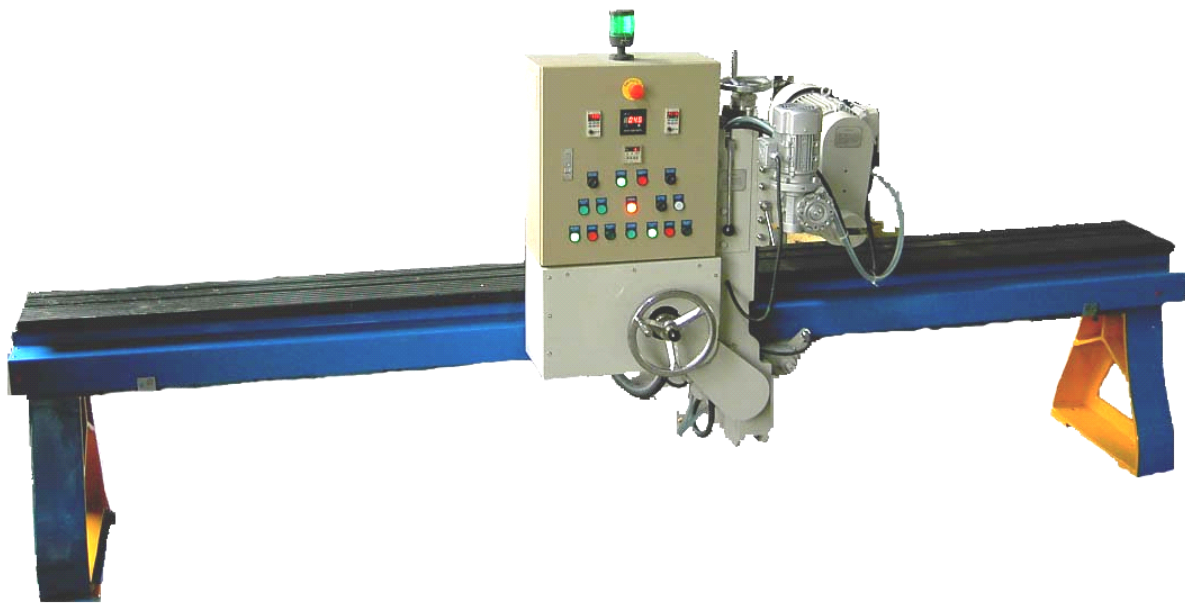


## **B2b009 Multi-Functional Stone Profiling Machine**



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## I . General Introduction

The b2b009 type multi-function stone profile machine is a high-precision multi-functional machine recently developed by this company. This machine is chiefly applicable to processing rectilinear borders and plane decorative lines. It may also be used to cut curved decorative borders, etc

This machine uses hermetic oil immersed guides rails and step less gearshift travel. Travel speed meets a variety of users needs. This machine has a high processing efficiency, good processing machines which integrates both straight-line and curve processing function. Gearshift ration control feed a tool, counter control processing course and backout automatically. It opens up a new and exciting trend among stone processing machinery.

It has power 3 phases 220V\380V\415V, 50Hz and 60HZ types for users need.

## II .Main technical parameters:

1. Dimension:	3800*1500*1510(mm)
2. Power:	3.75kw—4.75kw
3. processing length:	≤3000
4. Drilling diameter:	≤Ø6mm-Ø100mm
5. Decorative lines width:	≤600mm
6. Stone thickness:	≤200mm
7. Auto travel:	0.38-1.92m/min (50HZ) 0.46-2.30m/min (60HZ)
8. Feed a tool and backout quantity	0.62mm-3.1mm/sec. 0.74mm-3.72mm/sec.
9. Head angel:	May be freely rotated
10. Travel distance:	The distance may be set as required
11. Curved border grinding:	Both inner and external curves may be cut
12. Grinding head rotation speed:	1900/3800 rpm

## III.Transport of machine

When sold overseas, the machine is packed in a wooden case (it is usually not packed for domestic sales). When hoisting the packing case by crane, take care that the steel cable binds the packing case firmly. The hoisting position should be clearly indicated on the packing case. Avoid rocking or jolting the machine when lifting. After opening the case, pay attention to the following when transporting the machine to the installation position:

1. A wooden board should be placed under the load bearing point on the underside of the machine so as to avoid the machine overturning.
2. The travel mechanism cause the machine to be unevenly weighted, attention should be paid to avoid the machine overturning.
3. When hoisting, care should be taken that the steel cable does not collide with and damage protruding parts such as the water proof hood.

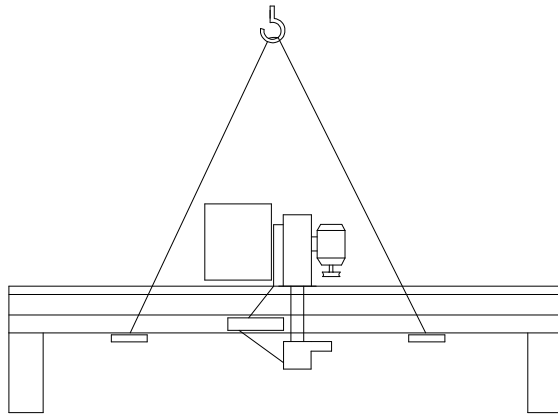


FIG.1

## IV. Installation and examination of machine

### A. Installation of machine

1. This machine should be installed on the proper foundation (see installation foundation fig.2). Depth of the foundation should be no less than 500mm. when making preliminary installation onto the foundation; the machine's level should be roughly calibrated. Cement is then poured in and the foundation bolts secured (foundation bolts to be provided for by user themselves). After the cement has hardened, the level can be precisely calibrated and the nuts are tightened. While adding the cement, an  $\text{Ø}8$  and 1.5m-long iron rod should be sunk into the foundation as grounding for the machine, machine must be earthed before connecting it to the mains supply.

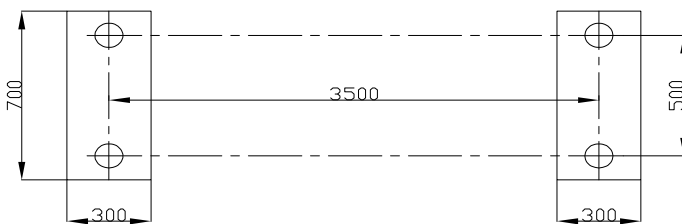


FIG.2

2. Before trial running, rustproof grease should be wiped away and 20# machine oil input via the oil injection hole on the back of the machine until oil level reaches 1/3 of travel rolling wheel. The various guides and fixed lubrication points should also be carefully lubricated. To avoid accidents, check whether the exposed parts of the electrical equipment (e.g. travel switch and leads) have been damaged in the course of transporting the machine.
3. After connecting to the mains, turn on the switch in the electrical equipment box on the machine body. Mains indicator lamp should immediately light up.
4. Turn switch to low or high speed, press start button and observe whether direction of grinding head's rotation is correct or not. If rotating in the wrong direction, then change the phase of the lead-in mains. Operation may be begun only once rotation direction is correct. At low speed the grinding head must be

rotated for at least 5 minutes, and at high-speed it must be rotated for at least 30 minutes, so as to ensure spindle reaches a stable temperature. Spindle temperature must not exceed 80°C.

## B. Installation of electricity

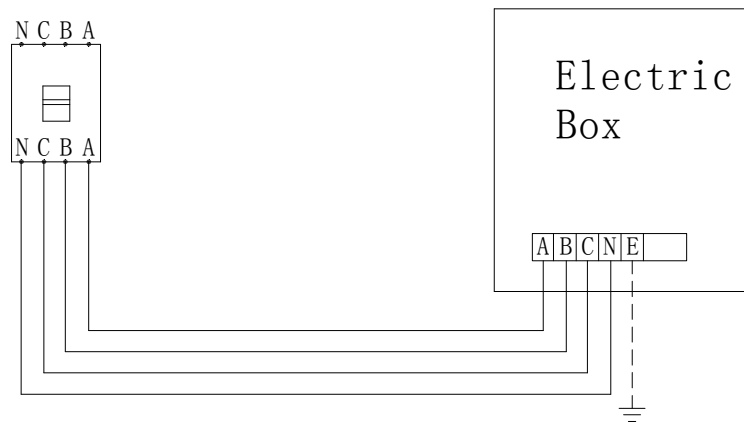


FIG.3

1. User should supply suitable electric leakage for its 3phases 5lines dispose.
2. It require good earth connection protect dispose, connector is a 40\*40\*4 angle iron, length should longer than 2m, embedding straight to earth, connect wire  $>2.5(\text{m}^2)$  linked with leg of machine firmly.(fig.4)
3. Check every parts of electricity and connect wire are intact and were in mint condition.

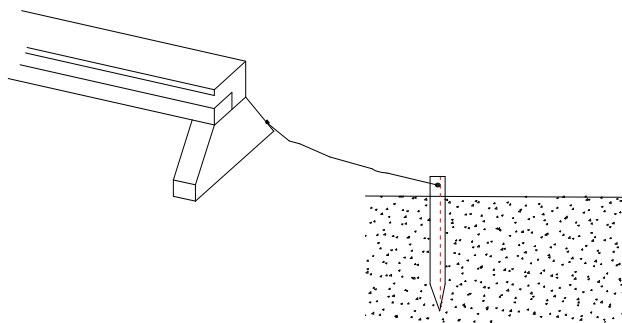


FIG.4

## V. Electrical equipment

### 1. power

After Setting the power in the junction box of machine, first checking and measuring 3 phases pressure ABC, zero line N, if the earth line is right or not, if it is right, and take off the mater switch (QF) (in figure page 18), if the pilot lamp is ok, it shows power.

### 2. the main motor working

Enter SK2, ( figure 5), KM2 is taken off, the main motor will run slowly, enter the button SK3, KM3 and KM4 are taken off, the main motor will run quickly, watching the current meter TA, the current should less than 10A.

### 3. travel and feed a tool

First enter the button which frequency conversion working, the KM1 is taken off, the transducer input the power, in the same time feed a tool, the transducer VFD-2 also input the pressure, the transducer will show F10~60HZ.

Manual-put the choose switch on the position “manual”, enter the right button SK4, take off KA2, give a right travel sign to M0 terminal of transducer (VFD-2) through 51# in the same time, the machine forth rightward, when near the switch SQ1 and the magnet, the machine is stopped.

Enter the left button SK5, take off KA3, give a left travel sign to M1 terminal of transducer (VFD-2) through 52# in the same time, the machine fall back rightward. When near the switch SQ2 and the magnet, the machine is stopped.

Notice: you can adjust the travel speed ,and also can inch the feed a tool and backout tool when the machine is traveling. The travel speed and the feed a tool as follows:

1. the travel speed---adjust the knob VFD-2, the show window F range is from 10HZ to 60HZ, the numerical value is more large and the speed is more quick, the corresponding travel speed should be 0.38~2.30meter/minutes.
2. the backout tool capacity--- put the choose switch SA3 on the position “quick”, inch the button SK8, give a quickly backout tool sign to M0 terminal of transducer VFD-1 through 61# which make the machine do it, inch the button SK9, give a quickly backout tool sign to M1 terminal of transducer VFD-1 through 62# which make the machine carry it out.

**Notice:** the size of backout tool and feed a tool is controlled by the different machined part through adjusting knob of transducer VFD-1.

Auto---put the select switch SA1 on the “auto”, put the select switch on the “counting on”, Enter the right button SK4, take off KA1, KA2, give a right travel sign to M0 terminal of transducer (VFD-2) through 51#, the machine travel rightly, and the 26#,27# make the relay which is taken off, connect the counter71#, 72# , the counter KJ count once. When the machine reach the best position near switch SQ1 and magnet, take on KA2, take off KA3, give a left travel sign to M1 terminal of transducer (VFD-2) through 52#, the machine travel back lefty, till near switch SQ2 and magnet, take on KA3, take off KA2,it repeat out and home. For example: if the counter KJ set 5 times, the counter input a change sign at once after the machine travel out and home 5 times, it makes 5# and 14# KJ to take on, the main motor and travel motor are taken off, and in the same time connect the 5# and 10# which making the time relay KT is taken off. The KT instantly connect 60# and 62# line, transfer the sign to M1 terminal of transducer VFD-2 through 62# line ( the frequency is 60HZ). After delaying several seconds, the 72# and 73 will make the count to zero, the working is finished.

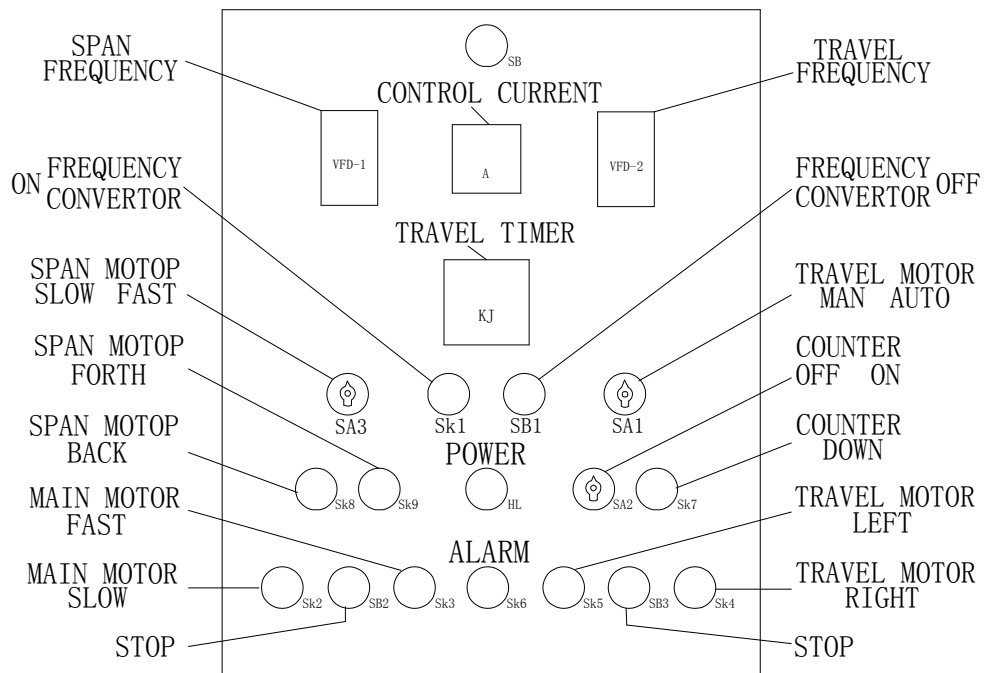


FIG. 5

## VI. Transmission system

This machine has 2 different transmission systems.

1. The rotation of the main spindle of the grinding wheel is directly by a double-speed motor via a pair of synchronous belt wheels. Transmission is steady and reliable.

2. The travel motor is directly mounted onto scroll-wheel decelerator. A gear wheel on the decelerator's output shaft drives the transmission gear shaft. The other end of the transmission gear shaft is fitted with a gear wheel, which engages with the rack on the machine body. Travel speed is controlled by gear shift knob on control box.

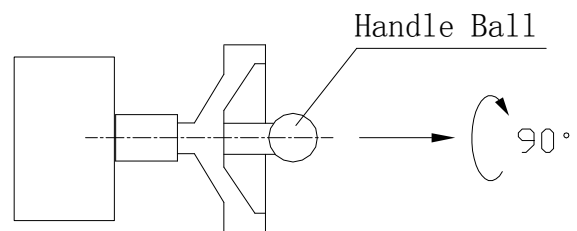


FIG. 6

Travel speed is controlled by gear shift knob on control box.

## VII. Cooling System

The coolant for the machine's grinding is water. Users provide their own water inlet pipeline or water source, A pipeline and valve are fitted to the grinding head fixing block (water nozzle is found in accessories case). These moves with the machine, it is strictly prohibited to operate the grinding wheel without water.

## VIII. Lubrication system

The service life of the machine depends largely on the timely and correct lubrication of its various mechanisms. The working environment of this machine typically involves a large amount of water, sand and stone powder, therefore, maintenance and lubrication are especially important. For oil type and application for each part, see lubrication table below and lubrication diagram (FIG.7)

Machine part	Lubrication	Place of lubrication	Oil gauge	Lubrication method	oil#	Change period	oil
Grinding head	Grinding and spindle and various bearings	1		Luboil poured into bearing seat, use spindle to splash oil over all bearing	Each application c.150 ml of oil containing 50% of 20# machine oil and 5 grams of molybdenum	Every 3months	
Decelerator	Scroll wheel, worm rod and bearing	2	3	Use scroll wheel to splash oil over all scroll rod bearings	20# machine oil	Every months	3
Master guide	Master guides and rolling bearing	4		Guides directly splash bearings	20# machine oil	Every months	3
List and drop leading screw. Leading screw	Leading screw thread bearing	5		Direct injection from oil can or oil gun	20# machine oil	Every shift	

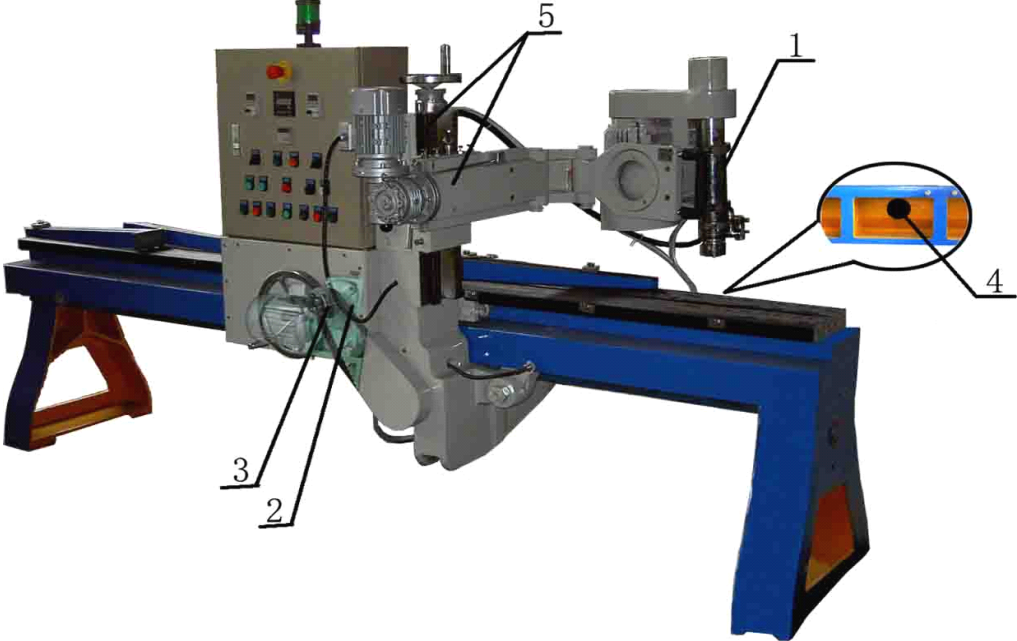


FIG. 7

## IX. Operating mechanism and adjustment

### 1. Installing grinding wheel

Install grinding-shaping wheel and polishing wheel separately onto tool row (as in figure) Secure tool row head at the left end of machine tool, and fasten bolt tightly with Allen wrench to firmly lock screws.

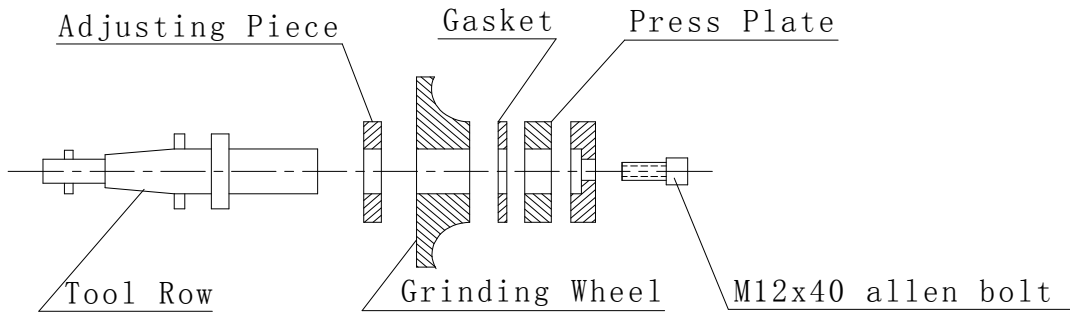


FIG.8

### 2. Assembly and disassembly of grinding wheel

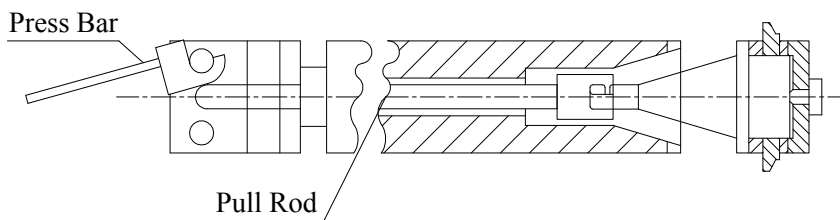


FIG.9

See diagram: Insert pressure bar supplied with the machine into the tail part. Apply force to the end of the pressure bar to push it in the direction of the arrow. This will push out the pull rod. Place tool row fitted with grinding wheel into spindle hole so that it lies within the latch hook. Turn the tool row by a small angle so that the latch hook catches on the tool row. Next, release pressure bar and restore the pull rod to its original position. The grinding wheel is now assembled onto the spindle. Conversely, when disassembling grinding wheel, simply prod out the pull bar, turn the tool row slightly anticlockwise so as to prevent it flying out when the motor is restarted and injuring operator or by-standers.

### 3. Adjustment of grinding wheel angle

With this machine, the grinding wheel can be freely set at any point through a 360° angle, depending on the stone processing requirements. Adjustment method: loosen the 2 locking bolts on the turntable (attention: do not unscrew bolts the way out all) and turn the machine headpiece as required. Then, tighten bolts to secure at the new angle. (See Fig.10)

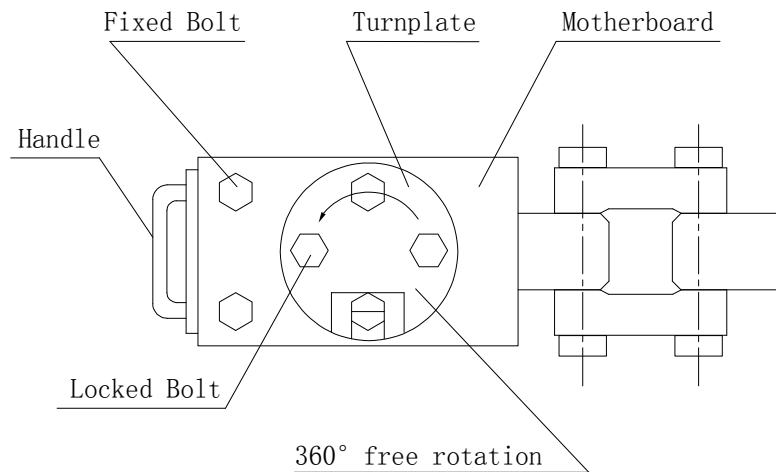


FIG.10

Experience shows that in order to achieve better polishing effects in stone decorative line and border processing, the grinding head spindle should be set an angle to the travel direction. Use a T-shape Allen wrench to loosen the 2 bolts shown in the diagram. Turn spindle motor baseplate by  $4^{\circ}$  to  $8^{\circ}$ , and then tighten it. (See FIG.11)

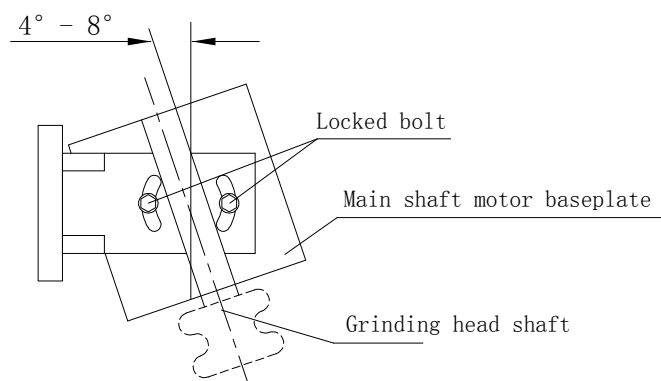


FIG.11

#### 4. Adjustment of transmission belt

in order to ensure steady and reliable spindle transmission, this machine uses synchronous tooth-shape belt transmission. If transmission is over-loose, loosen motor fixing bolts and then adjust regulating screws to achieve required degree of tightness of synchronous best. (See Fig .12)

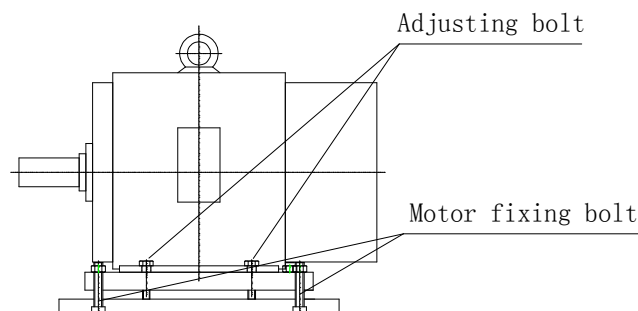


FIG.12

### 5. Fixing of flexible joint and others

When grinding and polishing straight line and decorative line, the 2 fixing bolts on the turntable baseplate are used to secure it to the horizontal drag plate. When grinding and polishing freehand curves, un-screw fixing bolts and hold handle with hand. Grinding head can be between 10 and 30; travel should not be used for polishing the rim of small holes. Instead the flexible head should be used directly, in conjunction with the horizontal drag plate. (See FIG.10)

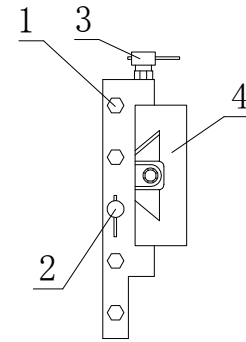


图 13

### 6. Locking of grinding head drag plate

(1) When processing decorative borders on stone products, the grinding head shaft should be in a vertical position. After adjusting the grinding wheel, the locking bolt (2) illustrated in FIG.13 should be tightened. In this way, ideal border-grinding results can be achieved.

(2) When processing plane decorative lines, the grinding head shaft should be in a horizontal position. In order to prevent aberrations in the shape of the decorative line, the locking bolt (3) illustrated in the figure on the right should be tightened. (See FIG.13)

## X. Selection of stone processing parameters

### a. selection of travel and grinding head speed

Operating mode		Grinding head		Travel speed	
		Fast rotation	Slow rotation	fast	slow
Marble	Shaping	★		★	
	Polishing		★		★
granite	Shaping	★			★
	Polishing		★		★
	drilling		★		

### b. operational status

mode	Auto traveling part	Manual extending links	Vertical grinding head	Horizontal grinding head
Processing object				
Straight-border line	★		★	
Straight decorative line	★			★
Inner curve border	★	★	★	
External curve border	★	★	★	
Small hole inner rim		★	★	
drilling			★	

c. selection of grinding tools and processing sequence

Grinding tools	Vacuum brazed wheel	Sintered wheel		Electroplated wheel	Polishing wheel			
		thick	thin		1#	2#	3#	4#
Processing object								
marble	1	coarse	fine	1		2	3	4
Granite(soft)	2		1	2	3	4	5	6
Granite(middle)	2	1		2	3	4	5	6
Granite(hard)	3	1	2	3	4	5	5	7

PC: Polishing wheel 1# green/2# red/3# yellow/4#white

d. processing wide decorative lines

(1)the maximum width of a decorative line grinding wheel is set at  $\leq 15$ cm. a wide decorative line is wider than 15cm, and should be processed in several separate stages.(FIG.14)

Example: decorative line with a span of 20cm may be processed using 2 grinding wheels. First step: use 14cm-wide grinding wheel to process left size.

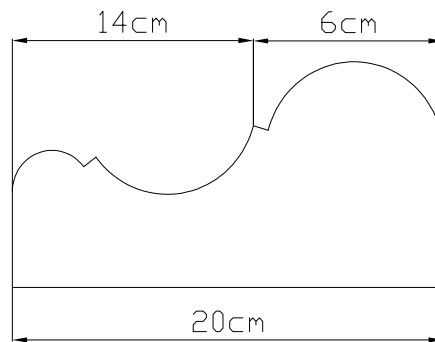


图 14

Second step: use 6cm-wide grinding wheel to process right side.

(2)Example: decorative line with a span of 60cm can be processed using separately 4 grinding wheels.(FIG.15)

First step: process left side (1)

Second step: process left side (2)

After processing the left half, turn the stone around.

Third step: process right side (3)

Fourth step: process right side (4)

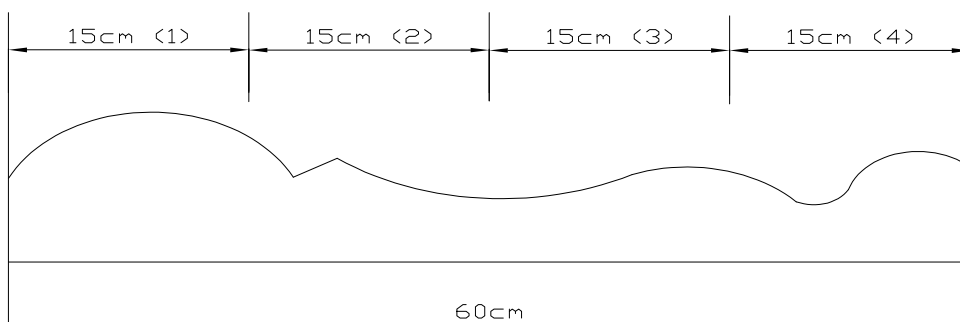


FIG.15

When motor is operational, numerical value of ammeter on operation box

should be observed. In normal working status, when voltage is 380V current (A) should be  $\leq 8A$ . at voltage of 220V, the current (A) should be  $\leq 10.4A$  the reading on the ammeter can reflect: a. the degree of grinding wheel grinding resistance, or b. the degree of sharpness the grinding wheel.

## **XI. Reshaping the polishing wheel**

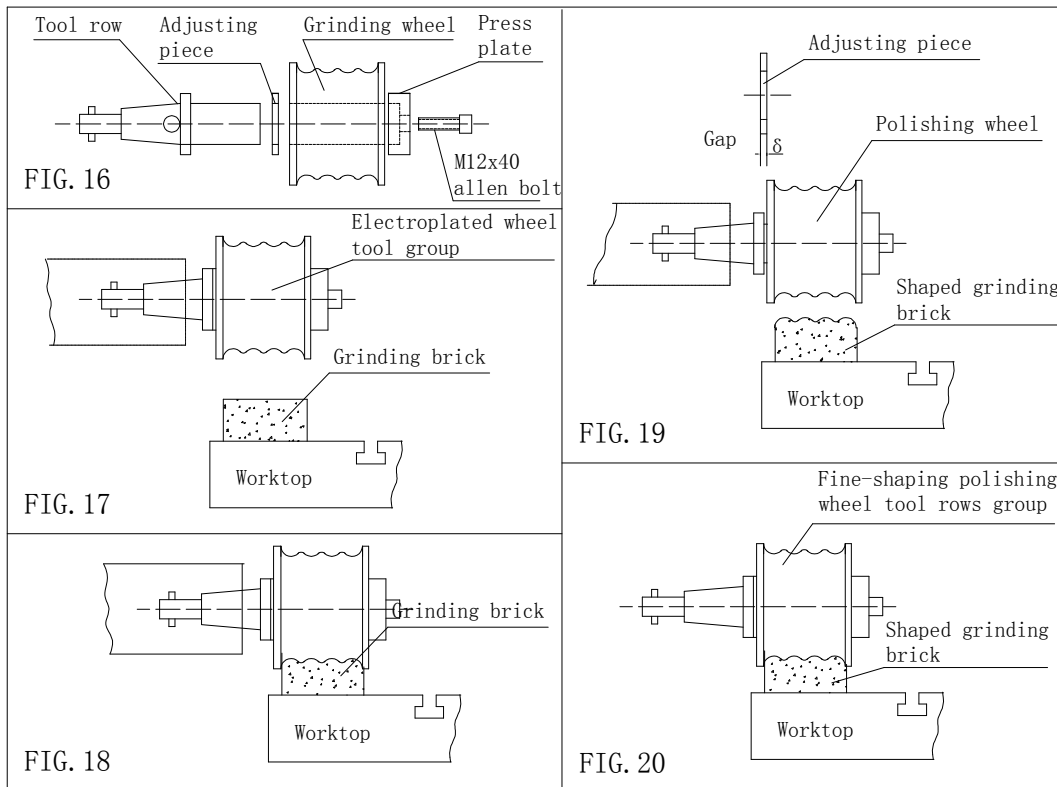
For schematic diagram of tool row grinding wheel assembly, see (FIG.16)

### **First step:**

1. First put 1cm-thick washer onto tool row and install electroplated wheel. Fit the tool row press plate, tighten the central allen bolt, and install on the grinding head shaft (fig.17)
2. fix is wide ceramic emery cutter grinding brick (36#/64#) onto worktop surface (fig.17)
3. Adjust vertical and horizontal hand wheel to align electroplated wheel with grinding brick.
4. Start machine and adjust vertical drag plate hand-wheel to grind grinding brick into shape.
5. After shaping, lock bolts on the horizontal drag plate. (Horizontal drag plate cannot now be moved).
6. Turn vertical drag plate hand-wheel to raise machine headpiece and take out electroplated wheel tool row assembly.

### **Second step:**

1. Install and secure the first tool row onto the grinding head shaft.
2. put 4# polishing wheel onto tool row shaft, but do not secure.
3. Adjust vertical drag plate hand wheel so that the 4#polishing wheel just touches the already shaped grinding brick.
4. At this point, use washers of various thicknesses to test the clearance between tool row piece and 4# polishing wheel and select the requisite number of washers needed to close the gap.
5. Adjust vertical drag plate hand wheel to raise machine headpiece, take out 4#polishing wheel and tool row, fit the selected washers and then re-install 4#polishing wheel. Replace tool row press platen, tighten central allen bolt, and install and secure on the grinding headpiece shaft.
6. Adjust vertical drag plate hand-wheel to align 4# polishing wheel with the grinding brick.
7. Start machine and adjust vertical drag plate hand wheel so that the shaping surface of the 4# polishing wheel is shaped by the surface of the grinding brick. For this process, rotation of grinding head should be set to a slow speed.
8. After accurate adjustment of shape, adjust vertical drag plate hand-wheel to raise machine headpiece and take out polishing wheel tool row assembly.



### Third step:

1. Fit 3# polishing wheel onto another tool row. Using the method outlined above fit the necessary washers and accurately shape and assemble the third (3#) polishing wheel tool row unit.
2. In the same way, shape 1# and 2# polishing wheel tool row assembly.  
Attention: shaping of polishing wheel tool row assembly must be done in sequence starting with 4# (the thinnest) and then 3#, 2# and 1#A Coarse wheel must not be shaped before a fine one.

### Forth step:

After making accurate adjustment of all polishing wheel tool rows, they can be put into assembly, and used to carry out batch processing of stone product decorative lines, if grinding and polishing borders are required, merely rotate the grinding head through  $90^\circ$ , so that it is perpendicular to the worktop surface. Also secure vertical drag plate bolts as shown in fig.11 on page 8. The steps for altering a complete set of polishing wheels are the same as those described above. (See FIG.13)

## XII.Maintenance

1. Before starting the machine, first check and ensure that all functional mechanisms of the machine and the various electrical parts are in good condition.
2. Set points for lubrication should be lubricated strictly as specified.
3. Regularly check that waterproof hood is in good condition. Strictly prevent water and sand from entering into the V-type guide.
4. After finishing use, clean the machine body, greases it with rustproof oil, smear oil on tool row taper handle, fill oil into spindle aperture for rust prevention and disconnect from the mains.

## **XII I .Points for attention**

1. it is strictly prohibited to operate the grinding wheel without water. The protective hood must be in place to prevent personal injury.
2. It is necessary to earth the machine so as to prevent electricity shock.
3. When changing grinding wheel, the grinding head must have completely stopped moving. Once it has, the grinding wheel may be assembled or disassembled using the hand wheel. After reassembling, take off the hand wheel. Check that the grinding wheel is firmly in place. The machine may then be started. A thin oil film should be maintained between grinding head spindle and tool row so as to prevent jamming. Grinding wheel should be removed at the end of each shift. Do not leave grinding wheel on the machine overnight to prevent rust, which may make future disassembly problematic.
4. While the grinding wheel is rotating, loosening the locking screw or nuts or making any adjustments is strictly prohibited.
5. When grinding and polishing comparatively wide decorative lines, attention should be paid the appropriate feed.
6. Electroplated grinding wheel is only able to grind marble and carry out finishing of shaped granite. It cannot be used for cutting granite into shape.
7. Untrained personnel must not operate this machine.
8. Non-operators should stand at least 5 meters from the machine.

## **XIV. Detailed list of machine rolling bearings**

No	Type	Type of bearing	dimension	quantity	remarks
1	Single-row centripetal ball bearing	180206	30*62*16	2	
2	Single-row centripetal ball bearing	180107	35*62*14	2	
3	Single-row centripetal ball bearing	80202	15*35*11	1	
4	Single-row centripetal ball bearing	180204	20*47*14	2	
5	Single-row thrust ball bearing	46107	35*62*14	2	
6	Single-row centripetal ball bearing	7205	25*52*15	4	
7	Single-row thrust ball bearing	8104	20*35*10	2	
8	Single-row thrust ball bearing	8105	25*47*15	2	
9	Single-row centripetal ball bearing	8103	17*35*10	2	

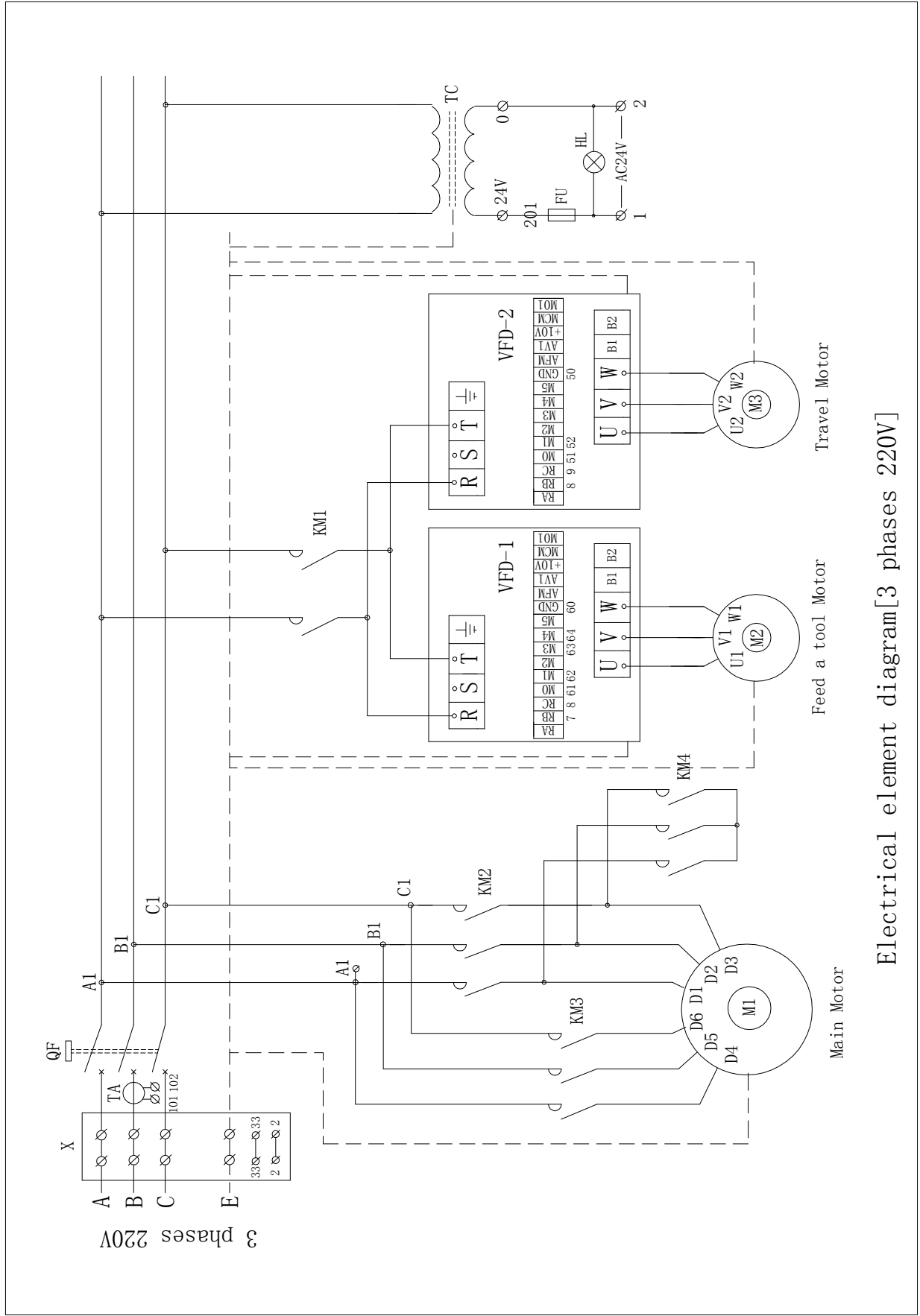
## **XV. Damageable parts**

No	Drawing No	Name	Material	Qty	Specification
1		Synchronous belt	Polyurethane or rubber	1	3*85*32
					3*85*30(export)
2		Flexible	QT50-5	1	
3	6-02-23	Fluctuating flexible	QT50-5	1	
4	7-06-04	landscape orientation flexible	QT50-5	1	

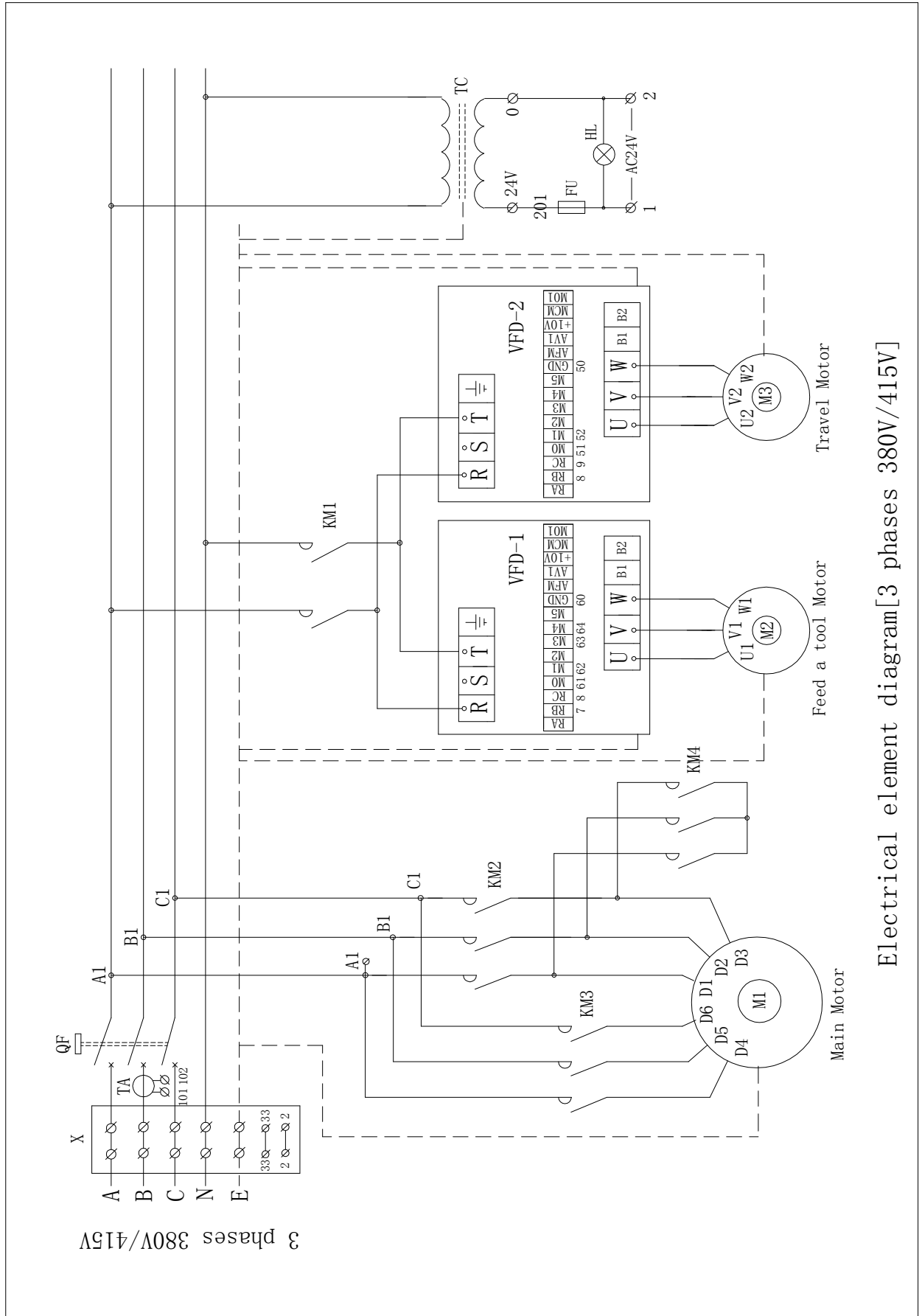
## XVI. Machine accessories

No	Name	Qty	Specifications	Remarks
1	Wide grinding wheel hood	1		Packed in accessories case
2	Narrow grinding wheel hood	1		Packed in accessories case
3	Idle allen wrench	1	14-17	Packed in accessories case
4	Idle allen wrench	1	17-19	Packed in accessories case
5	Idle allen wrench	1	27-29	Packed in accessories case
6	T-type allen wrench	1	10mm	Packed in accessories case
7	Allen wrench	1	4mm	Packed in accessories case
8	Allen wrench	1	5mm	Packed in accessories case
9	Allen wrench	1	6mm	Packed in accessories case
10	Allen wrench	1	8mm	Packed in accessories case
11	Tool row	12	1:8taper handle Ø30	Packed in accessories case
12	Drill clamping chuck tool row	1	1:8 taper handle	Packed in accessories case
13	Water-spray pipe	2		Packed in accessories case
14	Pressure bar	3		QT including screw and nut
15	Pressure bar	3		A3 including screw and nut
16	Synchronous belt	1	3*85*32	2 for overseas sales
17	Instruction manual	1		Packed in accessories case
18	Packing list	1		Packed in accessories case
19	Qualification certificate	1		Packed in accessories case

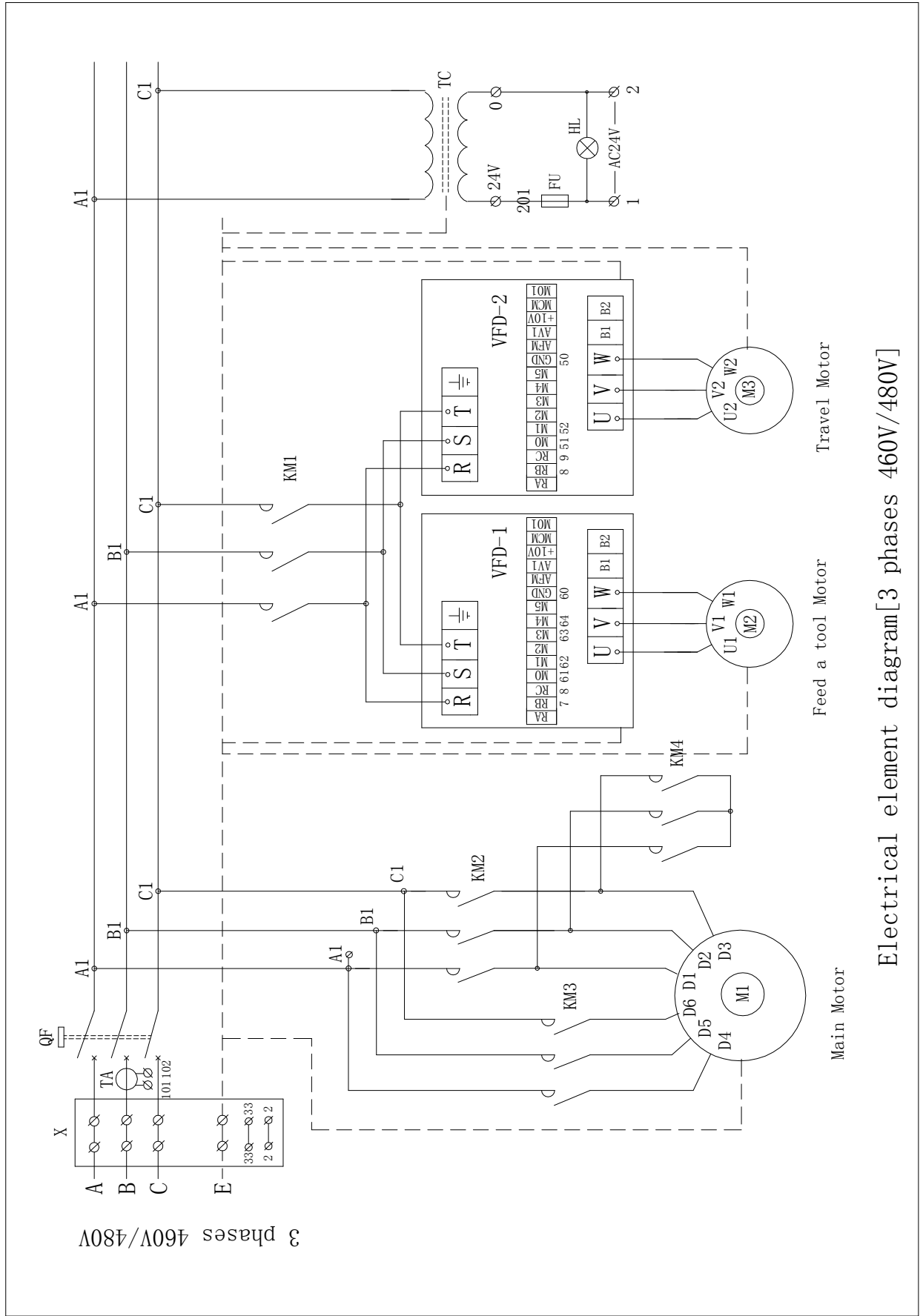
## XVII. Circuit diagram



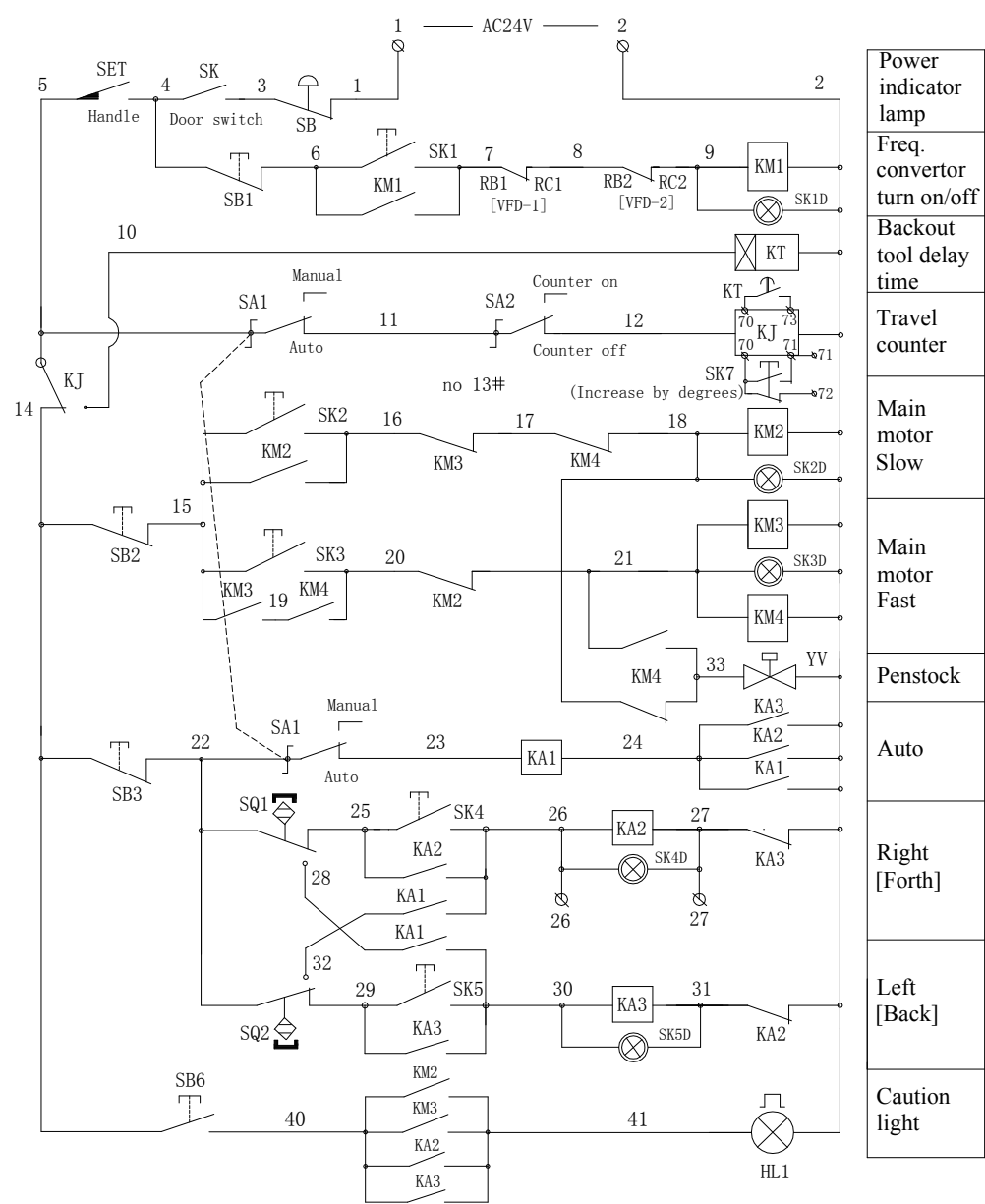
Electrical element diagram [3 phases 220V]



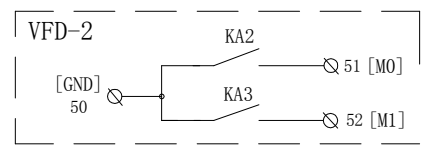
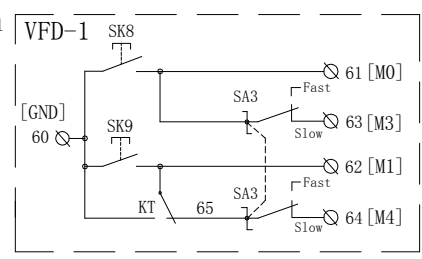
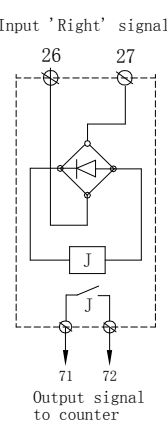
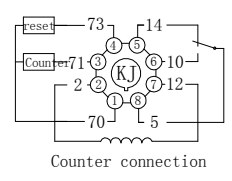
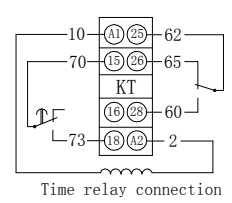
Electrical element diagram[3 phases 380V/415V]



Electrical element diagram[3 phases 460V/480V]



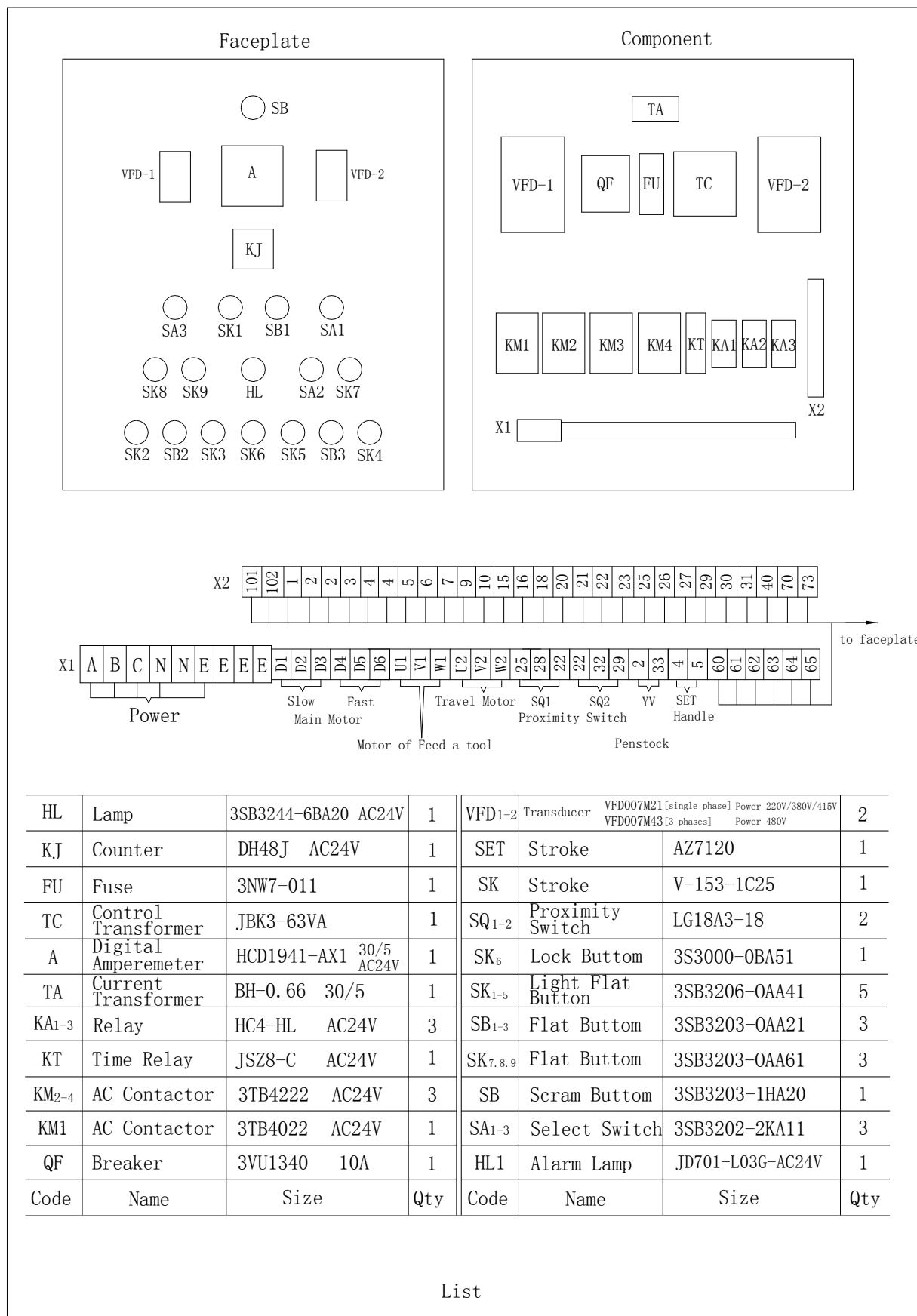
Power indicator lamp
Freq. converter turn on/off
Backout tool delay time
Travel counter
Main motor Slow
Main motor Fast
Penstock
Auto
Right [Forth]
Left [Back]
Caution light



Feed a tool motor
Fast, Forth
Slow, Forth
Fast, Back
Slow, Back

Travel motor
Right
Left

Control Diagram

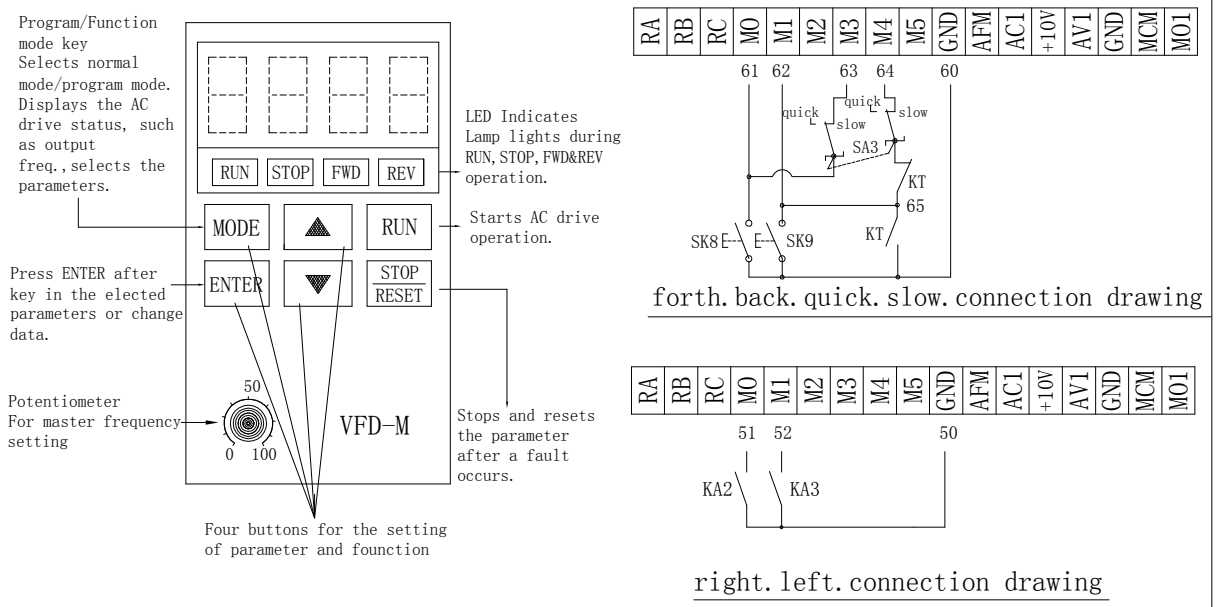


List

VFD007M21A-  
VFD007M43B- Transducer timing function enactment

	No.	Function	Functional description	Forth transducer (VFD-1)		Travel transducer (VFD-2)		
				Para-meter	Set point	Para-meter	Set point	
基本参数设定	1	way of freq. control	Frequency is controlled by the potentiometer	P-00	04	P-00	04	
	2	Way of running control	Be controlled by inputting signal from the terminal [M3] and [M4]	P-01	02	P-01	02	
	3	The tiptop operation freq.	According to motor rating freq.(Hz)	P-03	50	P-03	50	
	4	The tiptop power freq.	According to motor rating freq.(Hz)	P-04	50 60	P-04	50 60	
	5	Rise speedup time	The motor reach the highest freq. in range time	P-10	1.5	P-10	1.5	
	6	Fall speedup time	The motor reach the lowest freq. in range time	P-11	1	P-11	1	
	7	Highest output freq.	Set the working by adjusting POT highest	P-36	50	P-36	50	
	8	Lowest output freq.	Set the working by adjusting POT lowest	P-37	10	P-37	10	
	9	The first speed freq.	[M3] terminal-forth freq.	P-17	10			
	10	The second speed freq.	[M4] terminal-back freq.	P-18	10			
			The highest output voltage	According to the rated voltage of machine.	P-05	<380	P-05	<380

Notice: 1. All the parameters have been set. Please don't try to change them, except the potentiometer which is used for changing the speed of motor.  
2. Pay attention to the transducer power input.  
3. Forbid setting parameters when the machine is working.



The table of transducer timing function enactment

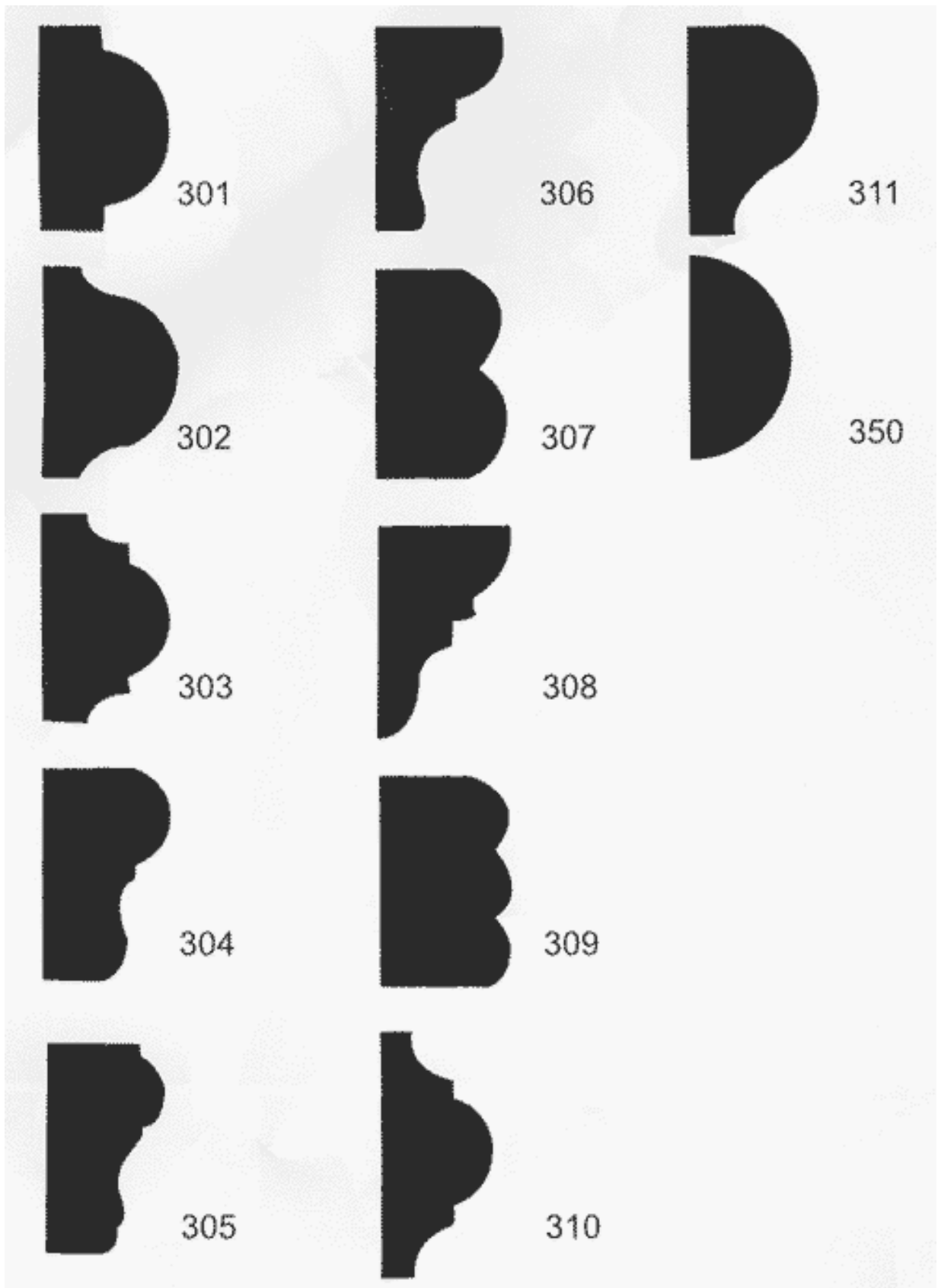
## 20mm Stone Shape

# DESIGN

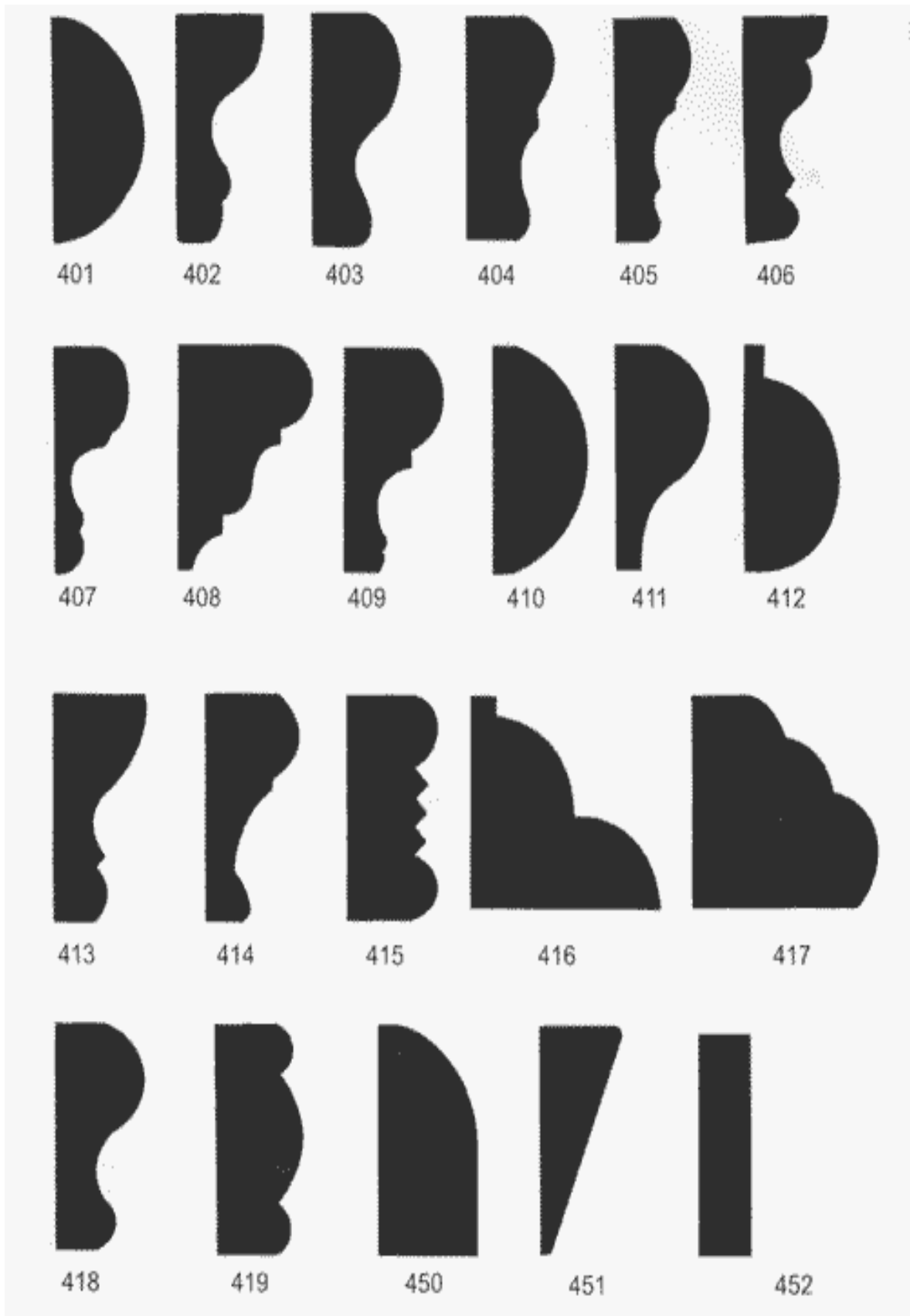


# SPECIAL DESIGN AVAILABLE

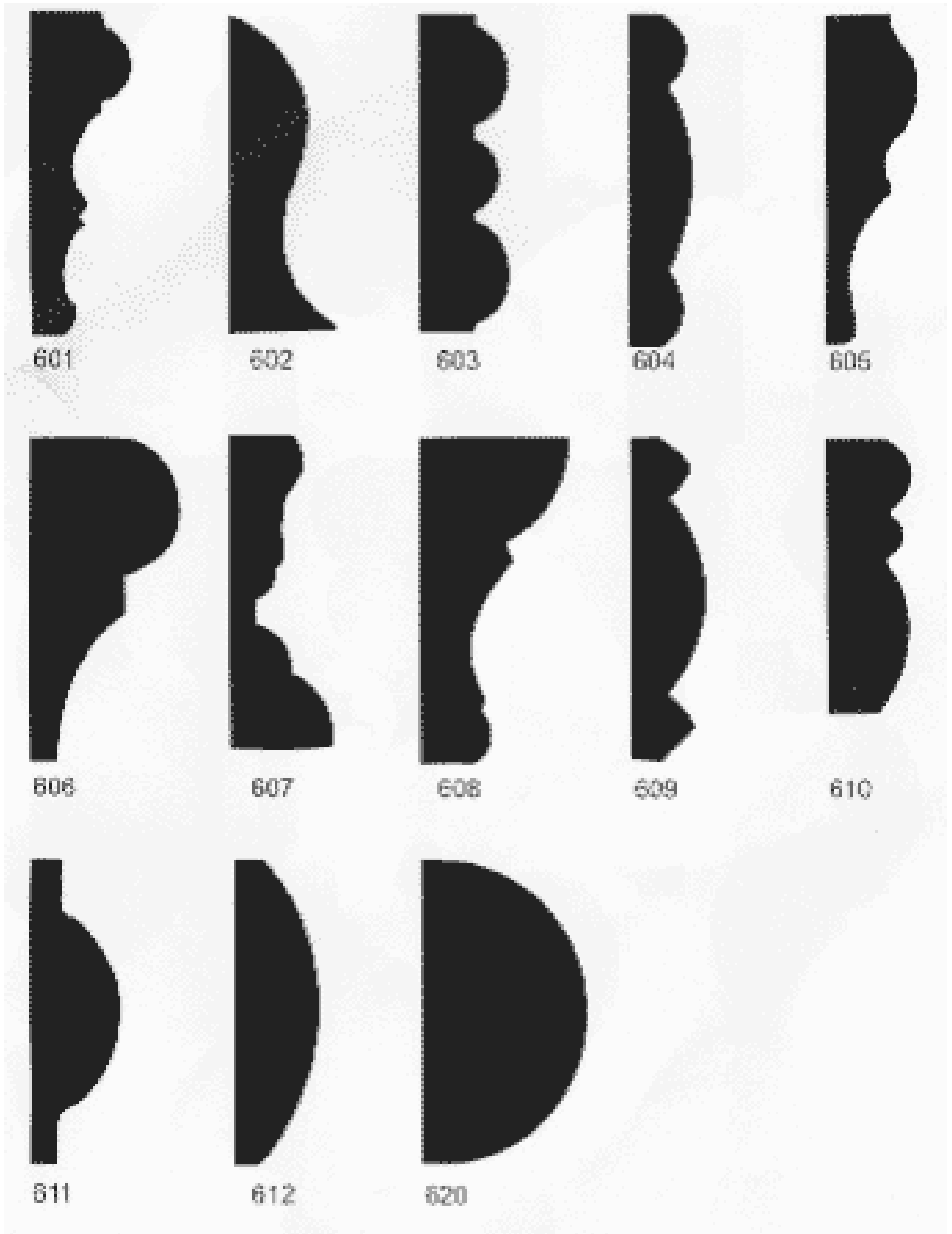
## 30mm Stone Shape



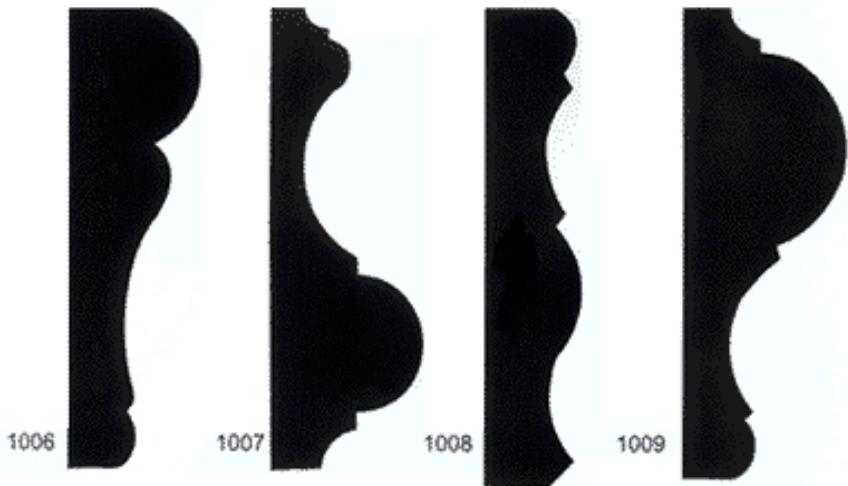
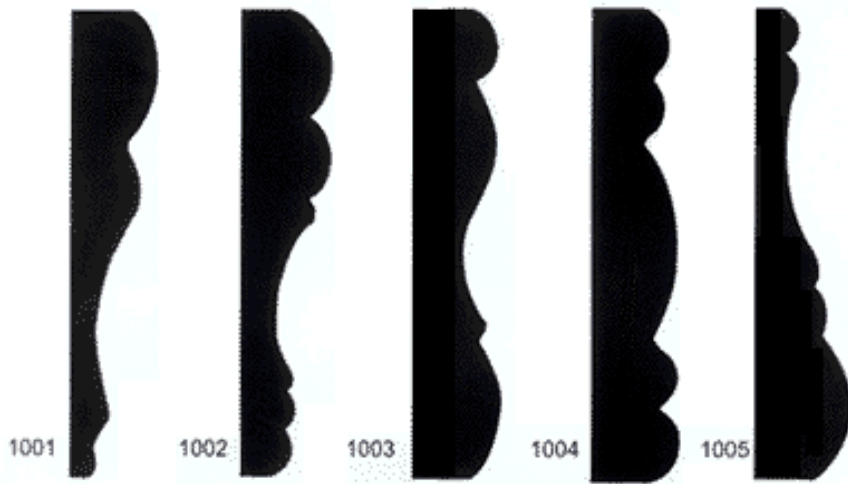
## 40mm Stone Shape



## 60mm Stone Shape



# 100mm Stone Shape



# 120mm –140mm Stone Shape

