

INSTRUCTION MANUAL

KA-34/40/43 series CNC lathe



KENT Industrial (USA) Inc. Address: 1231 Edinger Avenue, Tustin, CA, 92780 USA Phone: (714) 258-8526 Toll Free: 1-800-KENT-USA (1-800-536-8872) Fax: (714) 258-8530 http://www.kentusa.com/ sales@kentusa.com

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CHAPTER 1, GENERAL INSTRUCTION

SPECIFICATION

	ITEM	MODEL	KA-26	KA-30	KA-34	KA-40	KA-43	
		Distance between centers	1000/1500/2000/3000/4000/5000/6000/7000/8000/9000/10000					
	Machining	(mm) 11000/12000/13000/14000/15000/16000mm						
	capability	Swing over bed	660mm	760mm	860mm	1000mm	1100mm	
		Swing over cross slide	310mm	410mm	510mm	650mm	750mm	
	Bed	Width	558mm					
		Spindle nose	D1-11, 130mm, L: 40-130, M: 130-400, H: 400-1200 A2-11, 165mm, L: 20-110, M: 110-320, H: 320-660					
	Main	Spindle bore	A2 A2	2-15, 230mm, 2-20, 310mm, 2-20, 200mm,	110-320, H: 320 100-200, H: 200	:0, H: 320-660)0, H: 200-400		
	spindle	Spindle speed (rpm)	A2-20, 360mm, L: 20-100, M: 100-200, H: 200-300 A2-28, 410mm, L: 20-100, M: 100-200, H: 200-250					
		Spindle taper	MT15					
		Cross travel (X axis)	330mm	380mm	430mm	500mm	550mm	
	Travel		Standard tool post 240x240mm, larger tool post might cause travel reduced					
		Longitudinal travel (Z axis)(mm)	DBC minus 350mm					
		X axis rapid traverse	5M/min					
	Feeds	Z axis rapid traverse	5M/min					
		Cutting feed rate	0.001-500mm/rev (0.0004"-20"/rev)					
		Main motor	30hp 40hp					
		Inverter	30hp 40hp					
		X axis servo motor	Siemens or Fagor AC servo motor FXM 53 /2.49kw/11.9Nm / 2000rpm					
	Motors	Z axis servo motor	Siemens or Fagor AC servo motor FXM 76 /8.31kw/39.7Nm / 2000rpm					
		Oil pump	100W					
		Coolant pump	450W, 6~10bar					
		Hydraulic tank pump (optional)	3hp (2.2kw)					
	Tank	Hydraulic tank (optional)	20L 8L					
	capacity	Lubrication pump						
	Ball screw	X axis diameter	40mm					
		Z axis diameter	1000~6000: 63mm, 7000~10000: 80mm, 10000~16000: gear rack					
	Tailstock	Quill diameter	115mm/160mm(OPT.)					
		Quill travel	300mm					
		Quill taper MT6						
	Length	4080/4580/5080/6080/7080/8080/9080/10080/11080/12080/13080						
	(mm)	14080/15080/16080/17080/18080/19080mm						
	Width (mm)	2710mm						
	Height (mm)	2330mm						
	N.W. (kg)	7700/8400/9100/10500/11900/13300/14700/16100/17500/18900/20300/ 21700/23100/24500/25900/27300/28700kg					0/	

Above specifications are subject to change without notice. Special requirement please connect with us.

STANDARD EQUIPMENT & ACCESSORIES SUPPLIED WITH LATHE

MOTOR & RELATIVE ELECTRIC CONTROL SYSTEM.

_____VOLT/_____PH/____HZ PRIMARY INPUT

EACH MACHINE INCLUDE THE FOLLOWING STANDARD EQUIPMENT :

- 1. Main drive motor ____HP/___V/___PH/___HZ
- 2. Tail stock
- 3. Inverter
- 4. Heat exchanger
- 5. Quick change tool post (Opt: hydraulic turret, electric turret)
- 6. MPG hand wheel
- 7. E-stop button.
- 8. Steady rest
- 9. Halogen work light
- 10. Tool box with tools
- 11. Foundation bolt & leveling pads
- 12. Center sleeve

OPTIONAL ACCESSORIES:

- 1. 3-jaw chuck
- 2. 4-jaw chuck
- 3. Rolling center
- 4. Follow rest
- 5. Hydraulic chuck
- 6. Spindle oil cooler
- 7. Hydraulic turret
- 8. Electric tool post
- 9. Larger spindle bore 130mm, 160mm
- 10. Larger main motor 40hp + Larger inverter
- 11. Servo main motor

LIFTING MACHINES

WARNING: READ AND THROUGHLY UNDERSTAND ALL LIFTING, UNCRATING, AND PROPER INSTALLATION PROCEDURES BEFORE COMMENCING ANY WORK.

LIFTING MACHINE BEFORE UNPACKING

Normally, each lathe is packed in a seaworthy wooden crate. Before unpacking the wooden case and before lifting or unloading the lathe, you must insure that the following conditions are met:

- 1. The capacity of lift equipment is adequate for the machine.
- 2. Keep the heavy end fully supported and balanced when lifting.
- 3. The machine weights (approx, gross weight): 5000kgs
- 4. The only recommended lifting equipment is a hoist/crane and forklift as shown below:



WARNING: THE HEADSTOCK END OF LATHE THE "HEAVY END" MAKE SURE THIS END IS FULLY SUPPORTED. UNPACKING AND LIFTING

UNPACKING THE WOODEN CASE

- 1. Locate the wooden case on a sufficient area for easy working.
- 2. Clean the area and space.
- 3. Wear gloves and suitable safety equipment.
- 4. Use the claw hammer or nail extractor to pull out nails, especially the nails on sheet bands at four top corners.
- 5. Open the top cover first.
- 6. Pull down the four side covers carefully. Be careful of sharp nails.
- 7. Remove any broken wood pieces that might damage to the lathe.
- 8. Remove all the accessories packed on the wooden case.
- 9. Loosen and remove all the nuts mounted to the thru bolts, holding the lathe to the wooden shipping skid.
- 10. Clean all the nails and packing materials around the area.

Unloading Instruction

Drawing out the machine with a fork lifter 18 tons (G.W. of machine 15110kg, G.W. of parts 2300kg) $\,$



Take care not to raise the pallet too high, as it might touch roof of the container.



Normally a fork lifter pull back, the other fork lifter support from the middle, then the truck can release away.



A smaller fork lifter will be necessary for putting out another wooden pallet for sheet metal and parts. (2300kg)



MOVE AND LIFTING OF MACHINE

The machine can be moved by fork lifter (Fig. 1) or special lifting equipment (Fig. 2). The special equipment is not provided with the machine. Please ask your machine supplier to help move the machine if necessary.



- ※ Never move the machine before obtaining balance of the machine.
 - 12. DO NOT USE SLINGS AROUND BED AS THE BALLSCREW AND SHEET METAL MAY BE BENT!!
 - 13. FIX THE SLIDING DOORS BEFORE SLING THE LATHE!
 - 14. BENT SHAFTS FROM IMPROPER UNLOADING ARE NOT COVERED UNDER THE WARRANTY!

LIFTING PREPARTION AND SAFETY CHECK

- 1. Remove all loose items of equipment and accessories from lathe
- 2. Make sure the tailstock and cross slide are well fixed.
- 3. "NEVER" use a damaged sling and "DO NOT" use more than one sling.
- 4. "NEVER" sling around the bed to lift the machine. The ballscrew will become bent or damaged negating the warranty on the machine.
- 5. Make sure that the hook is a "Swivel" type with safety latch.
- 6. Just before making the final lift, make sure one person makes a final examination all around the lathe, double check everything.
- 7. Clean all ground obstacles and do not drag the machine across the floor.
- 8. Remember that vibration during transport can cause friction between the sling and the machine.
- 9. Lift and move the lathe very slowly to avoid tilting or rocking the machine which could become dangerous.
- 10. Keep the lathe low to the ground with the necessary ground clearance to move the machine freely over the surface.

SAFETY PRECAUTION

- 1. Protect your hands. Stop the machine spindle and ensure that the CNC control is in the STOP mode:
 - Before changing tools
 - Before changing parts
 - Before you clear away the chips, oil or coolant. Always use a chip scraper or brush.
 - Before you make an adjustment to the part, chuck, coolant nozzle or take measurements.
 - Before you open safeguards (protective shields, etc.) Never reach for the parts, tool, or fixture around a safeguard.
- 2. Protect your eyes and the machines as well. Don't use a compressed air hose to remove the chips or clean the machine (oil, coolant, etc.)
- 3. Stop and disconnect power to the machine before you change belts, pulley, gears, etc.
- 4. Keep work area well lighted. Ask for additional light if needed.
- 5. Do not lean on the machine while it is running.
- 6. Prevent slippage. Keep the work area dry and clean. Remove the chips, oil, coolant and obstacles of any kind around the machine.
- 7. Avoid getting pinched in places where the spindle, carriage, or cross-slide create "pitch points" while in motion.
- 8. Securely clamp and properly locate the workpiece in the chuck or in the fixture. Use proper tool holding equipment.
- 9. Use correct cutting parameter (speeds, feed, and depth of cut) in order to prevent tool breakage.
- 10. Use proper cutting tools for the job.
- 11. Prevent damage to the workpiece of the cutting tool. Never start the machine (including the rotation of the spindle) if the tools are in contact with the part.
- 12. Don't use dull and damaged cutting tools. They break easily and may become airbome. Inspect the sharpness of the edges, and the integrity of cutting tools and their holders.
- 13. Large overhangs on cutting tools when not required result in accidents and damaged parts.
- 14. Prevent fires. When machining certain materials (magnesium, etc.) the chips dust are highly flammable. Obtain special instruction from your supervisor before machining these materials.
- 15. Prevent fires. Keep flammable materials and fluids sway from the machine and hot, flying chips.
- 16. Changing the speed of rotation of the spindle must be done while the rotation is off. Never change gears when the spindle is rotating.
- 17. Do not rotate the spindle by hand unless the Red Emergency Stop button is pressed.

OPERATION WARNING

- 1. This machine is designed and intended for use by properly trained personnel only. A formal knowledge of basic lathe operation is required prior to operation. Seek professional lathe training before using this lathe.
- 2. DO NOT attempt to use this machine until you are totally familiar with it's operation and safety features.
- 3. Follow all recommended safety practices or conditions.
- 4. Notify your supervisor when you observe any unsafe practice or condition.
- 5. Safety glass/face shields and personal protective equipment must be worn at all times as specified by your employer.
- 6. Any employee who adjusts, positions, or installs safety equipment, devices, guards or shields should do so as instructed by the employer.
- 7. Operators, set-up operators, helpers or set up personnel should not alter remove or disable any safety equipment.
- 8. It is the responsibility of the operator, set-up operator or set up personnel as designated by the employer to check the set-up during each shift to ensure that the operation will be performed in a safe manner. Severe operating conditions may require more frequent checking.
- 9. Operators should not wear clothing, jewelry or unrestrained hair styles that will be hazardous to their personal safety.
- 10. Operators must maintain an orderly work area. Particular attention should be given to the storage of tools or parts that could be dislodged and fall or roll into the path of the cutter.
- 11. Disconnect machine from power source before performing any maintenance, or when changing tooling.
- 12. DO NOT perform any set-up work while machine is running.
- 13. Protect your feet. Wear safety shoes with oil-resistant, anti-skid soles, and steel toes.
- 14. Remove all tools (wrenches, chuck keys, etc.) from the machine before start. Loose items can become dangerous flying projectiles.
- 15. Never operate any machine tool after consuming alcoholic beverages, or taking strong medications, or while using non-prescription drugs.

WARNING:

Do not open any maintenance door during operation of the machine.





OPERATING HAZARDS

When using the machine be FULLY AWARE of the following operating hazards detailed under the following instructions:

• Metal Cutting Fluids

Cancer of the skin may be produced by continuous contact with oil; particularly with straight cutting oils, but also with soluble oils. The following precautions should be taken:

- 1. Avoid unnecessary contact with oil.
- 2. Wear protective clothing.
- 3. Use protective shields and guards.
- 4. Do not wear oil soaked or contaminated clothing.
- 5. After work thoroughly wash all parts of the body that have come into contact with oils.
- 6. Avoid mixing different types of oils.
- 7. Change oil regularly.
- 8. Dispose of oils correctly.

• Safe Operation of Lathe Chucks

Where details of operating speeds and of maximum recommended operating speeds are supplied these are intended only as a guide. Such details must be regarded as for general guidance only for the following reasons:

They apply only to chucks in sound condition.

If a chuck has sustained damage, high speeds may be dangerous. This applies particularly to chucks with grey cast iron bodies wherein fractures may occur.

The gripping power required for any given application is not known in advance.

The actual gripping power being used for any given application is not known by the chuck manufacturer.

- There is the possibility of the workpiece becoming insecurely gripped due to the influence of centrifugal force under certain conditions. The factors involved include:
 - 1. Too high a speed for a particular application.
 - 2. Weight and type of gripping jaws if non-standard.
 - 3. Radius at which gripping jaws are operating.
 - 4. Condition of chuck inadequate lubrication.
 - 5. State of balance.
 - 6. The gripping force applied to the workpiece in the static condition.
 - 7. Magnitude of the cutting forces involved.
 - 8. Whether the workpiece is gripping externally or internally.

Careful attention must be paid to these factors. As they vary with each particular use, the factors involved being outside his control.

NOISE LEVEL

The maximum noise level at the operators position and the maximum mean noise level for the KENT USA Lathe KA-34~43 is within 90dB(A).



Note:

The operator position is position 1 and the mean is taken from the readings at all 6 positions.

The conditions of measurement are with the spindle running at top speed, with a standard chuck fitted, without feed engagement.

GENERAL LAYOUT

1. HEADSTOCK	11. CHIP CONVEYOR
2. CHUCK GUARD	12. BELT CABINET
3. ELECTRIC ABINET	13. SPINDLE / CHUCK
4. REAR SPLASH GUARD	14. ONE PIECE LATHE BASE
5. CNC CONTROL PANEL	15. MPG HAND WHEEL
6. EMERGENCY BUTTON	16. RAPID FEED BAR
7. TURRET	17. Z AXIS BALLSCREW GUARD
8. TAILSTOCK	18. TAILSTOCK MOVE BY CARRIAGE
9. SLIDING DOOR	19. FOUNDATION BOLT
10. AIR SYSTEM TO MOVE TAILSTOCK	20. COOLANT TANK



FOUNDATION PLAN





With rear spindle nose









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CLEANING & INSTALLING

WARNING: Disconnect all electric power before cleaning.

CLEANING:

- Before operating any controls, remove the anticorrosive coating from slide ways with Kerosene. DO NOT USE CELLULOSE SOLVENTS FOR CLEANING AS THEY WILL DAMAGE THE PAINT FINISH.
- Oil all bright machine surface immediately after cleaning. Using machine oil or slideway lubricant.

INSTALLING:

Locate the machine on a solid-concrete foundation, allowing sufficient area all around for easy working and maintenance. (See foundation plane, page 12) The lathe may be used free-standing or bolted to the foundation.

- FREE-STANDING (Fig 1): Position
 lathe on foundation and adjust each
 of the foundation bolt to take equal
 share of the load. Then use a
 machinist precision level on the cross
 slide. (See page 14, leveling) Adjust
 the feet to level up machine.
 Periodically at least every six months
 check bed level to ensure continued lathe accuracy.
- FIXED INSTALLATION (Fig 2): Position lathe over all the bolts set into the foundation to correspond with holes in the mounting feet; dimensions are shown on the foundation plane. Accurately level the machine, as in Fig. 2, then tighten hold-down bolts. Re-check bed level.

Fig. 1



Foundation bolt





	0 2	0		
Anchor bolt				
Nut for Anchor				
Leveling bolt				
Nut for leveling bolt				
Leveling Pad				
Level of ground				

LEVELING

The precision and durability of the lathe also depends on its being leveled properly. Final inspection can be done only when machine has being correctly leveled.

• Use only a machinist precision level for leveling. Checking the leveling at least three points (Front, middle, rear). For long length, the best is to check leveling for each foundation bolt.



• Failure to properly level the lathe will result in inaccurate or tapered workpieces!

ELECTRICAL CONNECTIONS

Mains Supply and Recommended Fuses (FANUC) Main voltage required: 220V/50HZ3PH



Power should be supplied to the lathe from a separate fused isolator. Be sure the voltage of your main power is correct. Voltage of the machine is shown on the name plate.



Recommended fuse=150Amp

ELECTRICAL CONNECTIONS (SIEMENS)



OTHER CONNECTIONS

Some other accessories were disconnected before shipment. For example Chip conveyor, spindle oil cooler, hydraulic chuck, hydraulic turret, hydraulic tailstock etc. Be sure all the connections are ready before power on the machine.

Hydraulic Unit:

Be sure all oil tube, power cable are connected.



Chip Conveyor and Spindle Oil Cooler:

Power terminals should be connected from electric cabinet to the chip conveyor and spindle oil cooler. Please check the label carefully and connect all the power cable correctly.

Air Pressure System:

An air pressure system is provided with the machine to support auto gear change system. Be sure to have the air pressure system connected with air pipe.



LUBRICATION CHECK

HEADSTOCK

Gears and bearings inside the headstock will be lubricated automatically by the lubrication pump. If the machine is provided with spindle oil cooler, the pump is inside the oil cooler.



SPINDLE OIL COOLER

The oil cooler will be power on automatically 10 seconds after main power on. There is also power button on the oil cooler panel.



- 1. Suggested oil: ISO VG68
- 2. Please clean the oil filter inside the headstock to keep the oil cooler running well.





LATHE BED

- 1. The two axes and lathe bed will be lubricated automatically by oil pump.
- 2. Suggested oil: ISO VG68. If the tank is lack of oil, alarm of the tank will be on.



HYDRAULIC TANK

Suggested oil: ISO VG32



CHAPTER 2, OPERATION

CHUCK MOUNTING (A2 type)

When fitting chucks or face plates, first ensure that spindle and chuck tapers are scrupulously clean.

For A2-15 spindle, M22 bolts 8pcs are required.





CHUCK MOUNTING (D1 type)

*USE ONLY HIGH SPEED CHUCKS WITH THESE MACHINES.

When fitting chucks or face plates, first ensure that spindle and chuck tapers are scrupulously clean and all cams lock in the correct position. It may be necessary when mounting a new chuck to re-set the camlock studs. To do this remove the cap-head locking screws and set each stud so that the scribed ring is flush with the rear face of the chuck with the slot lining up with the locking screw hold. (Fig. 1)

Locking

Now mount the chuck or face plate 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. (Fig. 4) If one of the cams are not tightened fully



within these limit marks, remove the chuck or face plate and re-adjust the stud as indicated in the illustration. Fit and tighten the locking screw at each stud before remounting the chuck for work. A reference mark should be made on each correctly fitted chuck or face plate to coincide with the reference mark scribed on the spindle nose. This assists subsequent remounting.











Correct Camlock line between arrows.

Wrong Turn stud out one turn

Wrong Turn stud in one turn Fig. 3

Warning: Do not exceed speed limitations when using face plates. 21 in. face plate should not be run at speeds greater than 625rpm and 14in. face plate at not more than 840rpm.

CHUCK MOUNTING (A2-11 type spindle nose)

M20 bolts are required.

When fitting chucks or face plates, first ensure that spindle and chuck tapers are scrupulously clean. Chuck or chuck back plate or face plate should be mounted with M20 bolts.



DOUBLE SPINDLE NOSE (OPT)



AUTO GEAR CHANGE

Gear change system of this machine is activated automatically by air cylinder. Be sure the air pressure system is well connected before power on the machine.


SPINDLE SPEED CHART (for spindle bore 160mm)

Spindle speed ranges are as the follows. For Siemens control system the CNC will allow 10% speed overlapping. That is if in your program the first speed is 245 rpm, then you want to have 260rpm, the spindle will keep going to higher speed 260rpm in gear range L without changing to gear range M.

RPM	MIN	МАХ
L	16	50
М	50	150
Н	150	660

Torque/power diagram of main motor (FANUC spindle motor 22i/7000):



POWER & TORQUE DIAGRAM

Power and Torque diagram of main spindle in each gear steps:



Gear step 1 (L) (suggest cutting speed 70~250rpm)









SPINDLE SPEED CHART (for spindle bore 130mm)

Spindle speed ranges are as the follows. For Siemens control system the CNC will allow 10% speed overlapping. That is if in your program the first speed is 245 rpm, then you want to have 260rpm, the spindle will keep going to higher speed 260rpm in gear range L without changing to gear range M.

RPM	MIN	МАХ
L	50	150
М	150	500
Н	500	1200

Torque/power diagram of main motor (SIEMENS spindle motor1PH8165-1DD00-0CA1):



Hoperty bo Not Reproduce

MANUAL TAILSTOCK (standard)

General layout

- 1. Tailstock spindle
- 2. Tailstock spindle clamp handle
- 3. Tailstock spindle move handle
- 4. Gib
- 5. Set screw
- 6. Cross slide carrying device





- 7. Wiper
- 8. Base casting
- 9. Clamping bolt
- 10. Tailstock body
- 11. Safety stop pin. To prevent the tailstock from falling.
- 12. Clamping plate. To clamp the tailstock body with clamp bolt.
- 13. Air pressure system to help moving the tailstock easily.
- 14. Datum mark.
- 15. Air pipe.
- 16. Air pipe from air pressure device.





1	Tailstock body	9	Solenoid valves
2	Hydraulic motor for quill	10	Limit switch
3	Gib	11	Gear box (tailstock traverse system)
4	Tailstock base	12	Limit switch
5	Connect bolt	13	Pressure meter Tailstock rotating quill
6	Hydraulic lock for quill		
7	Tailstock quill		
8	Sensor bracket		

MOVEMENT OF TAILSTOCK BODY

The hydraulic tailstock body movement is programmable by M code M14, M15, M16: M14 TAILSTOCK FORWARD M15 TAILSTOCK BACKWARD M16 TAILSTOCK MOVE STOP



The quill movement is hydraulic but only controlled manually.

In **manual mode** (**MPG/JOG/RAPID/ZRN**) you can move the tailstock body or tailstock by pushing two buttons at the same time to move it. (X axis must be in home position first)



DO NOT MOVE THE TAILSTOCK WHEN THE MACHINE IS CUTTING A WORKPIECE.

TAILSTOCK HYDRAULIC PRESSURE METER



Total pressure should be: (1bar=1.02kg/cm2=102kpa=14.5PSI) KA-34~KA-43 558mm)-----70kg/cm2 (bed width KA-47~KA-60 (bed width 692mm)-----80kg/cm2 KA-63~KA-75 (bed width 888mm)-----85kg/cm2 KA-80~KA-90 (bed width 1150mm)----90kg/cm2 KA-96~KA-108 (bed width 1400mm)----100kg/cm2

Pressure detector setting: 30~40kg/cm2 lower than the total pressure.

When total pressure is lower than the pressure detector setting the CNC will have alarm:

EX1004 OIL HYDRAULIC LOW



> Do not change pressure detector setting without manufacturer's permission.



TAILSTOCK WITH ROTATING QUILL AND SPINDLE NOSE (OPT.)

The tailstock is with rotating quill. Spindle nose for tailstock is A1-8 **Taper of quill/center: MT6**







HYDRAULIC STEADY REST (OPT)







Clamping force graph for hydraulic steady rests

Operation of Hydraulic steady rest

For single steady rest:

Press Tailstock key and rest-O or rest-C key together to open or close steady rest.





For double steady rest

Press Enable key and rest-O or rest-C key together to open or close steady rest.



Movement of Hydraulic Steady Rest

The hydraulic steady rest can be moved by the second carriage with carry device.

<u>WARNING:</u> <u>Keep fingers away from the</u> <u>carrying device otherwise it</u> <u>might cause injured.</u>





Be sure the lock screw for steady rest is released before moving the steady rest.



Hydraulic system (OPTIONAL)





Y AXIS (OPT)



DO NOT TOUCH THE MOVING Y AXIS

CONTROL PANEL (Standard with X/Z axis)



CONTROL PANEL (optional with X/Y/Z/C axis)



MPG HAND WHEEL (Manual Pulse Generator)(OPT)

This machine is provided with a MPG hand wheel to move all axes manually. The MPG only works in "HANDLE" mode. Please select "HANDLE" mode by the switch:









1	EMERGENCY OFF push button	6	
2	Selection switch for 5 axes and neutral	7	
	position		
З	Feed rate x1, x10, x100	8	
4	Handwheel	9	
5	Connecting cable		

MPG HAND WHEEL(STA)

This machine is provided with a MPG hand wheel to move all axes manually. The MPG only works in MPG mode. Please select "MPG" mode.



HYDRAULIC TURRET 8T (OPT)

Brand: GSA Taiwan Model: CLT-100L-8T Tool size: 32x32mm Boring bar size: dia. 50mm Hydraulic working pressure: 33-37kgf/cm2 Flow rate: 40L/min Accuracy of repeatability: +-1" Clamping force: 3400kg





POWER TURRET (OPT)

Brand: DUPLOMATIC (Italy) Model: DM-20-8-3.0-/10-230-E1-R0 ODTN-N20M-340/0-8/50-W2 Tool disk: **VDI40 DIN 1809** B20x17, shaft diameter 50mm







Hydraulic connection for the turret





HYDRAULIC POWER PACK (Example)

- (1) IMPORTANT: A flow adjustment valve must be foreseen in order to avoid a violent or noisy clamping. (2) The accumulator's volume is according to
- the real pump flow rate.

POWER TURRET (OPT)

Brand: SAUTER (Germany) Model: 436.225 / 12T Tool disk: PCD420 VDI50 DIN 5480 Tool disk: 0.5.901.025 / 12T Delta A2 ABS servo motor Working tool: 9:00 o'clock Max. speed: 3000-4000rpm





GRANDEZZA <i>I SIZE</i>	ODT-N	10	12	16	20	25	32	40
Torretta abbinabile For turret size SM* / BSV-N		100	120	160	200	250	320	400
Dimensioni portautensili <i>Toolholder size</i>	mm	16	20	30	40	50	60	80
Potenza max trasmissibile <i>Max power</i> S3 - 40% - 10 min	kW	1,5	5	6	8	10	12,5	15
Coppia max trasmissibile (1) <i>Max torque</i>	Nm	5	15	20	40	60	130	160 (250) (5)
Velocità max in uscita <i>Max speed at the spindle</i>	g/min <i>RPM</i>	6.000	6.000	6.000	5.000	4.000	3.200	2.500
Rapporto di trasmissione (2) <i>Transmission ratio</i>	τ	1:1	1:1	1:1	1:1 1:1,33	1:1 1:1,33	1:1	તા
Opzionale / Optional : (3) Motore in C.A. Siemens / Siemens A.C. Motor	tipo type	1FT 6041	1FT 6064	1FT 6084	1FT 6086	1FT 6105	1FT 6132	1FT 6134
— Coppia <i>I Torque</i> S1 S3 - 40% - 10 min		2,5 7,5	9 14	20 25	27 35	48 60	75 115	105 140
— Velocitá max / Max speed	g/min <i>RPM</i>	6.000	6.000	6.000	5.000	4.000	3.200	2. 5 00
Motore in C.A. Fanuc/Fanuc A.C. Spindle motor	tipo type	α 0,5	01,5	α2	Q 3	Q 6	X 12/15	Q 18
— Coppia <i>I Torque</i> S1 S3 - 40% - 10 min		1,75 3,5	7 15	14 20	23,5 35	35 48	70/95 95/120	117 140
— Velocità max / Max speed	g/min <i>RPM</i>	6.000	6.000	6.000	5.000	4.000	3.200	2.50 0
Massa (motore escluso) Mass (motor excluded)	Kg	10	18	20	32	40	68	116

GRANDEZZA / SIZE	ODT-N	10	12	16	20	25	32	40
Foratura d x a <i>Twist drilling</i> [mm] x [mm/u]	d a	8x0,15	10x0,20	14x0,15	20x0,20	22x0,20	30x0,20	32x0,25
Maschiatura d x p Tapping [mm] x [mm]	d 	M6x1	M8x1,25 M12x1	M10x1,5 M24x1	M16x2 M24x1,5	M18x2 M27x1,5	M22x2,5 M33x2	M27x3
Fresat. front. d x p x a Slot milling [mm] x [mm] x [mm/min]	p d a	10x6x45	12x8x45	20x10x40	25x14x40	25x20x40	40x20x35	40x30x35

POWER TURRET (OPT)

Brand: SAUTER (Germany) Model: 0.5.434.020 / 12T Tool disk: BMT65-HF Delta A2 ABS servo motor Working tool: 9:00 o'clock Max. speed: 4000rpm



Drilling HSS spiral drill	s D	d x s mm x mm /U	16 x 0.20
Drilling HM short hole drill		d x s mm x mm /U	20 x 0.12
Thread- drilling		d x P mm x mm	M 14 x 2 M 20 x 1.5
Keyway cutting Finger milling		a x e x s mm x mm x mm/min	20 x 12 x 40
Keyway cutting Disc cutting		a x e x s mm x mm x mm/min	D = 63 10 x 10 x 40





1 Turret housing

8

- 2 Tool disk
- Connection hydraulic loocking control
 Connection cooling lubricant
 Connection central lubricant

- 6 Connection Elektric
- 7 Motor for indexing drive8 Motor for tool drive









MILLING ATTACHMENT (OPT)

Model: SH-50I Max. speed: 3600 rpm Motor: FANUC spindle motor A6/10000i Gear reducer ratio: 1:1 Belt: 840-8M Spindle taper: NT50



d D



C

Tool holder suggested:

Model No.	Clamping Range	d	D	L	Collet Type	Weight (kg)
BT50 ASG12-090	3~12	12	35	90	SC12	4.10
-110	3~12	12	35	110	SC12	4.30
-135	3~12	12	35	135	SC12	4.40
ASG16-090	3~16	16	46	90	SC16	4.40
-110	3~16	16	46	110	SC16	4.70
-135	3~16	16	46	135	SC16	4.90
-150	3~16	16	46	150	SC16	5.20
ASG20-090	4~20	20	54	90	SC20	4.50
-110	4~20	20	54	110	SC20	5.00
-135	4~20	20	54	135	SC20	5.30
-150	4~20	20	54	150	SC20	5.40
ASG25-110	6~25	25	58	110	SC25	5.00
-150	6~25	25	58	150	SC25	5.40
ASG32-110	6~32	32	68	110	SC32	5.10
-150	6~32	32	68	150	SC32	6.40

MILLING ATTACHMENT (OPT)

Model: SH-40 Max. speed: 8000 rpm Motor: SIEMENS spindle motor 1PH8101-1DF02-1CA1 9000rpm Gear reducer ratio: 32T:52T Belt: 800-8M Spindle taper: BT-40





RAPID

SP2-











SP2 JOG

I

SP2+

TOOL PROBE (Optional)

Brand: RENISHAW Model: HPRA KIT ARM assembly RP3 PROBE TS12 Interface STYLUS kit Rear exit base and stand









TOOL PROBE (Optional)





LIMIT SWITCHES

1. Be aware the door shaft is engaged before "Cycle Start."

When the shaft is engaged, the door will move with the cross slide.



2. Be aware the door interlock is engaged before cycle start.



 There is a door limit switch inside the belt cabinet. Don't open the door while the machine is running.

AUTO / SET MODE (OPT)

When turn to set mode, it is possible to adjust and measure-in workpiece and to adjust reference point while door is open.

Therefore in this mode the rpm is very low (2 rpm) and feeding very slow (1M/min max)

The above parameters are adjustable. Please check with the machine manufacturer.



SPINDLE NOSE DIN 55027 (OPT)

「同部視園

This machine is installed with spindle nose DIN55027. The inside is made according to customer's special quill ME100.





MOTORS (FANUC system)

	Motor	Model	Specification / Description
1	Main motor	Fanuc spindle motor Ail 30/7000	30-37kw, 1150~7000rpm
2	X axis motor	SIEMENS servo motor 1FK7083-2AF71-1RG1	2.6kw, 16Nm, 2000rpm
3	Z axis motor	SIEMENS servo motor 1FK7105-2AC71-1RG1	6.0kw, 48Nm, 3000rpm
4	Turret motor (optional)	Fanuc spindle motor SPA 3 / 10000	3.7KW, 1500~7000rpm
5	Hydraulic tank motor (optional)	TATUNG 3 phase induction motor	3HP, 2.2kw
6	Spindle oil cooler (optional)	DERYUN DO-4PSA	Power: 3PH/ 220V 5A Comp: 0.6KW, 3.6A Pump: 3PH / 220V 0.2kw 4.5L/min 1A
7	Coolant pump	WALAUS, TPH2T3K	220V, 2.0-2.8A, 530/750W, 2/2.7m3/h
8	Heat exchanger	DHE-20AR	220V 50/60HZ 35x2W 0.29x2A
0	Electric cohinet	HADOD DHA 400AEE 04	1PH 220V 50/60Hz 550W 3A
3	air conditioner (optional)	HABOR PHA-160AF5-04	Comp. 460W, 2.7A
3 10	air conditioner (optional) Chip conveyor (optional)	HABOR PHA-160AF5-04	Comp. 460W, 2.7A 0.4kw, 1/2HP
3 10 11	air conditioner (optional) Chip conveyor (optional) Lubrication pump	CHANGHUA CHEN YING CEN01	Comp. 460W, 2.7A 0.4kw, 1/2HP 110V, 50/60HZ, 26W, 2.5A
10 11 12	air conditioner (optional) Chip conveyor (optional) Lubrication pump Y axis motor (Optional)	CHANGHUA CHEN YING CEN01 Fanuc servo motor AiF22/3000	Comp. 460W, 2.7A 0.4kw, 1/2HP 110V, 50/60HZ, 26W, 2.5A 4kw, 22Nm, 3000rpm
10 11 12 13	Electric cabinetair conditioner(optional)Chip conveyor(optional)LubricationpumpY axis motor(Optional)	CHANGHUA CHEN YING CEN01 Fanuc servo motor AiF22/3000	Comp. 460W, 2.7A 0.4kw, 1/2HP 110V, 50/60HZ, 26W, 2.5A 4kw, 22Nm, 3000rpm
10 11 12 13 14	air conditioner (optional) Chip conveyor (optional) Lubrication pump Y axis motor (Optional)	CHANGHUA CHEN YING CEN01 Fanuc servo motor AiF22/3000	Comp. 460W, 2.7A 0.4kw, 1/2HP 110V, 50/60HZ, 26W, 2.5A 4kw, 22Nm, 3000rpm
10 11 12 13 14	Electric cabinetair conditioner(optional)Chip conveyor(optional)LubricationpumpY axis motor(Optional)	CHANGHUA CHEN YING CEN01 Fanuc servo motor AiF22/3000	Comp. 460W, 2.7A 0.4kw, 1/2HP 110V, 50/60HZ, 26W, 2.5A 4kw, 22Nm, 3000rpm

LOAD CAPACITY



WARNING: OVER THE WEIGHT CAPACITY MIGHT CAUSE DAMAGE TO THE MACHINE!
MOTORS (SIEMENS system)

	Motor	Model	Specification / Description
1	Main motor	SIEMENS spindle motor 1PH8165-1DD00-0CA1	28-37kw, 1150~7000rpm
2	X axis motor	Fanuc servo motor AiF22/3000	4kw, 22Nm, 3000rpm
3	Z axis motor	Fanuc servo motor AiF40/3000	6.0kw, 38Nm, 3000rpm
4	Turret motor (optional)	Fanuc spindle motor SPA 3 / 10000	3.7KW, 1500~7000rpm
5	Hydraulic tank motor (optional)	TATUNG 3 phase induction motor	3HP, 2.2kw
6	Spindle oil cooler (optional)	DERYUN DO-4PSA	Power: 3PH/ 220V 5A Comp: 0.6KW, 3.6A Pump: 3PH / 220V 0.2kw 4.5L/min 1A
7	Coolant pump	WALAUS, TPH2T3K	220V, 2.0-2.8A, 530/750W, 2/2.7m3/h
8	Heat exchanger	DHE-20AR	220V 50/60HZ 35x2W 0.29x2A
9	Electric cabinet air conditioner (optional)	HABOR PHA-160AF5-04	1PH 220V, 50/60Hz, 550W, 3A Comp. 460W, 2.7A
10	Chip conveyor (optional)		0.4kw, 1/2HP
11	Lubrication pump	CHANGHUA CHEN YING CEN01	110V, 50/60HZ, 26W, 2.5A
12	Y axis motor (Optional)	Fanuc servo motor AiF22/3000	4kw, 22Nm, 3000rpm
13			
14			
1			

LOAD CAPACITY



WARNING: OVER THE WEIGHT CAPACITY MIGHT CAUSE DAMAGE TO THE MACHINE!

SPECIAL KEYS (FANUC)





CHANG BATTERY FOR CNC CONTROL (FANUC)



4pcs of #1 Alkaline battery

Change the battery while the CNC power is "ON"



*		DATA PROTECTION KEY A key called the data protection key is used to preven part programs, offset values, parameters, and setting data from being registered, modified, or deleted.	DOOR INTERLOCK release. To open main door.	COOLANT ON/OFF Press this button, coolant motor ON; press again, coolant motor OFF.	DRY RUN The axes are moved at the feed rate specified by a parameter regardless of the feed rate specified in the program. This function is	used for checking the movement of the tool under the state that the workpiece is removed from the table.	Edition DOI First Date 12-MAR-201	Ploter Jeffrey Lai Last Date 12-MAR-201
5		Pogen		H.			No.	cter
2	Key function description	C POWER ON REEN LAMP)	C POWER OFF	rCLE START is button is used to start a ogram or restart a program ter feed hold.	ED HOLD is button is used to pause a ogram from running.	MERGENCY STOP nergency Stop Button is used to op all movement the machine.	Dai. Name: Panel function key Draw	CNC Modie Fanuc CNC Lothe Core
		- D	ک <u>بر</u>	ú⊨ 2,2		र्डे क्षे ⊡ ब		

OPTIONAL BLOCK SKIP Meen this optioned Block skip outton is ON, blocks containing a button is ON, blocks containing a autton is ON, blocks containing a autton is ON, blocks containing a again, chip conveyor stops. OPTIONAL BLOCK SKIP Meen this optioned Block skip outton is ON, blocks containing a stores the single block wutton stores the single block mode. At single block mode, the program stores the single block mode. At single block mode, the program stores the single block mode. At single block mode, the program stores the single block mode. At single block mode, the program stores the program in the single obcok mode by executing the program block by block. OPTION STOP (MOI) Meen the Optional Stop button is executed. OPTION STOP (MOI) SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE STOP Meen the Optional Stop button is over stores this button to stop SPINDLE run . OPTION STOP (MOI) Meen the Optional Stop button is executed. SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE ROTATOR SPINDLE STOP Meen the Optional Stop button is over stores this button, stop SPINDLE run .			-	[-2011
OPTIONAL BLOCK SKIP CHIP CONVEYOR C When this Optional Block skip wutton is ON, blocks containing a starts the single block button CHIP CONVEYOR C SINGLE BLOCK Press this button, runs forward; press again, chip conveyor SINGLE BLOCK OPTIONAL BLOCK SKIP Single block mode, the program starts the single block mode, the single block mode, the program executes only one block and then pouses. To process the next block on single block mode, the program executes only one block and then pouses. To process the next block on the single block mode, the program block mode by executing the press this button, spindle CW program block by block. OPTION STOP (M01) OPTION STOP (M01) Men the Optional Stop button is ON, feed hold at a block containing M01 is executed. OPTION STOP (M01) SPINDLE STOP att manual mode, button, spindle CW speed specified by conveyor motor stops. OPTION STOP (M01) SPINDLE ROTATOR att manual mode, button, spindle CW speed specified by button, spindle CC speed specified by button, spindle CC speed specified by button, spindle CC speed specified by	•	W MOTOR chip conveyor s the button or stops.	to switch the r OFF	press this runs at the S command.	to stop SPINDLE	press this W runs at the S command.	First Date 12-WAR-
Mey tanction description OPTIONAL BLOCK SKIP OPTIONAL BLOCK SKIP When this Optional Block skip When this Optional Block skip When this Optional Block skip SinGLE BLOCK SinGLE BLOCK Single block wutton Pressing the single block button Pressing the single block mode, the program Pressing the single block mode, the program Pressing the single block mode button Pressing the program in the single Dock mode by executing the Press this button, chip conveyor Men the Optional Stop button is Woll is executed. ON, feed hold at a block containing When the Optional Stop button, the When the Optional Stop button, the Moll is executed. ON, feed stis button, the Moll is executed. ON, feed stis button, the Moll is every release this button, the Moll is conveyor motor stops. Dot None Dot None Ponton Dot N	_	CONVEYOR CV ss this button, t forward; pres n, chip convey	KING LIGHT is this button king light ON o	IDLE ROTATOR manual mode, on, spindle CW ed specified by	IDLE STOP nanual mode, ss this button	IDLE ROTATOR manual mode, on, spindle CC ed specified by	001
April Include Marchine Single Block mode. At single block mode. At the program block by block. OPTION STOP (M01) Marchine again. Moli is executed. Marchine again. </td <td>5</td> <td>CHIF Pres runs agai</td> <td>WOR Pres work</td> <td>SPIN At r butt spee</td> <td>SPIN At r Pres</td> <td>SPIN At r butt spee</td> <td>Edition</td>	5	CHIF Pres runs agai	WOR Pres work	SPIN At r butt spee	SPIN At r Pres	SPIN At r butt spee	Edition
All function teacription All BLOCK SKIP When this Optional BLOCK SKIP When this Optional BLOCK SKIP When this Optional BLOCK Skip button is ON, blocks containing a slash(/) are ignored. SINGLE BLOCK Pressing the single block button starts the single block button Pressing the single block and then pressing the single block and then starts the single block and then pressing the single block and then pressing the single block and then pressing the single block and then press the program the program program block by block. OPTION STOP (MO1) When the Optional Stop button is ON, feed hold at a block containing Mo1 is executed. CHIP CONVEYOR CCW MOTOR Press this button, chip conveyor uns reverse; releas this button, the chip conveyor motor stops. DOI NOME		I,	O A Mark tamp	C C C C C C C C C C C C C C C C C C C			
OPTIONAL BLOCK SKIP When this Optional Block skip button is ON, blocks containing a slash(/) are ignored. SINGLE BLOCK Pressing the single block button starts the single block mode. At single block mode, the program executes only one block mode. At single block mode, the program executes only one block on the program block by block. OPTION STOP (M01) When the Optional Stop button is ON, feed hold at a block containing M01 is executed. CHIP CONVEYOR CCW MOTOR Press this button, chip conveyor runs reverse; releas this button, the chip conveyor motor stops.				20	P		W No.
	Key function descriptio	OPTIONAL BLOCK SKIP When this Optional Block skip button is ON, blocks containing a slash(/) are ignored.	SINGLE BLOCK Pressing the single block button starts the single block mode. At single block mode, the program executes only one block and then	pauses. To process the next block press cvcle start button again. Check the program in the single block mode by executing the program block by block.	OPTION STOP (M01) When the Optional Stop button is ON, feed hold at a block containing M01 is executed.	CHIP CONVEYOR CCW MOTOR Press this button, chip conveyor runs reverse; releas this button, the chip conveyor motor stops.	Doi Nome: Panel function key Dr

		O the second sec		
			K	
Río	SPINDLE ROTATOR At manual mode, press this button, spindle CW runs at the speed specified by spindle jog speed rotary swich.	AXIS DIRECTION At manual mode, Pressing those button to direct move each axis .	HYDRAULIC ENABLE When the EMERGENCY Stop button is pressed or power on . Pressing this key to enable operat the machine.	O.T RELEASE Press this button and axis jog key to release the axis over travel limit switch .
	Der O		O thydraulic	O ∦⊢

CHUCK MODEL SELECT KEY Turn this key to select chuck inward clamp or outward clamp .	At the Manual mode. Press Hydraulic key or satrt key and tool change key to move turret CW one step .	At the Manual mode and X axis HOME position and Caxis off. Press Tailstok key and Quill out key or Quill in key to move Tailstock Forward or Backward.	At the Manual mode and X axis HOME position and C axis off . Press Hydraulic key and Quill out o Quill in key to move Quill out or	SSR 0
-¢ -¢	Hydroulic Tool.ch		O⊕ Hydraulic	

CHAPTER 3, SERVICE & MAINTANCE

WARNING: Disconnect all electrical power when performing any service or maintenance!

LATHE ALIGNMENT

With the lathe installed and running, we recommend a check on the machine alignment at regular periods to ensure continued lathe accuracy.

HEADSTOCK CHECK

Take a light cut with a sharp tool over a 6 inch (152mm) length of 2 inch (50mm) diameter steel bar gripped in the chuck but not supported at the free end. Micrometer readings at each of the turned length (at A and B of Fig. 1) should be the same.

To correct a difference in readings, slacken the four headstock hold-down set screw (J) shown in (Fig. 2). Then adjust the set-over pad (K) beneath the eheadstock.

Tighten all screws after adjustment and repeat the test cut / micrometer – reading sequenceuntil micrometer readings are identical, machine now is cutting absolutely parallel.

TAILSTOCK CHECK

Using 12 inch (305mm) ground steel bar fitted between headstock and tailstock centers. Check the alignment by fitting a dialtest indicator to the topslide and traversing the center line of the bar. (lower sketch, fig. 1)

To correct error, release the tailstock clamp lever and adjust the tw set-over screws provided. Continue with checking and correction until the alignment is perfect.





REGULAR MAINTENANCE

WARNING: DISCONNECT ALL ELECTRICAL SUPPLY TO THE MACHINE WHEN PERFORMING ANY MAINTENANCE OR REPAIR.

• BELT

To keep machine running normally at the speed selected, it is necessary to check regularly the tension of driving belt. If belts are loose, please first loosen the nuts for the two setting screws at back of mounting plate of motor then lower the position of the plate for tightening the belt. (See page 22, fig. 2)

• ALIGNMENT

To ensure cutting accuracy, a regular check on machine alignment is very important. Please refer to page 21 to check alignment and make adjustments as needed.

• CHECK CHUCK TIGHTNESS

Daily check the chuck tightness to ensure safe operation. If it is not tightened, please refer to chuck mounting shown on page 13 for resetting cam locks.

• VIBRATION NOISE

Check regularly if any vibration noise has appeared. A vibration or noise shows the machine is running in improper condition. Please check if the spindle speed selecting lever in front of headstock and the threads and feed levers in front of the gear box are engaged in the correct position selected.

BELTS

Main motor belts	X axis motor
(the belt might be different, check	
before order)	
XPB-1900	624H-8M

TROUBLE SHOOTING GUIDE PORTION OF ELECTRIC EQUIPMENT OR FACILITIES

TROUBLE	PROBABLE CAUSE	REMEDY
Fails to start	1. Circuit not complete.	Check switch, leads, fuse etc. replace and reconnect perfectly.
Motor runs too slowly	2. Power maybe off	Check line connections to starter with light check contacts in starter.
Motor runs	3. Voltage below rated.	Check voltage or replace motor with new one.
	4. Overload	Reduce cutting speed or feed rate
Motor wrong rotation	5. Wrong sequence of phases	Reverse connection of motor at switch board.
Motor noisy	6. Motor loosely mounted	Tighten motor foundation bolts
	7. Loose or eccentric pulley	Tighten pulley on shaft or correct eccentric pulley.
	8. Bent or sprung motor spindle	Straighten or replace motor spindle
Motor	9. Motor loosely mounted	Tighten hold-down bolts.
vibrates	10. Foundation inadequate	Stiffen mounting place member
	11. Motor feed uneven	Add shims under foot pad to mount each foot tightly.
	12. Bad quality of belt	Replace proper belt.
	13. Bent of sprung shaft	Straighten or replace shaft
	14. Excessive belt pulley	Decrease belt tension
	15. Leaked or too much grease in bearing	Replenish or discharge grease.
Overheating	16. Quality of grease is wrong.	Replace the grease with recommended quality.
motor bearing	17. Oil tube to the bearing is obstructed by dirt	Remove the dirt from the oil tube.
· ·	18. Bearing obstructed by dirt	Clean the bearing and renew grease.
	19. Badly worn bearing	Replace bearing.
	20. Bearing in its case is not in proper position.	Dismantle and reassemble it.
	21. Over load.	Reduce cutting speed or feed rate.
Over heat in	22. Over load	Reduce cutting speed or feed rate.
motor	23. Voltage above rated	Reduce voltage of electric source.
	24. Oil level in headstock is too low	Check the oil level and replenish or
	or too high.	discharge the oil to the proper level.
C)	25. Quality and viscosity of oil is wrong.	Replace the oil with recommended one.
Overheat of	26. Oil is too dirty.	Replace oil.
boadstock	27. Oil tube to bearing is	Remove the dirt from the oil tube
hearing	obstructed by dirt.	
bearing	28. Badly worn bearing.	Replace bearing.
	29. Bearing in its case is not in proper position.	Dismantle and reassemble it.
	30. Bent or sprung main spindle.	Straighten or replace main spindle.
	31. Too much end thrust.	Adjust thrust nut.
	32. Plug of drain not tight.	Remove, re-cement threat, replace and tighten.
Oil Joakago	33. Headstock cracking.	Repaired by special welding.
from gearbox	34. Leakage from overflow headstock cover.	Tighten cover screw or replace gasket
	35. Leakage from overflow spindle bearing house.	Replace oil ring.

TROUBLE	PROBABLE CAUSE	REMEDY
г ·	36. Badly worn bearing.	Replace bearings.
Excess noise or	37. Badly worn gear.	Replace gears.
vibration of	38. Bent or sprung shaft.	Straighten or replace shaft.
machine	39. Lose of foundation bolts	Tighten foundation bolts.
Misalignment		
of chuck with main spindle	40. Incorrect position of cam.	Adjust cam and lock in proper position.
	41. Excessive clearance of lead screw in axial direction.	Adjust the thrust nut of the spindle holder.
Uneasy to	42. Excessive clearance between saddle and cross slide or cross slide and post tool slide.	Adjust slide gib to proper position.
cut thread	43. Worn thread or nut in cross slide or tool post slide.	Adjust or replace it.
	44. Excessive clearance of handle wheel.	Adjust the set bushing of handle wheel.
	45. Clamp of workpiece in from loose status.	Tighten clamp.
	46. Spindle bearing thrust too loose.	Adjust bearing thrust.
	47. Headstock is not tight with bedway.	Tighten headstock screw.
	48. Excess clearance between carriage and bed way.	Adjust carriage back clamp.
	49. Excessive clearance in cross or compound slide.	Adjust taper gib.
Chatter	50. Cutting angle of cutting tool is not correct.	Regrind tools to correct cutting angle.
	51. Edge of cutting tool has been worn-out.	Regrind cutting tool.
	52. Weak of tool shank and too long for extension.	Replace with rigid tools or reset the tools.
	53. Tools fixed to holder not tight enough.	Tighten tool again.
X	54. Unbalances of work piece or chuck when high speed revolution.	Balance or reduce spindle speed revolution.
	55. Front point of cutting tool not in correct position.	Reset cutting tool.
Bending when long work piece cutting	56. Feed valve too large.	Reduce feed valve size.
	57. Work piece too thin or too long.	Use follow rest and adjust position of tool.
Accuracy of product fails	58. Accuracy fails in machining.	Check the accuracy of correlation between products and machine. (ref. accuracy chart)
Uneasy to hold gear change lever	59. Set spring broken or too weak.	Adjust adjusting screw or replace the spring.
Tailstock is uneasy to clamp with bed stably	60. Clamp handle lever too long or too short.	Adjust the adjusting nut of clamp head lever.

Hydraulic schematics

For bed width 2000mm





	5		0	
25	MPC-02-W	Pilot Operated Check Valves	1	CHIA WANG
24	DG4V-3-2A-110V	Splenoid Valves	1	TOKIMEC
23	MPC-02-W	Pilot Operated Check Valves	1	CHIA WANG
22	DG4V-3-6C-110V	Splenoid Valves	1	TOKIMEC
21	MPC-02-W	Pilot Operated Check Valves	1	CHIA WANG
20	DG4V-3-2A-110V	Splenoid Valves	1	TOKIMEC
19	MPC-02-W	Pilot Operated Check Valves		CHIA WANG
18	MTC-02-W	Check Throttle Valves	1	CHIA WANG
17	MBR-02-P2-K	Reducing Valves	1	CHIA WANG
16	DG4V-3-6C-110V	Splenoid Valves	1	TOKIMEC
15	LB-1.5-100bar	Oill Pressure Sigh	1	CHUNG FONG
14	MBR-02-P1-K	Reducing Valves	1	CHIA WANG
13	DG4V-3-2N-110V	Splenoid Valves	1	TOKIMEC
12	EG-FM3012-4TC6	Cooler	1	SUNNY STONE
11	ES31-10222	Pressure Switches	1	CHUNG FONG
10	SB-02	Valve	1	CHUNG FONG
9	AT 1/4*63*160	Oill Pressure Sigh	1	WIKA
8	CV-04	Non-return valve	1	CLC
7	LS-3B	Level Indicator	1	CLC
6	MF-08	Suction Element	1	CLC
5	1163	Filler Breather	1	CLC
4	12AT-10C	Filters	1	PARKER
3	UG-V23A2R	Vane Pump	1	YG
2	JX2-7.5HP*4P-PISTON	Moter	1	DA TANG
1	TK-OU-820*550*550	Tank	1	CHUNG FONG
項目	型 號	名稱	數量	備註



Item	Nmae	Description	Q'ty
1	Tank 700-450-400	TK-OU-700	1
2	Motor 5HP*4P	JX2-5HP*4P TATUNG	1
3	Vane pump	UG-V15A2R10	1
4	Filter	12AT-10C	1
5	Filter breather	1163	1
6	Suction element	MF-08	1
7	Level indicator	LS-3B	1
8	Non-return valve	CV-04	1
9	Oil pressure sigh	AT 1/4*63*16	1
10	Valve	BL-02	1
11	Pressure switch	ES31-10222	1
12	Cooler	EG-FM3012	1
13	Oil route block	TK-02*1W	1
14	Pressure reducing and check valve	BRV-02-P2	1
15			
16	Oil route block	Oil route block	
17	Oil route block	T02*4W(B)-W	
18	Splenoid valve	DG4V-3-6C	
19	Splenoid valve	DG4V-3-2A	
20	Reducing valve	MBR-02-P2	
21	Pilot operated check valve	MPC-02-W	
22	Check throttle valve	MTC-02-W	
23			
24			
25			
26			

Parts list for hydraulic system (bed width 558mm)

M-code list

(SIEMENS) M00 program stop M01 Optional program stop M02 Program stop M03 Spindle Cw M04 Spindle Ccw M05 Spindle Stop M08Coolant on M09Coolant off M10CHUCK OPEN M11 CHUCK CLOSE M19Spindle positioning M20Quill forward M21 Quill retract M23 Thread chamfering off M24 Thread chamfering on M28Rigid tapping ccw M29 Rigid tapping M30Program end M34 Chip Conveyor on M35 Chip Conveyor off M40 Gear Neutral M41 L Gear M42 M Gear M43 H Gear M98 Sub program call M99 Sub program end

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FANUC OITD M CODE
*390 R0000.0 MOO PROGRAM DWELL 程式暫時性停止
*391 R0000.1 M01 OPTIONAL STOP 程式選擇性停止
*392 R0000.2 M02 PROGRAM STOP 程式停止
*393 R0000.3 M03 SPINDLE CLOCKWISE 第一主軸正轉
*394 R0000.4 M04 SPINDLE COUNTERCLOCKWISE 第一主軸反轉
*395 R0000.5 M05 SPINDLE STOP 第一主軸停止
*398 R0001.0 M08 COOLANT ON 水機啟動
*399 R0001.1 M09 COOLANT OFF 水機停止
*400 R0001.2 M10 CHUCK CLAMP 夾頭夾緊 (OPT)
*401 R0001.3 M11 CHUCK UNCLAMP 夾頭放鬆 (OPT)
*402 R0001.4 M12 QUILL FORWARD (OPT:CYLINDER TYPE) 頂針桿前進 (油壓缸形式)
*403 R0001.5 M13 QUILL BACKWARD (OPT: CYLINDER TYPE) 頂針桿後退 (油壓缸形式)
*417 R0001.6 M14 TAILSTOCK FORWARD 尾座前進 (OPT)
*418 R0001.7 M15 TAILSTOCK BACKWARD 尾座後退 (OPT)
*409 R0002.3 M19 SPINDLE ORIENTATION 第一主軸定位
*413 R0002.7 M23 THREAD CHAMFERING ON 螺紋倒角啟動
*414 R0003.0 M24 THREAD CHAMFERING OFF 螺紋倒角關閉
*419 R0003.5 M29 RIGID TAPPING 鋼性攻牙啟動
*420 R0003.6 M30 PROGRAM END 程式結束
*465 R0009.3 M34 CHIP CONVEYOR FORWARD 排屑機前進 (OPT)
*466 R0009.4 M35 CHIP CONVEYOR STOP 排屑機停止 (OPT)
*430 R0005.0 M40 GEAR CHANGE TO N GEAR RANGE 檔位換到空檔
*431 R0005.1 M41 GEAR CHANGE TO L GEAR RANGE 檔位換到低檔
*432 R0005.2 M42 GEAR CHANGE TO M GEAR RANGE 檔位換到中檔
*433 R0005.3 M43 GEAR CHANGE TO H GEAR RANGE 檔位換到高檔
*440 R0006.2 M50 SPINDLE CONTOUR ON (Cs) C 軸啟動 (OPT)
*441 R0006.3 M51 SPINDLE CONTOUR Off (rpm) C 軸關閉 (OPT)
*455 R0006.4 M52 SPD HAVY BRAKE ON 第一主軸重煞車啟動 (OPT)
*456 R0006.5 M53 SPD HAVY BRAKE OFF 第一主軸重煞車關閉 (OPT)
*460 R0008.6 M70 BARFEED START 送料機開始 (OPT)
*462 R0009.0 M72 BLOCK SKIP ON 單節跳耀啟動
*463 R0009.1 M73 BLOCK SKIP OFF 單節跳耀關閉
*467 R0009.5 M77 CHUCK OPEN CAN SPINDLE RUN 150 夾頭放鬆後主軸可以旋轉150轉 (OPT)
*468 R0009.6 M78 M77 OFF 關閉M77 (OPT)
*470 R0010.0 M80 TOOL PRESETTER ARM OUT (down) 刀具量測臂放下 (OPT)
*471 R0010.1 M81 TOOL PRESETTER ARM HOME (up) 刀具量測臂收回 (OPT)
*593 R0012.7 M103 2ND SPD ON TURRET CW 第二主軸正轉 (OPT)
*594 R0013.0 M104 2ND SPD ON TURRET CCW 第二主軸反轉 (OPT)
*595 R0013.1 M105 2ND SPD ON TURRET STOP 第二主軸停止 (OPT)
*525 R0013.4 M108 COOLANT 1 SOL.ON 水槍一開
*535 R0014.6 M118 COOLANT 2 SOL.ON 水槍二開
*522 R0014.7 M119 S2 ORENTATION ON 第二主軸定位 (OPT)
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J. PARTS LIST

Headstock (spindle bore 130mm)



NO	PART NO.	DESCRIPTION	QUANTITY	REMARK
01	22NC-H-004	AAXIS	1	
02	22NC-H-006	GEAR	1	M3X28T
03	22NC-H-008	SPACE COLLAR	2	45X55X22L
04	22NC-H-009	A SHAFT COVER	1	
05	22NC-HC-036	PULLEY	1	Ø330
06	-	LUCKING NUT	1	M33XP1.5
07	22NC-H-017	B REAR GEAR SHAFT	1	M3X23T
08	22NC-H-019	GEAR	1	M3X75T
09	22NC-H-005	GEAR	1	M3X48T
10	22NC-H-004	SAPCE COLLAR	1	45X55X5L
11	22NC-H-016	B,C SHAFT COVER	1	
12	22NC-H-013-02	SHAFT C	1	
13	22NC-H-014	GEAR SHAFT	1	M3X29T
14	22NC-H-015	GEAR		M3X81T
15	22NC-H-012	GEAR	1	M3X56T
16	22NC-H-022-03	GEAR	1	M4X52T
17	22G-H-131	SPACE COLLAR	1	70X80X2L
18	22NC-H-116	STOPPER	1	85X20L
19	22NC-H-116	STOPPER	1	85X72L
20	22NC-H-003D	MAIN SPINDLE	1	BORE Ø136
21	22NC-H-024-03	SPINDLE GEAR	1	M4X80T
22	22NC-H-025	LUCKING NUT	1	M180XP3.0
23	22NC-H-027	LUCKING NUT	1	M170XP3.0
24	22NC-H-179	SPACE COLLAR	1	160X200X60L
25	22NC-H-032D	SPINDLE FRONT COVER	1	D1-11
26	22NC-H-033	SPINDLE REAR COVER	1	
27	22NC-H-071	ENCODER PULLEY	1	5MX150T
28	22NC-H-062-01	BRAKE DISC	1	
29	22NC-H-048D	REAR SPINDLE NOSE	1	D1-11
30	22NC-H-070	ENCODER PULLEY BRACKET	1	
31	22NC-HB-076	ENCODER SHAFT	1	SIMENS
32	22NC-H-072	ENCODER PULLEY	1	5MX150T
33	22NC-H-074	SPACE COLLAR	1	40X50X10L
34	22NC-HB-077	ENCODER HOUSING	1	SIMENS
35	4026008ZZ001	BEARING	1	6008ZZ
36	402620900001	BEARING	6	6209
37	402601000001	BEARING	2	6010
38	402320380001	BEARING	1	32038
			· ·	

NO	PART NO.	DESCRIPTION	QUANTITY	REMARK
39	402320340001	BEARING	1	32034
40	402623200001	BEARING	1	6232
41	4026208ZZ001	BEARING	2	6208ZZ
42	00200055001	C ring	1	S55
43	00200050001	C ring	4	S50
44	00200075001	C ring	1	S75
45	00210807045	SHAFT KEYS	1	8X7X45L
46	00211208035	SHAFT KEYS	4	12X8X35
47	00211208070	SHAFT KEYS	2	12X8X70L
48	00211610050	SHAFT KEYS	2	16X10X50L
49	00211208045	SHAFT KEYS	1	12X8X45L
50	00211208060	SHAFT KEYS	2	12X8X60L
51	00210807030	SHAFT KEYS	1	8X7X30L
52	0024T04005508	OIL SEAL		40X55X8
52	0024T04005508	OIL SEAL		40X55X8



DATE:	89.08.16	*** HEADST	UCK ***	-	PAGE
NO	PARTS NAME	PARTS NO	DESCRIPTION	Q'TY	REMARK
1	Nut		M30	1	
2	Pulley	19HC0280		1	
3	Oil Seal		TC554508	1	
4	Bolt		M6*25L	3	
5	Bearing Stand	19HC0090		1	
6	Bearing		#6209	7	
7	Space Ring	19HC0040		6	
8	Gear	19HC0050		1	
9	Gear	19HC0060		1	
10	Space Ring	19HC0070		1	
11	Кеу		8*8*45L	1	
12	Gear Shaft	19HC0030		1	0.
13	Pump Cover	19HC0480		1	
14	Oil Feed Pump		1RA-2FS	1	
15	Nut		M16	2	
16	Set Bolt		M16*60L	1	
17	Gear Shaft	19HC0170		1	
18	Gear	19HC0370		1	
19	Gear	19HC0180		1	
20	Gear	19HC0190		1	
21	Snap Ring		R85	2	
22	O-Ring		S85	2	
23	Sleeve	19HC0160		2	
24	Bolt		M16*20L	3	
25	Cover	19HC0100		1	
26	Gear	19HC0110		1	
27	Gear	19HC0121		1	
28	Snap Ring		R72	3	
29	SNAP Ring		R50	2	
30	Gear Shafe	19HC0130		1	
31	Bearing		#6010	2	
32	Gear	19HC0150		1	
33	Gear	19HC0141		1	
34	Bolt		M6*25L	1	
35	Shafe Cover	19HC0240		1	
36	Bearing		#6040	1	
37	Gear	19HC0230		1	
38	Nut	19HC038B		2	
39	Bearing		HR32044XJ	2	HR32042X
40	Gear	19HC0220		1	

NO	PARTS NAME	PARTS NO	DESCRIPTION	Q'TY	REMARK
41	Bolt		M8*40L	4	
42	Nut [.]	19HC039B		1	
43	Cover	19HC0210		1	
44	Bolt		M6*35L	6	
45	Кеу		10*8*35L	1	
46	Shaft	19HC0020		1	
47	Кеу		16*10*36L	1	
48	Decipher		SIEMENS	1	
49	Decipher Cover			1	
50	Oil Seal		TC453008	1	
51	Bearing		#6206	2	
52	Sleeve	19HC0270		1	
53	Gear	19HC0260		1	
54	Кеу		5*5*24L		
55	Shaft	19HC0250		1	
56	Кеу		10*8*35L	1	
57	Cylinder			2	
58	Washer		AW30	2	
59	Nut		AN30	2	
60	Nut		M18	2	
61	Change Bracket	19HC0080		. 1	



		PARTS	LIST		
DY19-	-SIA				
DATE	:89.08.16	*** SADD	LE ***		PAGE1/2
NO	PARTS NAME	PARTS NO	DESCRIPTION	Q'TY	REMARK
1	Bolt		M12*100L	1	
2	Partial Shsft	21S0160		1	
3	Nut		M12	1	
4	Shaft	21S0140		1	
5	Tool Rest	21S0120		1	
6	T-Block			2	
7	Bolt		M6*20L .	12	
8	Bolt		M6*15L	12	
9	Flexible Cover	19S0160		1	
10	Skirt Plate	21B0020		1	
11	Bolt		M16*50L	4	
12	Pin			2	0
13	Fast Tool Rack	21S0130		1	
14	Link	21S0150		2	
15	Bolt		M12*30L	4	
16	Cross Slide	21S0030		1	
17	Bolt		M8*80L	1	
18	Stand	19S0150		1	
19	Wiper	19S0130		1	
20	Bolt		M8*30L	2	
21	Gib	19S0100		· 1	
22	Wiper	19S0140		1	
23	Bolt		M8	8	
24	Screw Bracket	21S0020		1	
25	Lead Screw	21S0060		1	
26	Bolt		M8*35L	4	
27	Bolt		M6*20L	4	
28	Plate			1	
29	Bolt		M6*25L	2	
30	Crash Stand	19S0690		1	
31	Crash Block	14S0330		2	
32	Bracket	21S0070·		1	
33	Pin			2	
34	Oil Seal		TC554009	1	
35	Bolt		M8*45L	4	
36	Bearing		#6908	2	
37	Bearing Cover	21S0090		1	
38	Bolt		M6*20L	3	
39	Sleeve	21S0080		1	
40	Nut		M30	1	

	ę.	PARTS	LIST		
DY19	-S1B				
DATE	:89.08.16	*** SADD	LE ***		PAGE2/2
NO	PARTS NAME	PARTS NO	DESCRIPTION	Q'TY	REMARK
41	Motor Bracket	21S0100		1	
42	Bolt		M8*40L	4	
43	Pulley	14B0350		1	
44	Washer			2	
45	Pulley SetCover	14B0330		1	
46	Bolt		M5*30L	3	
47	Bolt		M6*20L	4	
48	Plate		NL0317	1	
49	Bolt		M5*25L	2	
50	Plate			1	
51	Wiper	19S0170		2	
52	Plate	—	NL0318	1	
53	Bolt		M5*20L	4	
54	Motor		SIEMENS 1FK7083-5AF71-1AG3	1	
55	Bolt		M8*25L	6	
56	Motor Plate	14B039B		1	
57	Pulley	14B032B		1	
58	Washer			2	
59	Pulley SetCover	14B0330		1	
60	Bolt		M5*30L	3	
61	Pulley Belt		450L*5M*15H	· 1	
62	Plate	21S0110		1	
63	Bolt		M8*20L	6	
64	Wiper	19S0180		2	
65	Screw		M5*20L	5	
66	Gib	19S0120		1	
67	Strip	19S0110		1	
68	Gib	1980050		2	
69	Strip	19S0040		1	
70	Bolt		M8*35L	8	



DY19-E	B1A	***	D +++		Dif
DATE:8	39.08.16	*** BE	D ***		PAC
NO	PARTS NAME	PARTS NO	DESCRIPTION	Q'TY	REMARK
1	Bolt		M8*30L	1	
2	Washer		T=2	1	
3	Pulley Belt		XPB-1800	5	
4	Pulley	19B0410		1	C
5	Кеу		12*8*80	1	
6	Motor		SIEMENS 1PH7137-2NF00-0BA0	1	
7	Bolt		M12*60L	4	
8	Nut		M12	10	
9	Washer			4	
10	Rubber Washer			4	
11	Set Bolt	—	M12*115L	2	
12	Shaft	19B0450		1	0.
13	Motor Plate	19B0040		1	Ø
14	Bolt		M8*40L	2	
15	Bracket	19B0440		1	
16	Bed	19B0010		1	
17	LUBE Plate	19B0140		1	
18	Lubricator		YET-A1	1	
19	Motor		SIEMENS 1FK7101-5AF71-1AG3	1	
20	Bolt		M12*50L	• 4	
21	Bolt		M6*25L	4	
22	Motor Plate			1	
23	Linker			1	
24	Bearing Cover	17B0040		1	
25	Set Nut	17B0060		2	
26	Set Screw		M5*10L	2	
27	Sleeve	19B0050		2	
28	Bearing		#6207	5	
29	Oil Seal		TC553510	2	
30	Front Bracket	17B003E		1	
31	Pin	· ·		2	-
32	Bolt		M8*45L	6	
33	Base Block	13B0040		18	
34	Nut		M30	18	
35	Base Bolt		M30*120L	18	
36	Lead Screw	19B0030		1	
37	Bolt		M6*25L	4	
38	Crash Stand	19B0049		2	
39	Crash Block	19\$0090		1	
40	Crash Stand	19B0050		1	

DY19-B	1B		.51		
DATE: 89	9.08.16	*** BED	***		PAGE2
NO	PARTS NAME	PARTS NO	DESCRIPTION	0'TY	REMARK
41	Bolt		M6*20L	6	
42	Bracket	19B0160		3	
43	Set Bolt	19B0480	,	1	
44	Block	17B0510		2	
45	Bolt		M10*50L	4	
46	Pin			2	
47	Back Bracket	17B0070	•	1	
48	Piece	19B0110		1	
49	Bearing Stand	19B0120		1	
50	Bolt		M8*50L	8	
51	Bearing Stand	19B0130		1	
52	Bolt		M8*35L	4	
53	Bolt		M6*25L	6	
54	Pump Plate	19B0060		1	
55	Bolt		M6*30L	2	
56	Pump		GRUNDFOS	1	



DY19	-T1A	PARIS I	2121		
DATE	:89.08.16	*** TAIL ST	IOCK ***		PAGE
NO	PARTS NAME	PARTS NO	DESCRIPTION	Q'TY	REMARK
1	Center		MT6#	1	
2	Oil Seal		150*115*16	1	
3	Spindle	19T0030		1	
4	Sleeve	21T0080		1	
5	Bolt		M6*20L	3	
6	Set Screw		M12*20L	2	
7	Sleeve	21T0120		1	
8	Handle	21T0130		1	
9	Set Pin	21T0070		1	
10	Bolt		M6*15L	3	
11	Tailstock Cast	19T001A	C	1	
12	Shaft	19T0100		1	
13	Kev		8*7*50L	1	
14	Bolt		M12*70L	2	
15	Washer			Ī	
16	Spring Washer			$\frac{1}{1}$	
17	Base Casting	19T0020		1	
18	Winer	19T0120		1	
19	Screw	1910120	M6*10I	4	
20	Shaft	21T0150	MOTOL	1	
21	Bolt	2110150	M6*20L	. 3	
22	Wiper	19T0130	NO LOL	1	
23	Screw	1710150	M6*25L	2	
24	Set Plate	21T0060		2	
25	Spring	2110000		2	
26	Washer			2	
27	Calamp Plate	21T0170		2	
28	Spring Washer	2110170		2	
29	Bolt		M6*200L	2	
30	Gear	21T0040		1	
31	Kev	2110010	8*7*321	1	
32	Bearing		#511005	2	
33	Bushing	21T0160	1911005	1	
34	Indering	19T0120		· ·	<u> </u>
35	Handle Wheel	19T0130		1	t
36	Screw	21T0140		1	
37	Set Screw		M6*301	1	
- 38	Handle	19T0140	110 501	1	
- 30	Gear	21T0050		1	
40	Sleeve	2110030		1	

All Bearing #511005 2 42 Bearing Stand 19T0150 1 4 43 Bolt M6*25L 4 4 44 Nut AN05 2 4	NO	PARTS NAME	PARTS NO	DESCRIPTION	0'TY	DEMADI
42 Bearing Stand 19T0150 1 43 Bolt M6*25L 4 44 Nut AN05 2	41	Bearing		#511005	2	NEMAN
A3 Bolt M6*25L 4 44 Nut AN05 2	42	Bearing Stand	19T0150	*******	1	
	43	Bolt		M6*251.	4	
HINGUNCO	44	Nut		ANO5	2	
A A A A A A A A A A A A A A A A A A A		1			*	
Ky Kikkepionice						
A FREPRODUCE						
				d'Red		
				je e e e e e e e e e e e e e e e e e e		



HYDRAL	JLIC TAILSTOCK	PARTS LIST		
NO	PARTS NAME	PARTS NO	Q'TY	REMARK
1	Tailstock	22G-T-001	1	
2	Tailstock base block	22G-T-002	1	
3	Tailstock quill	22G-T-003	1	
4	Nut for leadscrew	22G-T-004	1	
5	Bearing housing	22G-T-005	1	
6	Leadscrew M43xP6	22G-T-006	1	
7	Hyd. Motor housing	22G-T-007	1	
8	Hyd. Lock block	22G-T-008	2	
9	Gib	27T-0270	1	
10	Oil seal	TC 115X140 14	1	
11	Hyd. Cylinder for quill	HCB-Z 32 ST:10	1	~
12	Thrust bearing	51111	2	
13	Lock nut	M55XP1.5	1	
14	Hydraulic motor	TB-390	1	
15	Hyd. Cylinder for base	HCB-Z 80 ST:110	2	0
16	Nut	M39XP1.5	2	
		ot Req'		






PARTS LIST (C AXIS AND ENCODER)						
ITEM	PARTS NO.	DESCRIPTION	SPEC.	QTY		
1	22NC-HB-070	ENCODER BRACKET		1		
2	22NC-HB-071	SPINDLE ENCODER PULLEY		1		
3	22NC-HB-072	ENCODER PULLEY		1		
4	22NC-HB-073F	ENCODER SHAFT		1		
5	Z22NC-H-074	SPACER		1		
6	22NC-H-075	ENCODER COVER		1		
7	4026208ZZ001	BEARING	6208ZZ	2		
8	00335M169015	HTD BELT		1		
9						
10						
000						





		PARTS LIST (Y AXIS)		
ITEM	PARTS NO.	DESCRIPTION	SPEC.	Q
1	22NC-S-102	Cross slide		1
2	22NC-SY-001	Y axis slide base		1
3	22NC-SY-002	Y axis slide		1
4	22NC-SY-003	Turret base		1
5	22NC-SY-004	Fix plate		4
6	22NC-SY-005	Fix plate		1
7	22NC-SY-006	Fix plate		1
8	22NC-SY-007	Bearing housing		1
9	22NC-SY-008	Y axis ballscrew		1
10	22NC-SY-009	Nut housing		1
11	22NC-SY-010	Adjust plate for nut housing		2
12	4037007DB001	bearing	7007	3
13	22NC-B-006B	Spacer		1
14	14NC-B-007	Bearing cover		1
15	00302063001	YSF-M35xP1.5		1
16	2331CXSD3210ST01	Hydraulic cylinder SD type	CX-SD 32*10ST	1
17	00373030040	Coupling	HAL-80C-30*40	1
18	0024T04206209	Oil seal	TC-42*62*9	1
19	13G-S-008	screw	M8*25	8
20	E22PGL142400000	Gear reducer	PGL 142-4	1
21		Servo motor	A22i 3000rpm	1
	0			
		•		
N.				