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Operation Manual

CT-1118 CNC Lathe

CONTENTS

PURPOSE OF THIS MANUAL

The model CT-1118CNC series machine is built for easy and safe operation and excellent manufacturing of work in process. The machine is built with high quality material, and carefully to exacting standards that guarantee the life, economical use, accuracy, and minimum maintenance of the machine.

This manual is an introduction to the KENT model CT-1118CNC HIGH ACCURACY TOOL ROOM LATHE. It is used for installation, operation and servicing of the CT-1118CNC KENT MACHINES.

Also, for fast reference, because it is necessary to make minor adjustments or do preventive maintenance. (For personnel and operators who deal with the CT-606CNC machine.)

Place Two Levels on Slide Way

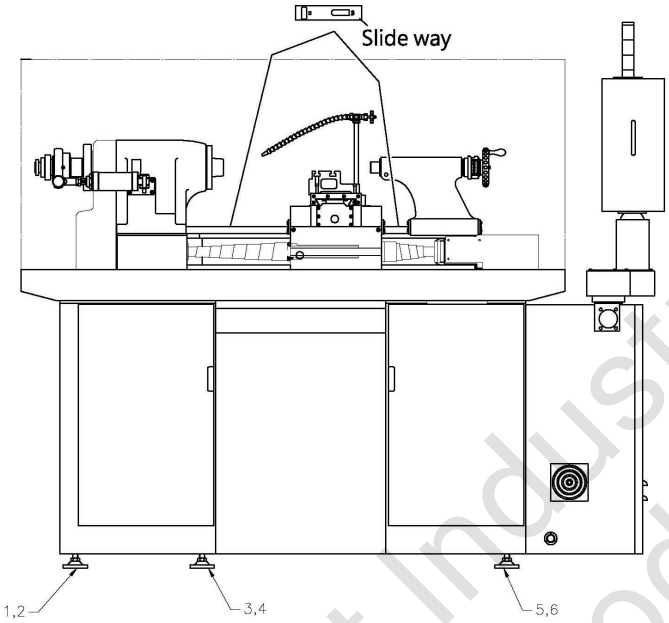


Figure A

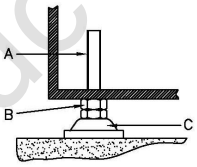


Figure B

Adjusting process for leveling machine

1. Put pads C (Figure B) under each of six points.
2. Insert the pillar A into the pedestal hole and adjust the nut B to the location according to machine level need.
3. Make sure every point is touching the ground to support the machine.

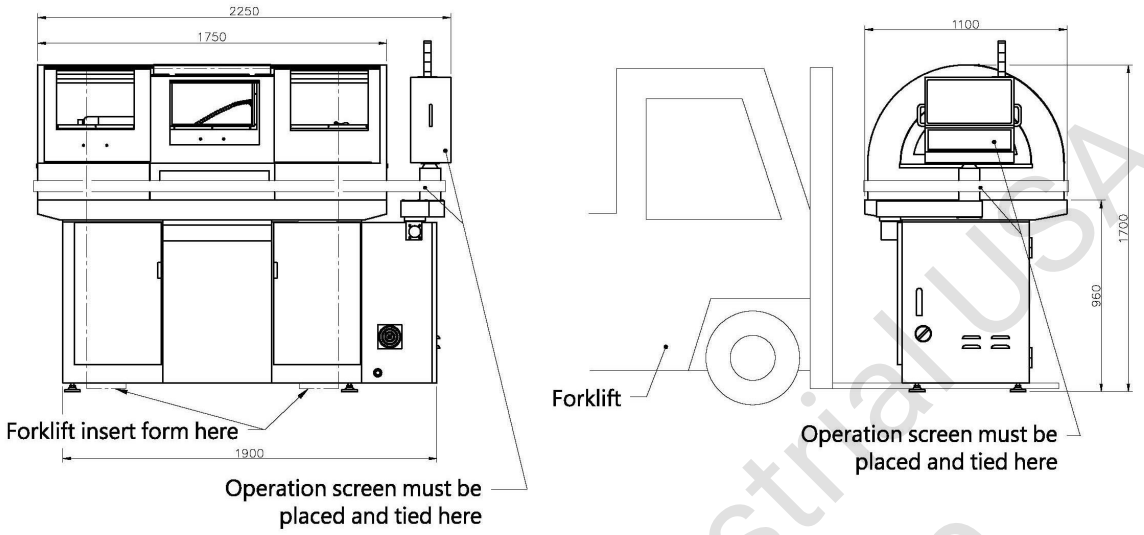


Figure C – Lifting machine

To lift and move the lathe, prepare the proper equipment and it must be rated at least 3,000 lbs. The recommended lifting equipment for CT-1118CNC would be Forklift. Prepare the permanent location for the lathe. Before lifting the lathe, please place the Operation Screen as shown in (Figure C) and tie it firmly with the lathe body to prevent from any damages. Insert the forks of Forklift between two sides of where pedestals located as shown in (Figure C) and then lift the lathe. Drive the Forklift slowly and steady the load, move it to the prepared location and lower it in place.

A.) ELECTRICAL CONNECTIONS

The CT-1118CNC TOOLROOM LATHE is shipped completely wired and assembled. Push the “A” (Figure 1) button, after that, hold handle “B” (Figure 1) and rotate it to the left side. Then turn cam switch ”C” (Figure1) to the reverse way, check motor voltage and open the switch case cover, connect the wires from the power source to the terminals (R.S.T) and ground connection is made at the “G” (Figure 2) which is the electric switch case. Push start button to start controller and make spindle run. The spindle should rotate counterclockwise when viewed from the tailstock end of the machine. If the spindle does not turn in the correct direction, turn the machine off. Disconnect electric power source and interchanges any two leads until the turning direction is correct. When the spindle is rotation correctly, secure switch case cover.

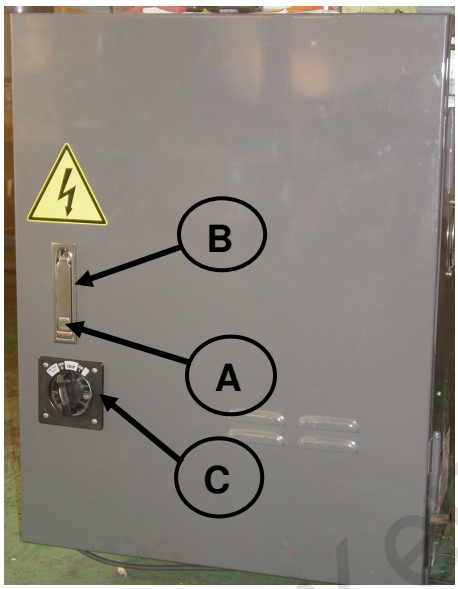


Figure 1-Electrical Box

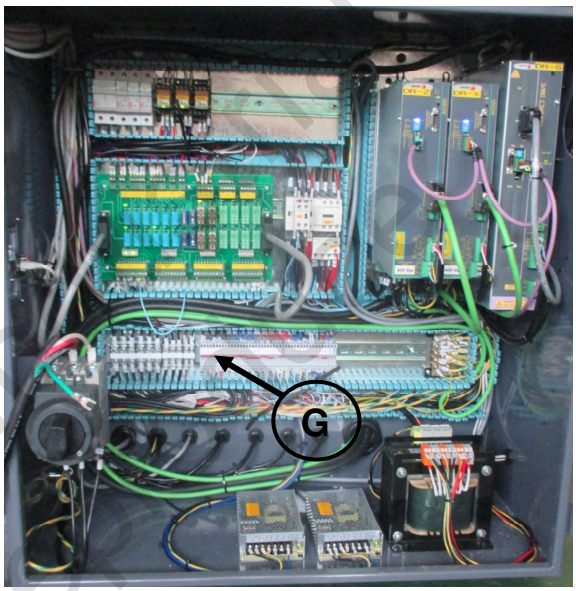


Figure 2- Electrical Box

B.) LUBRICATION

Proper lubrication supplied carefully , will maintain the life and performance of the machine for a long period. Therefore, lubricate the machine with a high quality lubricant. Fill with Mobil Vactra Oil No.2 or equivalent in oil reservoir and check oil level usually, please keep oil more then “Min” line (see figure 3).

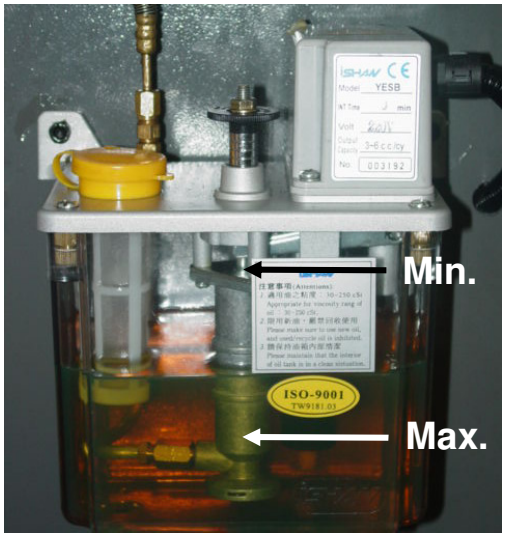


Figure 3-Automatically Oil Pump

1. HEADSTOCK LUBRICATION

The headstock spindle is mounted on precision preloaded ball, bearings. The ball bearings are grease packed for life and require no further lubrication.

2. BALL SCREW LUBRICATION

The ball screw should be lubricate every month. Please prepare grease gun for lubricate the ball screw. Before lubricate X-axis ball screw , open screw A (Figure 4) and fill some grease in to the X-axis ball screw. Fill grease in to the Z-axis ball screw from B (Figure 5). (The grease can use SUN LIGHT NO.2 or same kind of grease)

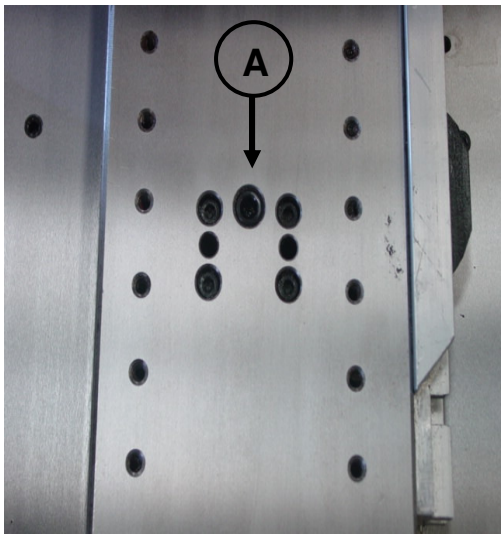


Figure 4–X-Axis Ball Screw Lubrication

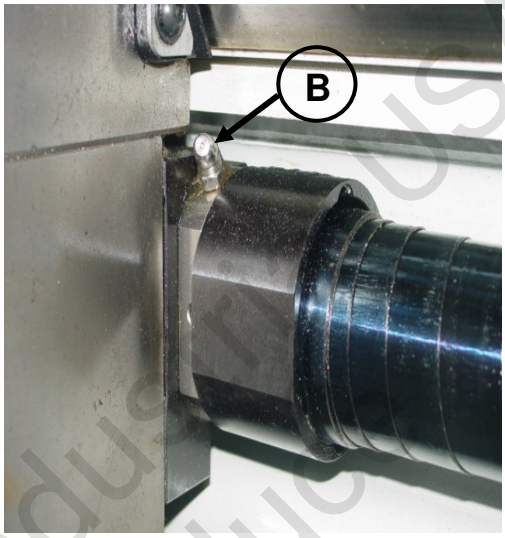


Figure 5–Z-Axis Ball Screw Lubrication

※PLEASE FILL IN SOME GREASE EVERY MONTH. IF NOT, MAY COUSE THE DAMAGE TO MACHINE

C.) COLLET CLOSER REMOVAL

Running the machine with the collet closer and not having a collet locked in place will damage the collet closer. Remove the collet closer when using chucks, face plates, or spindle nose type fixtures. The collet closer should be removed often for cleaning to prevent loading of chips between collet closer tube and inside of spindle at rear and collet threads. Removal method is：Pull out pin ”L” (Figure 4). Slide draw tube out of the spindle. Do not turn the adjusting nut “N” (Figure 6). It is keyed to the spindle. To remove slide it off the end of the spindle. Do not remove collet closer by removing screw “S” (Figure 6), this screw has been adjusted at the factory for proper operation of the collet closer.

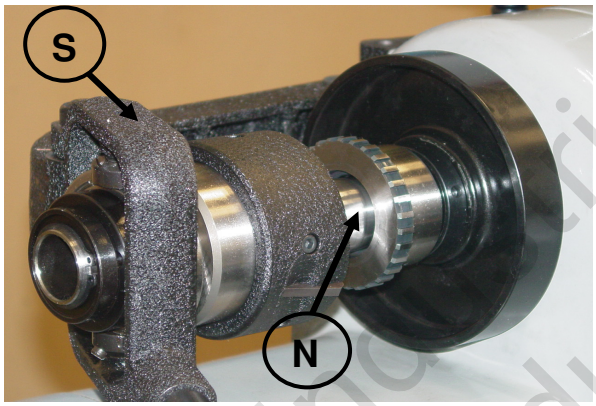


Figure 6-Collet Closer Removal

D.) COLLET CLOSER REPLACEMENT

Before replacement of the closer, clean inside of the headstock spindle and outside diameter at rear of spindle where Adjusting Nut “N” (Figure 7) is located. Apply a film of light oil on rear of spindle Do not force Adjusting Nut “N” (Figure 7) on spindle. If Adjusting Nut “N” (Figure 7) fits to tight, remove and check for burrs or scratches, then replace. Clean collet closer tube inside and out apply a film of light oil on slip surface “T” (Figure 7) of the collet closer tube, replace collect loser and insert Link Pin “L” (Figure 7).

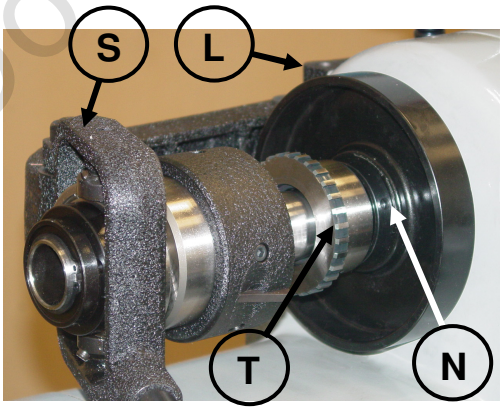


Figure 7-Collet Closer Removal

E.) COLLET CLOSER ADJUSTMENT

1. Before using collect closer, and any collet or step chuck to be used should be thoroughly cleaned.
2. Push the lock Pin “E” (Figure 8). To engage lock pin, turn spindle by hand till lock pin enters notch to lock.
3. Press the Closer Adjusting Finger “F” (Figure 9) down to the point “P” (Figure 9).
4. Guard “G” (Figure 9) forward with the left hand, and hold the collet or stop chuck with the right hand at the same time.
5. Place a work piece in collet or step chuck.
6. Place lever “L” (Figure 9) to the extreme left fixed position. Turn the Shell Guard “G” (Figure 9) toward operator until the work piece is clamped by the collet.
7. Place lever “L” (Figure 9) to the right, the released position. Turn Shell Guard “G” (Figure 9) toward operator, move the Adjusting Finger “F” (Figure 9).
8. Test collet closer’s tension on work piece. If the work piece needs additional gripping pressure, press down on the adjusting finger “F” (Figure 9) and turn Shell Guard “G” (Figure 9) forward and lock. (see figure 9).

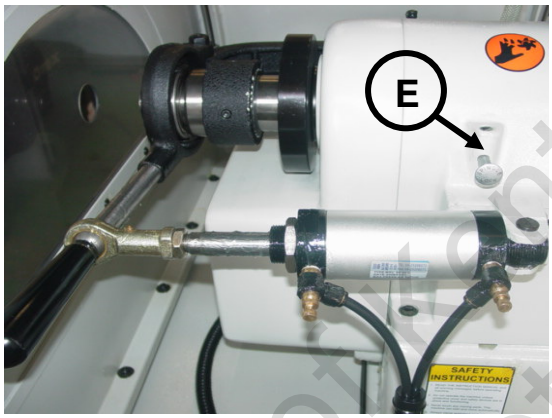


Figure 8-Spindle Lock

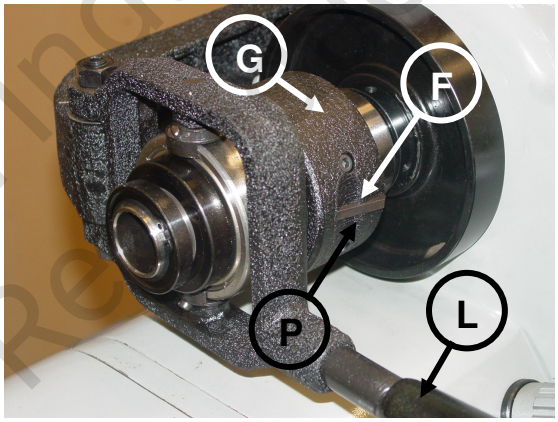


Figure 9-Collet Closer Adjustment

F.) BELT ADJUSTMENT

Run spindle at approximately 1000 rpm and stop the spindle. This is done to equalize belt tension. Loosen lock nut “N” (Figure 10) 19mm wrench. Turn adjusting screw “P” (Figure 10) 6mm socket head wrench clockwise to tighten belts. Stop machine and check belt tension, there should be approx. 25.4mm (1″) of play in belt.

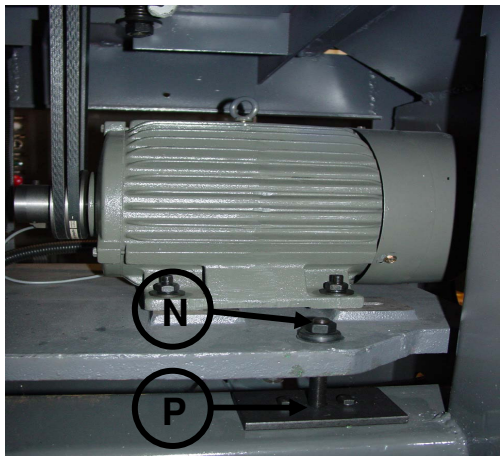


Figure 10-Belt Adjustment

G.) AIR COLLET CLOSER

When collet close, the handle “A” (Figure 11) will go → way. when collet open, handle “A” (Figure 11) will go → way.

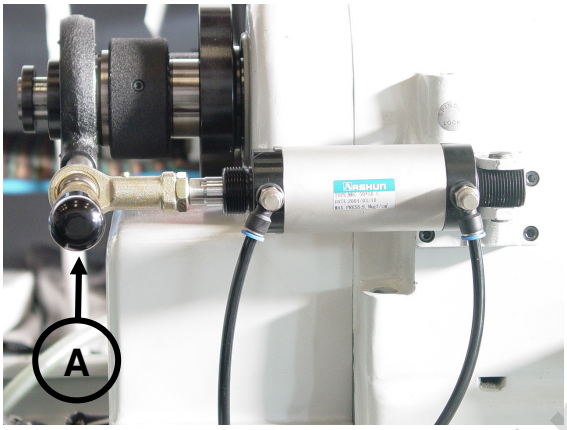


Figure 11-Air Collet Closer

H.) AIR F/R.L UNIT

Air flow in the triangle → on the primary unit. Change psi please pull up “A” (Figure 12) and counter clock wise it and you may change the psi.

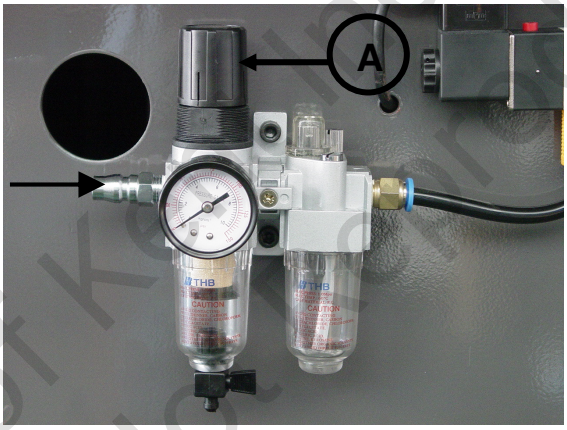


Figure 12-Air F/R.L Unit

I.) AUTOMATICALLY OIL PUMP

Open “A” (Figure 13) and fill with Mobil Vactra Oil No.2 or equivalent in oil reservoir when the oil line lower then min line.

Figure 13-Automatically Oil Pump

J.) FOOT STEP AIR COLLET CLOSER

Step the foot step air collet closer for open/close collet.

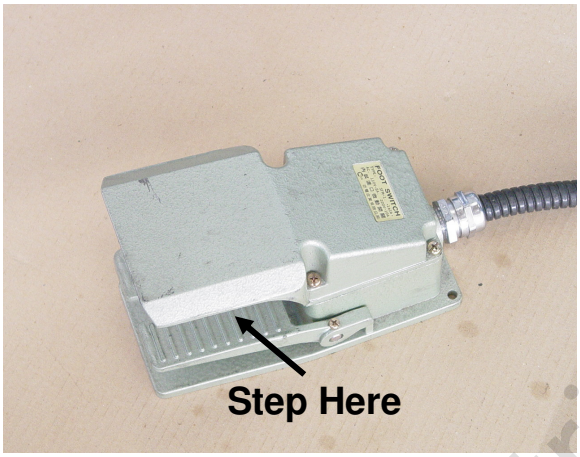


Figure 14-Foot Step Air Collet Closer

K.) COOLANT TANK

Please fill the coolant water up to max line (Figure 15) , if coolant water less then min line may damage the coolant pump . Change the coolant water , please take off the screw A , the waste water will out of hole .

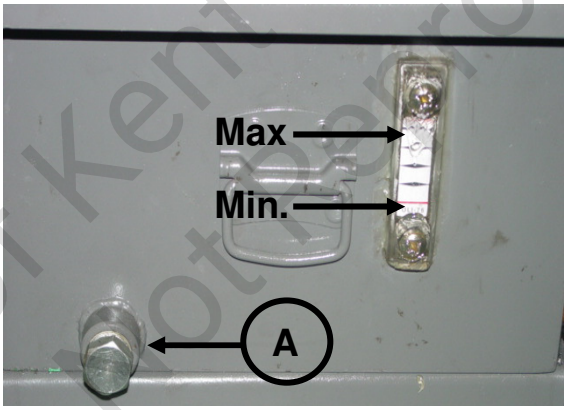


Figure 15-Coolant Tank

L.) WORK SITUATION LIGHT

When red light shine , it mean machine have some alarm massage or some problem . When yellow light shine , it mean work complete. When green light shine , it mean work is doing right now .

Figure 16 – Work situation light

M.) COOLANT

To increase coolant water please push it this way → . To decrease it goes to this way → .

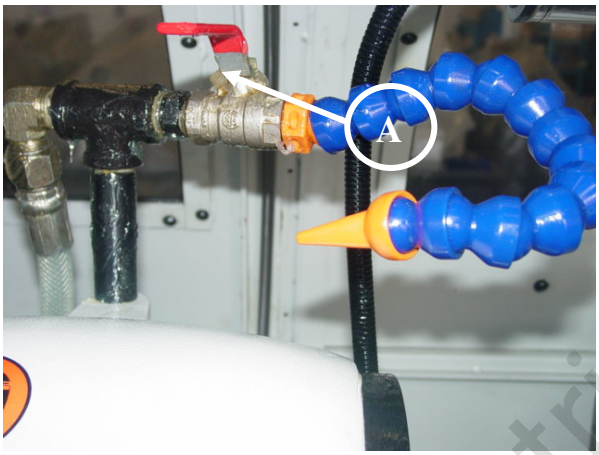


Figure 17-Coolant

N.) WORKING LAMP (WITH OUT COVER)

Press “LIGHT” key to open or close working lamp.

Figure 18-Working Lamp

O.) RS-232 CONNECTION

CT-1118 CNC Lathe machine have RS-232 or CF card to connect with FANUC controller . Also have 110v plug for Note Book.

Figure 19-RS-232

P.) MACHINE SIDE HAND WHEEL

The hand wheel which control Z-Axis is number “1” (Figure 20). For X-axis hand wheel is “2” (Figure 20). If want to use hand wheel in control penal, please punch F1 to decide use machine side hand wheel or control penal side hand wheel.

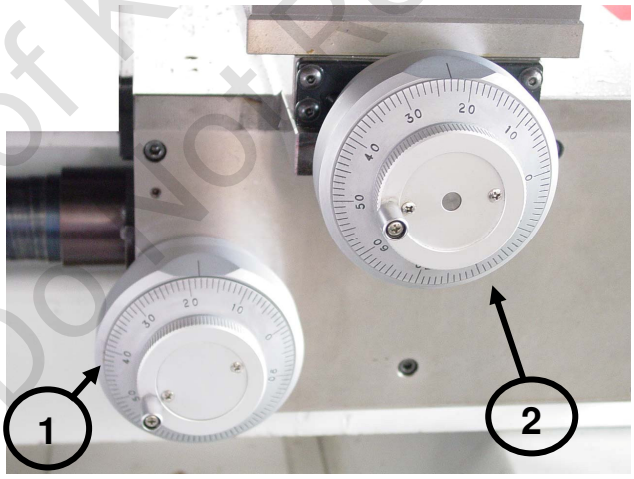


Figure 20-Machine Hand Wheel

Q.) TAILSTOCK

The tailstock is mounted on preloaded ball bearings and can support any load to the spindle. It is provided with a fine “feed” for accurate work. The spindle of the tailstock is graduated in eighths of an inch, and 1 mm and has a travel of 95mm (3-3/4″) The hand wheel is dual dial Inch and Metric. Graduations are 0.02mm (0.001″). It is built for the operator’s convenience of operation just turn the dial ring “D” (Figure 22) to the required location. It is unnecessary to tighten the dial rings. They are spring loaded, so a lock screw is not needed. Sliding cover cage exposes only the dial in use.

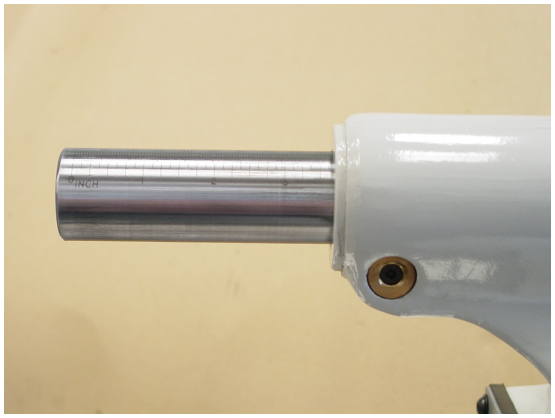


Figure 21-Tailstock Spindle Travel

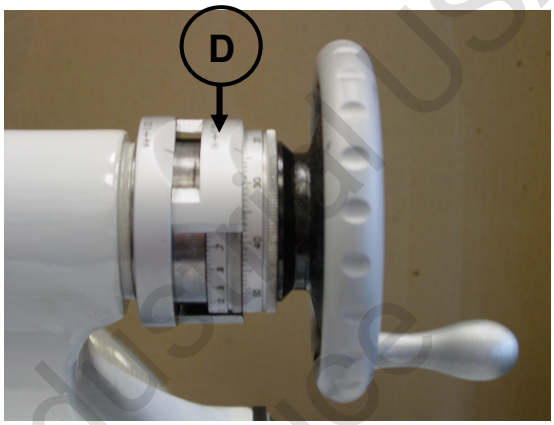


Figure 22-Handwheel Dial Ring

R.)TAILSTOCK SPINDLE LOCK

The tailstock spindle lock holds the spindle securely in any travel position. Move lever “L” (Figure 23) toward the headstock lock position and backward to the released position.

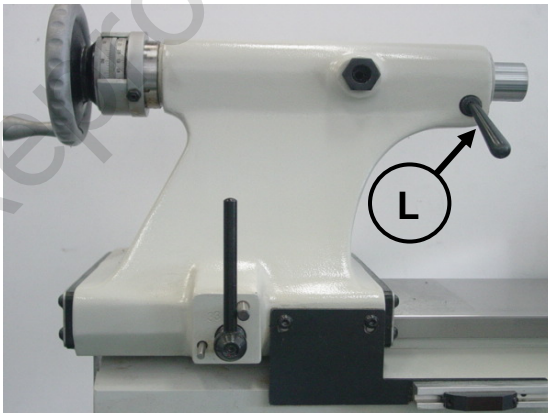


Figure 23-Tailstock Spindle and Body Lock

S.) TAILSTOCK BODY LOCK

The tailstock can be clamped in any position along the bed way by operating Lever ”M” (Figure 24). The Lever “M” (Figure 24) should be adjusted to a clamp position between the two stop pins “A” (Figure 24) and “B” (Figure 24). when tailstock is fully clamped, lever “M” (Figure 24) should not contact stop pin “A” (Figure 24).The hard ware limit “N” (Figure 24) protect the tailstock will not crash with carriage .

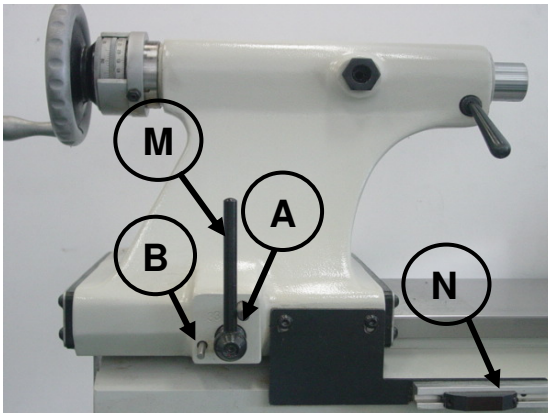


Figure 24-Tailstock Spindle and Body Lock

T.) OPERATING PROCEDURES

Stating procedures：

1) Main power switch

1. Turn the power of controller on.
2. Turn screen power on.

2) Machine origin locating

1. Press HOME ⑥ and press X ⑦ to return X-axis to origin.
2. Press HOME ⑥ and press Z ⑩ to return Z-axis to origin.

※EXECUTE MACHINE ORIGIN LOCATING WHENEVER THE MACHINE STARTS, OR ERRORS WILL OCCUR AND PROGRAM CAN NOT BE EXECUTED AFTER WARDS.

3) Perform daily job.

U.) TEST THE ROTATING DIRECTION OF SPINDLE

1. Switch on main power switch.
2. Turn the power of controller on.
3. Press MDI ③, key in **M3 S100** ； and press **insert** and press cycle start©.
4. Rotate ↺ way (clockwise).

※THE SPINDLE SHALL ROTATE IN THE DIRECTION OF AN ARROW WAY, WHICH IS SHOWING IN THE VICINITY OF THE SPINDLE. IF THE SPINDLE IS ROTATING IN THE OPPOSITE DIRECTION, PLEASE TURN OFF POWER AND OPEN ELECTRICAL BOX AND SWITCH ANY 2 WIRED, AFTER THAT THE SPINDLE SHOULD BE ROTATE CORRECT WAY.

V.) TEST COOLANT PUMP DIRECTION

Must test rotate of coolant pump way. If going wrong way. It may cost pump break or don't have enough coolant water.

REPLACING BATTERIES

When FANUC controller appear alarm 3n6~3n8 battery alarm massage ,please change the battery as soon as possible. Otherwise may loose absolute position data. Change the battery please follow the step.(or refer to FANUC operator's manual)

(1)***Turn on the power of the machine*** *(**turn on the servo amplifier**).*

(2) Loosen the screws of the battery case, and remove the cover.

(3) Replace the dry batteries in the case.

(4) After installing the new batteries, replace the cover.

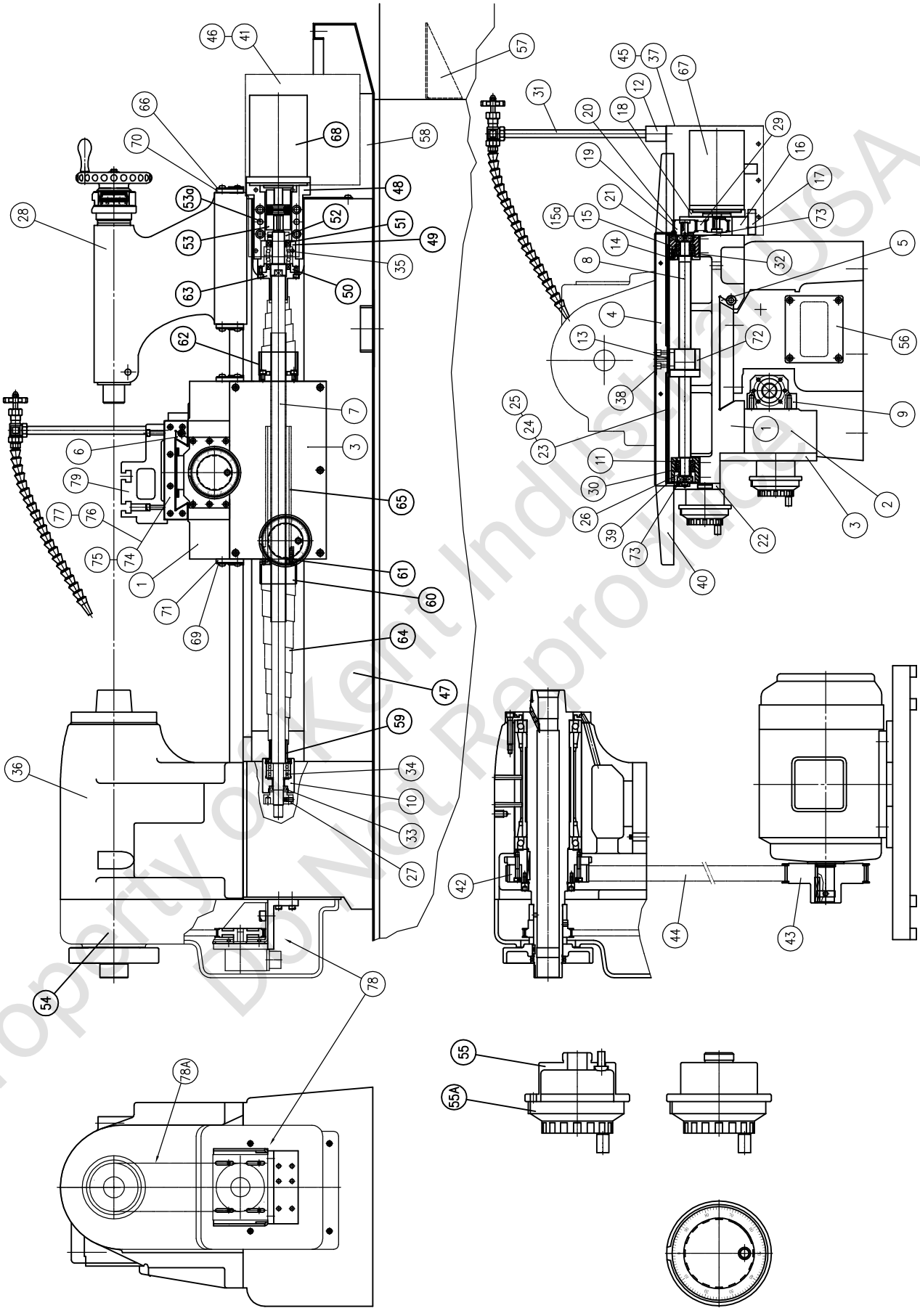
(5)Turn off the power to the machine.

PADESTAL ASSEMBLY

KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1	1118GW001	1	CARRIAGE SLIDE	29	230-5M-0015W	1	BELT
2	1118G002	1	CARRIAGE	30	BB7002	2	BEARING
3	1118G003	1	CARRIAGE COVER	31	L-6604	1	ELBOW SUPPORT
4	1118GW004	1	CROSS SLIDE (X)	32	BB7002A	2	BEARING
5	1118G005	1	GIB (Z-AXIS)	33	BB51103	1	BALL BEARING
6	1118GW006	1	GIB (X-AXIS)	34	BB6203ZZ	2	BALL BEARING
7	1118G007	1	BALL SCREW (Z)	35	BB7204	2	ANGULAR CONTACT BALL BEARING
8	1118GW008	1	BALL SCREW (X-AXIS)	36	LT-01-101G	1	HEADSTOCK
9	1118G009	1	Z-AXIS BALL SCREW NUT BASE	37	1118GW025	1	Motor Cover (X)
10	1118G010	1	Z-AXIS SCREW NUT COVER	38	1118G026	1	NUT WASHER
11	1118GW011	1	X-AXIS BALL SCREW BASE	41	1118G029	1	MOTOR COVER (Z)
12	118154	1	Coolant Support Fixed block	42	1118G030	1	SPINDLE GEAR PULLEY
13	1118GW013	1	X-AXIS BALL SCREW WASHER	43	1118G031	1	SIDE COVER STOP B (X)
14	1118GW014	1	MOTOR COVER	44	1736-8YU-12-2W	2	MOTOR BELT
15	1118GW015	1	BALL SCREW SUB-BASE	45	1118G025-1	1	BOTTOM OF MOTOR COVER (X)
15a	PT5#38L	4	TAPER PIN	46	1118G029-1	1	BOTTOM OF MOTOR COVER (Z)
16	1118G016	1	BALL SCREW SUB-SEAT (X)	47	LT-03-101-G	1	BED BODY
17	1118G017	1	BELT ADJUSTMENT BASE (X)	48	118103	1	MOTOR BASE (Z)
18	1118G018	1	MOTOR SEAT (X)	49	118107	1	BALL BEARING BASE
19	1118G019	2	BELT PULLEY	50	118108	1	BALL BEARING LID
20	1118G020	4	BELT PULLEY RING	51	118109	1	INTERVAL RING
21	1118GW021	2	BELT PULLEY CUSHION RING	52	118110	1	NUT
22	1118GW022	1	DIAL VING BASE SEAT	53	118122	1	COUPLING
23	1118GW023a	1	SIDE COVER A	53a	PT7#64L	2	TAPER PIN
24	1118GW023b	1	SIDE COVER B	54	118123	1	BODY FRONT COVER
25	1118GW023c	1	SIDE COVER C	55	118125s	2	MPG BASE
26	1118GW026	1	GIB	55a		2	MPG
27	1118G024	1	NUT	56	118153	1	BED WAY SIDE COVER
28	LT-09-101G	1	TAILSTOCK BODY	57	118155	1	POWER SUPPLY BASE

PADESTAL ASSEMBLY

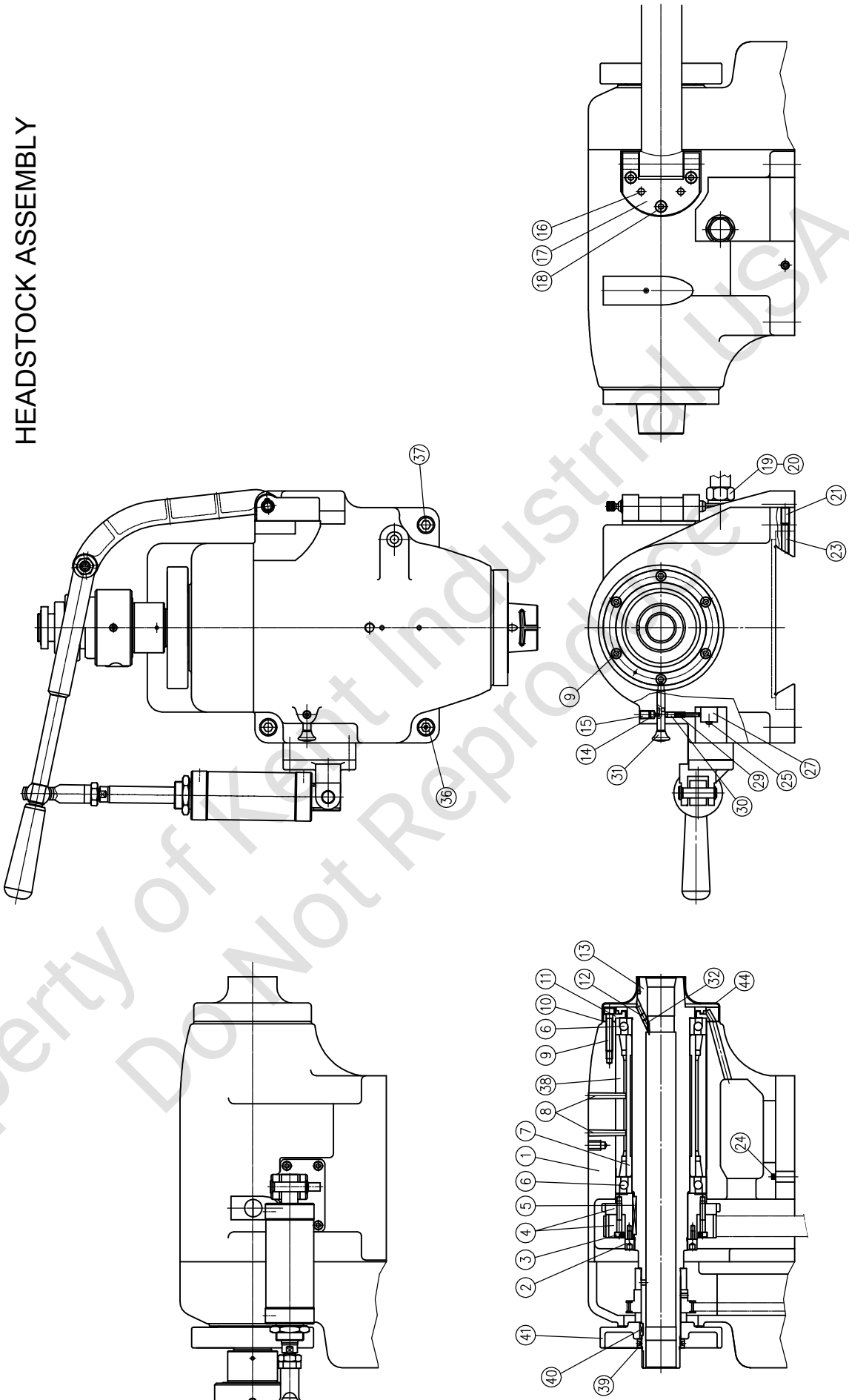
KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
58	118156	1	SWITCH BOX				
59	118136	1	BALL SCREW BASE				
60	118137	1	BALL SCREW BASE				
61	118138	1	BALL SCREW BASE				
62	118139	1	BALL SCREW BASE				
63	118140	1	BALL SCREW BASE				
64	118143	2	BALL SCREW COVER				
65	118144	1	MIDDLE COVER				
66	LT-09-123	2	WIPPER				
67		1	X AXIS MOTOR				
68		1	Z AXIS MOTOR				
69	LB-05-114C	2	WIPER COVER				
70	LB-05-114A	2	RIGHT WIPER				
71	LB-05-114B	2	LEFT WIPER				
72	1118GW008-1	1	BALL SCREW BASE (X)				
73	1118GW008-2	2	NUT				
74	1118GW004-1	1	WIPER COVER (F)				
75	1118GW004-3	1	WIPER (F)				
76	1118GW004-2	1	WIPER COVER (R)				
77	1118GW004-4	1	WIPER (R)				
78	118123	1	COVER				
78A	5M-565-10W	1	BELT				
79	1118GW004-TH	1	GANG TOOL BLOCK				



HEADSTOCK ASSEMBLY

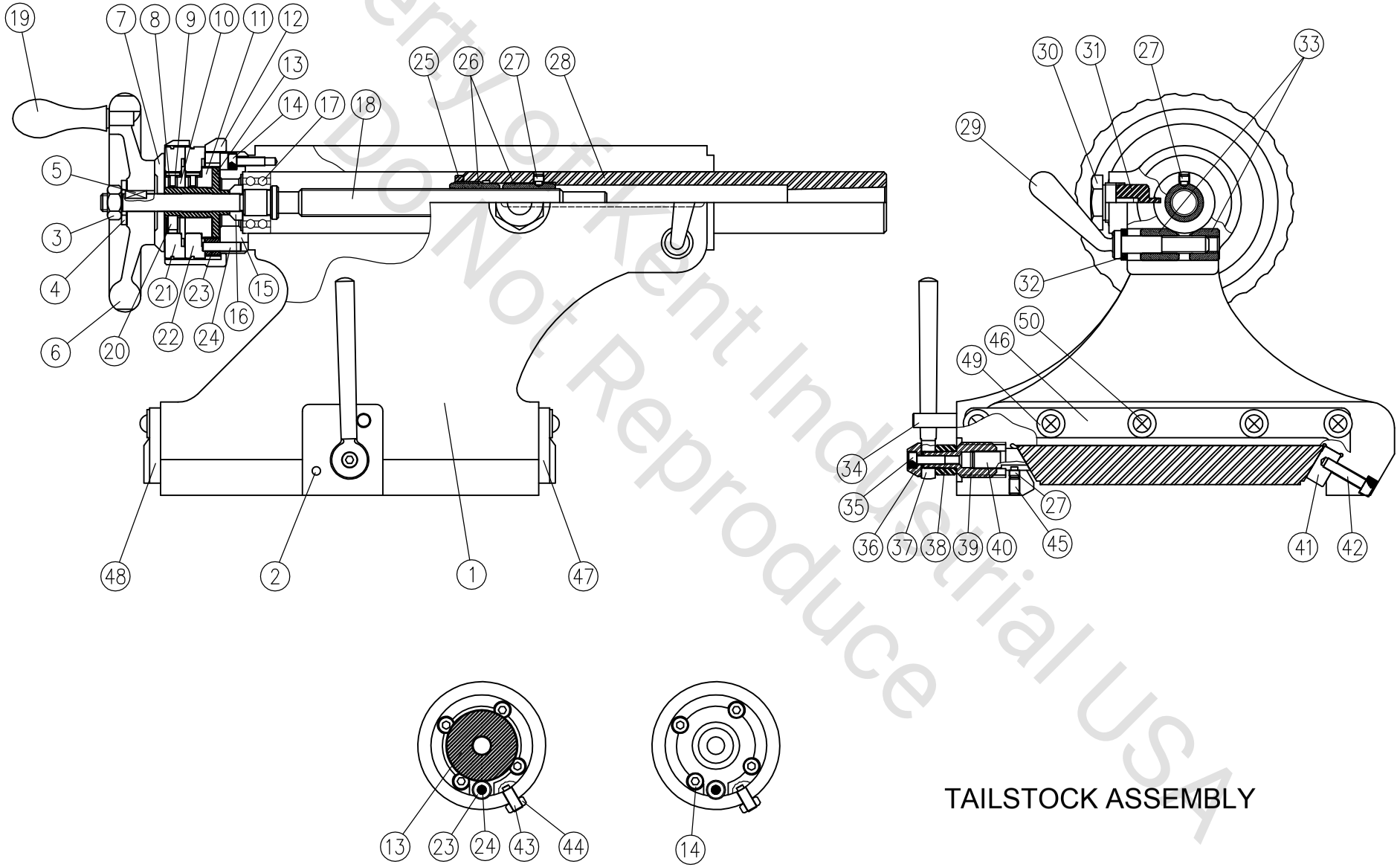
KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1	LT-01-101-G	1	HEADSTOCK	36	LT-01-117	1	SCREW
2	LB-01-102	1	SPINDLE NUT	37	SA12040	3	SCREW
3	1118G032	1	HANDLEWHELL	38	LT-01-105	1	BEARING SPACER
4	118G030	1	SPINDLE PULLEY	39	LB-01-101	1	NUT
5	KD02B042	1	KEY	40	KD02B14	1	KEY
6	BB7014P4C/P4	2	BEARING	41	LT-01-106	1	HANDWELL
7	LT-01-103	1	BEARING SPACER	44	LB-01-115	1	COOLANT SHIELD
8	PT5#50	1	TAPER PIN				
9	LB-01-113	6	SCREW				
10	LB-01-107	1	GASKET				
11	LB-01-108	1	FRONT CAP				
12	SL06008	1	LOCK SCREW				
13	LT-01-104C	1	SPINDLE				
14	L-1014	1	LOCK SCREW				
15	SL06B08B	1	LOCK SCREW				
16	PD05B112B	2	PIN				
17	L-1017	1	COLLET CLOSER				
18	SA08035	3	SCREW				
19	PCL-04B 1/2"	1	CONNECTOR QUEKER				
20	PCB-04B 1/2"	1	CONNECTOR STRAIGHT				
21	SL08006	1	LOCK SCREW				
22	SL08012	1	LOCK SCREW				
23	L-1023	1	LOCKING PLUG				
25	SC04025	2	SCREW				
27	Z-15G-B	1	MICRO SWITCH				
29	L-1031	1	SPRING				
30	LT-01-116	1	PLUNGER				
31	L-1032	1	LOCK PIN				
32	L-1033		KEY SCREW				

HEADSTOCK ASSEMBLY



TAILSTOCK ASSEMBLY

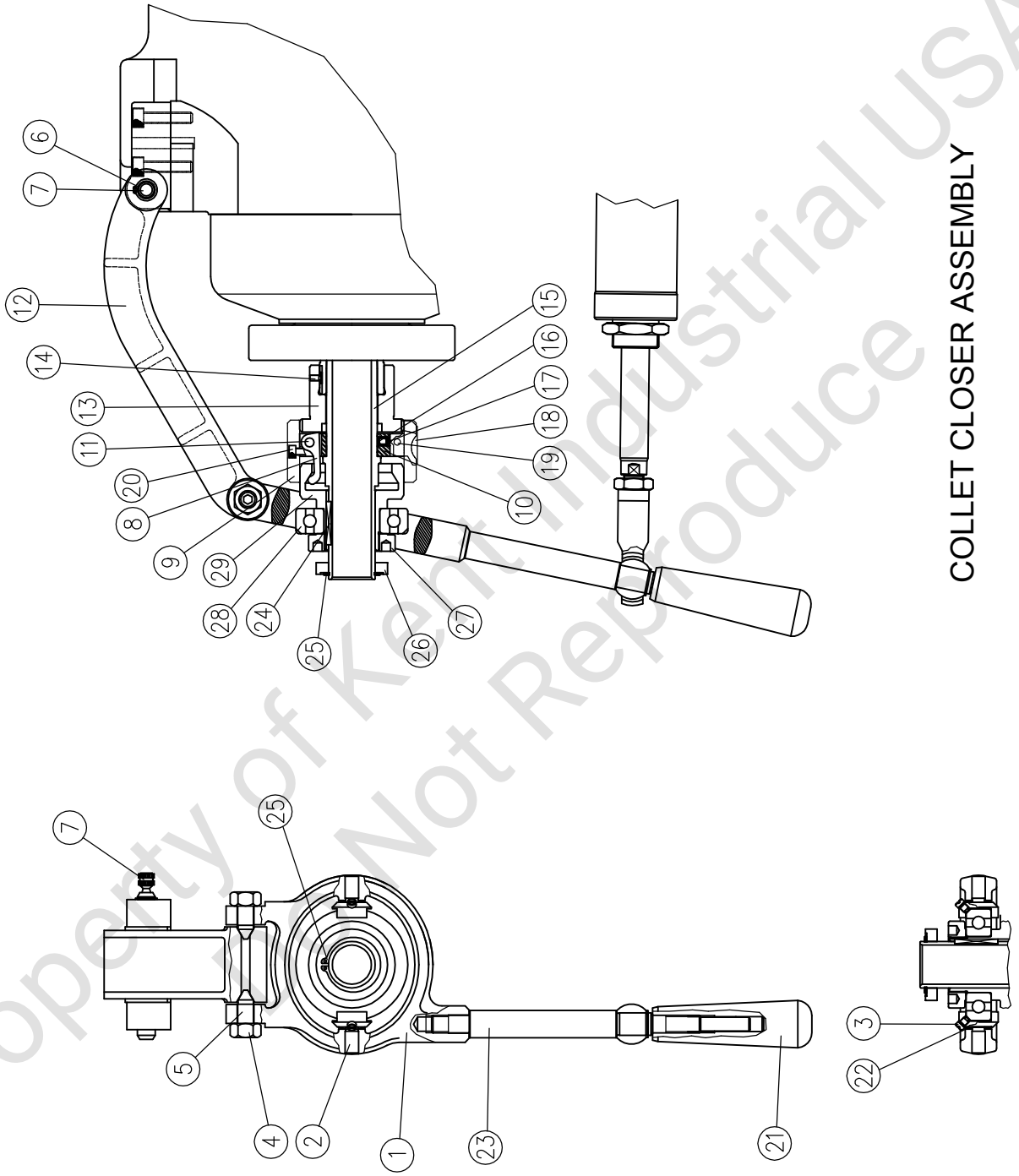
KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1	LT-09-101	1	TAILSTOCK BODY	31	LT-09-111	1	KEY
2	PD03104B	1	PIN	32	LT-09-114	1	WASHER
3	NH10	1	NUT	33	LT-09-113	1	LOCK PLUG
4	WB10	1	WASHER	34	PD05112B	1	PIN
5	KD04012	1	KEY	35	SA05016	1	SCREW
6	LT-09-102EM99	1	HANDLE WHEEL	36	LT-09-116	1	PLUG
7	LT-05-203	1	COVER PLATE	37	LT-09-115	1	HANDLE
8	LT-09-121	2	SPRING	38	LT-09-117	1	BUSHING
9	LT-05-432	2	KEY	39	LT-09-109	1	LOCK BOLT
10	LT-05-431	1	COLLAR	40	LT-09-109A	1	LOCK BLOCK
11	LT-05-428	1	GEAR	41	LT-09-103	1	GIB
12	LT-05-207EMC99	1	ZERO RING	42	SA06025	4	SCREW
13	LT-05-427	1	GEAR	43	LT-05-219	1	SCREW
14	SA05016	4	SCREW	44	NH06	1	NUT
15	LT-09-105EM99	1	BEARING SPACER	45	SL06010	1	SCREW
16	LT-09-119	1	SPACER	46	LT-09-123	2	WIPPER
17	LB-05-337	1	BEARING	47	LT-09-123A	1	LEFT WIPPER
18	LT-09-107EM99	1	SCREW SHAFT	48	LT-09-123B	1	RIGHT WIPPE
19	LT-05-324	1	HANDLE WHEEL	49	WB06	7	WASHER
20	SL06008	1	SCREW	50	SN06014	7	SCREW
21	LT-05-206EC	1	DIAL RING				
22	LT-05-206MC	1	DIAL RING				
23	LT-05-430	1	GEAR				
24	LT-05-429	1	SHAFT				
25	LT-09-110	1	LOCK NUT				
26	LT-09-108	1pr	NUT				
27	LB-05-442	1	LOCK SCREW				
29	LT-09-112	1	HANDLE				
30	LT-09-122	1	LOCK PLUG				



TAILSTOCK ASSEMBLY

COLLET CLOSER ASSEMBLY

KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1	L-2001	1	LEVER YOKE				
2	L-2002	2	SWIVEL BLOCK				
3	L-2003	2	SCREW				
4	NH12F	2	NUT				
5	L-2005	2	PIVOT SCREW				
6	RCS13	1	SNAP RING				
7	L-2007	1	LINK PIN				
8	L-2008	3	CLUTCH FINGER				
9	L-2009	1	SHELL GUARD				
10	L-2010	1	BRACKET				
11	PD04B104B	3	PIN				
12	LT-02-001	1	CONNECTING LINK				
13	LT-02-002	1	ADJUSTING KEY				
14	L-2014	1	KEY				
15	LT-02-003	1	COLLET SPINDLE				
16	L-2016	1	SPRING				
17	L-2017	1	SPRING CAP				
18	L-2018	1	ADJUSTING FINGER				
19	PD03B14B	1	PIN				
20	SA05010	4	SCREW				
21	L-4001	1	LEVER HANDLE				
22	L-2022	3	SPRING				
23	118204	1	HANDLE				
24	KD02B104B	1	KEY				
25	RCS34	1	SNAP RING				
26	L-2026	1	STOP RING				
27	L-2027	1	NUT				
28	L-2028	1	BEARING				
29	L-2029	1	CLUTCH CONE				

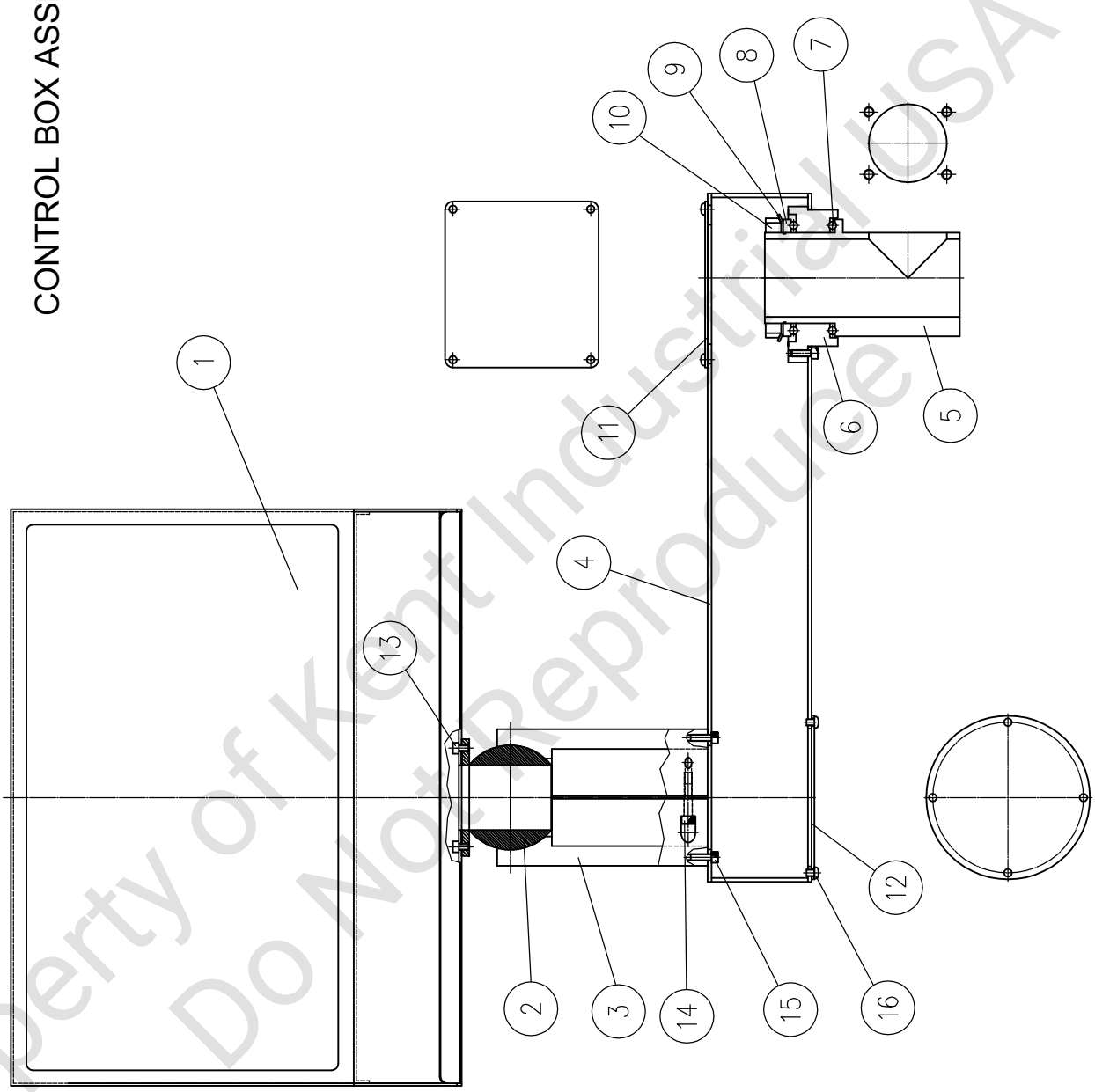


COLLET CLOSER ASSEMBLY

CONTROL BOX ASSEMBLY

KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1		1SET	CONTROL BOX				
2	118118T	1SET	CONTROL BOX PARTS				
3	118117	1	CONTROL BOX PARTS				
4	118115	1	CONTROL BOX PARTS				
5	118114	1	CONTROL BOX PARTS				
6	118116	1	BALL BASE				
7	MB6	82	BALL				
8	118116-A	1	BALL TRACK RING				
9	118120	1	WASHER				
10	118121	1	NUT				
11	118119-A	1	COVER				
12	118119	1	COVER				
13	SA05008	4	SCREW				
14	SA06025	4	SCREW				
15	SA05016	8	SCREW				
16	SN05006	8	SCREW				

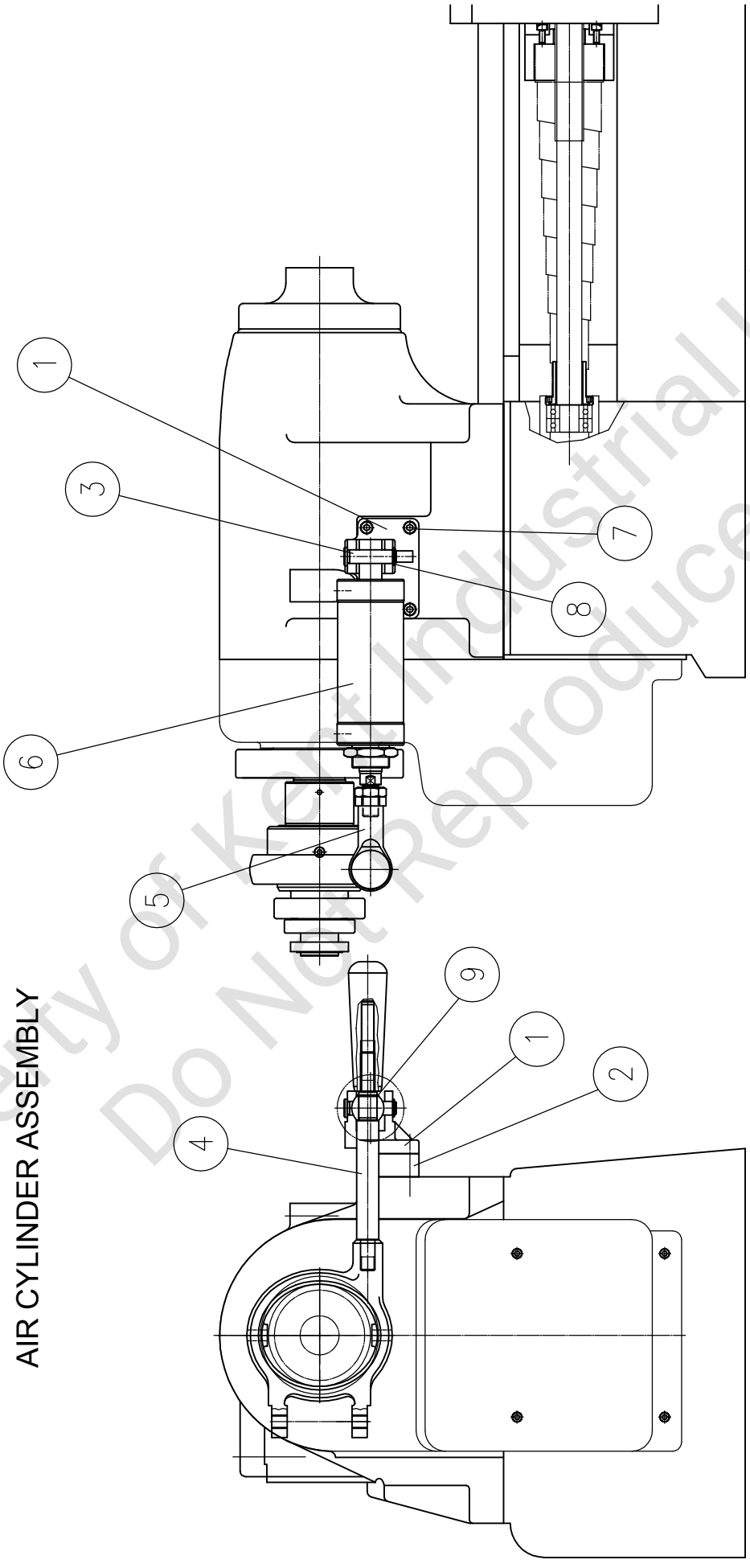
CONTROL BOX ASSEMBLY



AIR CYLINDER ASSEMBLY

KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1	118201	1	AIR CYLINDER BASE				
3	118203	1	PIN				
4	118204	1	LEVER HANDLE				
5	118205	1	UNIVERSAL BALL BEARING				
6	118206	1	AIR CYLINDER BASE				
7	SA06040	4	SCREW				
8	RCS12	1	SNAP RING				
9	RCS16	1	SNAP RING				

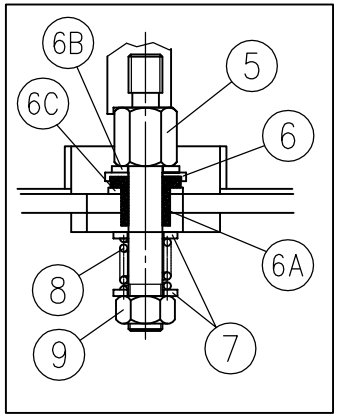
AIR CYLINDER ASSEMBLY



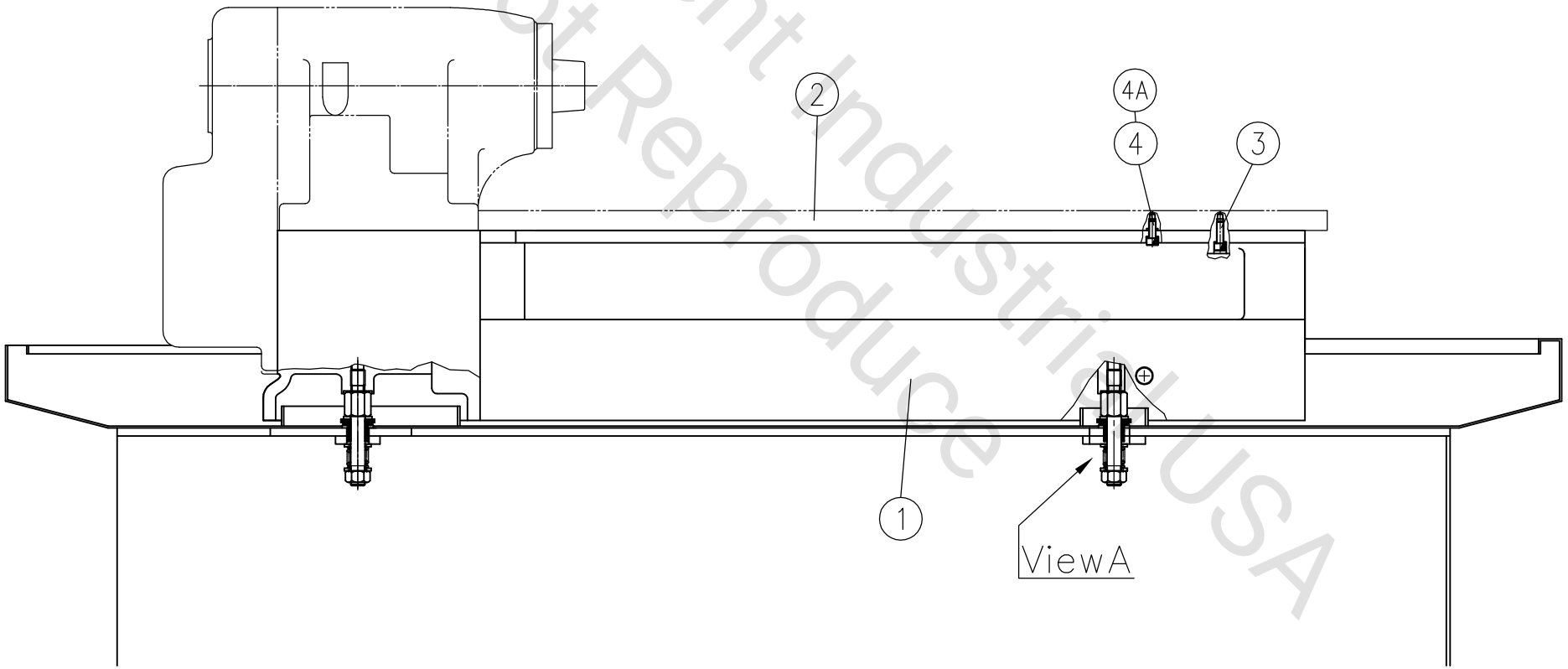
BED BODY ASSEMBLY

KEY	PARTS NUMBER	PCS	PARTS NAME	KEY	PARTS NUMBER	PCS	PARTS NAME
1	LT-03-101G	1	BED BODY				
2	LB-03-013	1	BED PLATE				
3	SA08025	14	SCREW				
4	SA08020	14	SCREW				
4A	WS08	14	SPRING WASHER				
5	LB-03-021	3	HOLD DOWN STUD				
6	LB-03-025	3	WASHER				
6A	LB-03-026	3	SPACER				
6B	LB-03-022	10	WASHER				
6C	LB-03-027	3	WASHER				
7	WS10B	6	SPRING WASHER				
8	LB-03-024	3	SPRING				
9	NH10BF	3	NUT				

BED BODY ASSEMBLY



view A



CNC : *FAGOR 8055i-FL/ TC*
Half-Key / 10.4" Color TFT LCD
USB + Ethernet + RS232C Interface

Driver : FAGOR Servo Driver System;
Spindle Driver/Motor: SCD 1.25-C0-0 / FS5-A037-S5C1-E01
X Axis Driver/Motor: ACSD 8H / FKM 22.30A.A3.100.1
Z Axis Driver/Motor: ACSD 8H / FKM 22.30A.A3.100.1

Machine Specification:
2 Axes + Portable Hand wheels
Air Chuck Function

Power Up :
Check the main power voltage: AC 220V ,5.0KW
Check the power phase: L1,L2,L3
Check the earth connection: PE

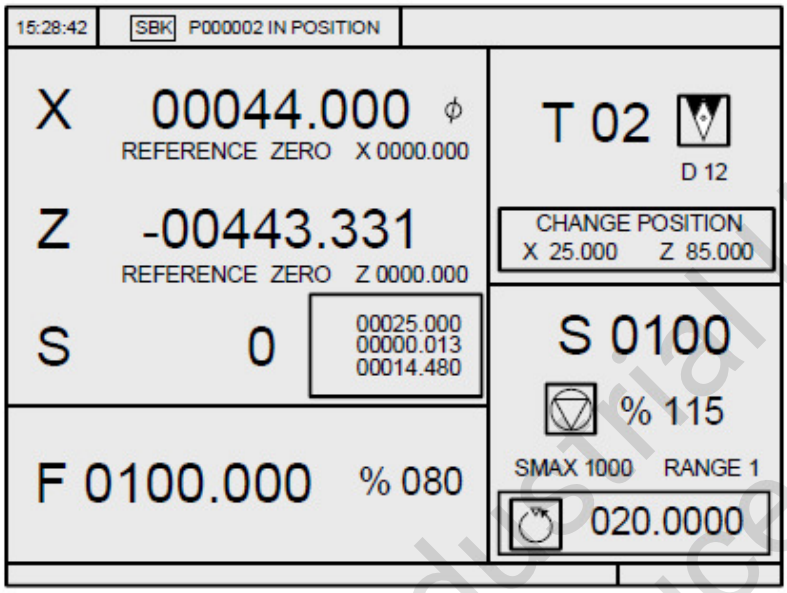
Put the Air to machine:
Check the air pressure indicator: > 6 Kg/cm^2

Add the Oil:
Check the axis lubrication unit oil level

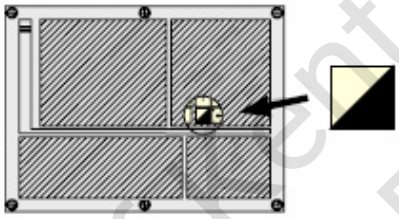
Machine Operation :

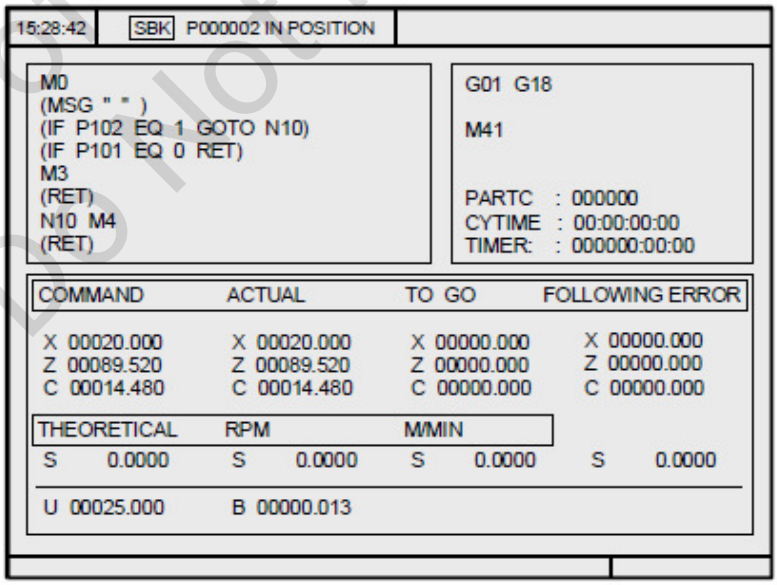
Start-Up

1. Release the E-stop Button (operator panel)
2. Press the "ESC" key to clear errors or alarms messages : CNC Ready
4. Press the "Servo On" button: Servo Power On
5. Manual moving the 2-axes to safety area
6. Machine need to Home Search: X→Z
7. Turret Home Search: T1→Start



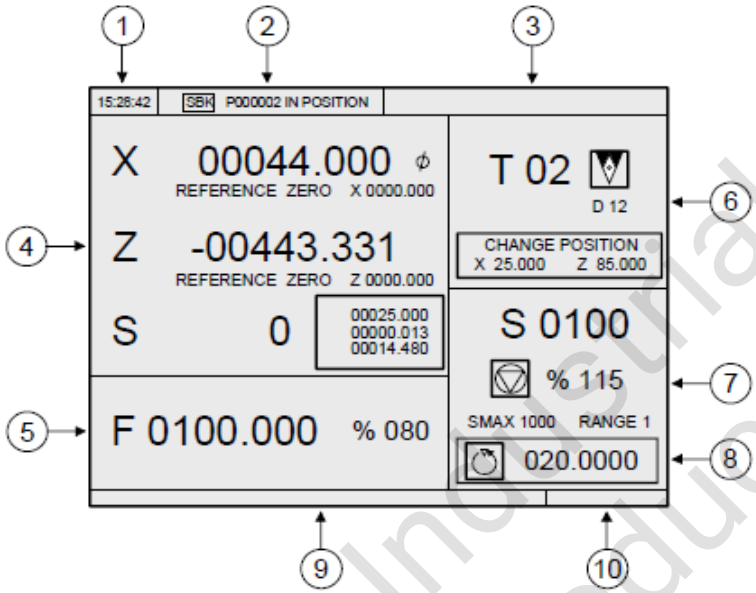
When pressing the [TWO-COLOR] key, the CNC shows the special screen of the TC mode.





Standard screen of the TC mode

The standard screen of the TC mode offers the following data:



1. Clock.
2. This window may show the following data:

   SBK when "single block" execution mode is selected.

   DNC when the DNC mode is active.

   P..... number of the program currently selected.

   Message "In position" - "Execution" - "Interrupted" - "RESET".

   PLC messages.
3. This window shows the CNC messages.
4. This window may show the following data:

   X, Z coordinates of the axes. The Ø symbol indicates that the axis is working in diameter.

   In small characters, the axis coordinates referred to machine reference zero. These values are useful when letting the user define a tool change point (see zone 6) The CNC shows this data when text 33 of program 999997 has not been defined.

   The coordinates of the auxiliary axes that are defined.

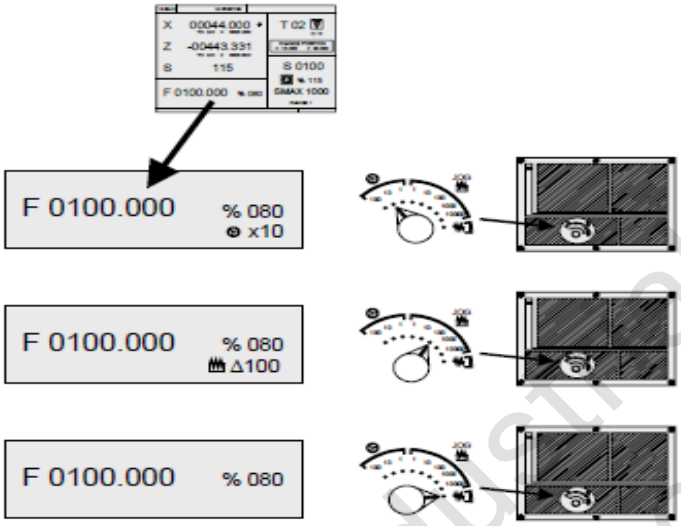
   The "C" axis will only be displayed when it is enabled (G15) and may be governed manually with the jog keys [C+] and [C-]. Being the X-C plane active, the coordinates shown correspond to the transformed coordinates; not to the machine coordinates.

   The actual spindle rpm (S symbol) or the actual rpm of the second spindle (S2 symbol).
5. The information shown in this window depends on the position of the left switch.

   In all cases, it shows the axis feedrate "F" currently selected and the % of F being applied.

   When feed-hold is active, the color of the feedrate value changes.

Here are all the possible cases.



6. This window shows, in large characters, the selected tool number "T" and, in small characters, the "D" offset associated with the tool. If the tool number and the offset number are the same, the CNC will not show the "D" value. The window also shows a drawing of the location code (shape) associated with the tool.

   This window also shows the coordinates of the tool change point referred to machine reference zero. The CNC does not show this window when text 47 of program 999997 has not been defined.

7. This window shows everything related to the spindle:

   The theoretical turning speed that is selected; "S" value when constant turning speed and "CSS" value when working at constant surface speed.

   The spindle status. It is represented with an icon and may be turning clockwise, counterclockwise or stopped.

   The % of spindle speed being applied.

   The maximum spindle rpm.

   The active spindle speed gear (range). The CNC does not show this data when text 28 of program 999997 has not been defined.

8. Spindle angular increment when working in spindle orientation mode.

9. When accessing a work cycle, this window shows the help text associated with the selected icon.

   That help text must be defined in program P999997 and edited in the desired language. See chapter *"1 General concepts"*.

10. Reserved.

Displaying the active PLC messages

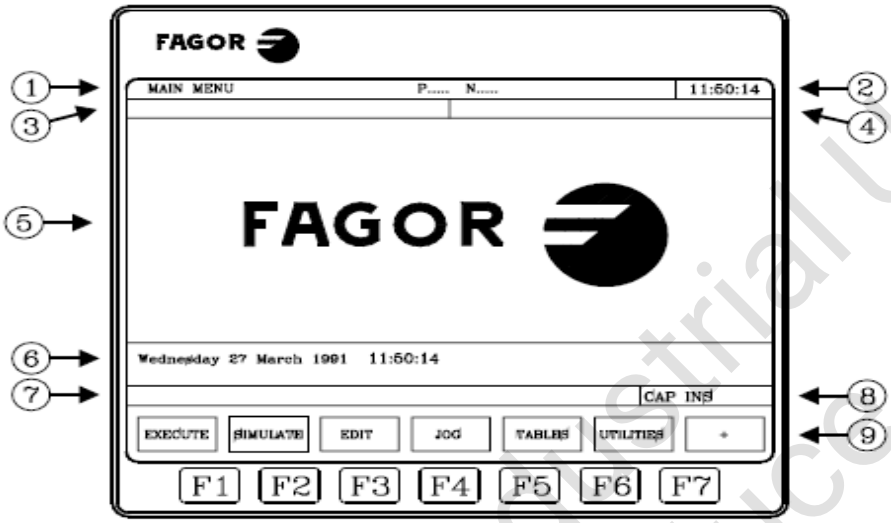
At the screen, press [+] of the alphanumeric keyboard, the CNC shows a window with all the active PLC messages. Besides, this window is also displayed whenever there is a program in execution.

The [⬆] [⬇] [PAGE UP] [PAGE DOWN] keys are used to move around the messages. The [ESC] key is used to close the window.

The window is only displayed when there are more than one active message.

ISO-MODE

The monitor is divided into the following areas or display windows:



1. This window indicates the selected operating mode, as well as the program number and the number of the active block. The program status is also indicated (in execution or interrupted) and if the DNC is active.
2. This window indicates the time in the " hours : minutes : seconds".
3. This window displays the messages sent to the operator from the part program or via DNC.

   The last message received will be shown regardless of where it has come from.
4. This window will display messages from the PLC.

   If the PLC activates two or more messages, the CNC will always display the one with the highest priority, which is the message with the smallest number. In this way, MSG1 will have the highest priority and MSG255 will have the lowest.

   In this case the CNC will display the character + (plus sign), indicating that there are more messages activated by the PLC, it being possible to display them if the ACTIVE MESSAGE option is accessed in the PLC mode.

   In this window the CNC will also display the character * (asterisk), to indicate that at least one of the 256 user-defined screens is active.

   The screens which are active will be displayed, one by one, if the ACTIVE PAGES option is accessed in the PLC mode.
5. Main window.

   Depending on the operating mode, the CNC will show in this window all the information necessary.

   When a CNC or PLC error is produced the system displays this in a superimposed horizontal window.

   The CNC will always display the most important error. The CNC will show the [→] key to indicate that another less important error has also occurred and to press this key to view its message. The CNC will show the [→] key to indicate that another more important error has also occurred and to press this key to view its message.
6. Editing window.

   In some operating modes the last four lines of the main window are used as editing area.

7. CNC reports window. (errors detected in edition, nonexistent program, etc.).
8. This window shows the following information:

SHF	Indicates that the [SHIFT] key has been pressed to activate the second function of the keys. For example, if the [9] key is pressed after the [SHIFT] key, the CNC will understand that the "$" character is required.
CAP	This indicates capital letters ([CAPS] key). The CNC will understand that capital letters are required whenever this is active.
INS/REP	Indicates if it is insert mode (INS) or substitution (REP) mode. It is selected by means of the [INS] key.
MM/INCH	Indicates the unit system (millimeters or inches) selected for display.

9. Shows the different options which can be selected with soft-keys F1 thru F7.

M-Codes Function Table for FAGOR 8055i-TC

M00	**Program Stop**
M01	**Optional Program Stop**
M02	**Program End**
M03	**Spindle CW**
M04	**Spindle CCW**
M05	**Spindle Stop**
M08	**Coolant On**
M09	**M8 Coolant Off**
M10	**Spindle Chuck/Collector Close**
M11	**Spindle Chuck/Collector Open**
M19	**Spindle Orientation**
M30	**Program End**
M67	**Turret Unclamping Function**
M68	**Turret Clamping Function**
M70	**Turret Turning Start**
M77	**Manual Tool Changed Mode**

The lists of the PLC-Parameters for operator to Setup different operate mode

Please change the CNC operating mode to **ISO-Mode** (8055iT-Mode) by push the **"SHIFT"+"ESC"** keys, then go into the "**Machine Parameters**" function tables. The "PLC Parameter" is under the "Machine Parameter" groups.

CNC PLC Parameters: P2
P2 = 0 (Default Value)
Once the machine power is turn-on, you don't finish "Home Search" function, the "Cycle Start" key inhibited and the CNC can't execute M, S, and T functions.
P2 = 1
Once the machine is power-on, no the "Home Search", but you want to execute M, S and T functions.

CNC PLC Parameters: P3
P3 = 0 (Default Value)
The machine would disable the door interlock function.
P3 = 1 (Default Value)
The machine would enable the door interlock function.

CNC PLC Parameters: P4
P4 = 0 (Default Value)
The machine would disable collector with sensor function.
P4 = 1
The machine would enable the collector with sensor function.

CNC PLC Parameters: P5
P5 = 0 (Default Value)
The machine would disable turret function.
P5 = 1
The machine would enable the turret function.

CNC PLC Parameters: P6
P6 = 0 (Default Value)
The machine would disable the portable hand wheels function.
P6 = 1
The machine would enable the portable hand wheels function.

CNC PLC Parameters: P13
P13 = 3 (Default Value) The collector clamping period.
The PLC timers to control collector close and open timer.
While you can control the collector close/open by the manual touch foot pad or M-code (**M10**/**M11**) function, the moving period is controlled by the PLC timer.

Trouble shooting for FAGOR 8055i TC

Errors Messages:

1. X-AXIS DRIVER ALARMS
2. Z-AXIS DRIVER ALARMS
3. SPINDLE DRIVER ALARMS
Cause:
The FAGOR digital driver's system & servomotors (X,Z and S) had some errors or alarms issued.
Trouble shooting:
Check the driver's status, it would show checksum codes by the "8-Segament Led Displayer" on the each driver. The list of errors and warning codes, you can referent to the manual of the "FAGOR Servo Driver System".
In the manual has troubleshooting and solution.

4. TURRET DRIVER ALARMS
Cause:
The DELTA driver system & servo motor had some errors or alarms issued.
Trouble shooting:
Check the driver's status, it would show checksum codes by the displayer on the driver. The list of errors and warning codes, you can reference of the DELTA driver manual.
In this manual has troubleshooting and solution.

5. MOTOR BREAKER OVERLOADS
Cause
This indicates that the power breakers are faulty. Relay inside panel has tripped, service or trained personnel should investigate if problem persists.
Trouble shooting:
Checking the turret, spindle, x and z axis servo system.
Checking the voltage of the main power.
Reset the motor breaker (QF1-QF4) inside the electrical cabinet.

Alarms Messages:

1. TAILSTOCK LIMIT TOUCH

Cause:

When the z-axis are travel over soft limit and touch the limit switch.

Trouble shooting:

Move the tailstock back to the safety area.

Move z axis (-) direction and leave the limit switch.

2. AXES LUBE. OIL-LEVEL LOW ALARMS

Cause:

Slide lube level is low refill oil tank.

1. Under the manual-mode, the CNC can't execute any command and the key "Cycle Start" is no function (Inhibit).
2. During CNC in the executing-mode, the CNC would change to the "Single-Block" mode and into the "Feed Hold" condition, waiting this alarm take out, then press "Cycle Start" key to restart the programs and the CNC functions.
3. Under the "Lubrication-low" condition happen 15 minutes; the CNC would go into the "Stop" condition.

Trouble shooting:

Refill oil up to maximum-level.

If tank oil level okay then call service.

3. AXES LUBE. OIL PRESSURE LOW ALARMS

Cause:

When the axes lubricated pump is activated and oil pressure can't reach the normal then the PLC issued this alarms.

Trouble shooting:

Check oil level in slide oil tank.

Checking the oil tube or pipe of the lubrication had broken or loosened happen.

4. AIR PRESSURE LOW

Cause:

When the air pressure is lower than the 4Kg/cm^2, this message will be appeared.

1. Under the manual-mode, the CNC can't execute any command and the key "Cycle Start" is no function (Inhibit).
2. During the CNC in the executing-mode, the CNC would change to the "Single-Block" mode and into the "Feed Hold" condition, waiting this alarm take out, then press "Cycle Start" key to restart the programs and the CNC functions.

Trouble shooting:

Check and make sure the air source pressure must larger than the 6Kg/cm^2, is not lower than the 4Kg/cm^2 .

5. SPINDLE LOCK

Cause:

If the machine had spindle lock pin function and lock pin is locked, the CNC launch this alarm message and the CNC inhibit the spindle turning.

Trouble shooting:

Check the limit switch of the spindle lock pin if it is broken.

The pin is locked for the chuck to clamp parts function, in the normal the lock pin need to unlock position.

6. COOLANT PUMP OVERLOADS

Cause

This indicates that the coolant motor has pump or is faulty. Relay inside panel has tripped, service or trained personnel should investigate if problem persists.

Trouble shooting:

Checking the coolant-pump if it is turning in correctly direction.

Checking the coolant water if it is not enough, let the pump motor dry running.

Checking the pump cable, connector if it had the short-circuited happen condition.

Reset the motor breaker (overload) inside the electrical cabinet.

7. DOOR OPEN CAN'T CYSTART (AUTO)

Cause:

This is a guard interlocks protection function.Under the automatic mode, must be close the guard.

1. During the CNC in the executing-mode you can press the "**Cycle_Stop**" key to stop the CNC, then push key "Spindle Stop" to stop spindle turning. Then push the "Door-Release" key to open the door.
2. Under the door open, the axes, coolant pump and chip-conveyor function would be immediate stop and into the "**Feed hold**" condition, and the spindle speed down to lower speed turning.
3. While the CNC is executing "M00, M01, M02, M30", the door interlock would be released automatic.

Trouble shooting:

Close the door guards, this message would disappear then press the "Cycle Start" key to continue run the program.

8. NO SPINDLE SPEED VALUE

Cause:

It means no spindle speed command while push the "**CW**" or "**CCW**" keys or executing the "M3" or "M4" function to turning the spindle.

Trouble shooting:

Key in the spindle speed value and maximum speed, and the message would be disappeared and can turning the spindle.

9. SPINDLE SPEED ARRIVED OVERTIMES

Cause:

The spindle is turning and can't reach the command speed.

The feedback from the encoder and the motor encoder are compared. If the difference between the two falls outside the factory set tolerances and alarms generated..

Trouble shooting:

Check the spindle belt if it is lossing.

Check the spindle encoder if it is broken.

10. TURRET IS NOT CLAMPING

11. TURRET PARITY ERRORS

12. TURRET TURNING OVERTIMES

13. TURRET NO RESPONSE

20. TURRET MUST BE HOME RETURN

21. NEED CALL TOOL AGAIN

22. TOOL CODE NEED TO RESTORE

Tool changed is not finish by external E-Stop, CNC Errors and other alarms make the tool-changed failure and not finished inside 20 seconds.

Trouble shooting:

Reference to the turret manual then checking the turret sensors, turret position coder, turret motor and wiring if they are working correctly.

Press the "E-Stop" button once then release the "E-Stop" button to reset the CNC and clear the errors. The CNC in the ready condition, press the "Turret Home Mode" key and press the "Start" to do the T1 changed and the CNC would do the turret "Home return".

14. COLLECTOR MUST BE CLAMPING

15. COLLECTOR CLAMPING OVERTIMES ALARMS

16. COLLECTOR NOT READY CAN'T CYSTART

Cause:

It means the spindle air collector open\close accessory not in the ready condition. The CNC detect the alarms and launch these messages, then inhibit the spindle turning.

Trouble shooting:

Check the sensors, air solenoids of the spindle chuck-open\close device if they are working correctly.

Check the collector mechanical open\close function if it had some troubles let the collector open\close can't work correctly.

17. SPINDLE RUNING COLLECTOR CAN'T OPEN

Cause:

While the spindle is turning, the air chuck function would be inhibited. If the machine had the part is clamping by the air chuck and spindle is turning. If you make the chuck clamping or un clamping, it's very dangerous condition during the machining. The CNC detect the alarms and launch this message, inhibit the these function working.

18. DOOR OPEN (COOLANT-OFF)

Cause:

Under door-open in the manual-mode, limit the axes speed and the rapid feed, spindle speed and coolant pump would be inhibited.
The axes' feed can be limited by the "Axis Parameter(**P75**)" values independently.
The spindle speed can be limited by the "Spindle Parameter (**P66**)" values.
If you want to disable these speed limited, setup the PLC parameter (**P3 = 0**).

Trouble shooting:

Close the door guards, this message would disappear and some speed limits would be cancel.

19. PUSH "SERVO ON"

Cause:

The driver system and CNC in the ready status, waiting power supply to the FAGOR driver power-supply. After the power-supply system go into "BUS ON" status and green led on display, this alarm message immediately disappeared.

Trouble shooting:

Please push the "Servo On" button on operator panel.

33. M01STOP FUNCTION ACTIVED

Cause:

Under the automatic mode, the CNC had executed the "**M01**" function and the M01-function key on status. At the moment, the machine and coolant water would be immediate stop and the door-interlock would be released automatic then go into the "M01stop" condition.

Trouble shooting:

Close the door, press the "Cycle Start" or "Reset" keys and this message would be disappeared.

34. BLOCKSKIP1 FUNCTION ACTIVED

Cause:

When you press the "**Block Skip**" key, the PLC sets these signals at a high logic level to tell the CNC that the block skip condition "/ " , "/1" is met, therefore, the blocks which have the block skip condition will not be executed..

Trouble shooting:

Press the "**Block Skip**" key again to cancel this function, this message would be disappeared.

35. FEED HANDWHEEL FUNCTION ACTIVED

Cause:

When you press the "**Feed Hand Wheel**" key, the PLC sets these signals at a high logic level to tell the CNC that the Feed Hand wheel condition. It is possible to use the machine hand wheels to control that federate.

This way, the machining federate will depend on how fast the hand wheel is turned.

Trouble shooting:

Press the "**Feed Hand Wheel**" key again to cancel this function, this message would be disappeared.

36. HOME SEARCH NOT DONE

Cause:

When you power-on the machine every time, not make the machine home search.

Trouble shooting:

After executing the "Home Search" function and finished, this message would be disappeared. If you don't finish the axes' reference return, the PLC-function would inhibit the "Cycle Start" key. If you need to use this "Cycle Start" key under the "Home Search Not Done" condition, setup the PLC parameter (**P2 = 1**) of the CNC to enable "Cycle Start" key.

37. TURRET IS HOMING

Cause:

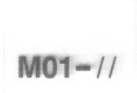
It is mean the CNC executing the turret T1 search function, the CNC launch this message. When the turret go to the T1 position, this message would disappear.

38. TOOL REQUESTED NOT IN TURRET

Cause:

Use another tool in the manual tool post and tool number command is not in the turret position. The CNC detect this condition and launch this message.

2th Control Panel Function-Key Definition :



M01 Function Key

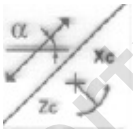
Block Skip1 Function Key

“Feed Hand Wheel” Function Key

The Spindle Jogging Function Key

The Turret Home Return Mode Function Key

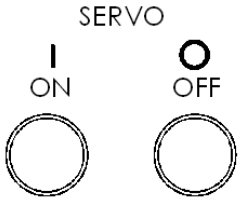
The Path Hand Wheel (Linear) Function Key



The Path Hand Wheel (Arc) Function Key

The Manual Coolant Pump On/Off Function key

The switch button of the machine's work lamp on/off function.



The two buttons to turn on/off the power of the driver's system, if had turn-on the machine and the CNC is ready you must push the Servo-On button to enable the driver system with led illuminated. The other, if the machine had any alarms or errors issued, the CNC would be cut-off the power of the driver's system immediately, the led of the Servo-On button would be turn-off.

The Emergency-Stop button is designed to any dangerous or trouble condition, to push this button to prevent any accident to happen.

The button of the turret turning one position function.

How to executing the Turret Home Search Mode

While the CNC is start up need to turret home once.
The screen would show message " Turret Must Be Home Return"

T1→ Cycle Start to execute the turret homing.

The turret had alarms issued need to turret home return again.

Under the manual mode, push the key  **the CNC would into the Turret Home Return Mode.**

Under the "Turret Home Return Mode", press the tool-change button to execute the turret homing.

How to clear the Turret Driver Alarms

The procedure as below:

1. Push the key the CNC would into the Turret Home Return Mode.
2. Press the "Emergency-Stop" once then release the "Emergency-Stop".
3. Press the "Reset" to clear CNC alarms.
4. Push "Servo On" and machine is ready.
5. Press the "Tool-Change" button to execute the turret homing.

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