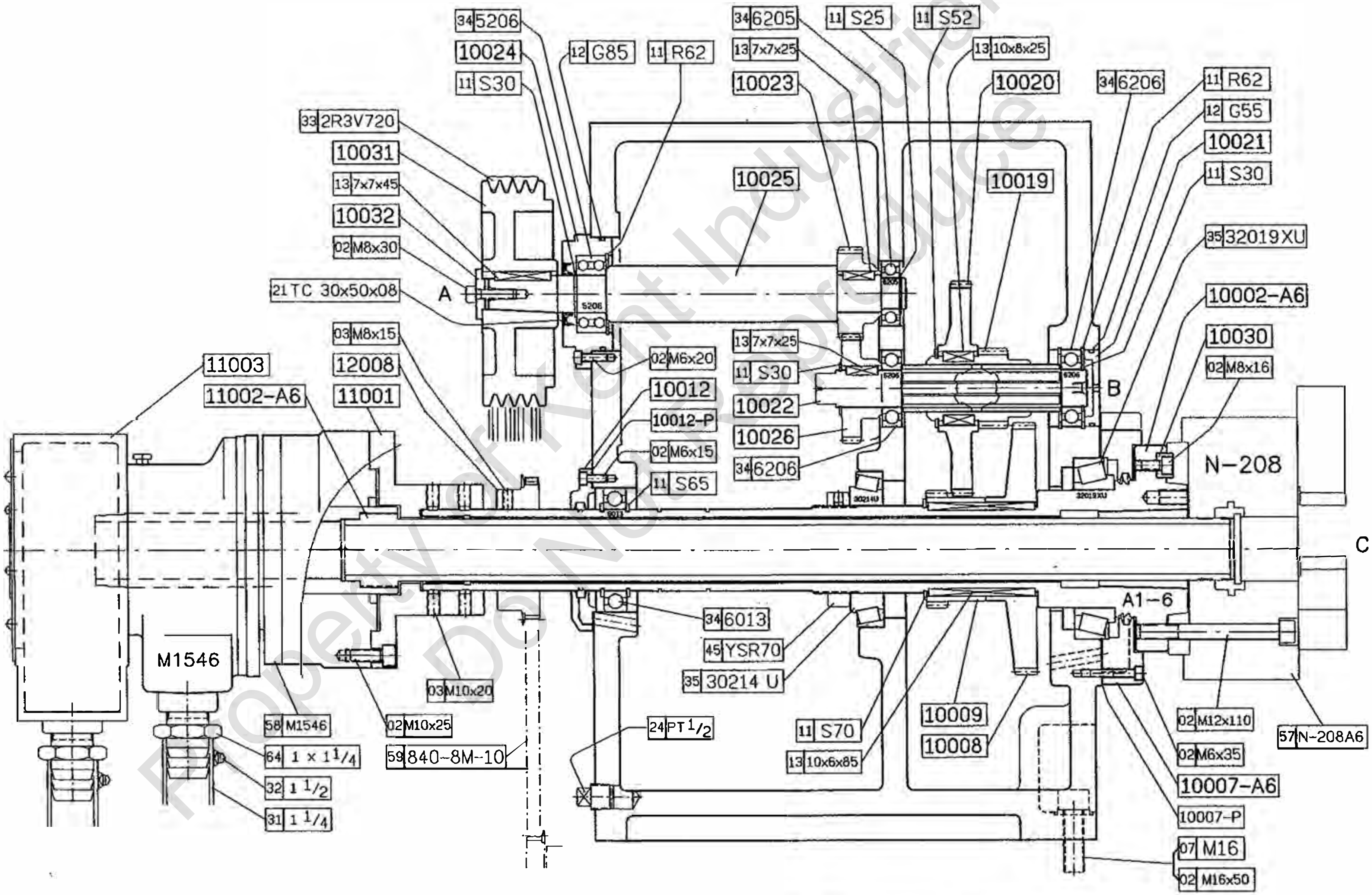


-17 A1-6 HEADSTOCK ASSEMBLY (Ⅱ)

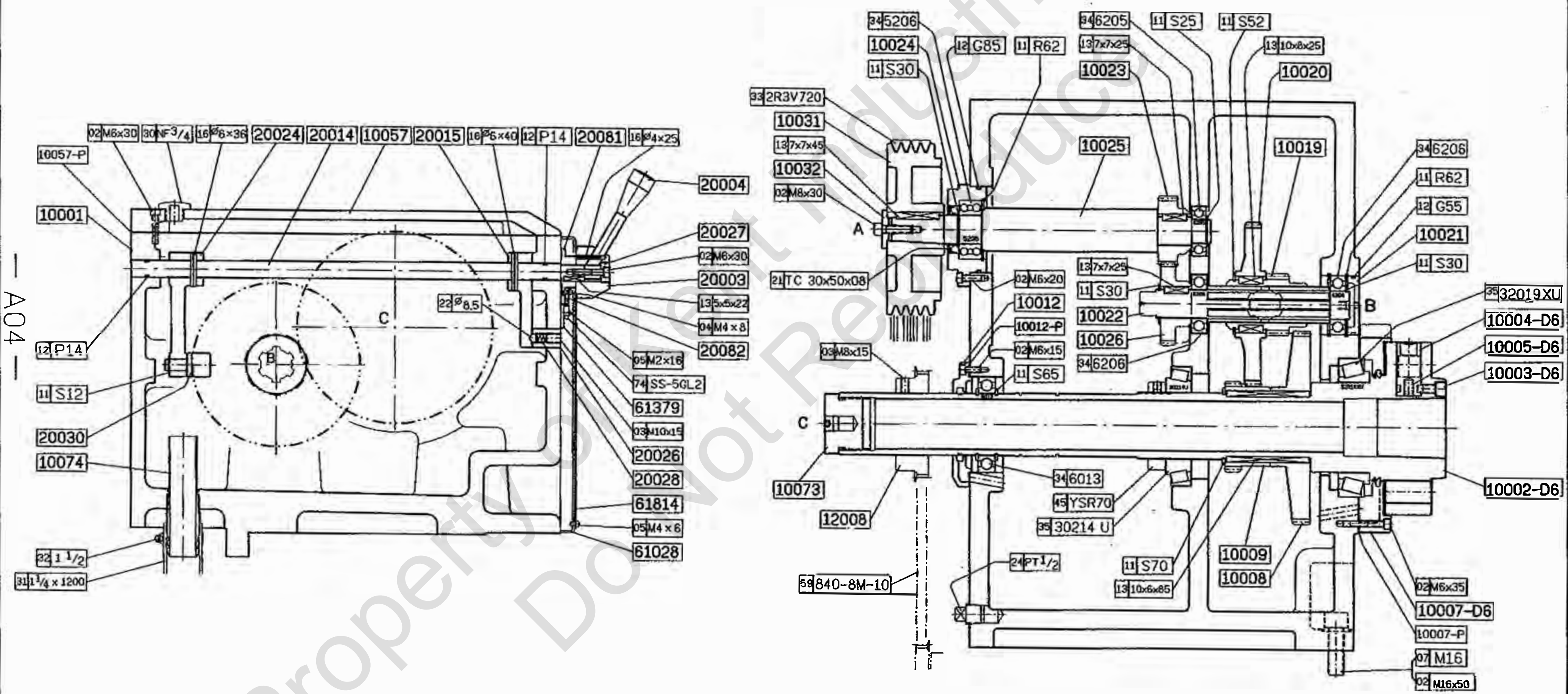


-17 A1-6 HEADSTOCK ASSEMBLY (III)

WITH ROTARY CYLINDER & POWER CHUCK (OPTIONAL)

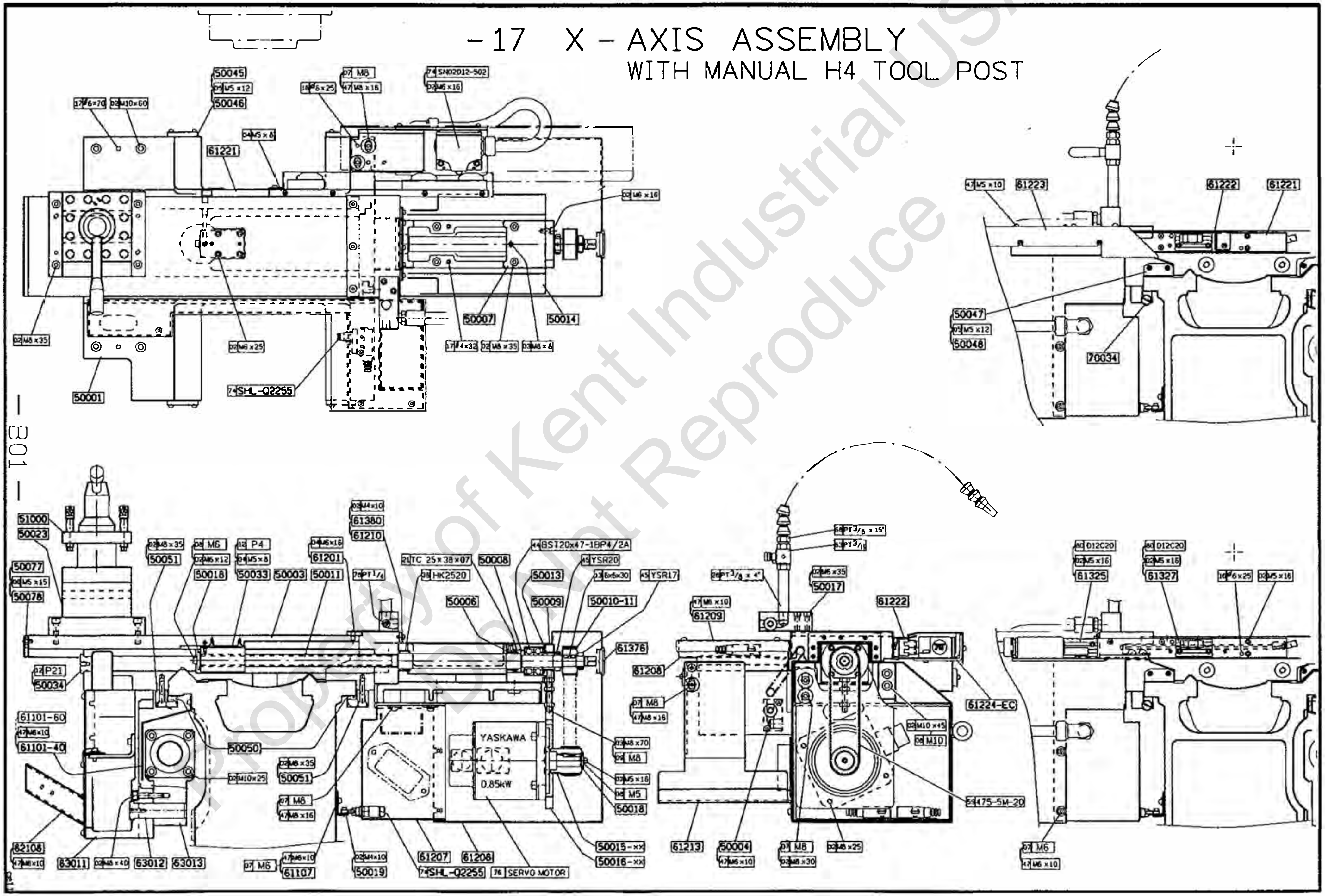


-17 D1-6 HEADSTOCK ASSEMBLY (Ⅱ)



-17 X-AXIS ASSEMBLY

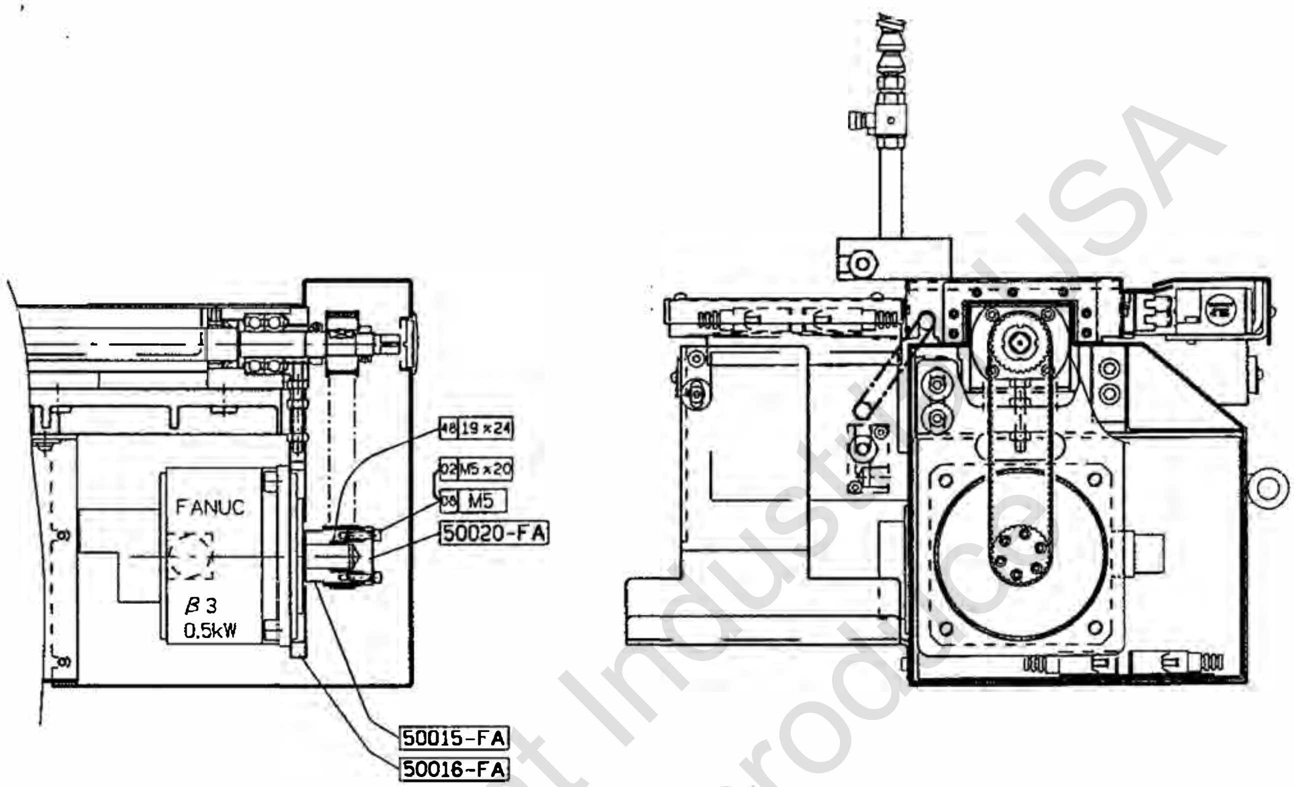
WITH MANUAL H4 TOOL POST



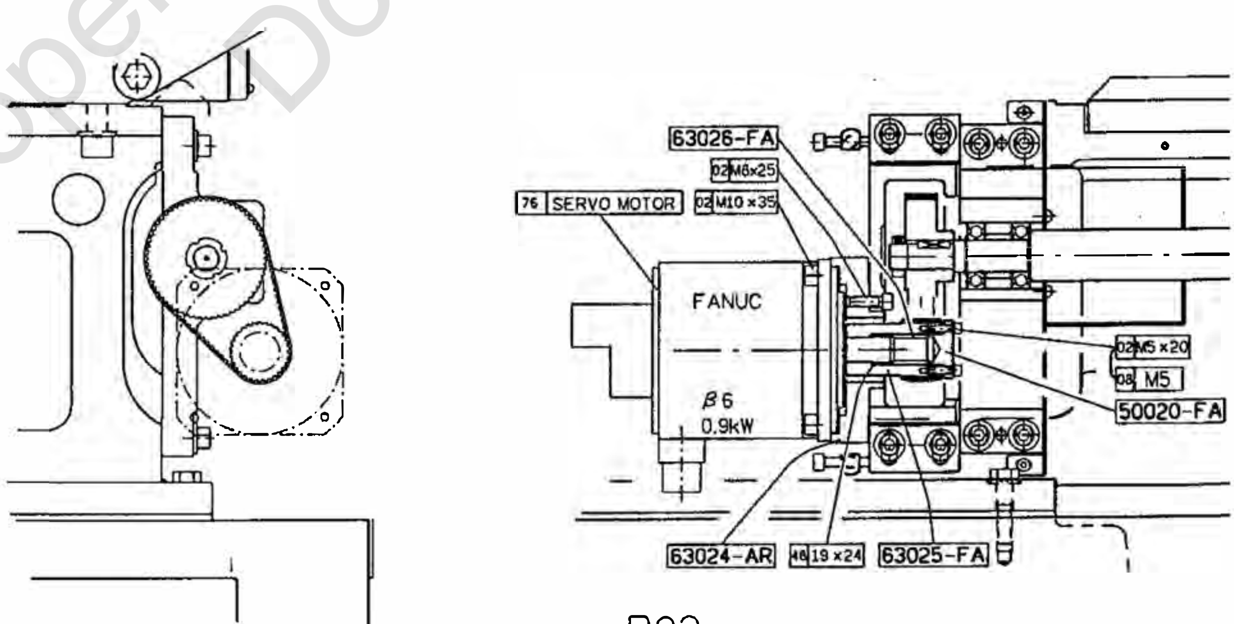
— B01 —

FANUC CONTROLLER

X - AXIS SERVO MOTOR ASSEMBLY



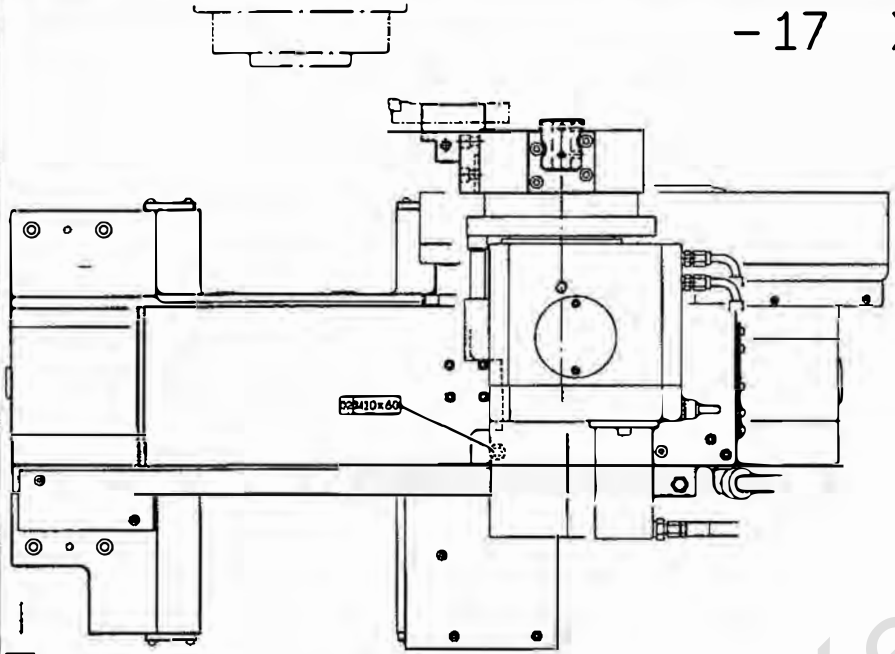
Z - AXIS SERVO MOTOR ASSEMBLY

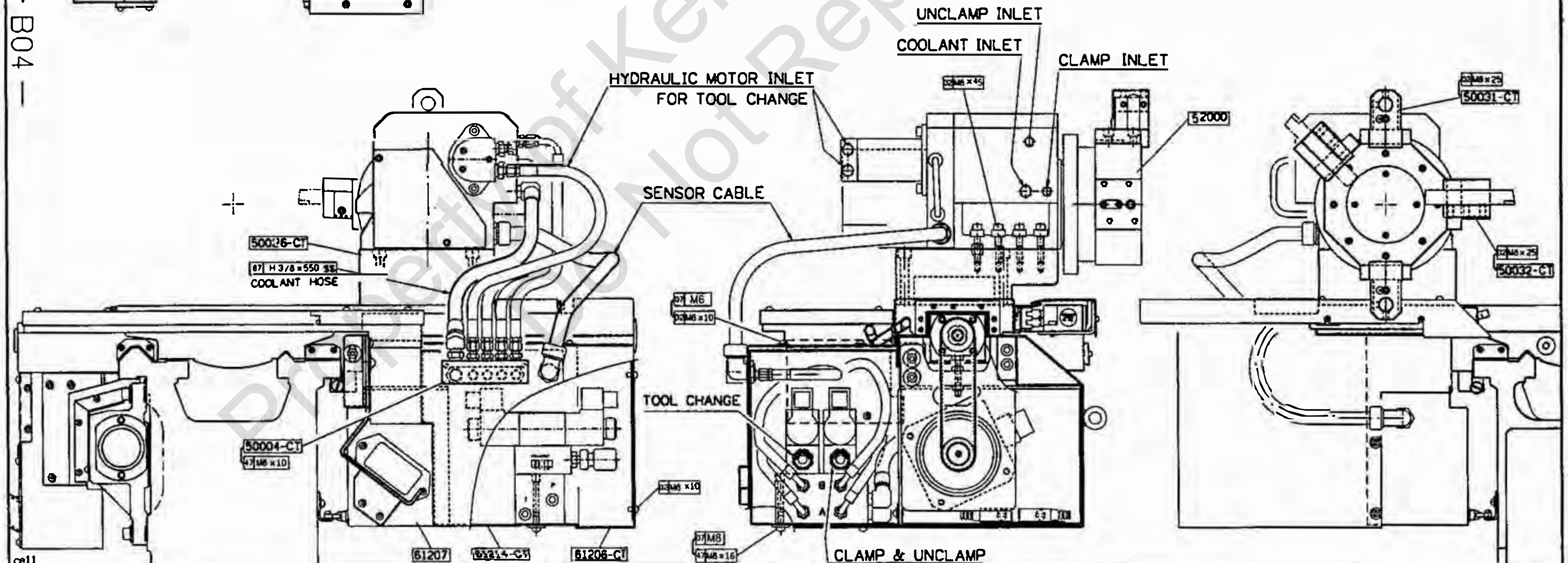


- 17 X - AXIS PARTS LIST

PARTS NO.	PARTS NAME	REMARK	PARTS NO.	PARTS NAME	REMARK
50001	SADDLE		51000	TOOL POST ASS'Y	MANUAL TYPE
			61101-40	SCREW PROTECTOR	FOR 1740 MODEL
50003	CROSS SLIDE		61101-60	SCREW PROTECTOR	FOR 1760 MODEL
50004	JOINT BLOCK		61107	ANGLE PLATE A	FOR SHL-Q2255…
			61201	REAR COVER	
50006	COLLAR		61206	MOTOR PROTECTOR I	
50007	BEARING HOUSING		61207	MOTOR PROTECTOR O	
50008	WASHER		61208	WIRE PROTECTOR D	
50009	BEARING COVER		61209	WIRE PROTECTOR U	
50010-11	TIMING PULLEY XS	5M 30T	61210	PLATE B	
50011	BALL SCREW	Ø20 P5	61213	WIRE SUPPORTER	
			61221	RECTANGLE BAR	
50013	BUSH		61222	DOG COVER	
50014	BRACKET		61223	SWITCH COVER	
50015-FA	TIMING PULLEY XM 5M 30T	FOR FANUC β3	61224-EC	SWITCH HOUSING	FOR SN02D12-50…
50015-YA		FOR YASKAWA	61325	ALUMINUM TRAY X+	
50015-EM		FOR FAGOR SEM	61327	ALUMINUM TRAY X-	
50016-FA	MOTOR PLATE	FOR FANUC			
50016-YA		FOR YASKAWA			
50016-EM		FOR FAGOR SEM			
50017	JOINT BLOCK		61376	RUBBER CAP	
50018	WASHER		61380	BACK WIPER	
50019	DOG		62108	BOX SUPPORT	
50020-FA	FIXING SLEEVE	FOR FANUC			
50023	T SOLT SEAT				
50033	LINING PLATE				
50034	PLUG				
50045	WIPER V		63011	APRON	
50046	PLATE V		63012	POSITION SHAFT	
50047	WIPER F		63013	NUT HOUSING	
50048	PLATE F				
50050	GIB				
50051	SUPPORT PLATE		70034	GIB SCREW	
50077	PLATE D				
50078	WIPER D				

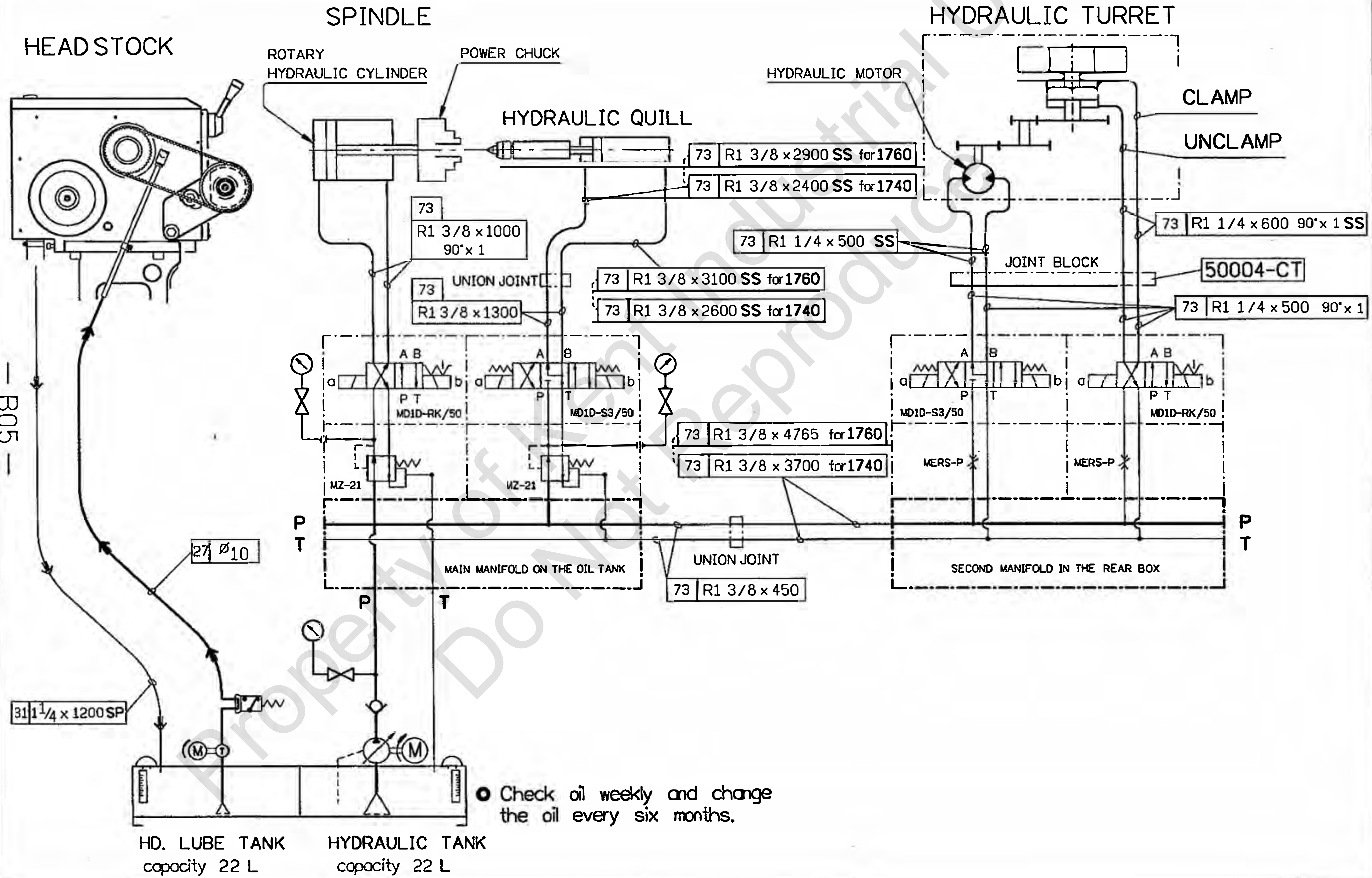
-17 X-AXIS ASSEMBLY
WITH HYDRAULIC TURRET (OPTIONAL)





— B04 —

-17 HYDRAULIC CIRCUIT DIAGRAM (OPTIONAL)



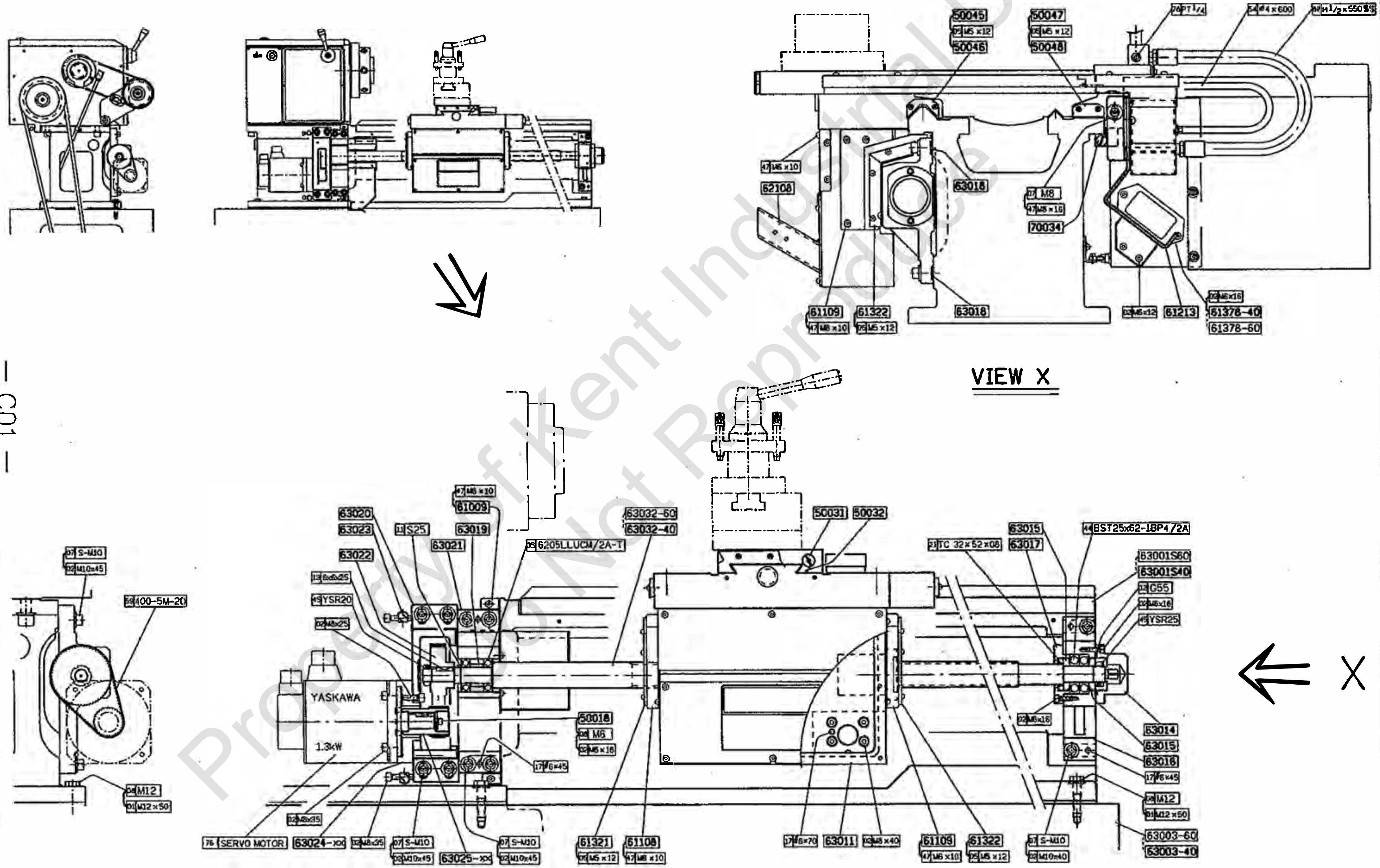
- Check oil weekly and change the oil every six months.

— B05 —

- 17 X - AXIS OPTION Hydraulic turret PARTS LIST

PARTS NO.	PARTS NAME	REMARK	PARTS NO.	PARTS NAME	REMARK
52000	HYDRAULIC TURRET	CLT-63R			
50004-CT	JOINT BLOCK				
50026-CT	SPACER BLOCK				
50031-CT	BORING BAR HOLDER				
50032-CT	FACING TOOL HOLDER				
61206-CT	MOTOR PROTECTOR O				
61207	MOTOR PROTECTOR I				
61214-CT	MANIFOLD HOUSING				

-17 Z-AXIS ASSEMBLY



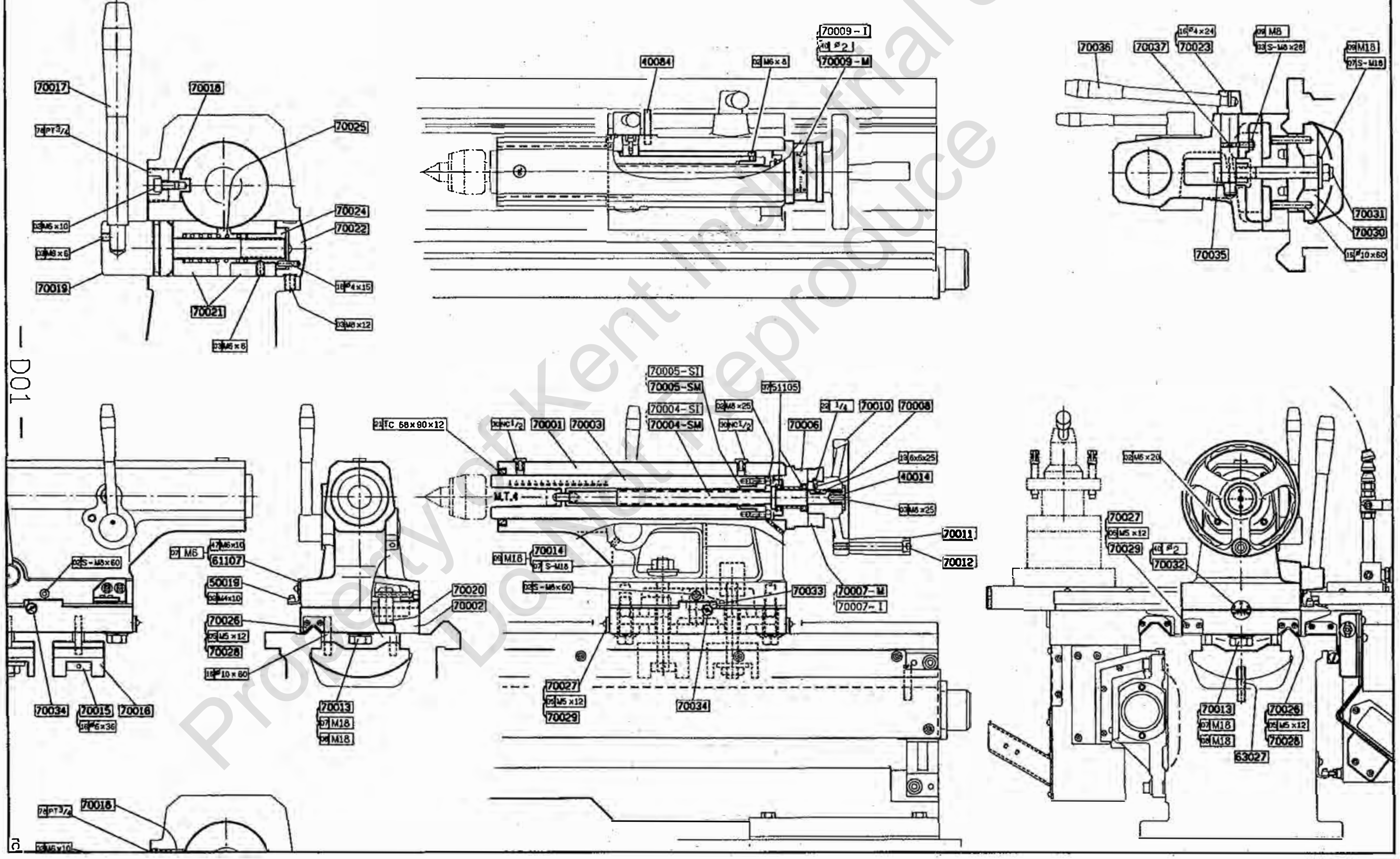
- C01 -

Z - AXIS PARTS LIST

PARTS NO.	PARTS NAME	REMARK	PARTS NO.	PARTS NAME	REMARK
63001S40	BED	FOR 1440 1640 MODEL	50018	WASHER	FOR YASKAWA
63001S60		FOR 1660 MODEL	50018-EM	WASHER	FOR FAGOR
			50020-FA	FIXING SLEEVE	FOR FANUC
63003	RIGHT PLINTH				
63004	LEFT PLINTH		50048	WIPER V	
			50049	PLATE V	
			50050	WIPER F	
63011	APRON		50051	PLATE F	
63012	POSITION SHAFT		50054	GIB SCREW	
63013	NUT HOUSING				
63014	RIGHT END COVER		61101-40	SCREW PROTECTOR	FOR 1440 1640 MODEL
			61101-60	SCREW PROTECTOR	FOR 1660 MODEL
63015	COLLAR				
63016	BRACKET				
63017	BEARING COVER		61105	APRON COVER	
63018	LINING PLATE				
63019	BUSH L		61107-BF	ANGLE PLATE Z+	
63020	MOTOR SUPPORTER		61108	LEFT SIDE COVER	
63021	BEARING HOUSING		61109	RIGHT SIDE COVER	
63022	TIMING PULLEY ZS	5M 60T			
63023	ADJUSTING BOLT		61204	RIGHT-HAND COVER	
63024-AR		FOR FANUC			
63024-LJ	MOTOR FLANGE	FOR YASKAWA	61321	LEFT SIDE WIPER	
63024-EM		FOR FAGOR SEM	61322	RIGHT SIDE WIPER	
63025-FA		FOR FANUC			
63025-YA	TIMING PULLEY ZM 5M 30T	FOR YASKAWA			
63025-EM		FOR FAGOR SEM			
63026-FA	BUSH F	FOR FANUC			
63031	BUSH R				
63032-40	BALL SCREW Ø32 P10	FOR 1440 1640 MODEL			
63032-60		FOR 1660 MODEL			

-17 TAIL STOCK ASSEMBLY (MANUAL STYLE)

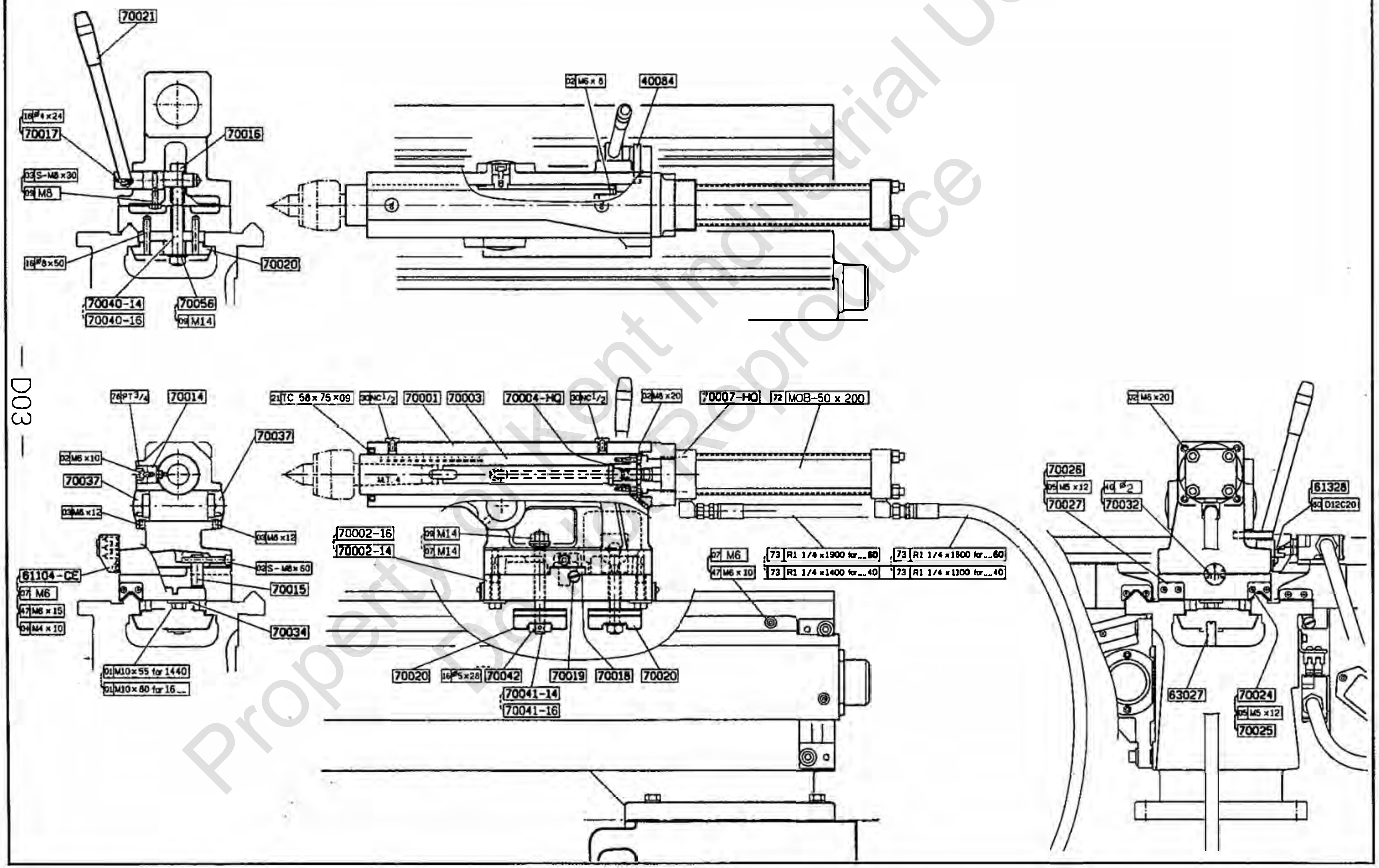
WITH MANUAL H4 TOOL POST



– 17 TAIL STOCK manual style PARTS LIST

PARTS NO.	PARTS NAME	REMARK	PARTS NO.	PARTS NAME	REMARK
70001	TAIL STOCK		70037	PIN STOPPER	
70002	BASE				
70003	QUILL MT.4 x Ø68				
70004-SM	LEAD SCREW P5	ASSEMBLY FOR REPLACEMENT			
70005-SM	NUT P5				
70004-SI	LEAD SCREW P0.2"	ASSEMBLY FOR REPLACEMENT			
70005-SI	NUT P0.2"				
70006	FLANGE				
70007-M	INDEX RING 250 DIVIDING for METRIC		40014	FIXED SCREW	
70007-I	INDEX RING 200 DIVIDING for IMPERIAL		40084	PIN SCREW	
70008	SPRING		50019	DOG	
70009-M	PILOT PLATE	FOR METRIC			
70009-I	PILOT PLATE	FOR IMPERIAL	61107	ANGLE PLATE A	
70010	HANDWHEEL				
70011	HANDLE		63027	STOPPER SCREW	
70012	BOLT				
70013	HEXAGON HEAD BOLT	M18 P2.5 x 63L			
70014	STUD	M18 P2.5 x 180L			
70015	SQUARE NUT	M18 P2.5			
70016	CLAMP BLOCK L				
70017	CLAMP LEVER L				
70018	GUIDE KEY				
70019	LOCATING BLOT				
70020	PIN NUT	M8 P1.25			
70021	FORCING VISE				
70022	PLUG				
70023	CAM SHAFT				
70024	T NUT M16 P2				
70025	SPRING				
70026	WIPER V				
70027	WIPER F				
70028	PLATE V				
70029	PLATE F				
70030	CLAMP BLOCK R				
70031	STUD				
70032	MARKED PLATE				
70033	GIB				
70034	GIB SCREW	M6 x Ø16			
70035	PIVOT BLOCK				
70036	CLAMP LEVER R				

-14 & -16 TAIL STOCK ASSEMBLY (HYDRAULIC QUILL STYLE)



– 17 TAIL STOCK OPTION hydraulic quill style PARTS LIST

PARTS NO.	PARTS NAME	REMARK	PARTS NO.	PARTS NAME	REMARK
70001	TAIL STOCK		70037	PIN STOPPER	
70002	BASE				
70003	QUILL MT.4 x Ø68				
70004-HQ	CONNECT NUT	M16 P1.5			
70006-HQ	FLANGE				
			50019	DOG	
			61107	ANGLE PLATE A	
			63027	STOPPER SCREW	
70013	HEXAGON HEAD BOLT	M18 P2.5 x 63L			
70014	STUD	M18 P2.5 x 180L			
70015	SQUARE NUT	M18 P2.5			
70016	CLAMP BLOCK				
70018	GUIDE KEY				
70020	PIN NUT	M8 P1.25			
70022	PLUG				
70023	CAM SHAFT				
70026	WIPER V				
70027	WIPER F				
70028	PLATE V				
70029	PLATE F				
70030	CLAMP BLOCK R				
70031	STUD				
70032	MARKED PLATE				
70033	GIB				
70034	GIB SCREW	M6 x Ø16			
70035	PIVOT BLOCK				
70036	CLAMP LEVER R				

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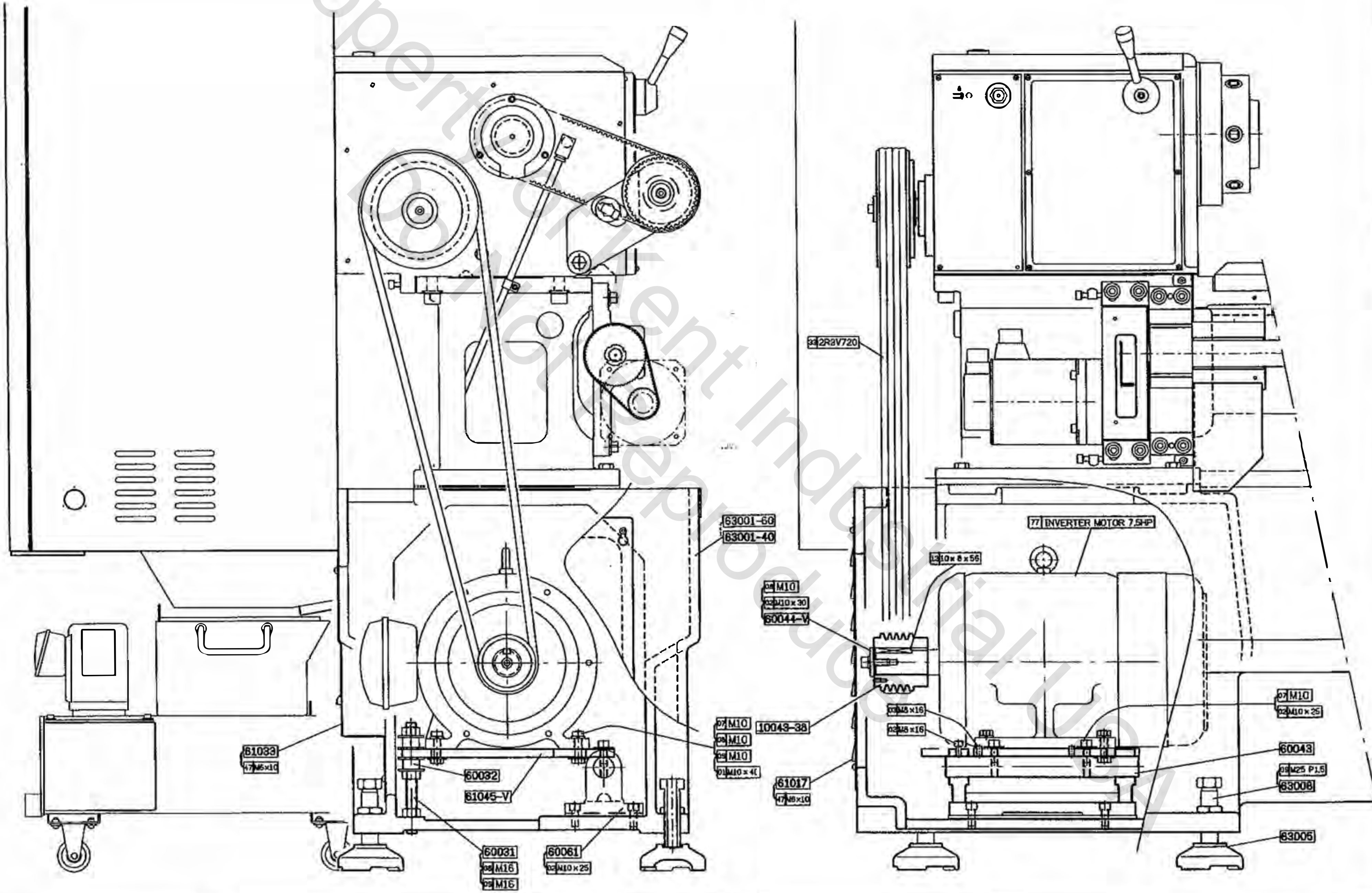
-17 MAIN MOTOR ASSEMBLY



- 17 MAIN MOTOR PARTS LIST

PARTS NO.	PARTS NAME	REMARK	PARTS NO.	PARTS NAME	REMARK
10043-38	MOTOR PULLEY	3V TYPE			
60031	FIXING SCREW	M16 P2.0 x 170L			
60032	RUBBER RING				
60043	PIVOT				
60044-V	WASHER				
60061	SUPPORT BASE				
61017	LEFT SIDE COVER				
61033	BACK OF COVER				
60045-V	MOTOR PLATE				
63001S40	BED	FOR 1740 MODEL			
63003-40	PLINTH				
63001S60	BED	FOR 1760 MODEL			
63003-60	PLINTH				
63005	FOUNDATION PAD				
63006	FOUNDATION BOLT	M25 P1.5 x 90 L			

HARDWARE CODE NAME CLASSIFICATION

HARDWARE NO.	DESCRIPTION	HARDWARE NO.	DESCRIPTION
01	HEXAGON HEAD BOLT	41	HANDLE
02	HEXAGON SOCKET HEAD BOLT	42	BRAKE CABLE
03	SET SCREW	43	LOCKING WASHER
04	FLAT HEXAGON SCREW	44	ANGULAR BALL BEARING
05	DOME CROSS SCREW	45	PRECISION LOCKNUT
06	FLAT CROSS SCREW	46	DOUBLE CYLINDRICAL BEARING
07	WASHER	47	DOME HEXAGON SCREW
08	SPRING WASHER	48	POWER RING
09	HEXAGON NUT	49	MALE ELBOW PT x H
10	NYLON JAM NUT	50	HEXAGON BUSHING PT x PT FM
11	SNAP RING	51	HOSE FITTING PT x H
12	O RING	52	QUARTER JOINT
13	KEY	53	HEXAGON CONNECTOR PT x PT
14	S KEY	54	FLEXIBLE TUBE
15	WOODRUFF KEY	55	GAUGE TUBE
16	SPRING PIN	56	ALUMINUM TUBE
17	TAPER PIN	57	HYDRAULIC POWER CHUCK
18	STRAIGHT PIN	58	ROTARY HYDRAULIC CYLINDER
19	SPLIT PIN	59	TIMING BELT
20	OIL BALL	60	PIPE CLIP
21	OIL SEAL	61	OIL DISTRIBUTOR
22	STEEL BALL	62	B- OIL DISTRIBUTOR
23	GREASE CAP	63	BRONZE BALL VALVE
24	SQUARE HEAD PLUG	64	MALE HOSE BIB FITTING PT x L
25	FEMALE ELBOW PT x PT	65	WING NUT
26	NIPPLE PT x L	66	OIL FILTER
27	NYLON TUBE	67	COOLANT HOSE WITH SS
28	OIL CAP	68	COOLANT NOZZLE
29	OIL SIGHT	69	COOLANT CONDUIT
30	OIL COVER	70	COOLANT PUMP
31	NET HOSE	71	PNEUMATIC CYLINDER
32	HOSE CLAMP	72	HYDRAULIC CYLINDER
33	V-BELT	73	HYDRAULIC HIGH PRESSURE HOSE
34	BALL BEARING	74	LIMIT SWITCH
35	TAPER ROLLER BEARING	75	ENCODER
36	NEEDLE BEARING	76	SERVO MOTOR
37	THRUST BEARING	77	INDUCTION MOTOR
38	BAND CABLE CHAIN	78	HEXAGON SOCKET HEAD PLUG
39	CLUTCH	79	ELECTRIC LUBRICATOR
40	RIVET	80	SWITCH DOG