GHD-35PFV

DRILL PRESS

Original:
GB
Operating Instructions

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Contents

Dear end-user,

Thank you very much for choosing our products. Please let us have the model of your machine, series number, as well as the name, address and correspondence method of your company in order to facilitate us to let you have a good service.

Important notice:

1. Please immediately contact your dealer in case the machine, accessories or documents are not in conformity with those indicated in the packing list after the machine package is opened.

2. Please carefully read this Operation Manual particularly the electric part of the documents before installation, testing and running the machine.

3. Removing grease on the machine (particularly on the column) and checking lubrication oil in each place is well filled. Before use machine, please kindly use diesel oil or gasoline to clean the antirust on the column. Running the machine without lubrication oil is strictly forbidden. Lubrication of the machine as per the stipulation of this documents is required.

4. Ground wire of the machine shall be well connected. When test running, push jog button in slow spindle speed to check if direction of spindle revolution is correct.

5. Machine must be stopped if spindle speed or feed rate change is necessary for the spindle speed is available frequency timing.

6. Please check if cutting tool or work piece is well clamped before machining

7. The red mushroom push button located in front of the spindle box is an emergence push button for emergency purpose and stopped the machine. Familiar with its position and its use are necessary.

8. Professional electric service engineer is required for electric maintenance.

9. The machine must be stopped when you need removing away the cutting material around the drill. Moving the cutting material by hand or by hook is definitely forbidden.

10. Correct use and daily maintenance of the machine are required in order to keep machine accuracy and its lifetime in long time.

11. We will much appreciate if you could salve some problems of the machine.
    In order to facilitate us for the service, please let us know the details regarding the places and phenomenon of the troubles if you could not solve problems.

1. **Main use and features of the machine:**

GHD-35PFV vertical drilling machines are our new products designed and developed by our-self based on our accumulated experience in so many years in this field. It is a light, column type, superior quality and high efficiency machine vertical drilling machine. It is really a multi-function universal machine which could be widely used for small and middle sizes of work pieces for drilling, spot facing, reaming, tapping etc. Besides, some machine tool accessories could also be used on this machine. The machines are suitable for the machining workshop, maintenance workshop and production line etc.

Features:

1.1 Good in appearance, easy in operation, convenience in maintenance and well consideration in safety protection

1.2 "Lenze" transducer spindle speed stepless, gear dispatch, configuration compact, convenient timing, low voice, high transmission efficiency.

1.3 The spindle features good rigidity and good wear resisting and equipped withtool disassembly and balancing device.

1.4 The worktable and spindle box could be turned round the column center line or worktable center line itself or horizontal shaft centerline by manual and could be moving up and down by manual or automatically.

1.5 Spindle feed both in mechanical and in electrical with micro feed structure is available in this series machines.

1.6 Main operation levers and push buttons could be reached easily that makes you comfortable when you operate the machine.

1.7 Superior quality material with special treatment for the wear-resisting purpose has been used parts such as gears, worm and worm shaft, rack, lead screw etc as well as for some key parts like spindle and spindle quill.

1.8A safety protection guard under the spindle box is available as it is not only prevent coolant splash while cutting but also could observe the machining status.
The guard is interlocked with the spindle, so when the guard is opened, the spindle could not be running until the protection guard keeps his position.

2. Main technical data:

2.1 Main technical data

No.	Name of the items	Unit	Data
1	Max. drilling diameter (steel)	mm	35
2	Max. taping diameter (steel)	mm	M22
3	Distance between spindle center line to the center line of column	mm	280
4	Max. distance between spindle end to the surface of the worktable	mm	700
5	Max. distance between spindle end to the worktable surface of the base	mm	1260
6	Max. stroke of the spindle	mm	155
7	Spindle taper	Morse	MT4
8	Spindle speed range	r/min	65-460,460-3250
9	Feed steps of the spindle	Step	3
10	Feed range of the spindle	mm/r	0.1,0.2,0.3,
11	Max travel of spindle box	mm	285
12	Max. stroke of worktable and its bracket	mm	490
13	Rotation degree of spindle box in horizontal axes	degree	±45°
14	Working area of the worktable (L x W)	mm	500×420
15	Working area of the worktable of the base (L x W)	mm	370×360
16	Numbers and width of the T slots for worktable of base	mm	2-T14、2-T14
17	Diameter of column	mm	ϕ120
18	Power and speed of the main motor	kW, rpm	1.5 ; 1440/2880
19	Power and flow rate of the coolant pump motor	kW, L/min	0.18/6
20	Machine dimension (L x W x H)	mm	930×555×2260
21	Net weight of the machine (Net weight)	Kg	550

2.2 For the machine appearance and its main technical data, see diagram 1.

3. Brief description of the driving system and its structure:

The machine consists of spindle box, column, machine base, worktable and its bracket, electric cabinet, coolant device and machine accessories, total seven component parts. Spindle revolution is main motion of the machine. During drilling processing, spindle movement along with its axis is a feed motion, spindle box、Worktable up and down movement and worktable turn round itself is an auxiliary motion. To those big or higher work piece that could be clamped on the worktable of the base. The worktable and its bracket should turn round the column to a proper area far away from the machining area.

Two separately vertical motors realize machine transmission. A special pump supplies coolant water.

Transducer control frequency conversion and realize stepless timing. Two speed segment are made by slippage gear. Operation lever for slippage and frequency button are located in the front of box, the lever has an idle position.

The feed rate of speed change could be realized by shifting lever，control one group slippage gears realize three kinds of feed.

Up and down movement of the worktable and spindle is completed by manual. Of cause, little adjustment for the height of the worktable could also be made by manual.

Two kinds of lubrication, auto or manual, of the machine are available.

Please refer to the diagram 2 for the transmission system of the machine.

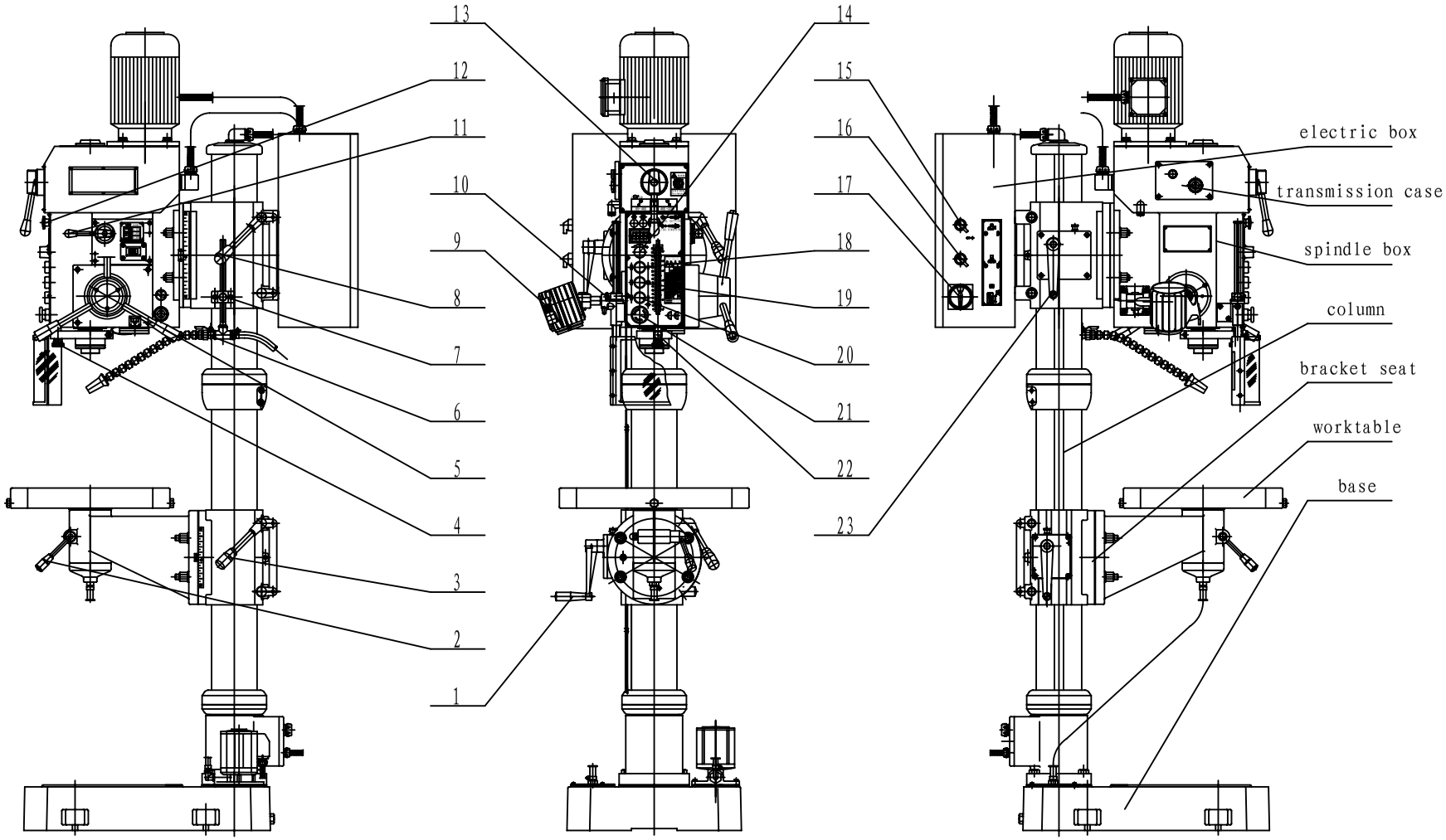
For the gear, worm and worm shaft, rack and pinion etc, please see table 1.

For the details of roller bears to be used on the machine, please refer to the diagram 3 and for a list of roller bears, please refer to the table 2.

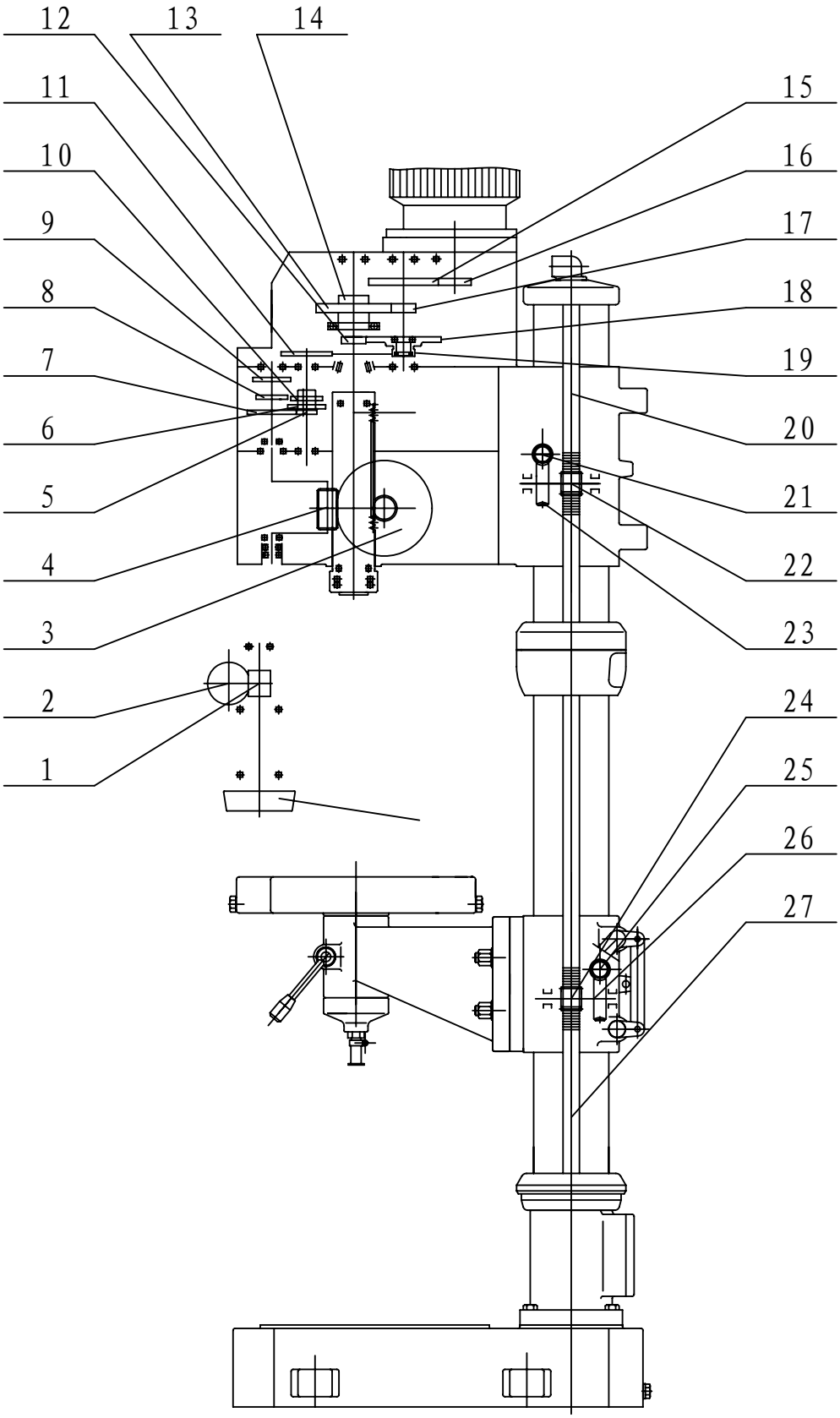
4. Electrical system

4.1 Brief description

The machine with foreign advanced singlechip and superior quality electric element is controlled by electric system, the software system not only realize all kinds movement control, but also has many protective function with catenation, the capability of this system is very good, and the movement of this system is jarless and reliable. The move and stop of the main motor function are used by electric circuitry, and it improved the arrury of machine’s drilling.



drawing 1 picture of appearance of machine



drawing 2 picture of transmission

4.1 **list of gear, worm wheel, worm and rack**

table（1）

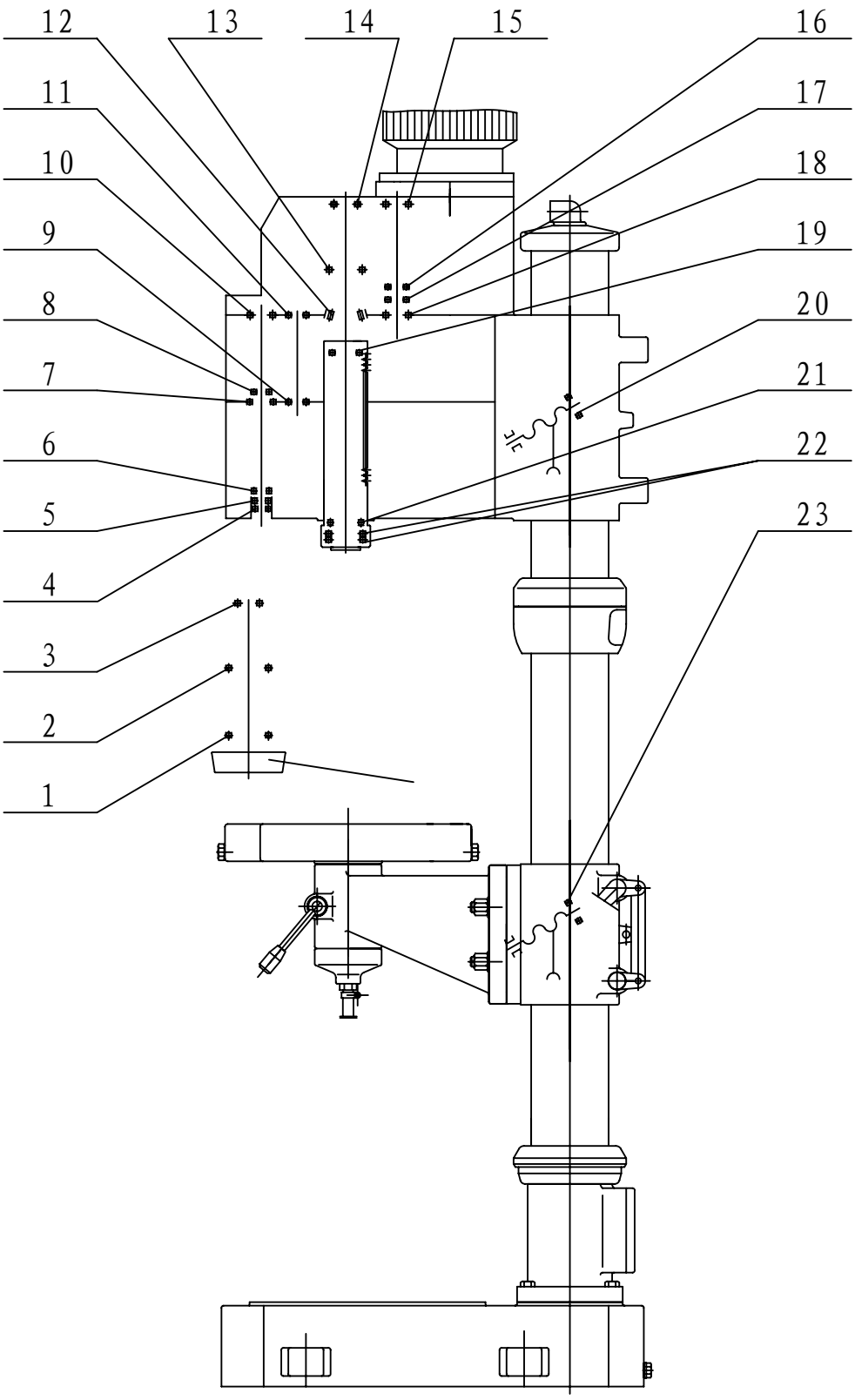
Number on the drawing	1	2	3	4	5	6	7
Part drawing NO.	GHD35PFV-1-195	GHD35PFV-1-020	GHD35PFV-1-199	GHD35PFV-1-152	GHD35PFV-1-127	GHD35PFV-1-128	GHD35PFV-1-163
Number of teeth and starts	13	25	60	1	20	37	48
Module	2.5	2.5	2	2	1.5	1.5	1.5
Direction of helical angle			4° 23’55” left	4° 23’55” left			
Class of Accuracy	8-7-7	8	8	9	8	8	8
Material	45	40Cr	QT400	45	45	45	45
Heat treatment and hardness	G42	HV500		T235	G42	G42	G42
Number on the drawing	8	9	10	11	12	13	14
Part drawing NO.	GHD35PFV-1-164	GHD35PFV-1-165	GHD35PFV-1-129	GHD35PFV-1-136	GHD35PFV-1-031	GHD35PFV-1-036	GHD35PFV-1-037
Number of teeth and starts	31	37	31	50	18	55	22
Module	1.5	1.5	1.5	1.5	2	2	2
Direction of helical angle							
Class of Accuracy	8	8	8	8	8	7-6-6	7-6-6
Material	45	45	45	45	45	40Cr	40Cr
Heat treatment and hardness	G42	G42	G42	G42	G48	G52	G52

4.1 **list of gear, worm wheel, worm and rack**

table（1）

Number on the drawing	15	16	17	18	19	20	21
Part drawing NO.	GHD35PFV-1-087	GHD35PFV-1-096	GHD35PFV-1-086	GHD35PFV-1-082	GHD35PFV-1-	GHD35PFV-2-031	GHD35PFV-1-103
Number of teeth and starts	51	24	18	55	22	40	1
Module	2	2	2	2	1.5	2.5	2
Direction of helical angle							4° 23’55”
Class of Accuracy	7-6-6	7-6-6	7-6-6	8	8	9	9
Material	40Cr	40Cr	40Cr	40Cr	40Cr	45	45
Heat treatment and hardness	G52	G52	G52	G48	G48	T235	T235

Number on the drawing	22	23	24	25	26	27	28
Part drawing NO.	GHD35PFV-1-108	GHD35PFV-1-106	GHD35PFV-2-061	GHD35PFV-2-065	GHD35PFV-2-063	GHD35PFV-2-030	GHD35PFV-2-065
Number of teeth and starts	12	30	12	1	1	70	1
Module	2.5	2	2.5	1.5	1.5	2.5	1.5
Direction of helical angle		4° 23’55” right		4° 17’20” left	4° 17’20” left		4° 17’20” left
Class of Accuracy	9	9	9	9	9	9	9
Material	45	45	45	45	45	45	45
Heat treatment and hardness	T235	T235	T235	C42	T235	T235	C42

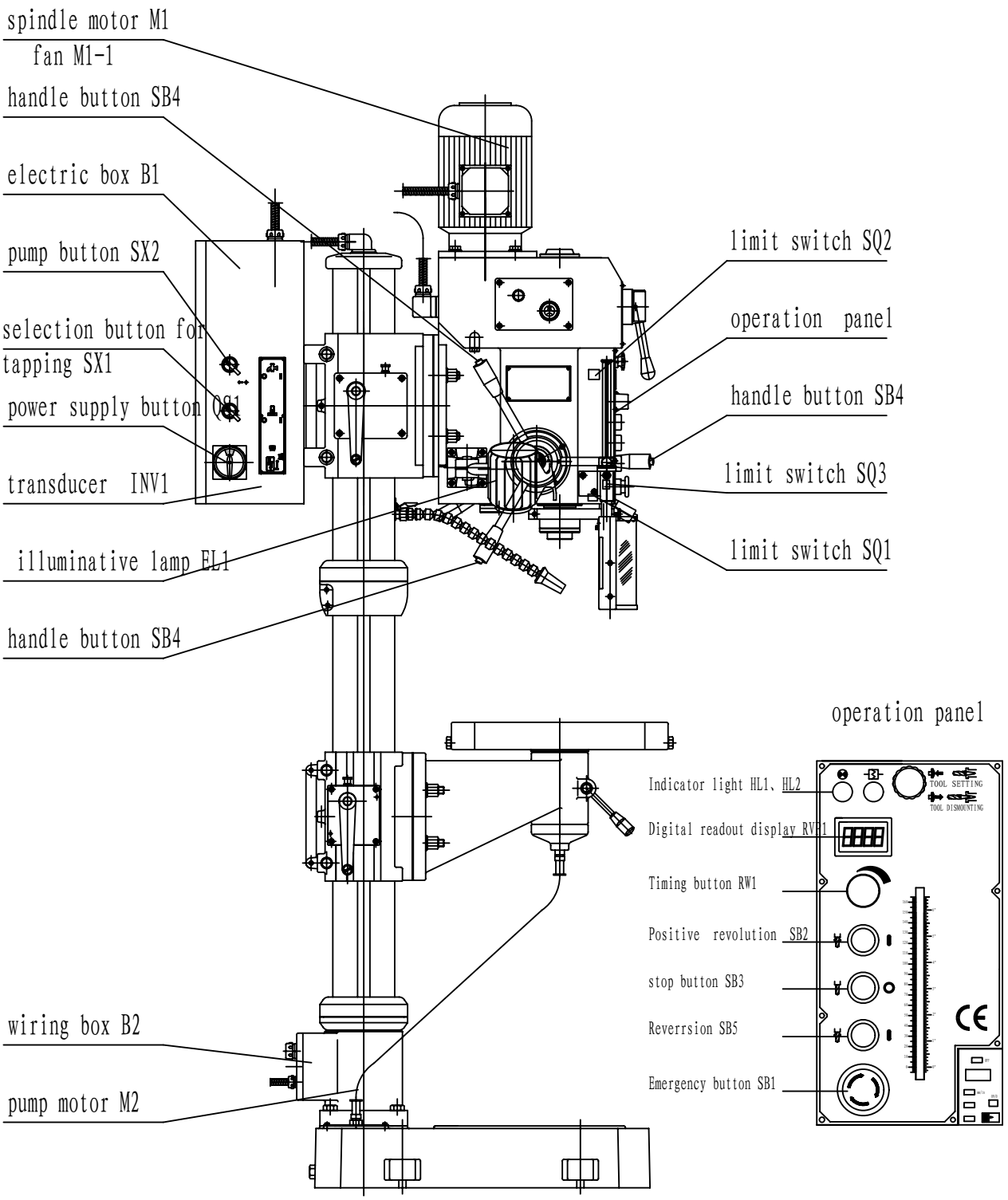


drawing 3 picture of rolling bearing

Roller bearing table

Table (2)

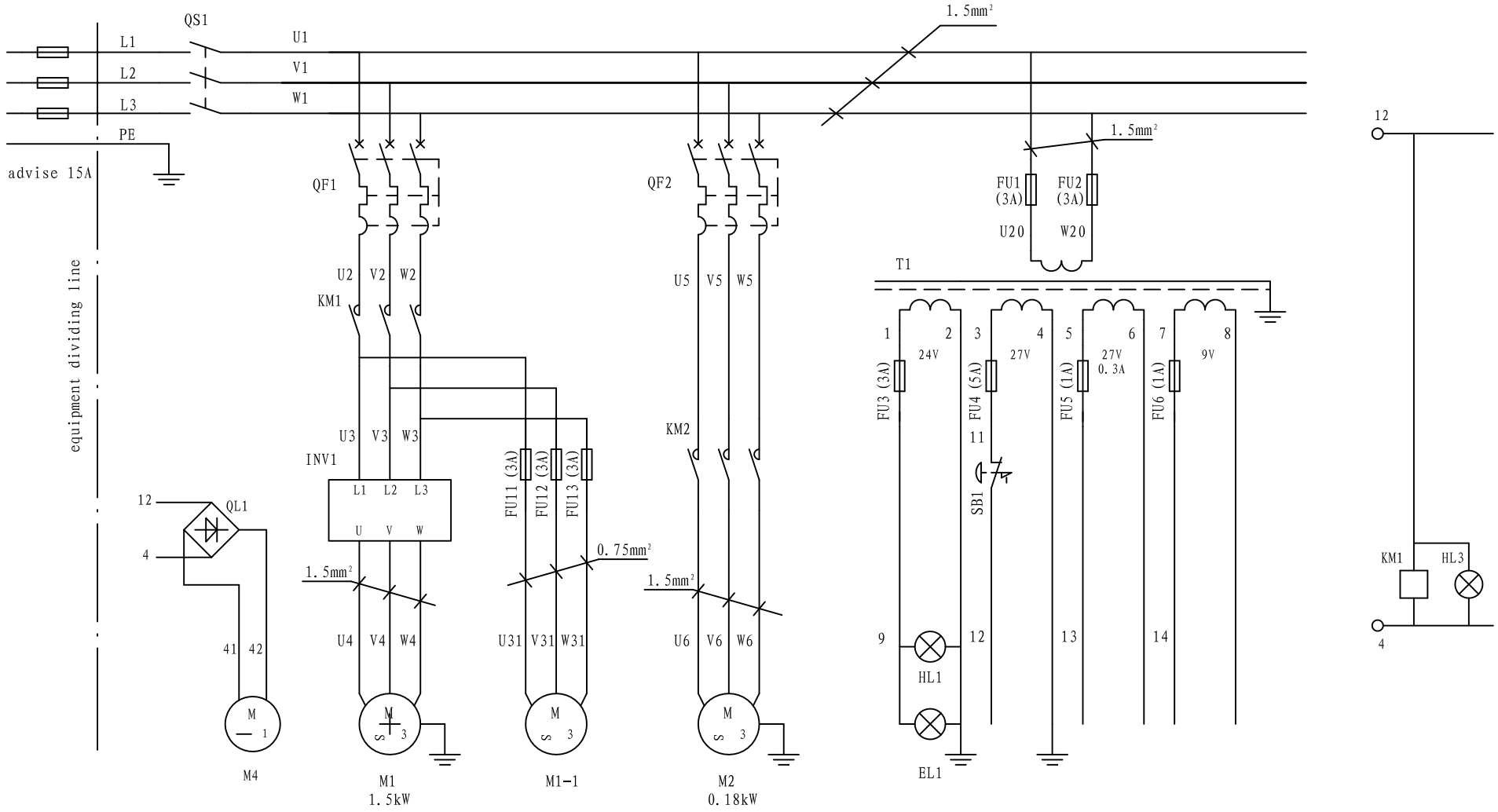
No.	Model	Name	Specification	Q'ty	Accuracy
1	1180909K；GB276	Deep racing ball bearing	45×68×12	1	
2	7000108；GB276	Deep racing ball bearing	40×68×9	1	
3	180104K；GB276	Deep racing ball bearing	20×42×12	1	
4	180101K；GB276	Deep racing ball bearing	12×28×8	1	
5	8101；GB301	Thrust ball bearing	12×26×9	1	
6	8102；GB301	Thrust ball bearing	15×28×9	1	
7	1180905K；GB276	Deep racing ball bearing	25×42×9	1	
8	1180902K；GB276	Deep racing ball bearing	15×28×7	1	
9	150202；GB277	Deep racing ball bearing with stop moving racing outside	15×35×11	1	D
10	180302K；GB276	Deep racing ball bearing	15×42×13	1	D
11	180302K；GB276	Deep racing ball bearing	15×42×13	1	
12	2007106；GB297	Tapered roller bearing	30×55×17	1	
13	7000109；GB276	Deep racing ball bearing	35×75×10	1	
14	150204；GB277	Deep racing ball bearing with stop moving racing outside	20×47×14	1	
15	180303K；GB276	Deep racing ball bearing	17×47×14	1	
16	7000103；GB276	Deep racing ball bearing	17×25×8	1	
17	1180803K；GB276	Deep racing ball bearing	17×26×5	1	
18	180203K；GB276	Deep racing ball bearing	17×40×12	1	
19	D100906；GB276	Deep racing ball bearing	30×47×9	1	
20	8103；GB301	Tapered roller bearing	17×30×9	1	
21	8107；GB301	Thrust ball bearing	35×52×12	1	
22	D7000107；GB276	Deep racing ball bearing	35×62×9	2	
23	8102；GB301	Thrust ball bearing	17×28×9	1	



drawing 4 picture of electrical element

total power supply	total switch / transducer coolant	splind motor	motor coolant	pump motor	power supply: illumination	power supply: control	Transducer power supply

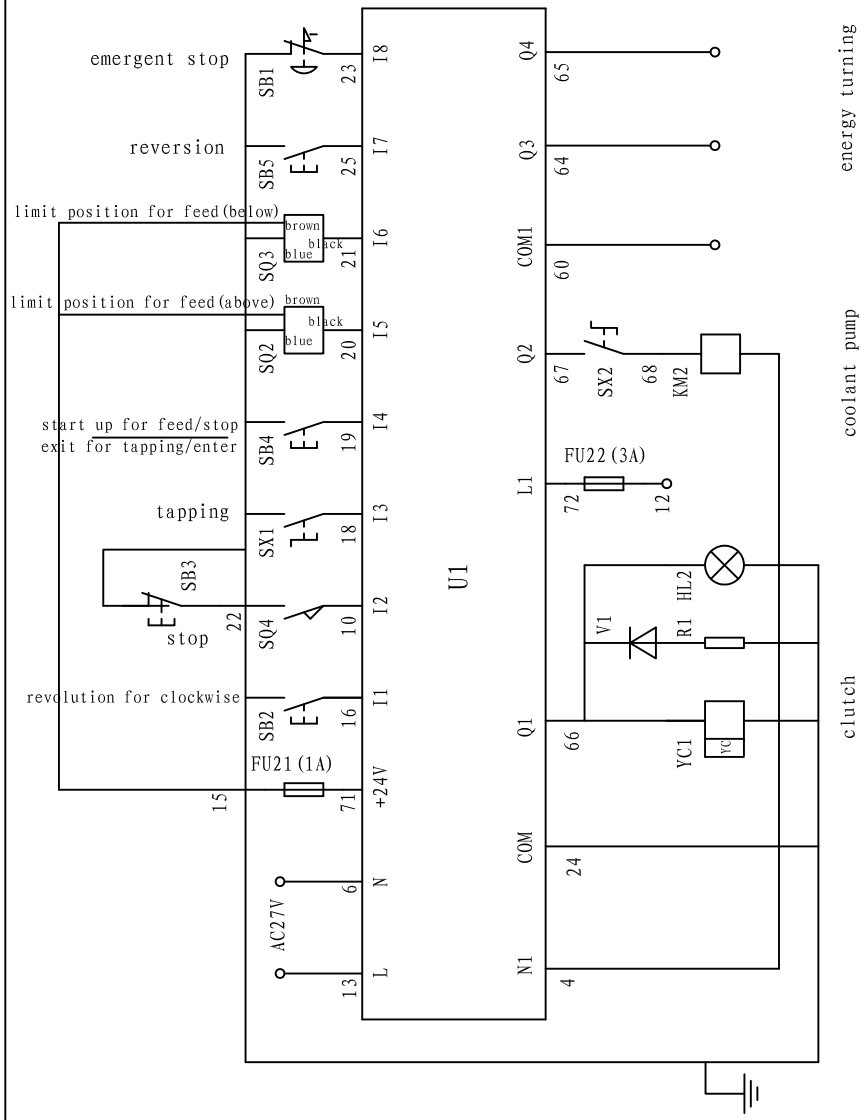
3φ AC400V 50Hz



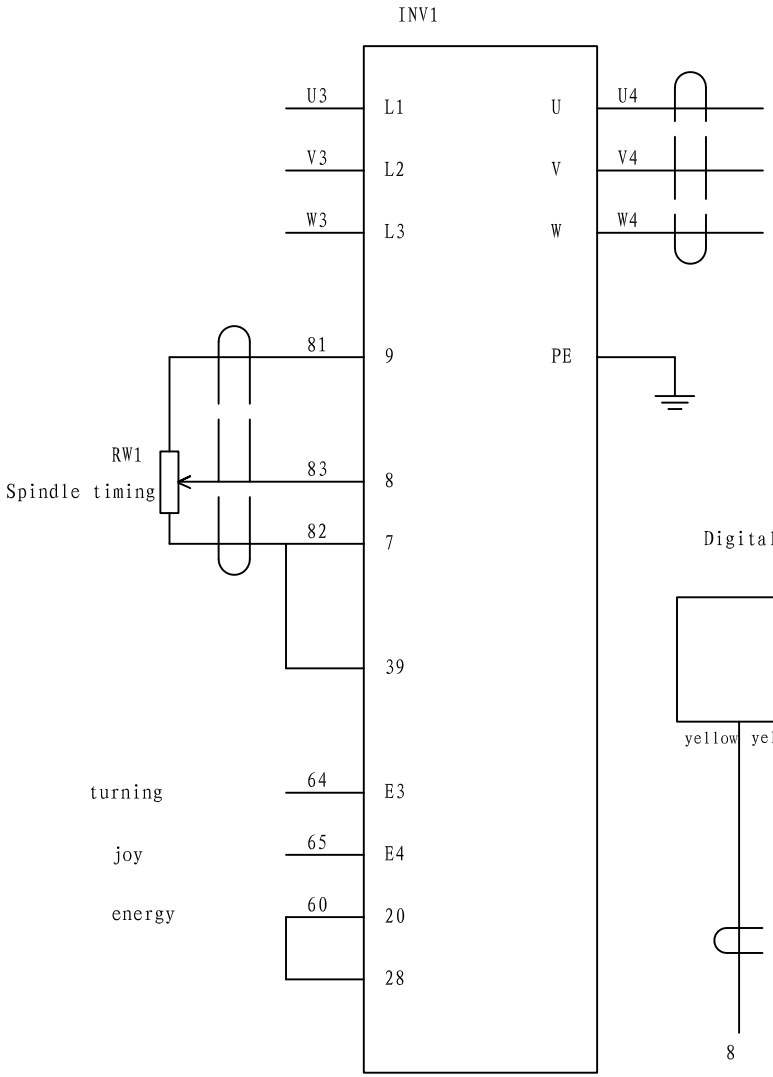
Attention: The diameter of the line without indicating is 0.75mm².

drawing 5-1 picture of electric elements

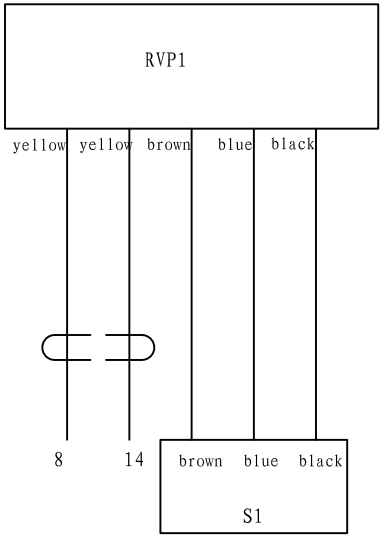
WJ1-8/4F wiring diagram



transducer wiring drawing



Digital display wiring drawing



Attention: The diameter of the line without indicating is 0.75mm^2.

drawing 5-2 picture of electric elements of machine

4.2 Explanation of the circuit

When using the machine, breaker QF1,QF2， which positioned electric box B1(drawing 4,5) must be closed, it can be opened when examined and repaired. The two breakers separately protect short circuit、over loading and short phase of spindle motor and pump motor .When close the chief switch QS1, the system is entering working state and the single lamp HL1 light up ,when break the chief electric source, the lamp crush out and working stopped.

4.3 Tapping operation:

Electric Element for the tapping control mainly transducer INV1 and contactors KM1, selection switch SX1 and limit switches SQ2 and SQ3 for tapping depth control. Put the selection switch SX1 into the "1"("0"is for hole drilling only),arrange the spindle revolution in clockwise direction KM1 engaged), put the spindle manual operation lever in down position until touches work piece, tapping job noe is starting. When required depth is reached , the limit switch SQ3 works, the spindle immediately runs in counter clockwise direction , the tap returns out of the work piece, when spindle returns to the up highest position ,the limit switch SQ2 works, spindle runs in clockwise direction, now one tapping job is finished. If tapping stop is required, push the button (SB4) on the lever end , the spindle motor will immediately run in count clockwise direction, that's all. If the selection switch SX1 is in the "0"position, normal drilling work starts.

Attention: As the spindle motor works frequently during tapping, the motor will be hot quickly ,so the tapping job could not be down for a long time, eight times of tapping per minutes maximum is recommended as the motor needs cool when it is hot otherwise it will be burned.

4.4 Auto feed operation:

When auto feed , moving spindle down 5-6mm, press a push button at the end of either one of the three levers, now feed clutch is engaged and indicator HL2 on the panel is lighted auto feed job is started. When required drilling depth is reached, the limited switch will be pressed, then spindle returns automatically. Press the push button of the lever once again, auto feed will be stopped and the spindle will return back to the original place.

4.5 Emergency stop operation:

If emergency stop is necessary during operation, press emergency push button SB1 that makes the loss of electric power of the contactor KM1,so the machine is completely stopped .After eliminating the breakdown ,release the lock of the push button then restart the machine.

4.6 Coolant pump

Revolving the switch(SX2)of coolant pump right, then the coolant pump is moving and working with the spindle. When the spindle stopped, the coolant pump stopped too.

4.7 Installation of the main motor:

Insert the key of the main motor into the slot position of the spline shaft then fixed by 4-M10×35 hex screw bolts.

Connect three phases and one ground wires to the power supply as per the electrical diagram (5) of the machine.(please note the direction of main revolving).

4.8 Sheet metal guard:

The sheet metal guard of this machine has a safety protection function, when it is opened

The spindle can't working, until it is closed when the spindle is working now, it immediately stopped if The sheet metal guard is opened.

4.9 Maintenance of the electric equipment:

Turn off the electric power before maintenance of the electric equipment starts. The electric equipment must keep on clean condition. Therefore, regularly cleaning is necessary. However, liquid such as kerosene, gasoline and detergent etc.is not be allowed for the cleaning. Wave of power supply shall not be over ±5% required by the electric motor. Maintenance of electric equipment is absolutely important in order to keep machine works well.

Electric components list:

Table (3)

Code of elements	Name	Specification	Q'ty	Remark
QF1	Breaker	DZ108-2.5/4A	1	
QF2	Breaker	DZ108-0.4/0.63A	1	
QS1	Instruction switch	JCH13-20	1	
SB1	Emergency stop button	CE4T-10R-02	1	
SB2,5	Push button	CP1-10G-10	2	
SB3	Push button	CP1-10R-01	1	
SB4	Push button	Homemade	1	
SX1,2	Selection push button	C2SS2-10B-10	2	
SQ2,SQ3	Adjacent switch	TL-Q5MC1	2	
KM1,KM2	Contactor	AS12-30-01-20(AC24V)	2	
HL1,HL2	Single lamp	AD17-16AC24V	2	
EL1	Illuminating light	25W AC24V	1	
T1	Transformer	JBK5-160TH,400/24,27,27,9	1	
R1	Resistor	RT 2W62Ω	1	
V1	Diode	IN5404	1	
U1	Control panel	WJ1-8/4F	1	
QL1	Bridge wiring	QL5A200V	1	
RVP1,S1	Tachometer	RSD-27	1	
INV1	Transducer	E82EV152-4C	1	
RW1	Position device, knob	WTH-1.1K,KYZ32-16-6J	Each 1	
SQ4	Door switch	JWM6-11A	1	

5. **Lubrication and coolant system:**

5.1 Lubrication system:

Parts and bearings inside of the spindle box are all automatically lubricated. Oil level shall be a little bit higher than the centerline of the oil window when you fill lubrication oil. Too much oil filling will cause overflowing.
For lubrication places and its requirements by manual. Please refer to the diagram 6

5.2 Coolant system:

A special pump will supply coolant both for tool cutter and for work piece during machining. Coolant liquid is stored in a compartment located at the backside of the machine base. Flow rate of the coolant could be adjusted by a ball valve. Regularly washing for the coolant system is necessary and coolant water shall be exchanged as per actual condition.

5 Hoisting and installation:

6.1 Hoisting:

The machine is strongly fixed inside of the crate. When hoisting the machine, please pay close attention to the sign outside of the crate (where the wire cable shall be placed and where the gravity center is).
The crate must not be reversed or inclined and must not be strongly stroked when lift up the machine.
Considering small size of the bottom and higher size of the height of the machine package, therefore, moving the machine by roller is forbidden. Lifting by a crane or by forklift is recommended.

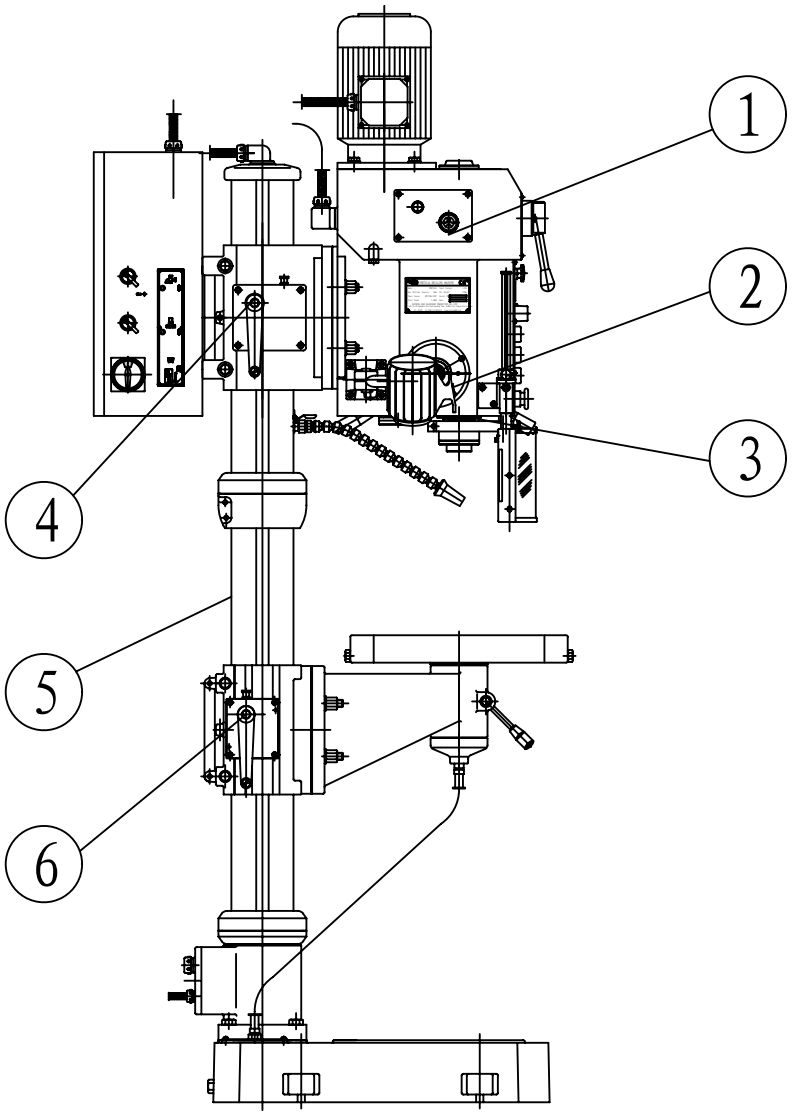
Please refer to the diagram 7 for the machine lifting. A soft pad between machine and wire cable is necessary in order to avoid paint damage of the machine. Lifting must be slow at beginning to see if the gravity center is correct.

6.2 Installation:

Working area of the machine shall be the size when the spindle box rounds its column in one cycle. Its diameter is about Ø2500mm. Further more, space for the work pieces, toolbox, and machine accessories as well as operating and maintenance space must be considered.

The machine should be placed on a solid ground. No foundation construction is required if ground of workshop is solid enough. However, we suggest that you'd better to make a foundation as per the attached drawing 8 and shall consider some space for foundation screw bolts use.

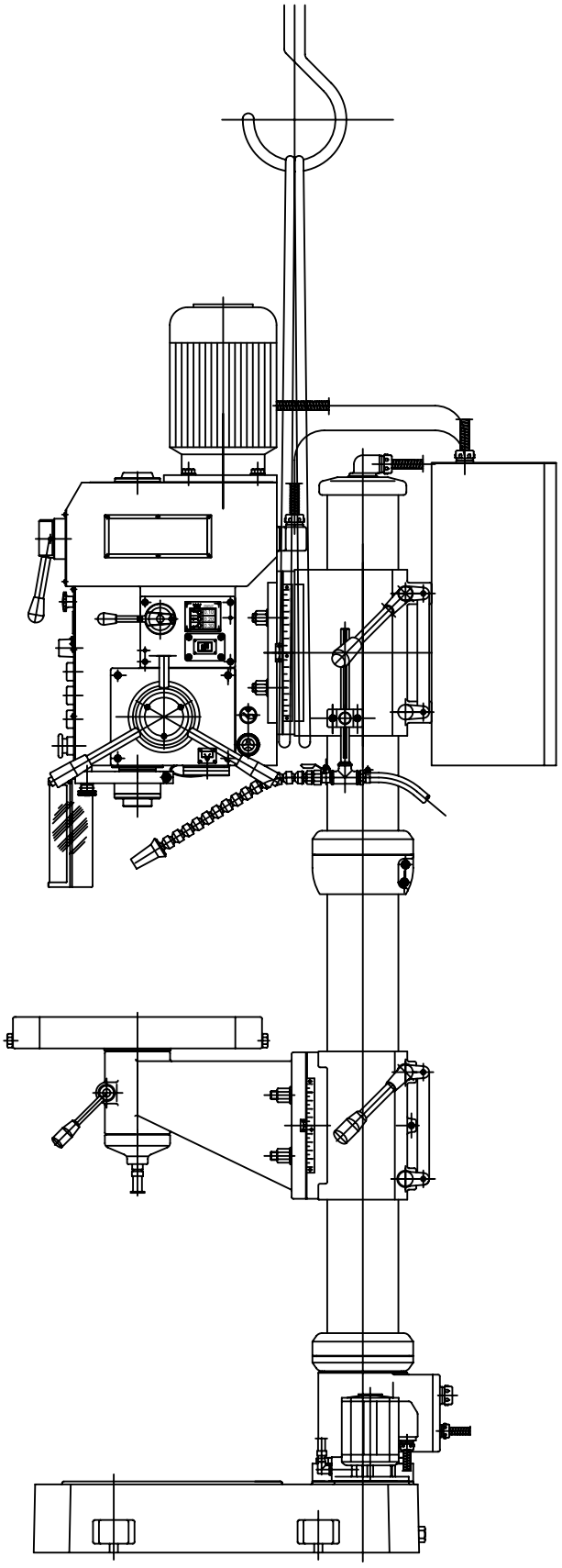
When the foundation is completely dry, the machine could be laid down on the adjustable pad. Concrete could be filled when screw bolts are placed. Fastening screw bolts after concrete is completely dry.



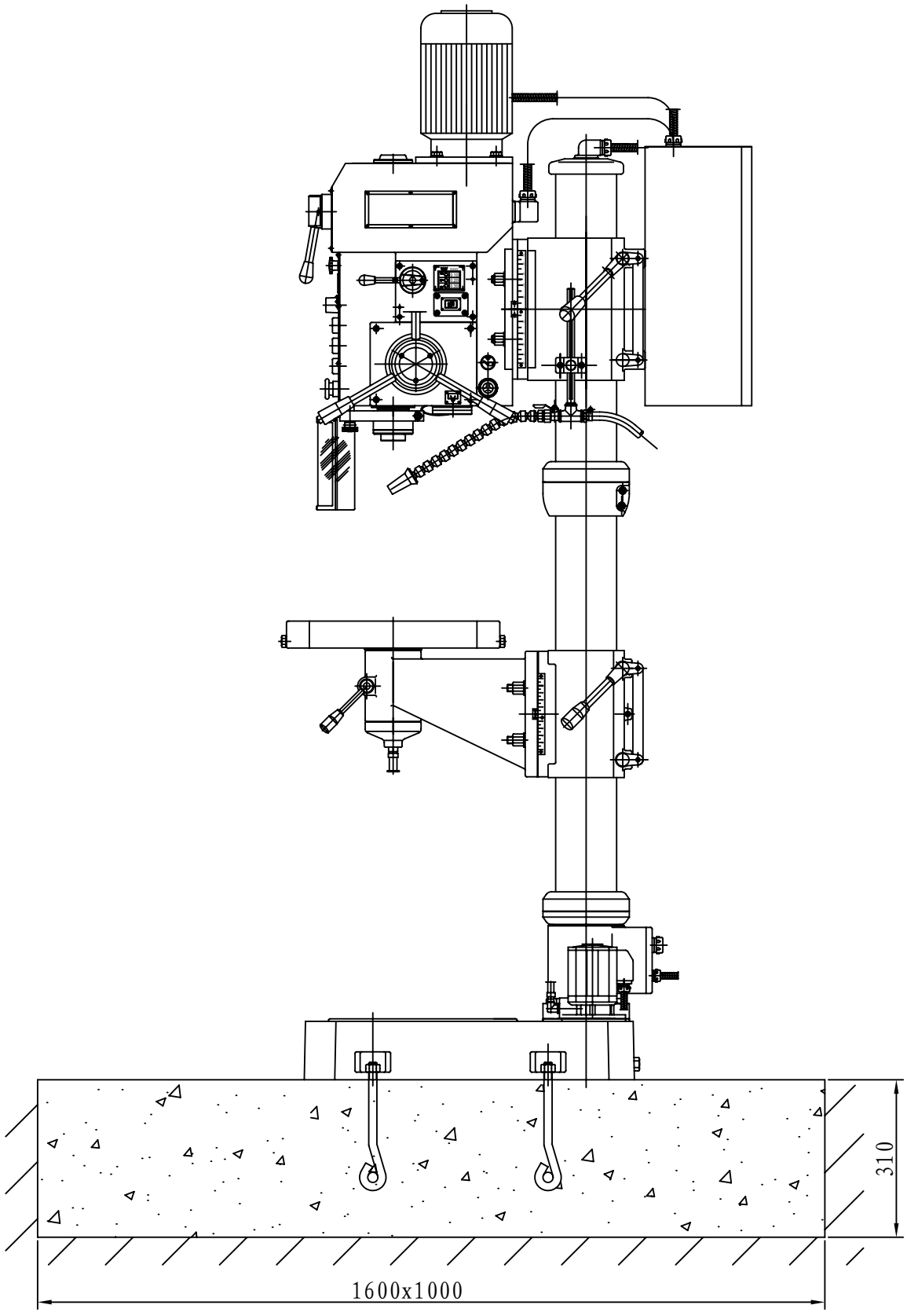
drawing 6 picture of lubrication

Chart of lubrication position

No.of lubrication position	lubrication position	lubrication period	Grease designation
1	Main drive parts	Changing grease once every 3 month	No.40 lubricant
2	Feed drive parts		
3	Surface of main spindle sleeve	Oiling once for each shift	
4	Worm wheel for spindle box up and down	Changing grease once every 3 month	ZL-3 lithium base grease
5	Surface of upright column	Oiling once for each shift	No.40 lubricant
6	Worm wheel for worktable up and down	Changing grease once every 3 month	ZL-3 lithium base grease



drawing 7. picture of hoisting



drawing 8 picture of installation of machine

Leveling the machine first, required tolerance should not be over 0.04/1000 both in horizontal and cross plane. Checking all items of the accuracy as per the table sheet of the certificate. Accuracy value for each checked item must not be over the required value.

6.3 Preparation before machine running:

A strict checking, testing and try cutting of the machine have been made before machine delivery. No adjustment of the machine itself is necessary. Before machine running, clean all surfaces of the machine first by using cloth with kerosene or gasoline, checking all lubrication points then turn the main switch of the machine to the "on" position, running the machine with middle or slow speed and checking all revolution direction is correct, operating levers are in a correct position, checking machine noise and working temperature are all ok. The machine should be running for a certain period of time, then it could be used if no any un-normal condition happened.

7 **Use and operation of the machine**:

7.1 For the operating levers, handles, electric switches and buttons, please refer to the diagram 1 and diagram 4..

7.2 Mounting and dismounting of tool cutters:

The machine equipped with a tool dismounting device to be controlled by a knob (12). Push forward the knob (12) to the spindle box direction when tool mounting is required. As for dismounting tool cutters, pull out the knob (12), hold the tool cutter by left hand, meanwhile, turn the feed lever (5) by right hand, then the spindle quill goes up rapidly, the tool cutter will fall down until tool taper shank strokes the shaft of spindle.

In case too tight mesh between tool shank and spindle taper and the tool cutter could not fall down after several strokes, then you have to use the normal way by using a taper wedge to dismounting the tool cutter.

Warning: The knob (15) must not be pulled out while tool mounting or machine Running, otherwise, the spindle will goes up quickly which results tool cutter falls down. It is really dangerous.

7.3 Changes for the spindle speed and feed rate:

Spindle speed change could be made by moving the two levers (13) and frequency transducer timing button (14) located in the front of the spindle box. Relations between spindle speed revolution and levers position is indicated at the speed change label. Meanwhile, the digital meter indicates the actual spindle revolution.

As mounting or dismounting tool cutter or adjustment of work piece needs spindle rotation by manual, therefore, the lever in the right side position shall be in the "idle" position, so spindle rotation could be easily obtained.

Changes of the feed rate could be realized by using the lever (11) in the upper right side position of the spindle box.

7.4 Selection and operation of the spindle feed:

There are three types of spindle feed selections for your choice as per the requirement of your machining:

Manual feed: Simply moving the feed lever(5) at the right side of the spindle box, the spindle will move down if turned the lever in counter clockwise and the spindle will move up if turned the lever in clockwise.

Auto feed: There are three levers (5), at the end of each lever equipped with a push button. Push one of any three buttons (SB4), auto feed could be realized as per your required pre-set feed rate. Push one of any three buttons (SB4) once again, the auto feed will be stopped immediately.

7.5 Cutting depth control:

For the batch production, you need control cutting depth. A scale in front of spindle box could meet your requirements. Loosening knurled screw (21) by turning knob (4), moving the scale to the required depth, then fastening the knurled screw(21). Now the machining depth could be controlled.

7.6 Tapping

Put the “Selection Switch” (17)on the tapping position first, turn the feed lever(5) and let the tap approaches the work piece, a proper manpower force (based on the size of grescrew) shall be exerted in order to let the tap comes into the hole. The spindle will be rotated in reverse when the screw depth is reached, promptly turn the feed lever(5) in counter clockwise direction, in order to let the tap comes out.
Suppose, tapping job needs stop, push button (SB4) then spindle will have reverse revolution. and tap returns back.

7.7 Adjustment of worktable position:

Symbols multi-use and convenience of the machine also reflects multi function of its worktable. Except its normal manual and auto up and down function, it can also be turned around the table itself, around the column and tilt in ±45° in horizontal position.

Operation method for the table tilting
Using a special tool to take out the taper pin and loosening four screw nuts on the bracket and manually turn the worktable to the required position then fastening the four screw nuts, now the work piece can be machined as per your tilting angle.
When the job is finished, keep the worktable in the original position by using the same way mentioned on the above. Be sure do not forget to push the pin in its position.

8. Machine adjustment:

8.1Spindle balance force adjustment:

Balance of spindle is realized through a springiness from a coil spring device located at the left side of the spindle box. Balance force shall be adjusted to the point that the spindle together with its tool shall not go down itself when spindle stops. (go up a little bit shall be much better).
Over springiness or less needs adjustment. Simply loosening the screw on the cover of spring box, turn the spring box cover, the spring could be either fastening or loosening. Fastening screw on the cover if the balance force is ok

8.2 Adjustment for the feed safety clutch:

Feed safety clutch is mounted on upper side of the warm shaft. If too much feed resisting force is occurred, the feed safety clutch will be automatically slipped (sound “Ka” will be heard) in order to protect machine driving system not to be damaged.
Clutch appearance could be seen when opening the cover below the feed change label.
Using a tool to turn a slotted nut in clockwise, this will increase the feed resisting force, meanwhile, the counter clockwise will reduce the feed resisting force. The max. feed resisting force of this machine is 7000N, Over feed resisting force will cause un-safety, be sure to lock it by screw bolt or nut after adjustment.

9. Machine use and maintenance:

9.1 Before running the machine, carefully read the Operation Manual first, fully understand the structure of the machine and its performance and needs to familiar with locations for all levers and buttons.

9.2 Lubrication of the machine is very important. Daily lubrication work as per the requirements of the operation manual is necessary. Otherwise transmission parts and bearings will be damaged.

9.3 Max. spindle torque of this machine is 105 N.M. Max. feed resisting force in the driving system is 7000 N. Over permitted cutting feed range is not allowed. High spindle speed with big cutting feed is not good to the machine.

9.4 As standard drill with118 degree angle features big cutting force but quick wear-out, so diameter and roughness of holes is not so ideal after drilling, therefore, regrinding its edges particularly for the big diameter drills is necessary. It is better to use two different angles for the machining of cast iron material (Second angle could be 70°).

9.5 Spot facer with three edges is proffered for the spot facing machining, using a normal drill for spot facing job will cause vibration. However, it will have a better result for the spot facing machining if reducing the rear angle of the normal drill with two different angles and going down the cutting speed and feed rate.

9.6 Temperature of motor will be increased so quickly when tapping due to frequently motor direction be changed. Therefore, rapid and continuous tapping shall be avoided. Max. eight times per minutes of tapping is recommended. The machine shall be stopped for cooling if the motor is too hot.

9.7 A proper cutting force is required when milling. As this is not a milling machine although it has a milling function. Too big milling force will cause worktable moving round the column, therefore, clamping the worktable strongly is required when milling and a reasonable cutting feed rate for milling job is necessary.

9.8 Please turn off the coolant valve when mounting and dismounting tools, clamping or adjusting work piece or measuring work piece, as coolant is not necessary during this period. Stop coolant pump if these job takes more than ten minutes.

9.9 As gears are to be used for spindle and feed system, so it is not allowed to change spindle speed or change cutting feed rate when machine running, otherwise it will damage gears, shafts or relevant parts.

9.10 Do not extend spindle quill too much, instead, a proper working table height is suggested .Clean the spindle taper hole and tool taper shank first before tool mounting.
Unqualified or rusted or damaged taper shank is forbidden to use.

9.11 Dry agent inside of the electric box and regularly removing dustiness are necessary. It is forbidden to us gasoline or kerosene or diesel oil to clean electric components. We suggest to use those no erosion and not be easily burned liquid such as carbon tetrachloride etc.

10. Machine accessories:

No.	Description	Specification/standard	Q'ty	Remark
1	Drill chuck with spanner	1-13/GB6087	1	
2	Adapter for drill check		1	
3	Adaptor	4-3/JB3477	1	
4	Adaptor	4-2/JB3477	1	
5	Adaptor	3-1/JB3477	1	
6	Taper wedge for flat shape quill	Wedge 1/JB3482	1	
7	Taper wedge for flat shape quill	Wedge 3/JB3482	1	
8	Wrench	21×24/GB4388	1	
9	Battery	SR44	1	
10	Fuse	φ5×25/5A,3A,1A	Two for each	

Vertical Drilling Machine

Model：GHD-35PFV

Packing list

Max. Drilling Diameter: 35mm

Series Number:

Model GHD-35PFV	Packing list	Total 1 page 1

Case No.: 1/1
Dimension (L ×W × H): × × **CM**
Gross weight:
Net weight:

No.	Name	Specification and marks	Q'ty	Remark
1	Machine		1 piece	
2	Drill check with lever	1-13: GB6087	1 piece	
3	Drill check adaptor		1 piece	
4	Tool shank adaptor	4-3;JB3477	1 piece	
		4-2: JB3477	1 piece	
		3-1: JB3477	1 piece	
5	Taper wedge for shank	Wedge 1: JB3482	1 piece	
		Wedge 3: JB3482	1 piece	
6	Double end wrench	21×24; GB4388	1 piece	
7	Battery	SR44	1piece	
8	Fuse	Φ5×25/5A,3A,1A	2 pieces each	
16	Operation manual		1 piece	
	Quality certificate		1 piece	
	Packing list		1 piece	

Inspector of he packing: Date:

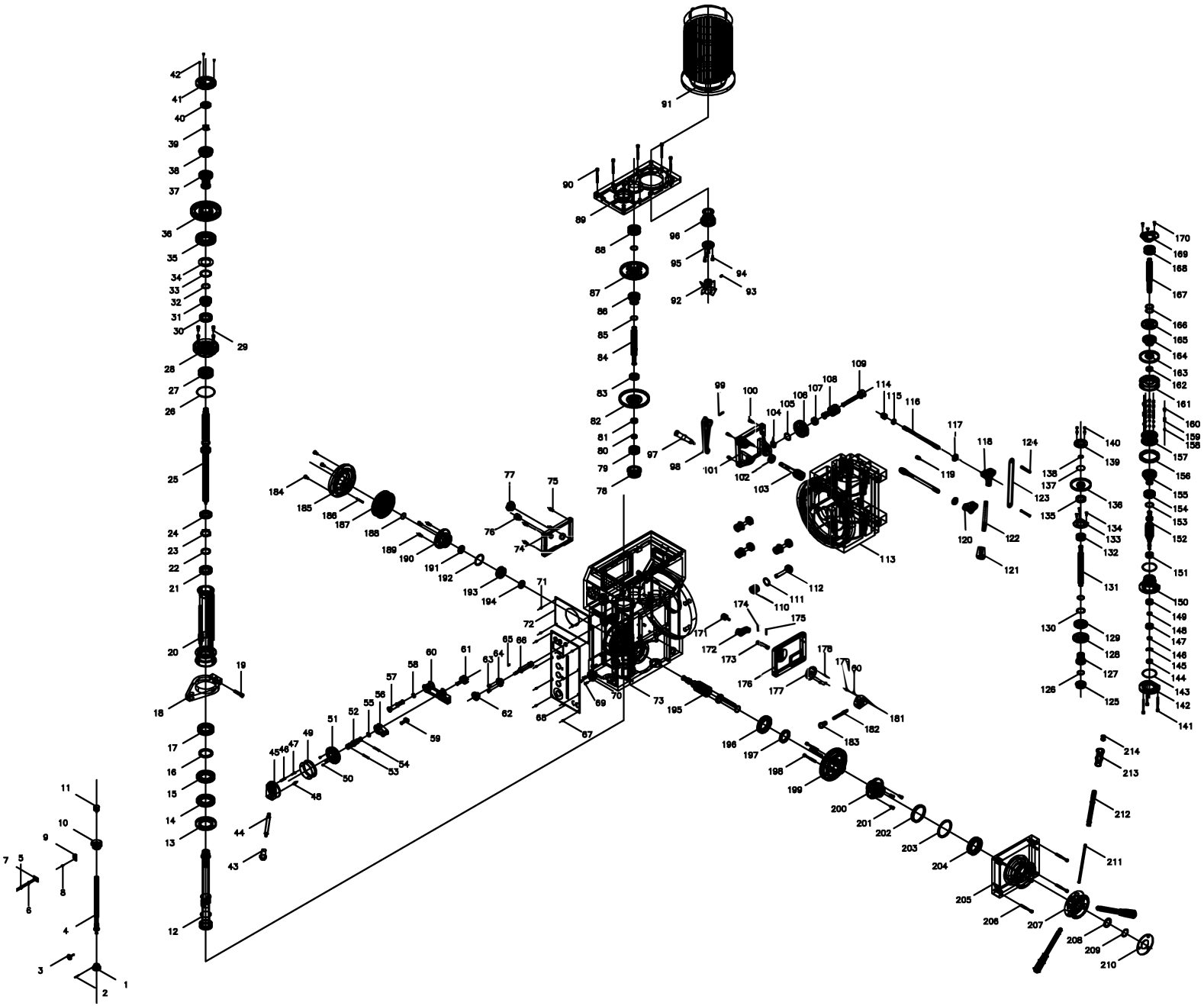
Vertical Drilling Machine

Model：GHD-35PFV

Ancillary page of Operation Manual

Max. Drilling Diameter: 35 mm

Series Number:



Parts Breakdown For GHD-35PFV Drill Press Drawing (1)

Part List for GHD-35PFV DRILL PRESS

No.	Part no.	Descirption	Size	Qty.
1	GHD35PFV-1-001	Knurled knob		1
2	GHD35PFV-1-002	Taper pin	3X20	1
3	GHD35PFV-1-003	Knurled screw		1
4	GHD35PFV-1-004	Rod screw	Zn DM2X6	1
5	GHD35PFV-1-005	Cross Recess Head Screw		2
6	GHD35PFV-1-006	Gasket	Zn D2	2
7	GHD35PFV-1-007	Indicator sheet		1
8	GHD35PFV-1-008	Slotted cheese head screws	Zn DM3x6	1
9	GHD35PFV-1-009	Vernier block		1
10	GHD35PFV-1-010	Scaled nut		1
11	GHD35PFV-1-011	Limit block		1
12	GHD35PFV-1-012	Spindle		1
13	GHD35PFV-1-013	Bearing cover		1
14	GHD35PFV-1-014	Deep groove ball bearing	D7000108	1
15	GHD35PFV-1-015	Deep groove ball bearing	D7000108	1
16	GHD35PFV-1-016	Washer		1
17	GHD35PFV-1-017	Bearing	8108	1
18	GHD35PFV-1-018	Scaled clamper		1
19	GHD35PFV-1-019	Hexagon socket head cap screws	M8x35	1
20	GHD35PFV-1-020	Spindle quill		1
21	GHD35PFV-1-021	Bearing	D1000906	1
22	GHD35PFV-1-022	Washer		1
23	GHD35PFV-1-023	Washer		1
24	GHD35PFV-1-024	Round nut		1
25	GHD35PFV-1-025	Transmission shaft		1
26	GHD35PFV-1-026	O--ring	63x2.65	1
27	GHD35PFV-1-027	Bearing	2007106	1
28	GHD35PFV-1-028	Bearing seat		1
29	GHD35PFV-1-029	Hexagon socket head cap screws	M6x16	4
30	GHD35PFV-1-030	Seal ring	B30x47x7	1
31	GHD35PFV-1-031	Feed gear		1
32	GHD35PFV-1-032	External circlip		1
33	GHD35PFV-1-033	External circlip		1
34	GHD35PFV-1-034	Washer		1
35	GHD35PFV-1-035	Bearing	7000109	1
36	GHD35PFV-1-036	Gear		1
37	GHD35PFV-1-037	Gear		1
38	GHD35PFV-1-038	Bearing	150204	1
39	GHD35PFV-1-039	Washer	18	1
40	GHD35PFV-1-040	Round nut		1
41	GHD35PFV-1-041	Cover		1
42	GHD35PFV-1-042	Slotted cheese head screws	M5x12	3
43	GHD35PFV-1-043	Knob		1
44	GHD35PFV-1-044	Handle		1
45	GHD35PFV-1-045	Handle seat		1
46	GHD35PFV-1-046	Spring	1x6x32	2
47	GHD35PFV-1-047	Spring pin		2
48	GHD35PFV-1-048	Pin		1
49	GHD35PFV-1-049	Retainer		1
50	GHD35PFV-1-050	Screw	M4x12	3
51	GHD35PFV-1-051	Positioning plate		1
52	GHD35PFV-1-052	Shaft		1
53	GHD35PFV-1-053	Pin	6m6x28	1
54	GHD35PFV-1-054	Taper pin	6x32	1
55	GHD35PFV-1-055	O-ring	17x2.4	1
56	GHD35PFV-1-056	Lever		1
57	GHD35PFV-1-057	Shaft （B）		1
58	GHD35PFV-1-058	O-ring	17x2.4	
59	GHD35PFV-1-059	Shaft（A）		1
60	GHD35PFV-1-060	Fork lever		1
61	GHD35PFV-1-061	Fork block		1
62	GHD35PFV-1-062	Knob		1

Part List for GHD-35PFV DRILL PRESS

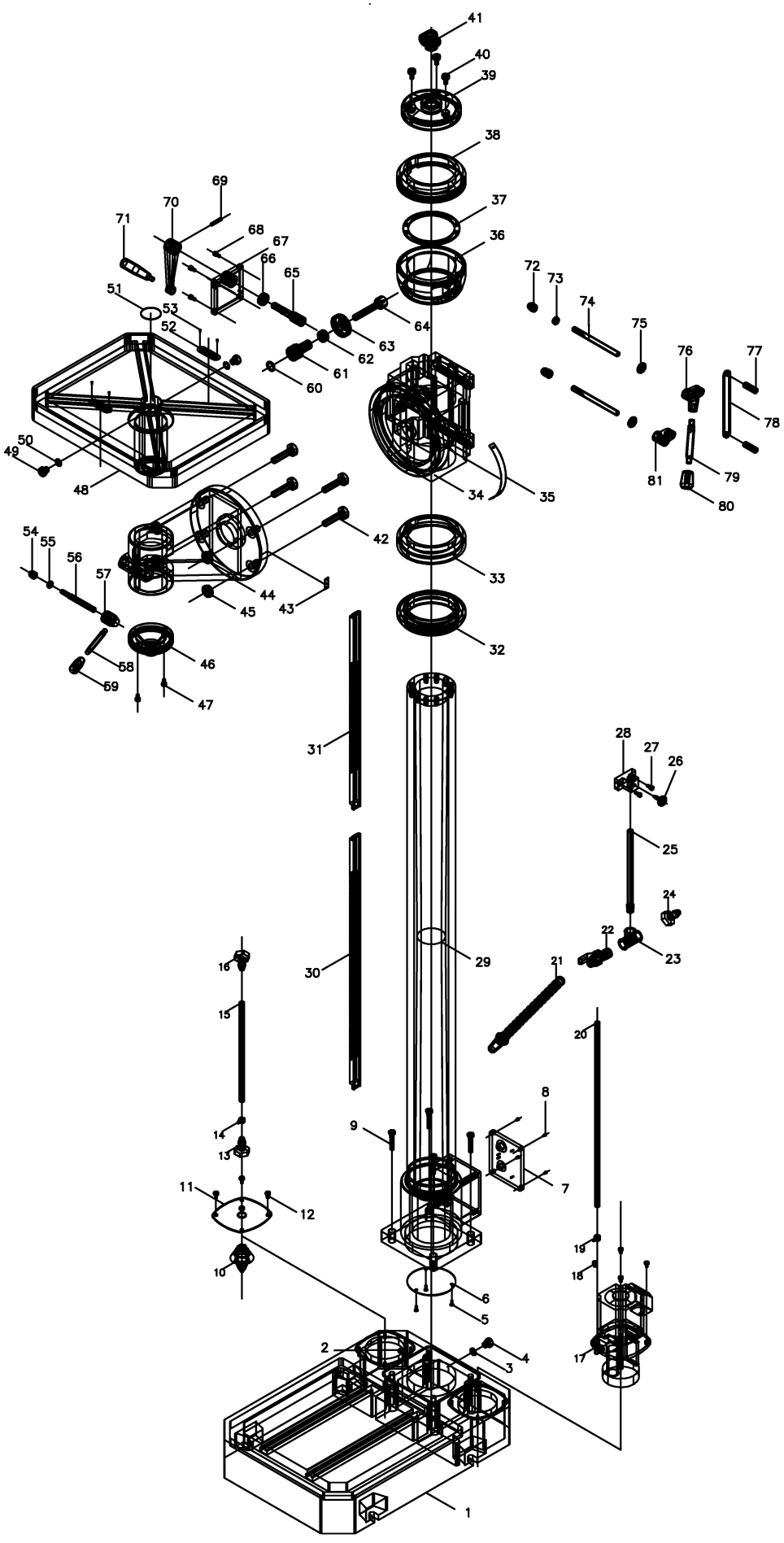
No.	Part no.	Descirption	Size	Qty.
63	GHD35PFV-1-063	Slotted countersunk flat head screw	M3x6	2
64	GHD35PFV-1-064	Sleeve		1
65	GHD35PFV-1-065	Key	3h9x3x10	
66	GHD35PFV-1-066	Shaft		1
67	GHD35PFV-1-067	Cross Recess Head Screw	Cr. DM3x6	8
68	GHD35PFV-1-068	Label		1
69	GHD35PFV-1-069	Slotted countersunk flat head screw	M5x10	3
70	GHD35PFV-1-070	Locking block		1
71	GHD35PFV-1-071	Cross Recess Head Screw	Cr. DM3x6	
72	GHD35PFV-1-072	Speed label		1
73	GHD35PFV-1-073	Spindle box		1
74	GHD35PFV-1-074	Side cover		1
75	GHD35PFV-1-075	Hexagon socket head cap screws	M5x12	4
76	GHD35PFV-1-076	Oil plug	M16x1.5	1
77	GHD35PFV-1-077	Oil window	（20）M27x1.5	1
78	GHD35PFV-1-078	Bearing seat		1
79	GHD35PFV-1-079	Bearing		1
80	GHD35PFV-1-080	Washer		1
81	GHD35PFV-1-081	Bearing		1
82	GHD35PFV-1-082	Feed gear		1
83	GHD35PFV-1-083	Bearing		1
84	GHD35PFV-1-084	Spline shaft		1
85	GHD35PFV-1-085	External circlip		2
86	GHD35PFV-1-086	Gear		1
87	GHD35PFV-1-087	Gear		1
88	GHD35PFV-1-088	Bearing	180303K	1
89	GHD35PFV-1-089	Box cover		1
90	GHD35PFV-1-090	Hexagon socket head cap screw	M6x25	
91	GHD35PFV-1-091	Motor	1.5kW	1
92	GHD35PFV-1-092	Splash device		1
93	GHD35PFV-1-093	Screw	M6x10	2
94	GHD35PFV-1-094	Hexagon socket head cap screws	M5x14	3
95	GHD35PFV-1-095	Connecting plate		1
96	GHD35PFV-1-096	Gear		1
97	GHD35PFV-1-097	Teleflex+screw		1
98	GHD35FPV-1-098	Handle		1
99	GHD35FPV-1-099	Taper pin	4x35	1
100	GHD35FPV-1-100	Hexagon socket head cap screws	M6x16	4
101	GHD35FPV-1-101	Lifting seat		1
102	GHD35FPV-1-102	Bearing	8103	1
103	GHD35FPV-1-103	Worm screw		1
104	GHD35FPV-1-104	Washer		1
105	GHD35FPV-1-105	External circlip		1
106	GHD35FPV-1-106	Worm wheel		1
107	GHD35FPV-1-107	Sleeve		1
108	GHD35FPV-1-108	Gear		1
109	GHD35FPV-1-109	Shaft		1
110	GHD35FPV-1-110	Hexagon thick nuts	M14	4
111	GHD35FPV-1-111	Washer	14	4
112	GHD35FPV-1-112	T type screw		4
113	GHD35FPV-1-113	Lifting device		1
114	GHD35FPV-1-114	Cap nut	M12	2
115	GHD35FPV-1-115	Hexagon thin nut	M12	2
116	GHD35FPV-1-116	Double-thread screw		2
117	GHD35FPV-1-117	Washer		2
118	GHD35FPV-1-118	Clamping moderators nut		1
119	GHD35FPV-1-119	Slotted flat end set screws	M10x12	1
120	GHD35FPV-1-120	Clamping plate nut		1
121	GHD35FPV-1-121	Knob	M12x40	1
122	GHD35FPV-1-122	Handle lever		1
123	GHD35FPV-1-123	Connecting board		1
124	GHD35FPV-1-124	Pin	8m6x24	2

Part List for GHD-35PFV DRILL PRESS

No.	Part no.	Descirption	Size	Qty.
125	GHD35FPV-1-125	Bearing	150202	1
126	GHD35FPV-1-126	External circlip		2
127	GHD35FPV-1-127	Feed gear		1
128	GHD35FPV-1-128	Feed gear		1
129	GHD35FPV-1-129	Feed gear		1
130	GHD35FPV-1-130	External circlip		2
131	GHD35FPV-1-131	Spline shaft (Ⅲ)		1
132	GHD35FPV-1-132	Bearing	180302K	1
133	GHD35FPV-1-133	Bearing cover		1
134	GHD35FPV-1-134	Slotted countersunk flat head screw	M5x12	4
135	GHD35FPV-1-135	Seal ring	B25x36x7	1
136	GHD35FPV-1-136	Feed gear		1
137	GHD35FPV-1-137	O-ring	25x2.65	1
138	GHD35FPV-1-138	External circlip		1
139	GHD35FPV-1-139	Feed gear		1
140	GHD35FPV-1-140	Slotted cheese head screws	M4x10	4
141	GHD35FPV-1-141	Slotted cheese head screws	M5x20	3
142	GHD35FPV-1-142	Cover		1
143	GHD35FPV-1-143	O-ring	47x2.65	2
144	GHD35FPV-1-144	Round nut	M10x1	1
145	GHD35FPV-1-145	Washer	10	1
146	GHD35FPV-1-146	Washer		1
147	GHD35FPV-1-147	Bearing	180101K	1
148	GHD35FPV-1-148	Washer		1
149	GHD35FPV-1-149	Bearing	8101	1
150	GHD35FPV-1-150	Bearing seat		1
151	GHD35FPV-1-151	Bearing	8102	1
152	GHD35FPV-1-152	Worm shaft		1
153	GHD35FPV-1-153	External circlip		1
154	GHD35FPV-1-154	Bearing	1180905K	1
155	GHD35FPV-1-155	Clutch seat(below)		1
156	GHD35FPV-1-156	Nut		1
157	GHD35FPV-1-157	Overload protection seat		1
158	GHD35FPV-1-158	Steel ball	8	8
159	GHD35FPV-1-159	Spring	1x6x22	8
160	GHD35FPV-1-160	Ball pin		8
161	GHD35FPV-1-161	Round nut		1
162	GHD35FPV-1-162	Adjusting washer		1
163	GHD35FPV-1-163	Feed gear		1
164	GHD35FPV-1-164	Feed gear		1
165	GHD35FPV-1-165	Feed gear		1
166	GHD35FPV-1-166	Sleeve		1
167	GHD35FPV-1-167	Spline shaft(Ⅳ)		1
168	GHD35FPV-1-168	Bearing	180302K	1
169	GHD35FPV-1-169	Bearing cover		1
170	GHD35FPV-1-170	Slotted cheese head screws	M4x10	
171	GHD35FPV-1-171	Fork		1
172	GHD35FPV-1-172	Connecting block		1
173	GHD35FPV-1-173	Shaft		1
174	GHD35FPV-1-174	Taper pin	4x24	1
175	GHD35FPV-1-175	Taper pin	4x20	1
176	GHD35FPV-1-176	Side cover		1
177	GHD35FPV-1-177	Locating plate		1
178	GHD35FPV-1-178	Slotted countersunk flat head screw	M3x8	1
179	GHD35FPV-1-179	Steel ball	8	1
180	GHD35FPV-1-180	Cylindroid helical-coil compression spring	1.4x6x22	1
181	GHD35FPV-1-181	Handle seat		1
182	GHD35FPV-1-182	Handle lever		1
183	GHD35FPV-1-183	Knob		1
184	GHD35FPV-1-184	Slotted cheese head screws	M5x16	3
185	GHD35FPV-1-185	Cover		1
186	GHD35FPV-1-186	Pin		1

Part List for GHD-35PFV DRILL PRESS

No.	Part no.	Descirption	Size	Qty.
187	GHD35FPV-1-187	Coil spring		1
188	GHD35FPV-1-188	External circlip		1
189	GHD35FPV-1-189	Slotted cheese-head screw	M5x12	3
190	GHD35FPV-1-190	Bearing box		1
191	GHD35FPV-1-191	Adjusting washer		1
192	GHD35FPV-1-192	Circlip		1
193	GHD35FPV-1-193	Bearing	180104K	1
194	GHD35FPV-1-194	Adjusting washer		1
195	GHD35FPV-1-195	Horizontal shaft		1
196	GHD35FPV-1-196	Bearing	D7000108	1
197	GHD35FPV-1-197	Washer		1
198	GHD35FPV-1-198	Hexagon socket head cap screw	M5x25	3
199	GHD35FPV-1-199	Worm wheel		1
200	GHD35FPV-1-200	Sleeve		1
201	GHD35FPV-1-201	Hexagon socket head cap screws	M5x12	3
202	GHD35FPV-1-202	Seal ring	B50x68x8	1
203	GHD35FPV-1-203	Circlip		1
204	GHD35FPV-1-204	Bearing	1180909K	1
205	GHD35FPV-1-205	Side cover		1
206	GHD35FPV-1-206	Hexagon socket head cap screws	M6x45	4
207	GHD35FPV-1-207	Handle seat		1
208	GHD35FPV-1-208	Adjusting washer		1
209	GHD35FPV-1-209	External circlip		1
210	GHD35FPV-1-210	Cover		1
211	GHD35FPV-1-211	Lever		3
212	GHD35FPV-1-212	Handle lever		3
213	GHD35FPV-1-213	Knob		3
214	GHD35FPV-1-214	Coil lever		3



Parts Breakdown For GHD-35PFV Drill Press Drawing (2)

Part List for GHD-35PFV DRILL PRESS

No.	Part no.	Descirption	Size	Qty.
1	GHD35PFV-2-001	Base		1
2	GHD35PFV-2-002	Drainage plate		1
3	GHD35PFV-2-003	Washer	16	1
4	GHD35PFV-2-004	Oil plug	M16x1.5	1
5	GHD35PFV-2-005	Slotted countersunk flat head screw	M3x6	3
6	GHD35PFV-2-006	Plate		1
7	GHD35PFV-2-007	Cover		1
8	GHD35PFV-2-008	Slotted cheese head screws	M4x16	4
9	GHD35PFV-2-009	Hexagon head bolts	M16x55	4
10	GHD35PFV-2-010	Strainer		1
11	GHD35PFV-2-011	Plate		1
12	GHD35PFV-2-012	Slotted cheese head screws	M6x8	4
13	GHD35PFV-2-013	Pipe joint		1
14	GHD35PFV-2-014	Hose clamp		2
15	GHD35PFV-2-015	Hose		1
16	GHD35PFV-2-016	Pipe joint		1
17	GHD35PFV-2-017	Cooling pump	0.18kW	1
18	GHD35PFV-2-018	Slotted cheese head screws	M6x20	4
19	GHD35PFV-2-019	Hose clamp		1
20	GHD35PFV-2-020	Hose		1
21	GHD35PFV-2-021	Cooling pipe	L=400	1
22	GHD35PFV-2-022	Ball valve		1
23	GHD35PFV-2-023	Tee		1
24	GHD35PFV-2-024	Pipe joint		1
25	GHD35PFV-2-025	Adjusting bracket		1
26	GHD35PFV-2-026	Screw		1
27	GHD35PFV-2-027	Hexagon socket head cap screws	M6x14	2
28	GHD35PFV-2-028	Supporting		1
29	GHD35PFV-2-029	Column		1
30	GHD35PFV-2-030	Rack		1
31	GHD35PFV-2-031	Rack		1
32	GHD35PFV-2-032	Retaining collar seat		1
33	GHD35PFV-2-033	Retaining collar		1
34	GHD35PFV-2-034	Lifting device		1
35	GHD35PFV-2-035	Scaled plate		1
36	GHD35PFV-2-036	Retaining collar seat		1
37	GHD35PFV-2-037	Ring		1
38	GHD35PFV-2-038	Retaining collar		1
39	GHD35PFV-2-039	Cover		1
40	GHD35PFV-2-040	Slotted cheese-head screw	M10x12	3
41	GHD35PFV-2-041	Elbow		1
42	GHD35PFV-2-042	Screw		4
43	GHD35PFV-2-043	Label		1
44	GHD35PFV-2-044	Bracket seat		1
45	GHD35PFV-2-045	Hexagon thick nuts	M14	4
46	GHD35PFV-2-046	Housing		1
47	GHD35PFV-2-047	Slotted cheese head screws	M5x20	2
48	GHD35PFV-2-048	Worktable		1
49	GHD35PFV-2-049	Oil plug	M14x1.5	2
50	GHD35PFV-2-050	Washer	14	2
51	GHD35PFV-2-051	Cover plate		1
52	GHD35PFV-2-052	Drainage plate		2
53	GHD35PFV-2-053	Cross Recess Head Screw	Cr.Dm3x6	4
54	GHD35PFV-2-054	Nut	M10	1
55	GHD35PFV-2-055	Nut	M10	1
56	GHD35PFV-2-056	Bolt		1
57	GHD35PFV-2-057	Handle seat		1
58	GHD35PFV-2-058	Handle lever		1
59	GHD35PFV-2-059	Knob		1
60	GHD35PFV-2-060	Washer		1
61	GHD35PFV-2-061	Gear		1
62	GHD35PFV-2-062	Sleeve		1

Part List for GHD-35PFV DRILL PRESS

No.	Part no.	Descirption	Size	Qty.
63	GHD35PFV-2-063	Titled gear		1
64	GHD35PFV-2-064	Shaft		1
65	GHD35PFV-2-065	Worm		1
66	GHD35PFV-2-066	Bearing	8103	1
67	GHD35PFV-2-067	Side cover		1
68	GHD35PFV-2-068	Hexagon socket head cap screws	M5x16	4
69	GHD35PFV-2-069	Taper pin	4x35	1
70	GHD35PFV-2-070	Handle		1
71	GHD35PFV-2-071	Turing handle		1
72	GHD35PFV-2-072	Nut	M12	2
73	GHD35PFV-2-073	Nut	M12	2
74	GHD35PFV-2-074	Double end bolt		2
75	GHD35PFV-2-075	Washer		2
76	GHD35PFV-2-076	Clamping moderators nut		1
77	GHD35PFV-2-077	Pin	8h8x24	2
78	GHD35PFV-2-078	Connecting plate		1
79	GHD35PFV-2-079	Handle lever		1
80	GHD35PFV-2-080	Knob		1
81	GHD35PFV-2-081	Clamping plate nut		1
	GHD35PFV-2-082	Liquidometer (not show)		1