

Fig4 Transmission system

TRANSMISSION SYSTEM & PARTS

TRANSMISSION SYSTEM (SEE FIG4)
TABLE 1

| Part | NO. | NAME | Teeth no. | Modulus | Pressure Angle | Material | Note |
|-----------|----------------|----------------|-----------|---------|----------------|----------|-------|
| Headstock | 1 | Gear | 42 | M2 | 20° | 45 | 2013 |
| | 2 | Gear | 23 | M2 | 20° | 45 | 2018 |
| | 3 | Gear | 47 | M2 | 20° | 45 | 2019 |
| | 4 | Gear | 36 | M2 | 20° | 45 | 2021 |
| | 5 | Gear | 55 | M2 | 20° | 45 | 2020 |
| | 6 | Gear | 31 | M2 | 20° | 45 | 2022 |
| | 7 | Gear | 45 | M2 | 20° | 45 | 2016 |
| | ∞ | Gear | 58 | M2 | 20° | 45 | 2015 |
| | 9 | Gear | 21 | M2 | 20° | 45 | 2017 |
| | 10 | Duplicate gear | 48 | M2 | 20° | 45 | 2008 |
| | 11 | Gear | 59 | M2 | 20° | 45 | 2029 |
| | 12 | Gear | 46 | M2 | 20° | 45 | 2030 |
| | 13 | Gear | 83 | M2 | 20° | 45 | 2031 |
| | 14 | Duplicate gear | 30 | M2 | 20° | 45 | 2032 |
| | Gear box | 15 | Gear | 48 | M2 | 20° | 45 |
| 16 | | Gear | 24 | M2.25 | 20° | 45 | 3029B |
| 17 | | Gear | 16 | M2.75 | 20° | 45 | 3031B |
| 18 | | Gear | 18 | M2.75 | 20° | 45 | 3032B |
| 19 | | triple gear | 18 | M2.25 | 20° | 45 | 3005B |
| | | | | M2.75 | | | |
| | | | | M2.25 | | | |
| 20 | | Gear | 20 | M2.75 | 20° | 45 | 3003B |
| 21 | | Gear | 28 | M2.25 | 20° | 45 | 3002B |
| 22 | | Gear | 27 | M2.25 | 20° | 45 | 3027C |
| 23 | | Gear | 21 | M2.25 | 20° | 45 | 3025B |
| 24 | | Gear | 21 | M2.25 | 20° | 45 | 3018C |
| 25 | | Duplicate gear | 30 | M2.25 | 20° | 45 | 3026C |
| | | | 18 | | | | |
| 26 | | Gear | 22 | M2.25 | 20° | 45 | 3007C |
| 27 | Duplicate gear | 15 | M2.25 | 20° | 45 | 3006C | |
| | | 22 | | | | | |
| 28 | Gear | 23 | M2.25 | 20° | 45 | 3009B | |
| 29 | Gear | 17 | M2.25 | 20° | 45 | 3016C | |

| | | | | | | | |
|--|----|------|----|-------|-----|----|-------|
| | 30 | Gear | 15 | M2.25 | 20° | 45 | 3014C |
|--|----|------|----|-------|-----|----|-------|

TRANSMISSION SYSTEM & PARTS

TRANSMISSION SYSTEM (SEE FIG4)

RENEWAL

TABLE

| Part | NO | NAME | Teeth | Modulus | Pressure Angle | Material | Note |
|-------------------------|----|--------------------------|-------------|-----------------|----------------|-----------|------------|
| Carriage box and saddle | 31 | Gear | 11 | M2 | 20° | 45 | 4028 |
| | 32 | Rack gear | | M2 | 20° | 45 | 1009, 1010 |
| | 33 | Guide screw | Single head | 3mm or 8T.P.I | | 45 | 1005A |
| | 34 | Half nut | Single head | 3mm or 8T.P.I | | ZQSn6-6-3 | 4003A |
| | 35 | Worm | Single head | M2 | 20° | 45 | 4008 |
| | 36 | Worm gear | 24 | M2 | 20° | ZQSn6-6-3 | 4017 |
| | 37 | shaft | 12 | M2 | 20° | 45 | 4030 |
| | 38 | Gear | 50 | M2 | 20° | 45 | 4029 |
| | 39 | Gear | 25 | M2 | 20° | 45 | 4014 |
| | 40 | Guide screw nut | Single head | 2mm or 10 T.P.I | | ZQSn6-6-3 | 5104A |
| | 41 | Guide screw | Single head | 2mm or 10 T.P.I | | 45 | 5103A |
| | 42 | Gear | 14 | M2 | 20° | 45 | 4019 |
| | 43 | Gear | 51 | M2 | 20° | 45 | 4013 |
| | 44 | Gear | 19 | M2 | 20° | 45 | 5127 |
| | 45 | Gear | 25 | M2 | 20° | 45 | 4010 |
| | 46 | Gear | 48 | M2 | 20° | 45 | 4012 |
| | 47 | Guide screw | Single head | 2mm or 10 T.P.I | | 45 | 5011A |
| | 48 | Screw nut | Single head | 2mm or 10 T.P.I | | ZQSn6-6-3 | 5012A |
| Tail stock | 49 | Guide screw of tailstock | Single head | 2mm or 10 T.P.I | | 45 | 6006A |
| | 50 | screw nut of tailstock | Single head | 2mm or 10 T.P.I | | ZQSn6-6-3 | 6012A |
| Change gears | 1 | Gear | 21 | M1.25 | 20° | 45 | 3093 |
| | 2 | Gear | 22 | M1.25 | 20° | 45 | 3076C |
| | 3 | Gear | 24 | M1.25 | 20° | 45 | 2002C |
| | 4 | Gear | 26 | M1.25 | 20° | 45 | 3075C |
| | 5 | Gear | 28 | M1.25 | 20° | 45 | 3094 |
| | 6 | Gear | 38 | M1.25 | 20° | 45 | 3090C |
| | 7 | Gear | 41 | M1.25 | 20° | 45 | 3095 |
| | 8 | Gear | 44 | M1.25 | 20° | 45 | 3077C |
| | 9 | Gear | 47 | M1.25 | 20° | 45 | 3096 |
| | 10 | Gear | 48 | M1.25 | 20° | 45 | 3039C |

| | | | | | | |
|----|----------------|---------|-------|-----|----|-------|
| 11 | Gear | 52 | M1.25 | 20° | 45 | 3078C |
| 12 | Duplicate gear | 120/127 | M1.25 | 20° | 45 | 3038C |

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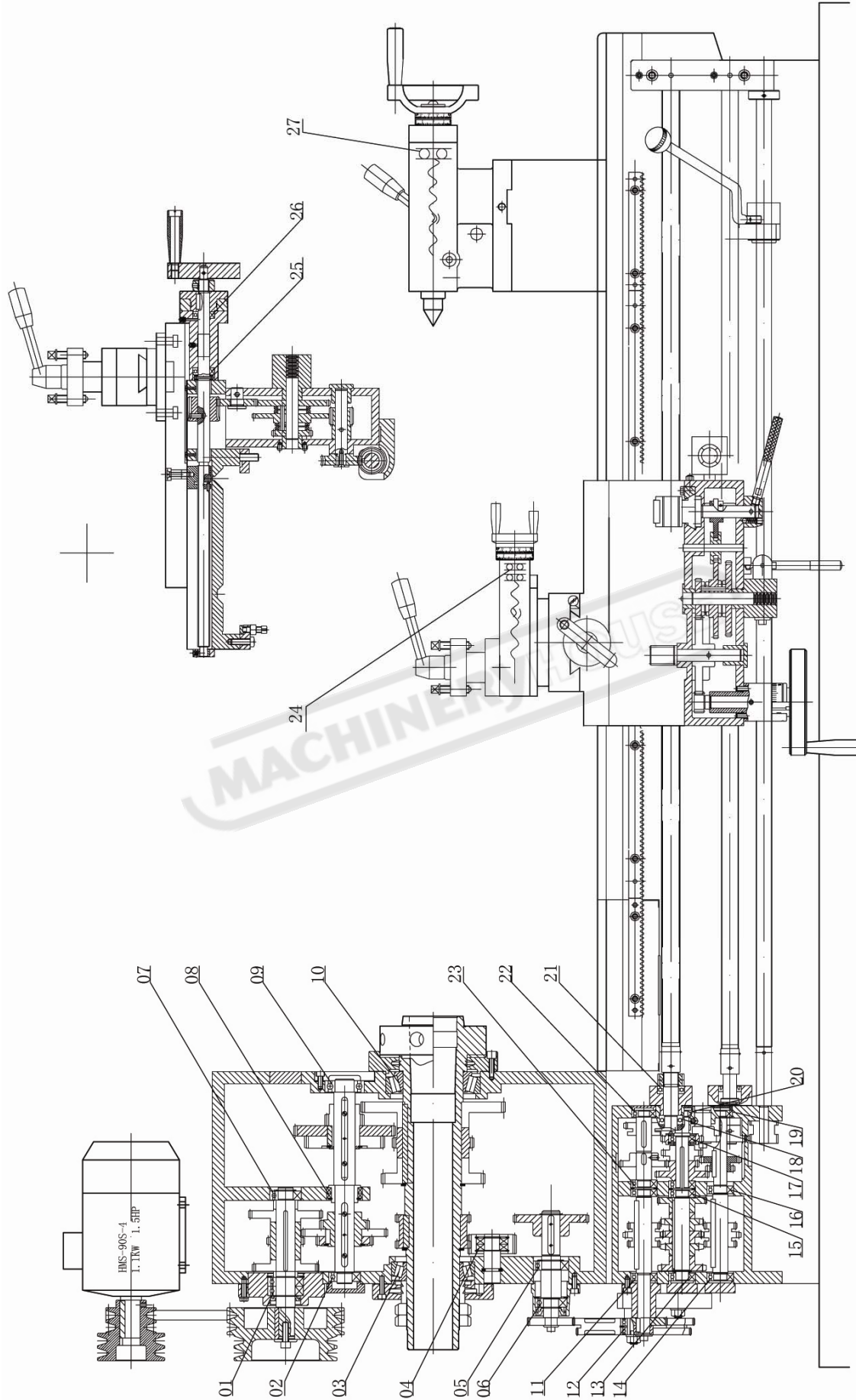


Fig5 Bearing distribution

BEARING DISTRIBUTION AND LIST

BEARING LIST (SEE FIG 5)

TABLE 2

| NO. | Name | Note | Specification | Qty. | Parts |
|-----|------------------------|---------|---------------|------|-------------|
| 1 | groove ball bearing | 6005 | 25×47×12 | 2 | headstock |
| 2 | groove ball bearing | 6004 | 20×42×12 | 1 | |
| 3 | conical roller bearing | 32014P5 | 70×140×25 | 1 | |
| 4 | groove ball bearing | 16004 | 20×42×8 | 2 | |
| 5 | groove ball bearing | 6005 | 25×47×12 | 1 | |
| 6 | groove ball bearing | 6004 | 20×42×12 | 1 | |
| 7 | groove ball bearing | 6004 | 20×42×12 | 1 | |
| 8 | groove ball bearing | 61807 | 35×47×7 | 2 | |
| 9 | groove ball bearing | 6205 | 25×52×15 | 1 | |
| 10 | conical roller bearing | 32016P5 | 80×125×29 | 1 | |
| 11 | groove ball bearing | 6003 | 17×35×10 | 1 | gear box |
| 12 | groove ball bearing | 6003Z | 17×35×10 | 2 | |
| 13 | groove ball bearing | 6003 | 17×35×10 | 1 | |
| 14 | groove ball bearing | 6003 | 17×35×11 | 1 | |
| 15 | groove ball bearing | 6003 | 17×35×12 | 2 | |
| 16 | groove ball bearing | 6003 | 17×35×13 | 1 | |
| 17 | groove ball bearing | 16003 | 17×35×8 | 1 | |
| 18 | thrust ball bearing | 51103 | 17×30×9 | 1 | |
| 19 | groove ball bearing | 6002 | 15×32×9 | 1 | |
| 20 | groove ball bearing | 6002 | 15×32×10 | 1 | |
| 21 | thrust ball bearing | 51104 | 20×35×10 | 1 | |
| 22 | groove ball bearing | 6002 | 15×32×9 | 1 | |
| 23 | groove ball bearing | 6003 | 17×35×11 | 1 | |
| 24 | thrust ball bearing | 51101 | 12×26×9 | 2 | |
| 25 | thrust ball bearing | 51102 | 15×28×9 | 1 | |
| 26 | thrust ball bearing | 51102 | 15×28×10 | 1 | |
| 27 | thrust ball bearing | 51101 | 12×26×9 | 1 | tailstock |

Table 3

| NO. | LOCATION | HOW | HOW MUCH | HOW LONG TO FILL UP | OIL QUALITY |
|-----|-----------------------------------|---|----------|--|-----------------------|
| 1 | HEADSTOCK | Remove the screws of filler on left side up | L | Once first month, then every two month | NO.15 SV1229 |
| 2 | GEAR BOX | Open top cover remove the screws of filler | L | Once a month | NO.22 L-AN GB443-1989 |
| 3 | SADDLE | open oil plug | L | Once a day | NO.22 L-AN |
| 4 | CHANGE GEAR | open the cover | Approp | Once a day | NO.22 L-AN |
| 5 | BEDMAN'S | By oil gun | Approp | Twice a day | NO.22 L-AN |
| 6 | TOOL POST/ TOP SLIDE, GUIDE SCREW | By oil gun | Approp | Twice a day | NO.22 L-AN |
| 7 | LEADSCREW, FEED ROD, SWITCH ROD | By oil gun | Approp | Once a day | NO.22 L-AN |
| 8 | HALF NUT | By oil gun | Approp | Once a day | NO.22 L-AN |
| 9 | TAILSTOCK | By oil gun | Approp | Once a day | NO.22 L-AN |
| 10 | BRACKET | open oil plug | L | Twice a day | NO.22 L-AN |

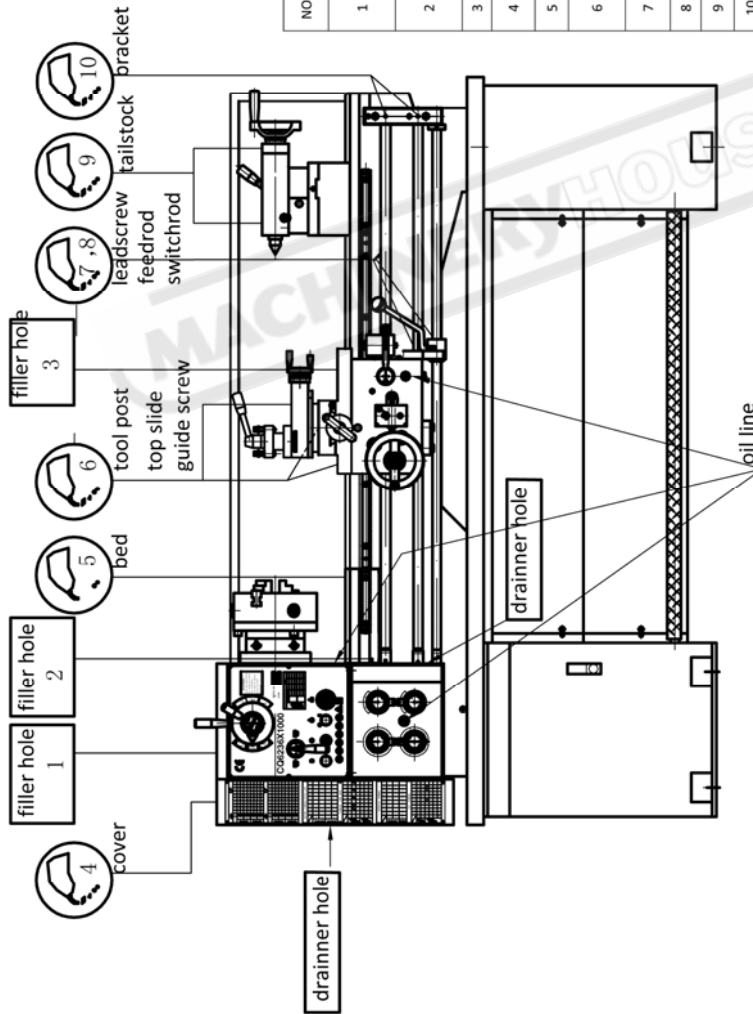


Fig 6 Lubrication

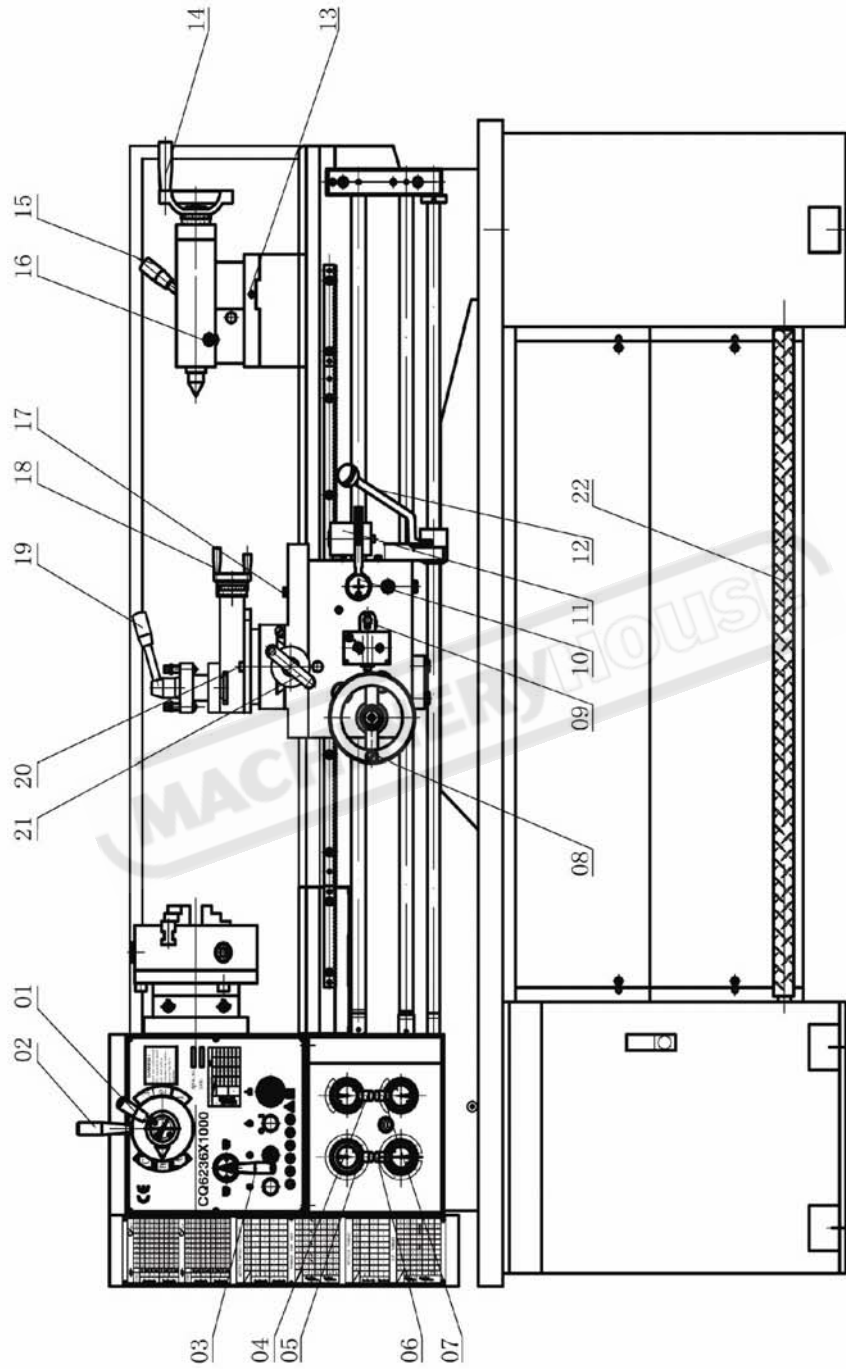


Fig 7 Handles

Handles and use

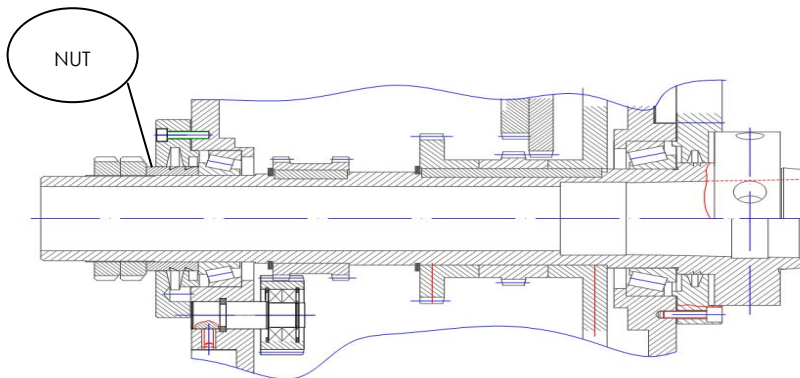
Table 5

| NO. | INSTALLATION | NAME | FUNCTION |
|-----|-----------------------------|--|---|
| 01 | headstock | variable speed handle I | spindle speed |
| 02 | | variable speed handle II | spindle speed |
| 03 | | turn &reverse handles | change the move direction of the saddle |
| 04 | feed box | thread or feed handle | S-feeding M-threading |
| 05 | | feeding and pitch handle | obtain appropriate feeding or pitch |
| 06 | | feeding and pitch handle | |
| 07 | | increases times optional handle | |
| 08 | carriage | carriage movement handle | |
| 09 | | vertical and horizontal handles | control move direction or manual |
| 10 | | handle of half nut | the combination or separation of the thread |
| 11 | | thread chasing dial | the combination or separation of thread dial |
| 12 | | start switch handle | turn or reverse turn or stop of the machine |
| 13 | tailstock | adjust screw of tailstock center | the coaxial tolerance of tailstock and spindle |
| 14 | | handwheel of tailstock sleeve | move forward or backward of the tailstock sleeve |
| 15 | | lock handle of the tailstock | tailstock movement |
| 16 | | lock handle of the tailstock sleeve | tailstock sleeve clearance and movement |
| 17 | compound rest and saddle | lock nut of bed | lock the saddle |
| 18 | | handwheel of top slide | make the top slide move forward or backward |
| 19 | | lock nut of tool | control of the rotation of the tool |
| 20 | | Lock nut of rotary tool | control of the rotation of the rotary tool |

| | | | |
|----|-----|---------------------|------------------------------------|
| 21 | | tool post handwheel | tool post move forward or backward |
| 22 | bed | foot brake switch | control the rotation of the lathe |

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Adjustment



Adjustment of clearance of the spindle sees fig8

1. Spindle adopt high precision conical roller bearing, after period of time, bearing trace to wear, the gap increases, so adjustment is needed ,please follow below steps: Loosen the two nut at spindle back-end, tighten front nut, test the spindle by hand with micro tight, backward 1/4 circle, then tighten one back nut .
2. Clearance adjustments between the tool post and top slide: Turn the screw at the right hand to the right side, the gap becomes small, otherwise becomes big.
3. Gap adjustments to guide screw nut: See fig10, Turn screw 1 to eliminate the gap. The gap can't be too small or wear is intensified.
4. Amount or detach of chuck and face plate: sees fig11. The spindle connects chuck by D-Cam and pull pins. When mounting, put the three pull pins of the chuck into the three wholes on the spindle face end, then turn the three came with the aid of square head wrench, when turning the cams clockwise, the chuck will be locked, when turning the cams counter-clockwise to certain point, the chuck can be detached.

Electrical system

1. 380V -400V 50HZ,60HZ Electrical diagram see Fig 12 form8 Electrical components
2. 110V -220V 50HZ Electrical diagram see Fig 13 form9 Electrical components
3. **Check the power and frequency whether in accordance with the request of the machine**, add 25A fuse.
4. Switch Rod 12 located in the middle position, the machine stops.
5. Switch rod 12 lift upwards, the spindle turn counterclockwise; push it down, the spindle turn clockwise. If not, cut off power supply, exchange of any two power lines.
6. Lathe must be well grounded.
7. The circuit diagram is only for reference. Practical circuit diagram is covered at the back of the electrical box to facilitate the maintenance.

TROUBLE SHOOTING PART table 6

| No. | Name | Material | Qty | Specification | Note |
|-----|------------------------|-----------|-----|-----------------|-------|
| 1 | Horizontal feeding nut | ZQSn6-6-3 | 1 | CQ6236-510 4 | Fig14 |
| 2 | Half nut | ZQSn6-6-3 | 1 | CQ6236-400 3 | Fig15 |

OPTIONAL ACCESSORIES see Form9 table7

| No. | Name | Qty | Note |
|-----|------------------|----------|--------------|
| 1 | steady rest | 1SET | |
| 2 | follow rest | 1SET | |
| 3 | 4 jaw chuck | 1SET | |
| 4 | face plate | 1SET | |
| 5 | coolant system | 1SET | |
| 6 | chuck cover | 1SET | Switch power |
| 7 | live center | M.T.NO.3 | 1SET |
| p8 | footbrake system | 1SET | |

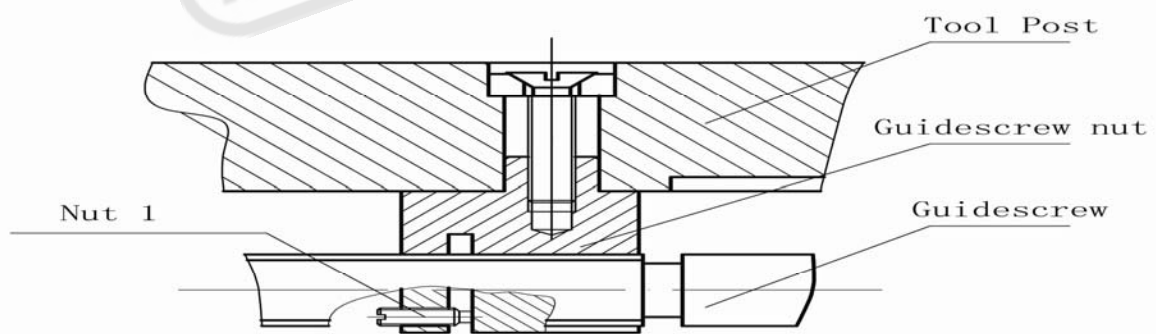


Fig 10 Adjust the gap of horizontal feeding nut

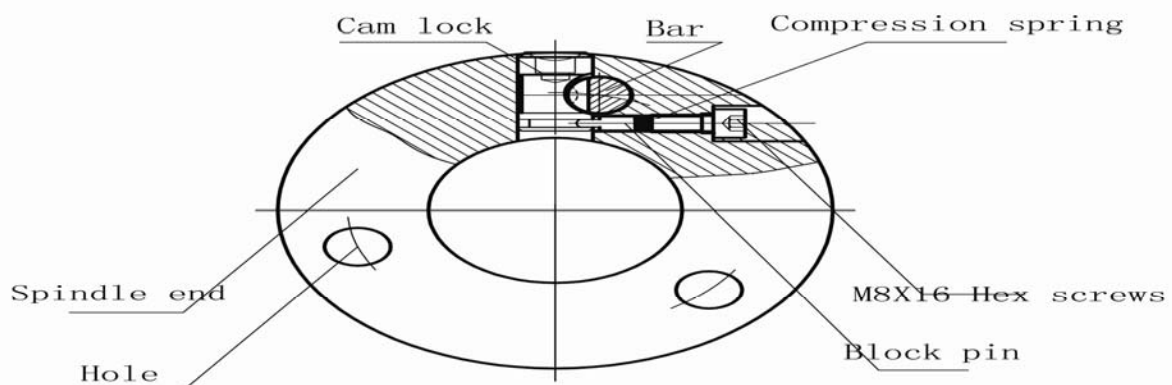


Fig 11 chuck or face plate lock structure

Electrical components list

Table 8

| NO | CODE | NAME | MODEL | QTY |
|----|-----------------|------------------------------|-------------------|-----|
| 1 | M1 | main motor | Y90S-4 380V | 1 |
| 2 | M2 | cooling motor | DB-12 | 1 |
| 3 | KM1 KM2 | contactor | LC1-D1209 24V | 2 |
| 4 | KM3 | cooling relay | LC1-D1209 24V | 1 |
| 5 | KA | middle relay | 32C4-40 24V | 1 |
| 6 | QM | circuit breaker | DZ47-63,3P | 1 |
| 7 | QF | circuit breaker | DZ47-63,1P | 1 |
| 8 | TC | transformer | JBK5-63 | 1 |
| 9 | EL | work light | JBK9-2A orJL50D-1 | 1 |
| 10 | HL | indicator | AD118.8/21-8GZ | 1 |
| 11 | SB ₁ | emergency stop button | LA38 Ith 10A | 1 |
| 12 | SB ₂ | point start button | L38-11/207 | 1 |
| 13 | 1SA,2SA | positive &negative switching | LXW5-11D1 | 2 |
| 14 | 3SA | switch power of cover | LXW5-M/L | 1 |
| 15 | 4SA | switch power of chuck cover | LXW5-M/L | 1 |
| 16 | 5SA | cooling control switch | LAY-11X/2 | 1 |
| 17 | SF | power switch of footbrake | LXW5-11N1/L | 1 |

Electrical components list(Single phase)

Table9

| | | | | |
|---|-----|---------------------|--------------------|---|
| 1 | M1 | main motor | Y90L2-4 220V 1.5KW | 1 |
| 2 | FR | thermal relay | T16 | 1 |
| 3 | FU | fuse | RT23-16 24V 2A | 1 |
| 4 | SB1 | button | LA38 ITH 10A | 1 |
| 5 | SB2 | button | LA38-11/207 | 1 |
| 6 | SQ1 | micro switch | LXW5-11D1 | 1 |
| 7 | SQ2 | micro switch | LXW5-11D1 | 1 |
| 8 | HL | indicator | AD118.8/21-8GZ | 1 |
| 9 | T | control transformer | JBK5-63 | 1 |

| | | | | |
|----|-----|--------------|---------------|---|
| 10 | KA | middle relay | 32C4-40 24V | 1 |
| 11 | KM1 | Ac contactor | LC1-D1209 24V | 1 |
| 12 | KM2 | Ac contactor | LC1-D1209 24V | 1 |

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