

# JET

**BD-12G**

**OPERATING MANUAL LATHE**

Original:

**GB**

**Operating Instructions**

**Parts List**



**EAC**

**JPW Tool Group Hong Kong Limited**

98 Granville Road, Tsimshatsui East, Kowloon, Hong Kong, PRC  
[www.jettools.com](http://www.jettools.com)

**Импортер в РФ: ООО «ИТА Технолоджи»**  
105082, Москва, Переведеновский пер., д. 17  
[www.jettools.ru](http://www.jettools.ru)

Made in PRC / Сделано в КНР

50000913M

2022-08

# EN Operating Instructions (Original)

## 1.0 About this Manual

This manual is provided by JET, covering the safe operation and maintenance procedures for a **JET Model BD-12G Metal Lathe**. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. The machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

Retain this manual for future reference. If the machine transfers ownership, the manual should accompany it.

## 2.0 Table of Contents

Section	Page
1.0 About this manual.....	3
2.0 Table of contents.....	3
3.0 Important safety instructions.....	4~5
3.1 Designated use and limitations to use.....	6
3.2 Remaining hazards.....	6
4.0 Specifications.....	7~8
5.0 Machine description.....	9
6.0 Setup and assembly.....	10
6.1 Unpacking and clean up.....	10
6.2 Shipping contents.....	10
6.3 Assembly.....	10
6.4 Initial lubrication.....	10
6.5 Installation.....	10
7.0 Electrical connections.....	10~11
7.1 Grounding instructions.....	10
7.2 Extension cords.....	11
8.0 Adjustments.....	11~13
8.1 Spindle speed range selection.....	11
8.2 Change gear setup.....	11
8.3 Taper turning with tailstock.....	12
8.4 Taper turning with top slide.....	12
8.5 Three jaw universal chuck.....	13
8.6 Four jaw independent chuck.....	13
8.7 Live centre.....	13
8.8 Steady rest and follow rest.....	13
9.0 Operating controls.....	14
10.0 Machine operation.....	14~17
10.1 Cutting execution.....	14
10.2 Chucking.....	14
10.3 Cutting tool setup.....	15
10.4 Recommended spindle speeds.....	15
10.5 Manual turning.....	15
10.6 Turning with auto feed.....	15
10.7 Thread cutting.....	16
10.8 Drilling operation.....	17
11.0 User maintenance.....	17~18
11.1 Lubrication.....	17
11.2 Readjustments.....	18
12.0 Troubleshooting.....	19
13.0 Environmental protection.....	19
14.0 Available accessories.....	19
15.0 Replacement parts.....	20~37
16.0 Wiring diagrams.....	38-39

## 3.0 IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THIS LATHE.



– To reduce risk of injury:

1. Read and understand entire owner's manual before attempting assembly or operation of this **machine**.
2. Read and understand the warnings posted on the machine and in this manual.
3. Replace warning labels if they become obscured or removed.
4. This machine is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a **metal lathe**, do not use until proper training and knowledge have been obtained.
5. Do not use this machine for other than its intended use. If used for other purposes, **JET** disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
6. Always wear approved safety glasses or face shield while using this machine. (Everyday eyeglasses only have impact resistant lenses; they are *not* safety glasses.)
7. Before operating this machine, remove tie, rings, watches and other jewellery, and roll sleeves up past the elbows. Remove loose clothing and confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do **not** wear gloves.
8. Wear hearing protection (plugs or muffs) during extended periods of operation.
9. Some dust created by sawing may contain chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - Lead from lead based paint.
  - Crystalline silica from bricks, cement and other masonry products.
  - Arsenic and chromium from chemically treated lumber.Your risk of exposure varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as face or dust masks that are specifically designed to filter out microscopic particles.
10. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
11. Make certain the switch is in the **OFF** position before connecting the machine to the power supply. Turn off all controls before unplugging.
12. Make certain the machine is properly grounded. Connect to a properly grounded outlet only. See Grounding instructions.
13. Make all machine adjustments or maintenance with the machine unplugged from the power source.
14. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
15. Keep safety guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately after maintenance is complete.
16. Check damaged parts. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
17. Provide for adequate space surrounding work area and non-glare, overhead lighting.
18. Keep the floor around the machine clean and free of scrap material, oil and grease.
19. Keep visitors a safe distance from the work area. **Keep children away.**
20. Make your workshop child proof with padlocks, master switches or by removing starter keys.
21. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.
22. Keep an ergonomic body position. Maintain a balanced stance at all times so that you do not fall or lean against the chuck or other moving parts. Do not overreach or use excessive force to perform any machine operation.
23. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and safer.
24. The machine is intended for indoor use. To reduce the risk of electric shock, do not use outdoors or on wet surfaces.
25. Do not handle plug or machine with wet hands.
26. Use recommended accessories; improper accessories may be hazardous.
27. Maintain tools with care. Keep tools sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
28. Turn off machine and disconnect from power before cleaning. Use a brush or compressed air to remove chips or debris; do not use bare hands.
29. Do not stand on the machine. Serious injury could occur if the machine tips over.
30. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
31. Remove loose items and unnecessary work pieces from the area before starting the machine.
32. Pull the mains plug if the machine is not in use.
33. Make sure the workpiece is securely clamped.

Familiarize yourself with the following safety notices used in this manual:



**WARNING:** This means that if precautions are not heeded, it may result in serious, or possibly even fatal, injury.



**CAUTION:** This means that if precautions are not heeded, it may result in minor injury and/or possible machine damage.

## SAVE THESE INSTRUCTIONS



**WARNING:**

These symbols below advise that you follow the correct safety procedures when using this machine.



Read and understand the entire user manual before attempting assembly or machine operation.



Any work piece stock extending the rear end of the headstock must be covered on its entire length. High danger of injury



Always wear approved working outfit  
Wear safety goggles.  
Wear ear protection.



Do not operate this machine under the influence of drugs, alcohol or medication



Always wear the approved working outfit  
Wear safety shoes.  
Remove tie, rings, watches, jewellery.  
Roll up sleeves above elbows.  
Remove all loose clothing and confine long hair



Do not wear gloves while operating this machine



Make all machine adjustments or maintenance with the machine unplugged from the power source.



Connection and repair work on the electrical installation may be carried out by a qualified electrician only.



Never reach into the machine while it is operating or running down.

### 3.1 Designated use and limitations to use

The machine is designed for turning and drilling machinable metal and plastic materials only.

The workpiece must allow to safely be loaded, supported and clamped.

The machine is intended for indoor use. The protection rating of the electrical installation is IP 54.

To avoid tipping, the machine must be bolted down with four anchor bolts.

If used for other purposes, JET disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.



#### **WARNING:**

The machine is not suitable for machining magnesium...high danger to fire !

Never place your fingers in a position where they could contact any rotating parts or chips.

Check the safe clamping of the work piece before starting the machine.

Don't exceed the clamping range of the chuck.

Work pieces longer than 3 times the chucking diameter need to be supported by the tailstock or a steady rest.

Avoid small chucking diameters at big turning diameters. Avoid short chucking lengths and small chucking contact.

Do not exceed the max speed of the work holding device.

Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and more safely.

Use recommended accessories; improper accessories may be hazardous.

Maintain tools with care. Keep cutting tools sharp and clean for the best and safest performance.

Follow instructions for lubricating and changing accessories.

Do not attempt to adjust or remove tools during operation.

Never stop a rotating chuck or workpiece with your hands.

Choose a small spindle speed when working unbalanced work pieces and for threading and tapping operations.

Any work piece stock extending the rear end of the headstock must be covered on its entire length. High danger of injury!

Long work pieces may need a steady rest support. A long and thin work piece can suddenly bend at high speed rotation.

Never move the tailstock or tailstock quill while the machine is running.

Remove cutting chips with the aid of an appropriate chip hook when the machine is at a standstill only.

Measurements and adjustments may be carried out when the machine is at a standstill only.

Maintenance and repair work may only be carried out after the machine is protected against accidental starting, pull the mains plug.

Remove loose items and unnecessary work pieces from the area before starting the machine.

Rotate workpiece by hand before applying power. Use lowest speed when starting new workpiece.

Tighten all locks before operating.

### 3.2 Remaining hazards

When using the machine according to regulations some remaining hazards may still exist.

The rotating work piece and chuck can cause injury.

Thrown and hot work pieces and cutting chips can lead to injury.

Chips and noise can be health hazards. Be sure to wear personal protection gear such as safety goggles and ear protection.

The use of incorrect mains supply or a damaged power cord can lead to injuries caused by electricity.

When opening the electrical cabinet, the grid-feeding voltage persists. Therefore pay attention every time you enter it.

## 4.0 Specifications

Model number..... BD-12G  
Stock number..... 50000913M

### Motor and electricals:

Motor type..... Induction motor  
Motor power..... 1.1 kW  
Power supply..... 1~230V, PE, 50 Hz  
Protection class..... IP 54  
Listed load amps..... 6.4 A  
Machine lamp..... Halogen lamp 24V, 35 W  
Coolant pump..... 40 W

### Capacities:

Centre height..... 150 mm  
Swing over bed..... 300 mm  
Swing over cross slide..... 170 mm  
Distance between Centres..... 750 mm

### Spindle:

Spindle nose mounting..... short taper mount (1:4 Ø63.51mm, Ø98x3xØ11)  
Spindle bore..... 38 mm  
Spindle taper..... MT5  
Number of spindle speeds..... 6  
Range of spindle speeds..... 150 ~ 2000 /min

### Tailstock:

Tailstock ram travel..... 80 mm  
Tailstock taper..... MT3

### Bed and Slides:

Bed width..... 180 mm  
Cross slide travel..... 170 mm  
Top slide travel..... 60 mm  
Tool size max..... 16x16 mm  
Lead screw pitch..... 3 mm  
Longitudinal feeds..... (9x) 0.085 /0.13 /0.17 /0.21 /0.25 /0.35 /0.40 /0.50 /0.83 mm/rev  
Metric threads..... (21x) 0.2 ~ 4.0 mm/rev  
Inch threads..... (21x) 8 ~ 56 TPI

### Materials:

Machine Bed..... Cast iron, induction hardened and precision ground  
Headstock, tailstock, slides..... Cast iron  
Spindle bearings..... Taper roller bearings, quality level P5

Sound emission in idle <sup>1</sup>..... 73.4 dB (LpA)  
Sound emission during cutting <sup>1</sup>..... 78.3 dB (LpA)

<sup>1</sup> Sound emission measured according to EN ISO 11202, in 1m distance, 1.6m above ground. The specified values are emission levels and are not necessarily to be seen as safe operating levels. As workplace conditions vary, this information is intended to allow the user to make a better estimation of the hazards and risks involved only.

### Dimensions and Weights:

Overall dimensions, assembled (W x D x H)..... 1400 x 700 x 700 (1400) mm  
Shipping dimensions (W x D x H) (Separate packing)..... 1550x750x750 & 820x680x430 mm  
Net weight (approximate)..... 357 kg  
Shipping weight (approximate)..... 402 kg

L = length; W = width; H= height; D= depth

The specifications in this manual were current at time of publication, but because of our policy of continuous improvement, JET reserves the right to change specifications at any time and without prior notice, without incurring obligations.

#### 4.1 Spindle nose mounting:

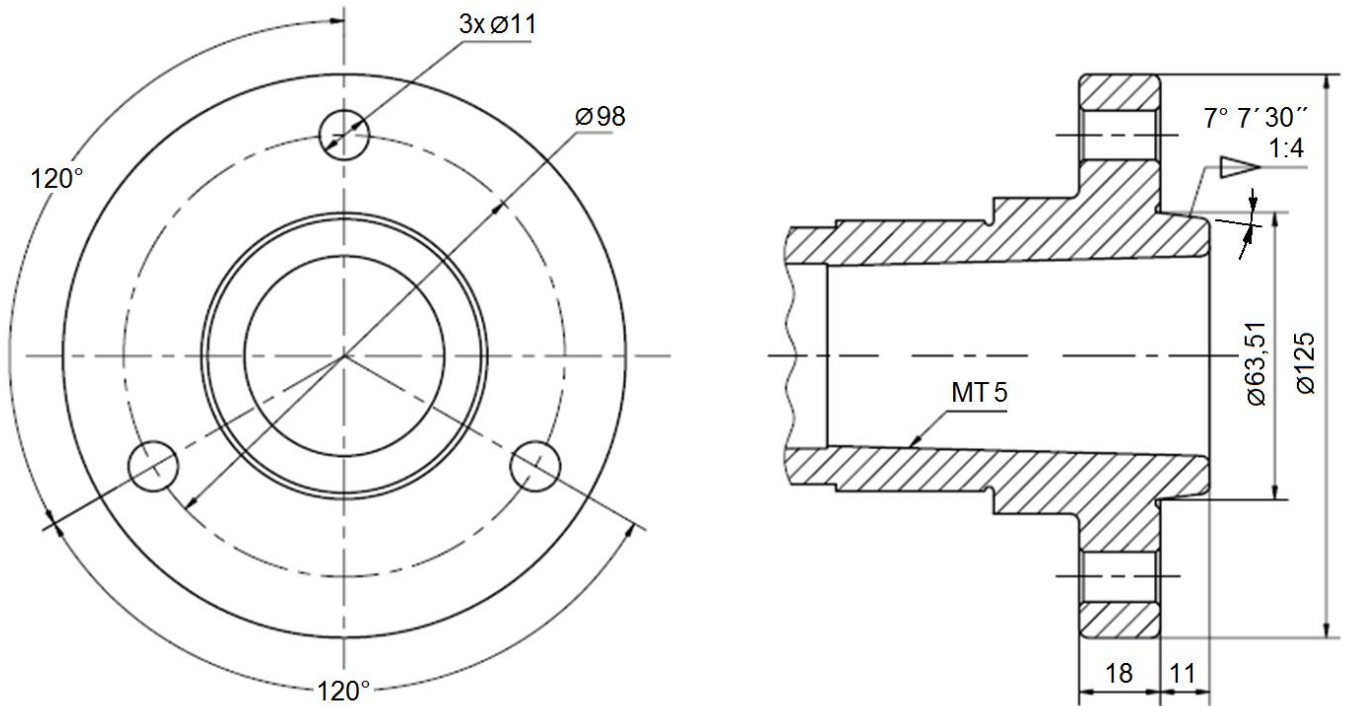


Figure 4-1: Spindle nose mounting

#### 4.2 Anchor bolt hole pattern:

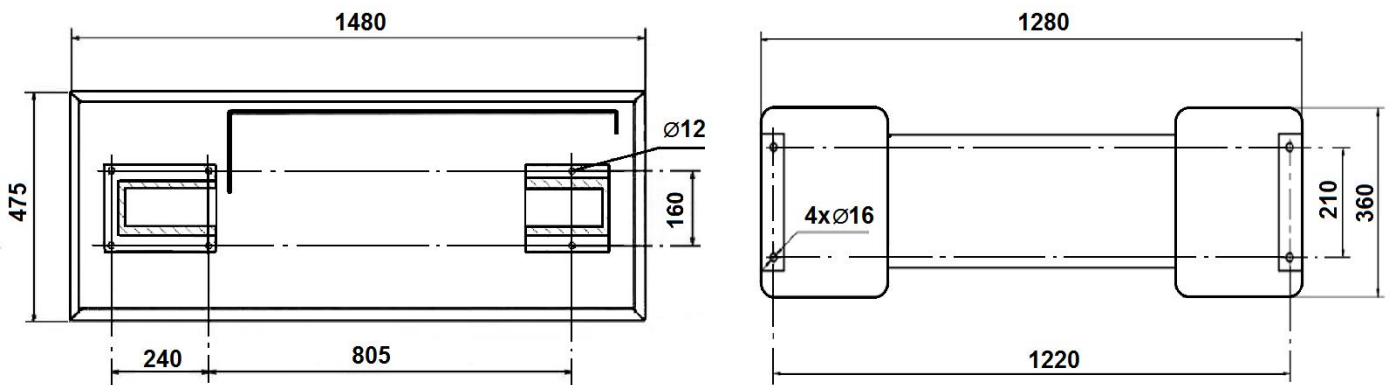


Figure 4-2: Lathe Bed (left) & Stand (right) anchor bolt pattern



**WARNING:**

To avoid tipping, the machine must be bolted down with four anchor bolts (not provided).

## 5.0 Machine Description



Figure 5-1: Machine description

- A ..... Machine cabinet stand
- B ..... Gear box
- C ..... Pulley cover
- D ..... Headstock
- E ..... Chuck and chuck guard
- F ..... Tool post and tool post guard
- G ..... Machine lamp
- H ..... Coolant nozzle
- I ..... Top slide
- J ..... Carriage
- K ..... Tailstock
- L ..... Splash guard
- M ..... Lathe bed
- N ..... Lead screw
- O ..... Chip tray
- P ..... Longitudinal feed / Cross feed select lever
- Q ..... Anchor bolt holes

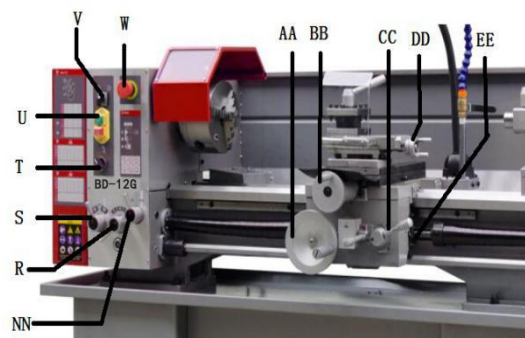


Figure 5-2: Machine description

- R ..... Feed speed select knob
- S ..... Feed forward/ off/ reverse
- T ..... Coolant ON/OFF
- U ..... Spindle power ON/OFF
- V ..... Spindle forward/reverse
- W ..... Emergency Stop
- AA ..... Apron hand wheel
- BB ..... Cross slide hand wheel
- CC ..... Half nut lever
- DD ..... Top slide hand wheel
- EE ..... Threading dial
- NN ..... Feeding / Threading select knob

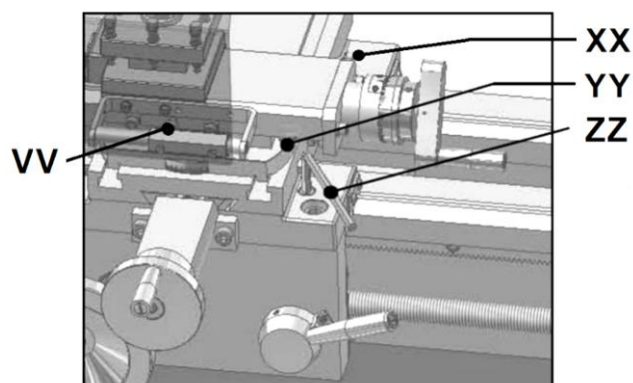


Figure 5-3 Machine description

- VV ..... Top slide lock
- XX ..... Cross slide lock
- YY ..... Top slide taper adjustment
- ZZ ..... Carriage lock



## 6.0 Setup and Assembly



### WARNING:

Read and understand the entire contents of this manual before attempting assembly or operation. Failure to comply may cause serious injury.

### 6.1 Unpacking and clean up

Remove all contents from shipping crate and compare parts to the contents list in this manual. If shipping damage or any part shortages are identified, contact your distributor. Do not discard crate or packing material until machine is assembled and running satisfactorily.

Clean all rust protected surfaces with kerosene or a light solvent. Do not use lacquer thinner, paint thinner or gasoline, as these can damage plastic components and painted surfaces.

### 6.2 Shipping contents

- 1 Machine
- 1 Cabinet stand
- 1 Coolant facility (optional)
- 1 Machine lamp(optional)
- 1 160mm 3-jaw universal chuck
- 1 160mm 4-jaw independent chuck
- 1 265mm face plate(optional)
- 1 Chuck guard
- 1 4-way tool post
- 1 **Tool post guard**
- 1 Set of change gears
- 1 Threading dial
- 1 MT5 fixed centre
- 1 MT3 fixed centre
- 1 Steady rest
- 1 Follow rest(optional)
- 1 Operating tools in tool box
- 1 Oil can
- 1 Operating instructions and parts manual

### 6.3 Assembly

The machine comes completely assembled. Install the drive belt (V-belt). Inspect that all fasteners are tight.

### 6.4 Initial lubrication

The machine must be serviced at all lubrication points before it is placed into service (see chapter 11.1 for lubrication).

## 6.5 Installation

Unbolt the lathe from the shipping crate bottom.

Use heavy duty fibre belt for lifting the machine off the pallet.



### Warning:

**The machine is heavy (402kg)!**

**Assure the sufficient load capacity and proper condition of your lifting devices.**

**Never step underneath suspended loads.**

**To avoid tipping, the machine must be bolted down with four anchor bolts (not provided).**

To avoid twisting the bed, make sure the setup surface is absolutely flat and level.

Loosen anchor bolts, shim and tighten bolts if needed.

The machine must be level to be accurate !

## 7.0 Electrical Connections



### WARNING:

**All electrical connections must be done by a qualified electrician in compliance with all local codes and ordinances. Failure to comply may result in serious injury.**

The BD-12G Metal Lathes are rated at 1~230V, PE, 50Hz power supply. The machines come with a plug designed for use on a circuit with a *grounded outlet*.

Mains connection and any extension cords and plugs used must comply with the information on the machine license plate.

The mains connection must have a 16A surge-proof fuse.

Only use extension cords marked H07RN-F, with wires 1,5mm<sup>2</sup> or more.

The total length of cord may not exceed 18 Meter

Power cords and plugs must be free from defects.

Connections and repairs to the electrical equipment may only be carried out by qualified electricians.

The machine is equipped with 2.3m power cord and plug.

Before connecting to power source, be sure main switch is in off position.

### 7.1 Grounding instructions

This tool must be grounded. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be

inserted into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.



**WARNING:**

**Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the tool.**

The green/yellow conductor is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Use only 3-wire extension cords with grounding plugs.

Repair or replace damaged or worn cord immediately.

**7.2 Extension cords**

The use of extension cords is discouraged; try to position machines near the power source. If an extension cord is necessary, make sure it is in good condition.

An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.

Only use extension cords marked H07RN-F, with wires 1,5mm<sup>2</sup> or more.

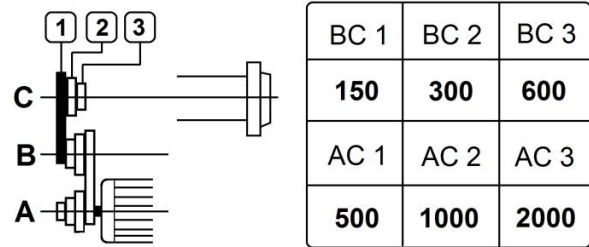
The total length of cord may not exceed 18 Meter

Extension cords and plugs must be free from defects.

**8.0 Adjustments**

**8.1 Changing spindle speed**

The speeds of the lathe are controlled by the position of the belt on the pulleys (Fig 8-1).



*Figure 8-1: Spindle speed setup*

Remove the pulley cover (C, Fig 5-1) to change the belt position.

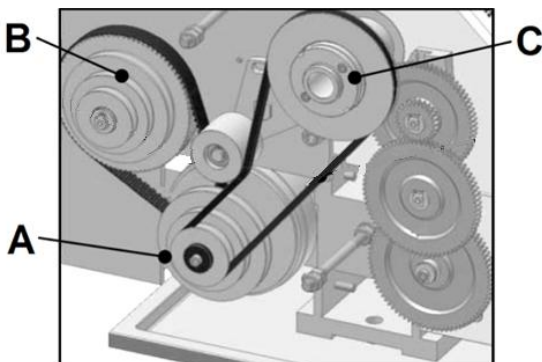
Reinstall the pulley cover.

**8.2 Change gear setup**

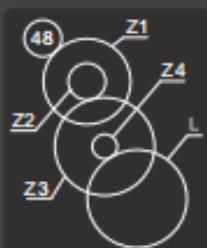
Remove the pulley cover.

The rotational speed of the lead screw, and hence the rate of feed of the cutting tool, is determined by the gear configuration and by the feed speed select lever (R, Fig 5-2).

Assemble the gears with desired setup (Fig 8-2)



mm /  $\phi$



Z1	75	75	75
Z2	45	45	45
Z3	80	80	70
Z4	20	30	30
L	85	85	60

I	0.085	0.128	0.208
II	0.170	0.256	0.416
III	0.340	0.512	0.832

I	0.010	0.016	0.025
II	0.020	0.032	0.050
III	0.040	0.064	0.100

Z1	-	-	-	-	-	-	
Z2	70	70	60	60	65	50	70
Z3	80	80	80	80	80	80	80
Z4	20	30	50	50	60	70	60
L	75	75	75	60	60	60	45
I	0.20	0.30	0.50	0.625	0.75	0.875	1.00
II	0.40	0.60	1.00	1.25	1.50	1.75	2.00
III	0.80	1.20	2.00	2.50	3.00	3.50	4.00

Z1	-	-	-	-	-	-	
Z2	60	50	65	70	60	70	60
Z3	70	85	75	50	80	60	85
Z4	60	60	50	45	50	45	45
L	65	60	60	85	65	85	70
III	8.0	9.0	9.5	10	11	12	14
II	16	18	19	20	22	24	28
I	32	36	38	40	44	36	56

Figure 8-2: Change gear setup

Adjust gears to mesh with upper and lower gear.

Placing ordinary paper in between gears helps to adjust for correct gear spacing (... remove the paper afterwards!).

Reinstall the pulley cover.

### 8.3 Taper turning with tailstock

Mount the work piece fitted with the drive dog between centres. The drive dog is driven by the face plate.

Lubricate the tailstock centre with grease to prevent tip from overheating.

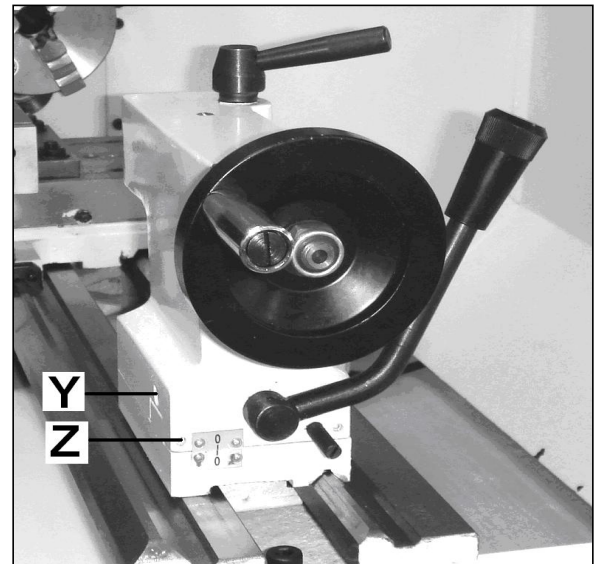


Figure 8-3: Taper turning between centres

To turn a taper, offset the tailstock, loosen the locking screws (Z, Fig 8-3) and use screws (Y) to adjust.

After taper turning, the tailstock must be returned to its original position. Turn a test piece and adjust until the machine turns a perfect cylinder.

### 8.4 Taper turning with top slide

By angling the top slide, tapers may be turned.

Loosen two hex nuts (A, Fig 8-4) and rotate the top slide according to the graduated scale (B).

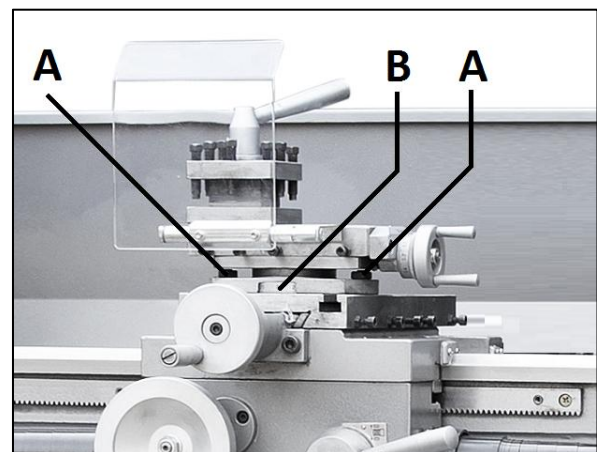


Figure 8-4: Taper turning with top slide

### 8.5 Three jaw universal chuck

With this universal chuck, cylindrical, triangular and hexagonal stock may be clamped (Fig 8-5).

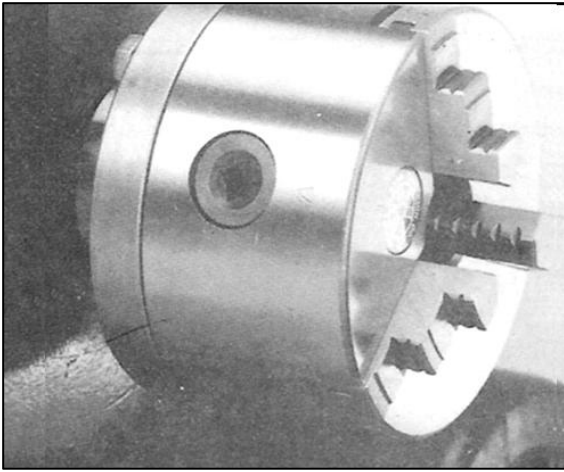


Figure 8-5: Three jaw universal chuck

To hold big diameter stock, a set of OD chuck jaws is supplied. The jaws need to be inserted to the chuck in the correct order. Use Molykote Paste G (or adequate grease) to lubricate the jaws.

### 8.6 Four jaw independent chuck (Optional)

This chuck has four independently adjustable chuck jaws (Fig 8-6).

These permit the holding of square and asymmetrical pieces and enables accurate concentric set-up of cylindrical pieces.



Figure 8-6: Four jaw independent chuck

### 8.7 Live centre (Optional)

The live centre (Fig 8-7) is mounted in ball bearings.

Its use is highly recommended for speeds above 500 RPM.

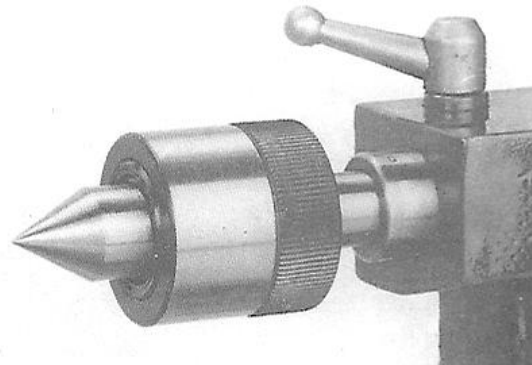


Figure 8-7: Live centre

To eject the live centre, fully retract the tailstock quill.

### 8.8 Steady rest and follow rest (Optional)

The rests prevent flexing of long and thin work pieces under pressure from the tool.

The steady rest (Fig 8-8) serves as a support for longer shafts and ensures a safe and chatter free operation.

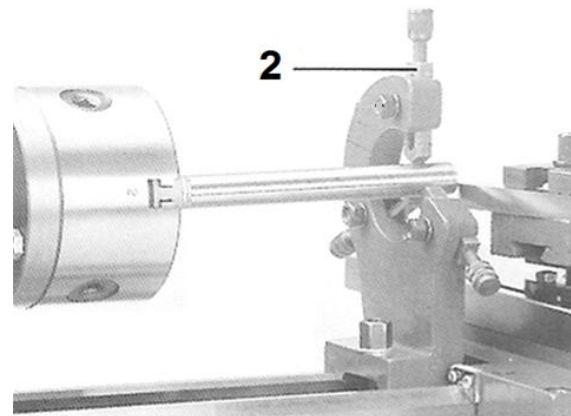


Figure 8-8: Steady rest

The follow rest (Fig 8-9) is mounted on the carriage and follows the movement of the tool.

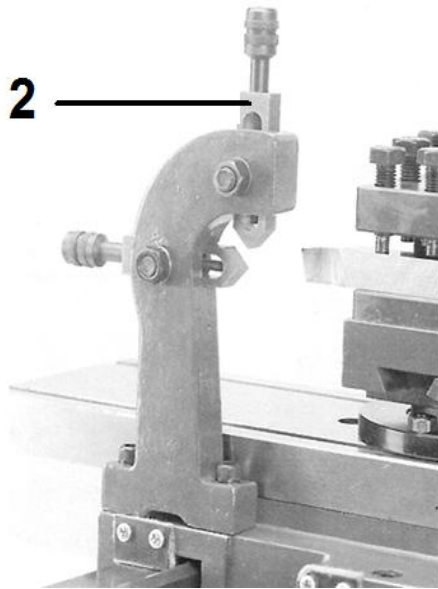


Figure 8-9: Follow rest

**Note:**

Set the fingers (2) snug but not overly tight.

Lubricate the fingers to prevent premature wear.

## 9.0 Operating Controls

Refer to Figure 9-1:

- R .....Feed speed select lever (I, II, III)
- S ..... Feed forward/off/reverse
- T ..... Coolant ON/OFF
- U ..... Spindle power ON/OFF
- V ..... Spindle forward/reverse
- W ..... Emergency Stop
- NN ..... Feed shaft / Lead screw select lever

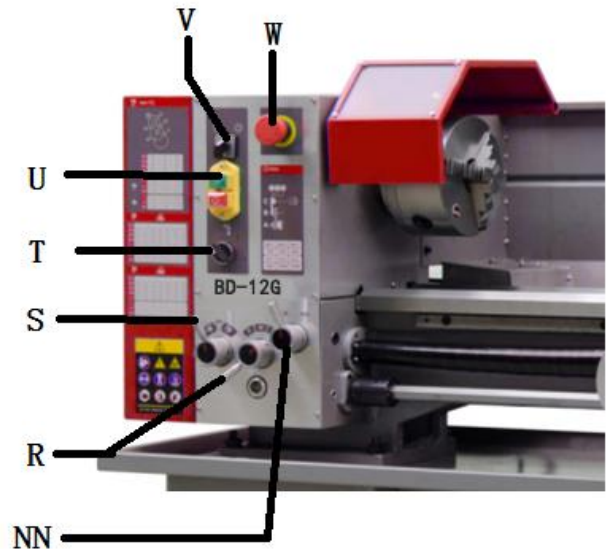


Figure 9-1: Operating Controls

## 10.0 Machine Operation

### 10.1 Cutting execution

Before starting the machine check the proper chucking.

Close the chuck guard and pulley cover before you start the machine.

Select running direction, forward or reverse (V, Fig 9-1).

You can start the machine with the green ON-button (U).

The red OFF-button stops the machine.

The emergency stop button (W) stops all machine functions.

Turn emergency stop button clockwise to reset.

The work lamp (G, Fig 5-1) operates independently; ON/OFF switch is on top of lamp housing.

**Unplug the machine if not in use.**

## 10.2 Chucking

Do not exceed the max speed of the work holding device.

Jaw teeth and scroll must always be fully engaged. Otherwise chuck jaws may break and fly off in rotation (Fig 10-1).

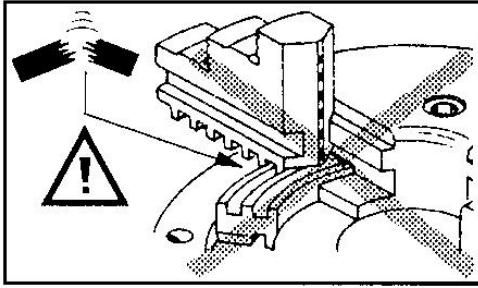


Figure 10-1: Poor jaw engagements

Avoid long workpiece extensions. Parts may bend (Fig 10-2) or fly off (Fig 10-3). Use tailstock or rest to support.

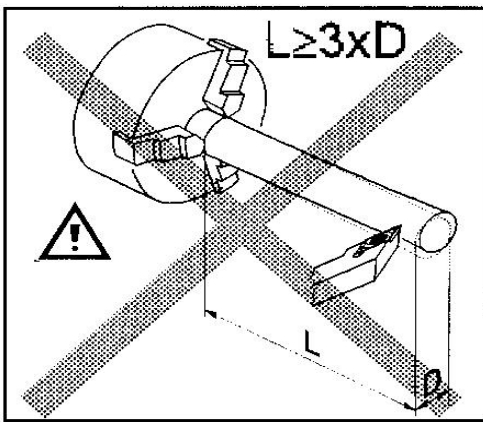


Figure 10-2: Workpiece too long

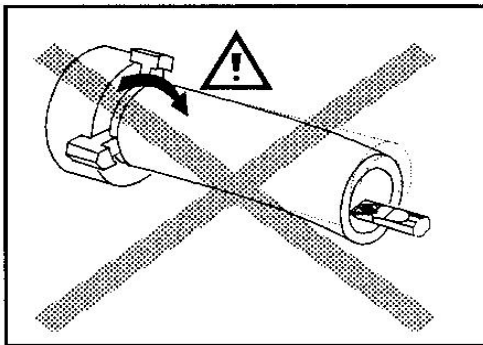


Figure 10-3: Workpiece too long

Avoid short clamping contact (A, Fig 10-4) or clamping on a minor diameter (B). Face locate workpiece for added support.

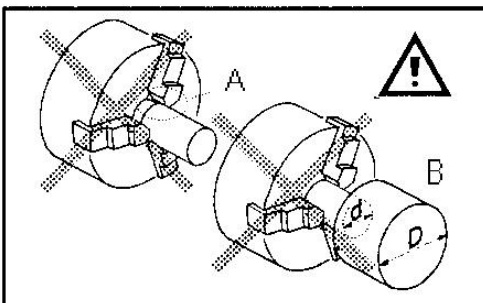


Figure 10-4: Poor clamping

## 10.3 Cutting Tool Setup

The cutting angle is correct when the cutting edge is in line with the centre axis of the work piece. Use the point of the tailstock centre as a gauge and shims under the tool to obtain the correct centre height (Fig 10-5).

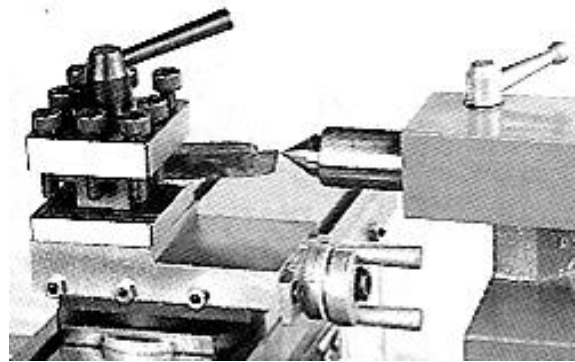


Figure 10-5: Cutting tool setup

Use a minimum of two screws to clamp the cutting tool.

Avoid large tool extensions.

## 10.4 Recommended spindle speeds

### ATTENTION:

Generally speaking, the smaller the **cut diameter**, the greater the RPM required. Soft materials require higher speeds; hard metals slower speeds.

**Metal is usually machined with coolant or cutting oil applied.**

Recommended spindle speeds for cutting 10mm diameter, with HSS tools (High speed steel tools):

Plastic: .....	2000 /min
Aluminium:.....	2000 /min
Brass: .....	1000 /min
Cast iron:.....	1000 /min
Mild steel:.....	800 /min
High carbon steel:.....	600 /min
Stainless steel:.....	300 /min

For carbide tools (HM), 5 times higher speeds can be chosen.

### For example:

Turning mild steel at a diameter of 20mm allows

With HSS tool..... 400 /min

With carbide tool..... 2000 /min

## 10.5 Manual turning

Apron travel (AA, Fig 10-6), cross travel (BB) and top slide travel (DD) can be operated for longitudinal and cross feeding.

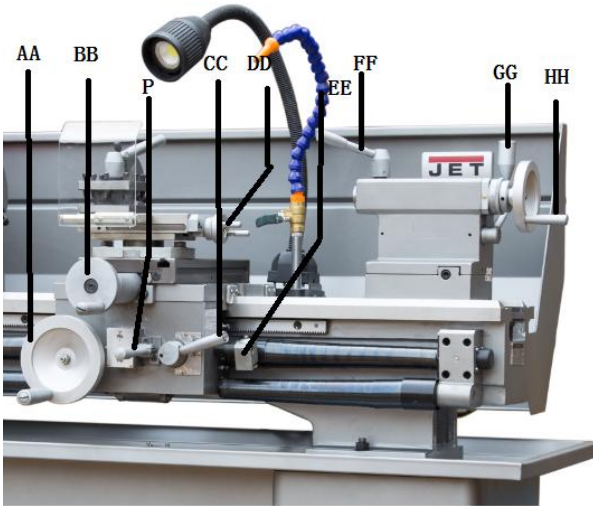


Figure 10-6: Machine controls

The correct feed depends on the material to be cut, the cutting operation, the type of tool, the rigidity of the work piece chucking, the depth of cut and the desired surface quality.

## 10.6 Turning with auto feed

Select "Feeding" mode on gear box (NN, Fig 9-1).

Select feed forward or reverse direction (S).

Start the auto feed with lever (P, Fig 10-7):

- For longitudinal feed, move lever right and up.....



- For cross feed, move lever left and down .....

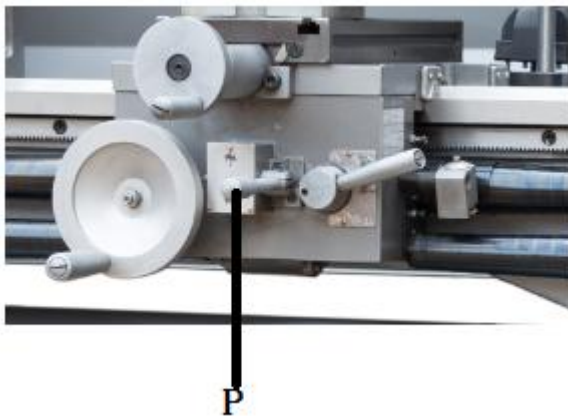


Figure 10-7: Auto feed

Three longitudinal and three cross feed rates are readily available by rotating the feed select knob (R, Fig 9-1).

### Example for longitudinal turning:

Operation	feed/rev	feed select knob
Stock removal	0,34mm.....	III
Finishing cut	0.17mm.....	II
Micro finishing cut	0.085mm.....	I

**NOTE:** Additional feed rates are available with different change gear setup (Fig 10-8).

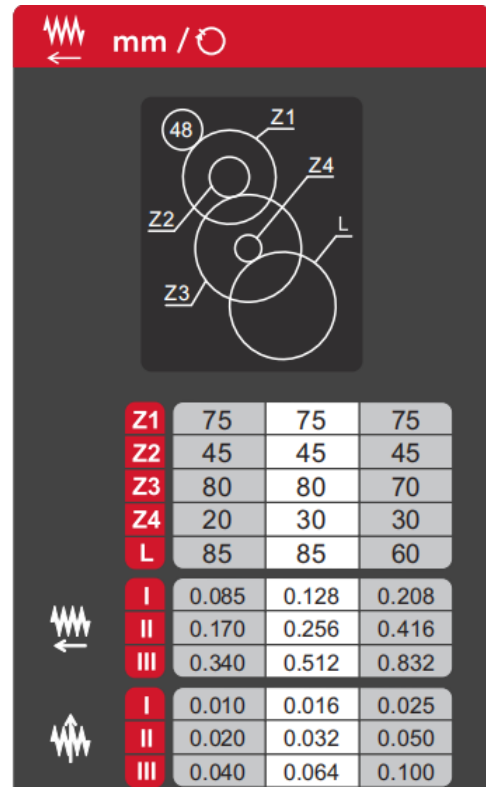


Figure 10-8: Available feed rates

The correct feed depends on the material to be cut, the cutting operation, the type of tool, the rigidity of the work piece chucking, the depth of cut and the desired surface quality.

When roughing big diameters reduce the depth of cut !

## 10.7 Thread cutting

Threading is performed in multiple passes with a threading tool.

Each depth of cut should be about 0,2mm and become less for the finishing passes.

### A) Cut inch and metric threads:

Set the machine up for the desired threading pitch (see chapter 8.2).

Select the lowest possible spindle speed.

Engage the halve nut (CC, Fig 10-9).

**NOTE:** The halve nut must stay engaged during the entire threading process.

- Set the tool up for the threading pass.

- Start the motor.

- When the tool approaches the end of cut, stop the motor and at the same time back the tool out, so that it clears the thread diameter.

- Start the motor in reverse direction, let the cutting tool travel back to the starting point.

Repeat these steps until you have obtained the desired results.

### B) Cut metric threads with threading dial

On most metric threads the threading dial (EE, Fig 10-9) can be used.

The halve nut can be opened at the end of cut, rather than the motor being stopped and reversed.

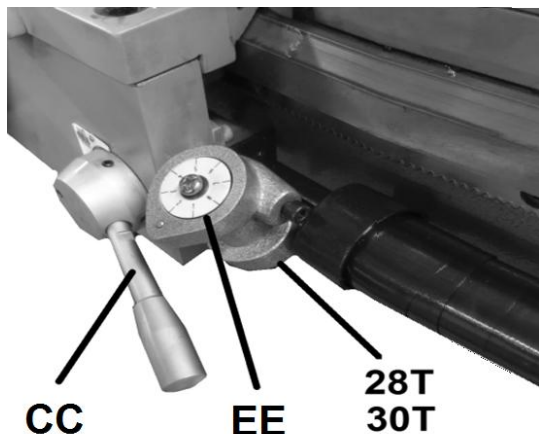


Figure 10-9: Threading Dial

Select threading dial gear 28T or 30T

The halve nut may only be engaged at the corresponding graduation match on the threading dial (Fig 10-10).

	n/1"						
Z1	-	-	-	-	-	-	-
Z2	60	50	65	70	60	70	60
Z3	70	85	75	50	80	60	85
Z4	60	60	50	45	50	45	45
L	65	60	60	85	65	85	70
III	8.0	9.0	9.5	10	11	12	14
II	16	18	19	20	22	24	28
I	32	36	38	40	44	36	56

Figure 10-10: Threading dial setup

#### Note:

For thread pitches of 0,2/0,3/0,5/0,6/0,75/ 1,0/ 1,5/3 mm the half nut can be engaged at any point.

(lead screw pitch = 3 mm = can be divided by thread pitch).

Use a drill chuck with MT3 arbor (option) to clamp centre drills and twisted drills in the tailstock (Fig 10-11)

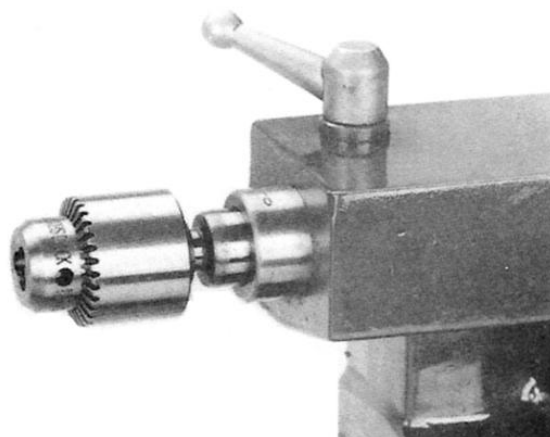


Figure 10-11: Drilling operation

For recommended speeds refer to section 10.4

To eject the drill chuck, fully retract the tailstock quill.

## 10.8 Drilling operation



## 11.0 User-Maintenance



### WARNING:

Before any intervention on the machine, disconnect it from electrical supply, pull the mains plug. Failure to comply may cause serious injury.

An important security factor is the cleaning of the machine, of bed, carriage and slides, of the floor and the surrounding places.

Loose objects could come into contact with the moving chuck or workpiece, creating hazards.

Empty the chip tray regularly.

Replace the coolant regularly, follow manufacturer's advice.

Check that bolts are tight and electrical cords are in good condition. If an electrical cord is worn, cut, or damaged in any way, have it replaced immediately.

### 11.1 Lubrication

Spindle bearings are pre-lubricated and sealed, and require no further lubrication.

#### A) Weekly apply oil:

##### DIN 51502 CG ISO VG 68

(e.g. BP Maccurat 68, Castrol Magna BD 68, Mobil Vectra 2)

- 1...oil balls on change gear hubs
- 2...oil bed ways lightly
- 3...oil tailstock quill over entire length
- 4...oil lead screw on entire length
- 5...oil ball on lead screw bracket
- 6...oil balls on top slide
- 7...oil balls on tailstock
- 8...oil balls on carriage
- 9...oil balls on apron

#### B) Monthly apply grease:

##### DIN 51807-1 non slinging grease

(e.g. BP L2, Mobilgrease Special).

- 10...grease teeth of change gears
- 11...grease rack over entire length

#### Gear box oil:

##### DIN 51517-2 CL ISO VG 68

(e.g. BP Energol HLP 68, Mobil DTE Oil Heavy Medium)

Oil must be up to indicator mark in oil sight glass (L, Fig 11-1).

In case of need, fill up with oil by removing plug (M).

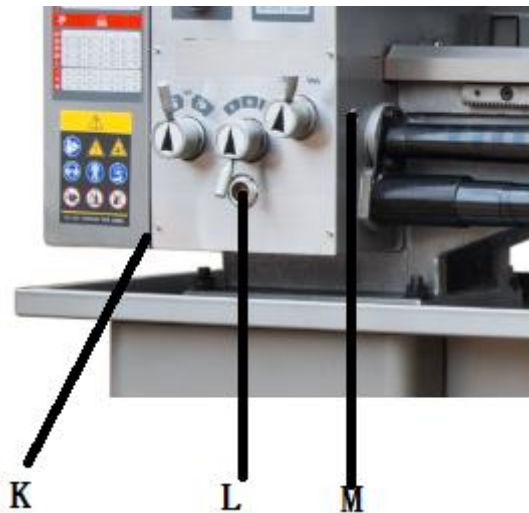


Figure 11-1: Gearbox oil fill-up

Change the oil in the gearbox every 1000 operating hours.

Drain oil by removing drain plug (K).

### 11.2 Readjustments

#### A) Bearing adjustment:

The main spindle taper roller bearings are adjusted at the factory.

If end play becomes evident after considerable use the bearings may be adjusted.

Loosen two hex socket cap screws (A, Fig 11-2). Tighten nut (B) until end play is taken up.

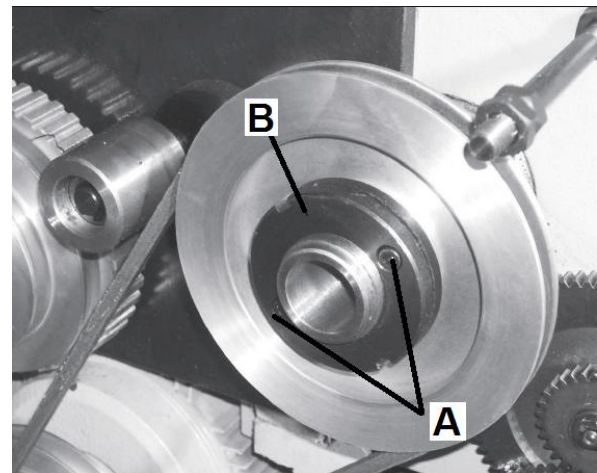


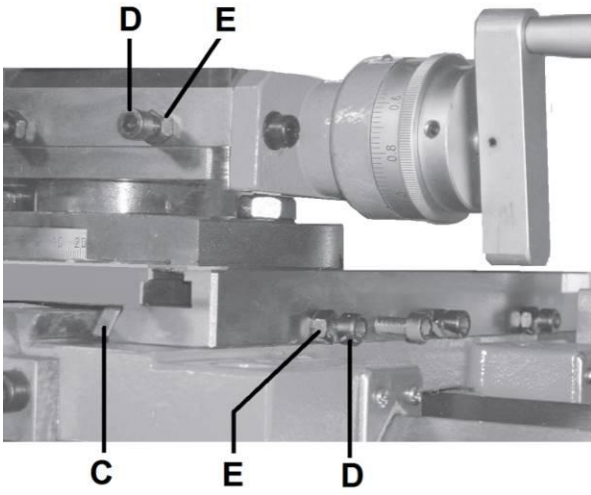
Figure 11-2: Bearing adjustment

Tighten nut carefully, the spindle should still revolve freely. Excessive preloading will damage the bearings.

Tighten the screws.

#### B) Cross slide and Top slide adjustment:

Each slide is fitted with a gib (C, Fig 11-3) and can be adjusted with screws (E) fitted with lock nuts (D).

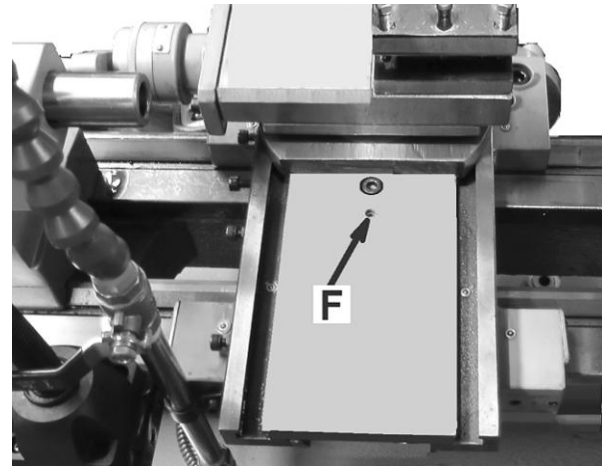


*Figure 11-3: Slide adjustment*

Adjust until slides move freely without play.

### C) Cross slide spindle adjustment

Remove the top slide and adjust the grub screw (F, Fig 11-4) until the backlash between the spindle and the nut is eliminated.



*Figure 11-4: Cross slide spindle adjustment*

## 12.0 Troubleshooting

Symptom	Possible Cause	Correction *
Lathe will not start.	Lathe unplugged from wall, or motor.	Check all plug connections.
	Fuse blown, or circuit breaker tripped.	Replace fuse, or reset circuit breaker.
	Cord damaged.	Replace cord.
	Chuck guard not closed.	Close chuck guard.
	Pulley cover removed	Install pulley cover
Lathe does not come up to speed.	Extension cord too light or too long.	Replace with adequate size and length cord.
	Low current.	Contact a qualified electrician.
Lathe vibrates excessively.	Base on uneven surface.	Locate lathe on even floor.
	Lathe not bolted to the floor	Bolt machine to the floor
	Unbalanced workpiece	Reduce speed
	Workpiece deflection	Improve chucking length or diameter, support on tailstock end
	Tool deflection	Reduce tool length
	Slide backlash	Adjust slides
	Slides running dry	Lubricate with oil
	Dull tool tip	Re-sharpen or change tool
	Chip load too high	Reduce depth of cut or feed
Noisy operation	Dry change gear hubs.	Lubricate with oil.
	Dry change gears	Lubricate with grease.
Tool tip burns	Cutting speed too high	Reduce spindle speed
	Dull tool tip.	Re-sharpen or change tool
	Dry cutting.	Use coolant.
	Feeding too slowly.	Increase feed rate.
Machine turns a taper.	Tailstock alignment is offset.	Align tailstock position.
	Machine bed is twisted.	Stand supporting surface must be flat. Shim if needed
	Workpiece deflection.	Reduce depth of cut or feed
Drill chuck or arbor does not stay in place.	Dirt, grease, etc. on arbor, chuck, or tailstock quill	Clean all mating surfaces thoroughly with a cleaner-degreaser.

\* **WARNING:** Some corrections may require a qualified electrician.

Table 1

## 13.0 Environmental Protection

Protect the environment.

Dispose all packaging material in an environmental friendly manner.

Dispose coolant in an environmentally friendly manner.

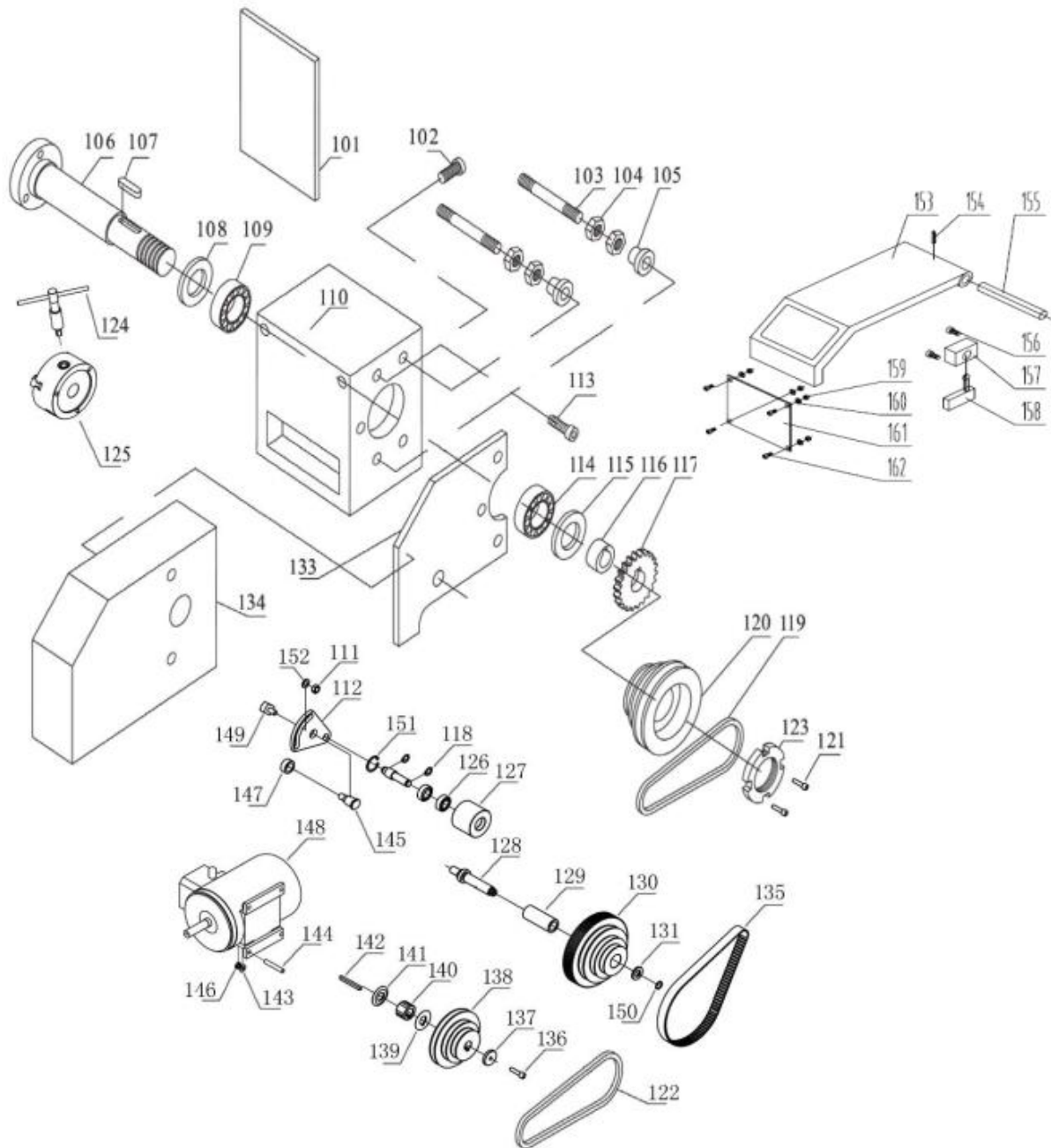
Your appliance contains valuable materials which can be recovered or recycled. Please leave it at a specialized institution.

## 14.0 Available Accessories

Refer to the JET price list.

# 15.0 Replacement Parts

## BD-12G Assembly Breakdown -1

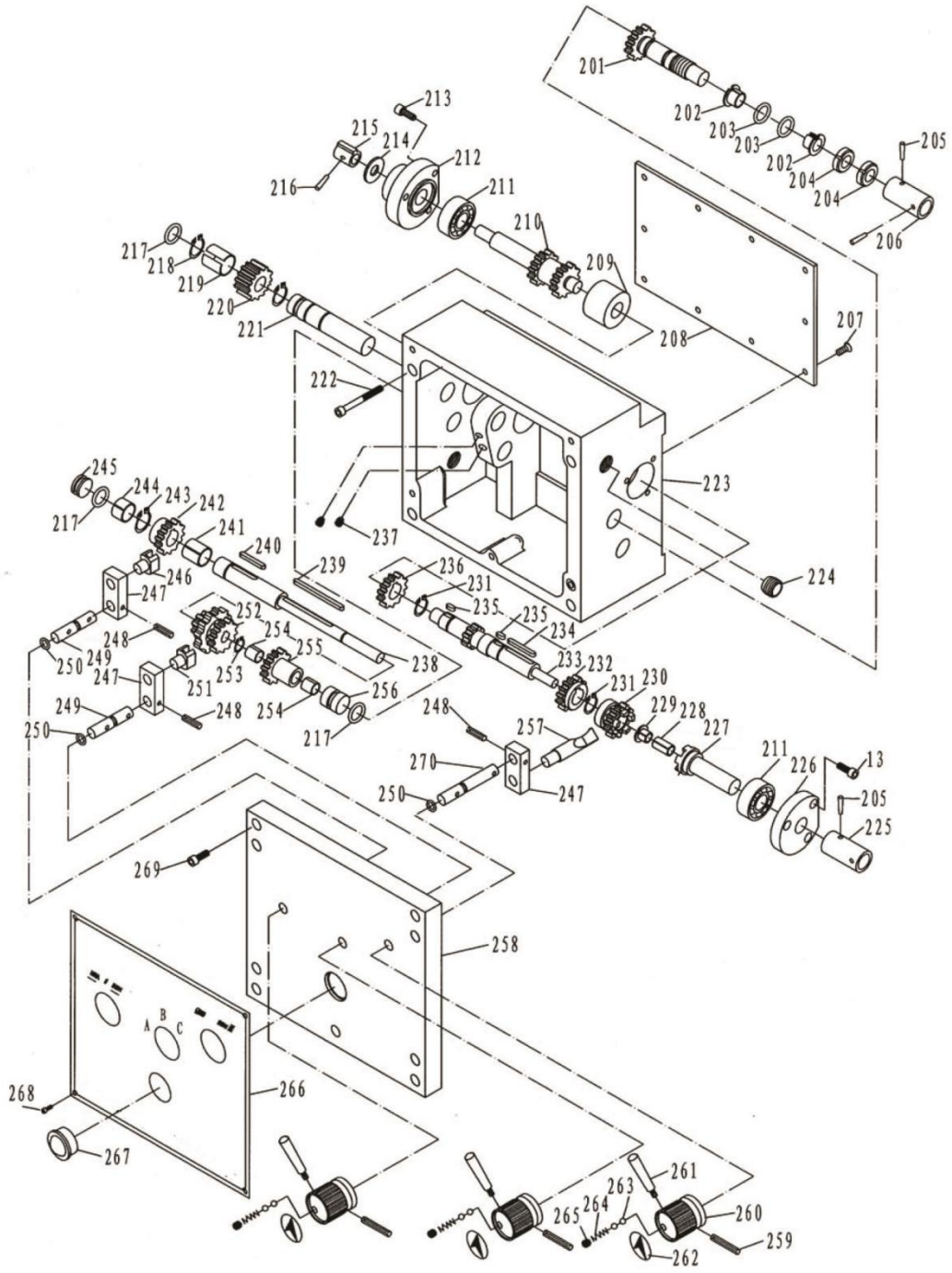


## BD-12G Parts List for Breakdown -1

Index No.	Part No.	Description	Size	Qty.
101	BD-12G-1-01	LABEL		1
102	BD-12G-1	SOCKET HD SCREW	DIN912 Φ 4×10	6
103	BD-12G-1-03	BOLT		2
104	BD-12G-2	NUT	DIN439-M10	4
105	BD-12G-3	KNURL NUT	M10	2
106	BD-12G-1-06	SPINDLE		1
107	BD-12G-4	KEY	DIN 6885-8×45	1
108	BD-12G-1-08	GASKET		1
109	TRB-30212	BEARING	30212	1
110	BD-12G-1-10	HEADSTOCK		1
111	BD-12G-5	HEXAGON NUT	DIN439 - M8	1
112	BD-12G-1-12	ECCENTRIC DISK IDLER		1
113	BD-12G-6	SOCKET HD SCREW	DIN912 M8×25	3
114	TRB-32211	BEARING	32211	1
115	BD-12G-1-15	GASKET		1
116	BD-12G-1-16	BUSH		1
117	BD-12G-1-17	GEAR		1
118	BD-12G-7	CIRCLIP	DIN 471-12 x 1	2
119	BD-12G-1-19	GATES BELT	O-889	1
120	BD-12G-1-20	SPINDLE PULLEY		1
121	BD-12G-8	SOCKET HD SCREW	M5×12	2
122	BD-12G-1-22	GATES BELT	O-710	1
123	BD-12G-1-23	NUT		1
124	BD-12G-1-24	CHUCK WRENCH		1
125	BD-12G-1-25	3-JAW CHUCK	K11-160	1
126	BB-6001	BEARING	6001	2
127	BD-12G-1-27	IDLER		1
128	BD-12G-1-28	SHAFT		1
129	BD-12G-1-29	CASE		1
130	BD-12G-1-30	TOOTHED BELT DISK		1
131	BD-12G-9	DISK FOR TOOTHED BELT DISK		1
133	BD-12G-1-33	BRACKET PLATE		1
134	BD-12G-1-34	BELT COVER		1
135	BD-12G-1-35	TOOTHED BELT	255L075	1
136	BD-12G-10	SOCKET HEAD SCREW	GB 70-85 - M6x25	1
137	BD-12G-11	FIXING DISC		1
138	BD-12G-1-38	MOTOR PULLEY		1
139	BD-12G-1-39	FLANGED WASHER IN FRONT		1
140	BD-12G-1-40	TOOTHED BELT DISK		1
141	BD-12G-1-41	FLANGED WASHER IN THE BACK		1
142	BD-12G-12	KEY	DIN 6885-A6x6x50	1
143	BD-12G-13	WASHER	DIN 125 - A8	1
144	BD-12G-1-144	SCREW		4
145	BD-12G-1-45	BOLT		1
146	BD-12G-15	HEX NUT	ISO 4032 M8	4
147	BD-12G-1-47	SPACER		1
148	BD-12G-1-48	MOTOR	1.1KW	1
149	BD-12G-1-49	CLAMPING PIECE		1
150	BD-12G-16	CIRCLIP	DIN 471 - 12x1	1
151	BD-12G-17	CIRCLIP	DIN 471 - 28x1. 2	1
152	BD-12G-18	WASHER	DIN 125 - A8	1
153	BD-12G-153	CHUCK GUARD		1
154	BD-12G-154	ROLL PIN	3 × 20 mm	1
155	BD-12G-155	SHAFT		1
156	BD-12G-156	SOCKET HD SCREW	M5 × 12 mm	2
157	BD-12G-157	BRACKET		1
158	BD-12G-158	MICRO SWITCH		1
159	BD-12G-159	HEX NUT (THIN)	M4	4

160----	BD-12G-160.....	WASHER.....	4.....	4
161----	BD-12G-161.....	ARCRYLIC GLASS.....	1.....	1
162----	BD-12G-162.....	SOCKET HD SCREW.....	M4 x 10 mm.....	4

### BD-12G Assembly Breakdown -2



## BD-12G Parts List for Breakdown -2

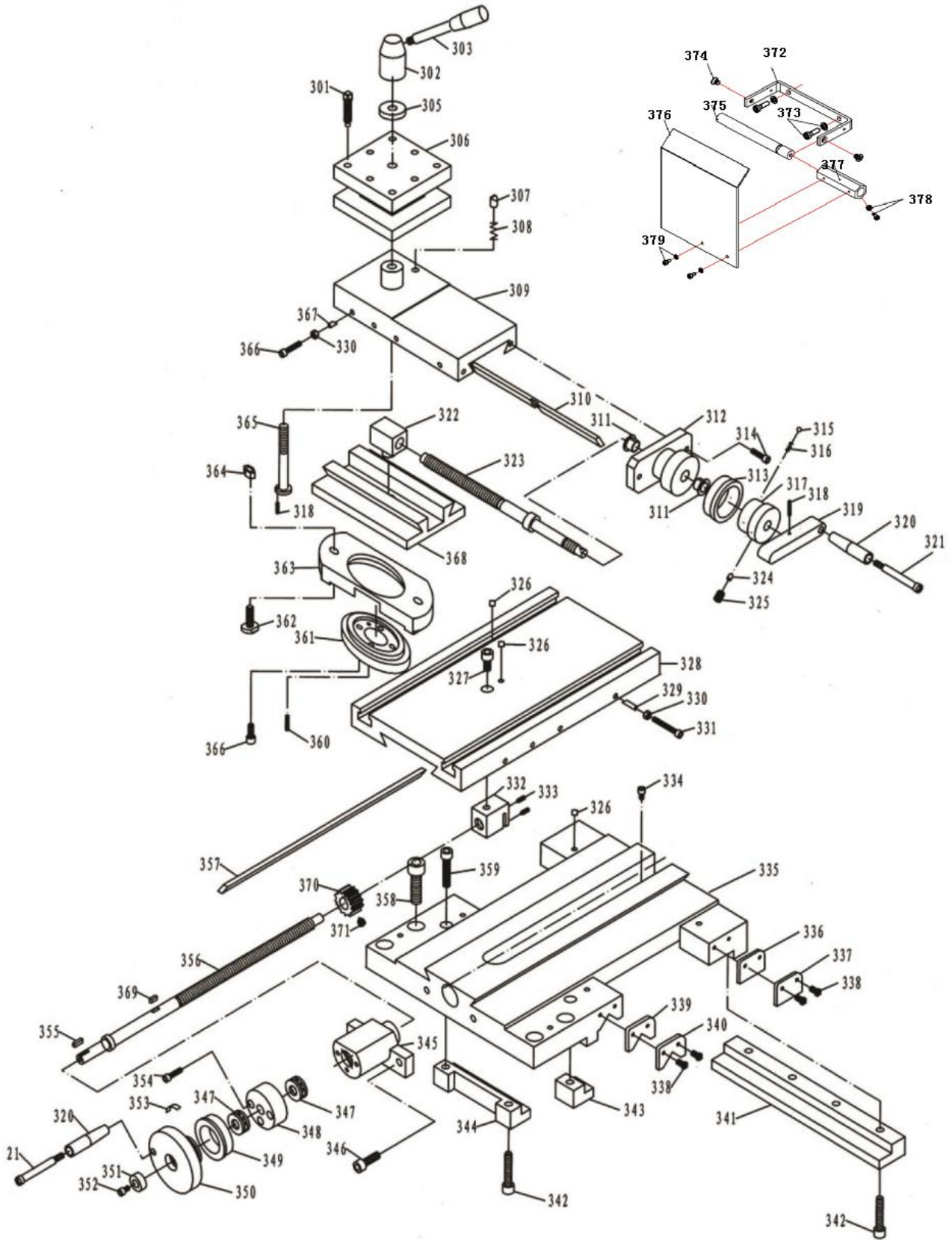
Index No.	Part No.	Description	Size	Qty.
201	BD-12G-2-01	GEAR SHAFT		1
202	BD-12G-2-02	BEARING	16170	2
203	BD-12G-19	O-RING	18001400	2
204	BD-12G-2-04	NUT DIN 1804	M16×1.5	2
205	BD-12G-20	PIN DIN 1481	Φ3×22	2
206	BD-12G-2-06	COLLAR		1
207	BD-12G-21	SOCKET HD SCREW	DIN912M5×8	10
208	BD-12G-2-08	COVER		1
209	BD-12G-2-09	COLLAR		1
210	BD-12G-2-10	GEAR SHAFT		1
211	BB-6202	BEARING	6202	2
212	BD-12G-2-12	LEFT PLUG		1
213	BD-12G-22	SOCKET HD SCREW	DIN 912 M5X12	6
214	BD-12G-23	WASHER	Φ10	1
215	BD-12G-2-15	KEY		1
216	BD-12G-24	PIN	DIN 1481 Φ4×14	1
217	BD-12G-25	O-RING	18001500	3
218	BD-12G-26	SNAP RING	Φ18	2
219	BD-12G-2-19	BEARING	1815	1
220	BD-12G-2-20	GEAR		1
221	BD-12G-2-21	SHAFT		1
222	BD-12G-27	SOCKET HD SCREW	M6×50	4
223	BD-12G-2-23	GEARBOX		1
224	BD-12G-2-24	SET SCREW	M16×1.5×12	2
225	BD-12G-2-25	COLLAR		1
226	BD-12G-2-26	RIGHT PLUG		1
227	BD-12G-2-27	SHAFT		1
228	BD-12G-2-28	BEARING	815	1
229	BD-12G-2-29	BEARING	8075	1
230	BD-12G-2-30	GEAR		1
231	BD-12G-28	SNAP RING	Φ15	2
232	BD-12G-2-32	GEAR		1
233	BD-12G-2-33	SHAFT		1
234	BD-12G-29	KEY DIN 6885	4×25	1
235	BD-12G-30	KEY DIN 6885	4×8	2
236	BD-12G-2-36	GEAR		1
237	BD-12G-31	SET SCREW	ISO4028-M6X10	2
238	BD-12G-2-38	SHAFT		1
239	BD-12G-32	KEY DIN 6885	4×50	1
240	BD-12G-33	KEY DIN 6885	4×20	1
241	BD-12G-2-41	BEARING	1615	1
242	BD-12G-2-42	GEAR		1
243	BD-12G-34	SNAP RING	Φ16	1
244	BD-12G-2-44	BEARING	1610	1
245	BD-12G-35	LEFT PLUG		1
246	BD-12G-2-46	FORK		1
247	BD-12G-2-47	BRACKET		3
248	BD-12G-36	PIN	DIN 1481 Φ3×20	3
249	BD-12G-2-49	SHAFT		2

## BD-12G Parts List for Breakdown -2

Index No.	Part No.	Description	Size	Qty.
250.....	BD-12G-37.....	O-RING.....	1800690.....	3
251.....	BD-12G-2-51.....	FORK.....		1
252.....	BD-12G-2-52.....	GEAR.....		1
253.....	BD-12G-38.....	SNAP RING.....	Φ10.....	1
254.....	BD-12G-2-54.....	BEARING.....	1010.....	2
255.....	BD-12G-2-55.....	GEAR.....		1
256.....	BD-12G-2-56.....	RIGHT PLUG.....		1
257.....	BD-12G-2-57.....	DIALS BLOCK.....		1
258.....	BD-12G-2-58.....	GEARBOX COVER.....		1
259.....	BD-12G-39.....	PIN.....	DIN 1481 Φ5×40.....	3
260.....	BD-12G-2-60.....	KNOB BASE.....		3
261.....	BD-12G-2-61.....	KONB.....		3
262.....	BD-12G-2-62.....	LABEL.....		3
263.....	BD-12G-40.....	BALL.....	Φ5.....	6
264.....	BD-12G-2-64.....	SPRING.....	0.8×4×16.....	3
265.....	BD-12G-41.....	SOCKET HD SCREW.....	DIN912 M6×12.....	3
266.....	BD-12G-2-66.....	LABEL.....		1
267.....	BD-12G-2-67.....	OIL SIGHT.....		1
268.....	BD-12G-42.....	SOCKET HD SCREW.....	DIN912 M3×16.....	4
269.....	BD-12G-43.....	SOCKET HD SCREW.....	DIN912 M5×16.....	5
270.....	BD-12G-2-70.....	SHAFT.....		1



# BD-12G Assembly Breakdown -3



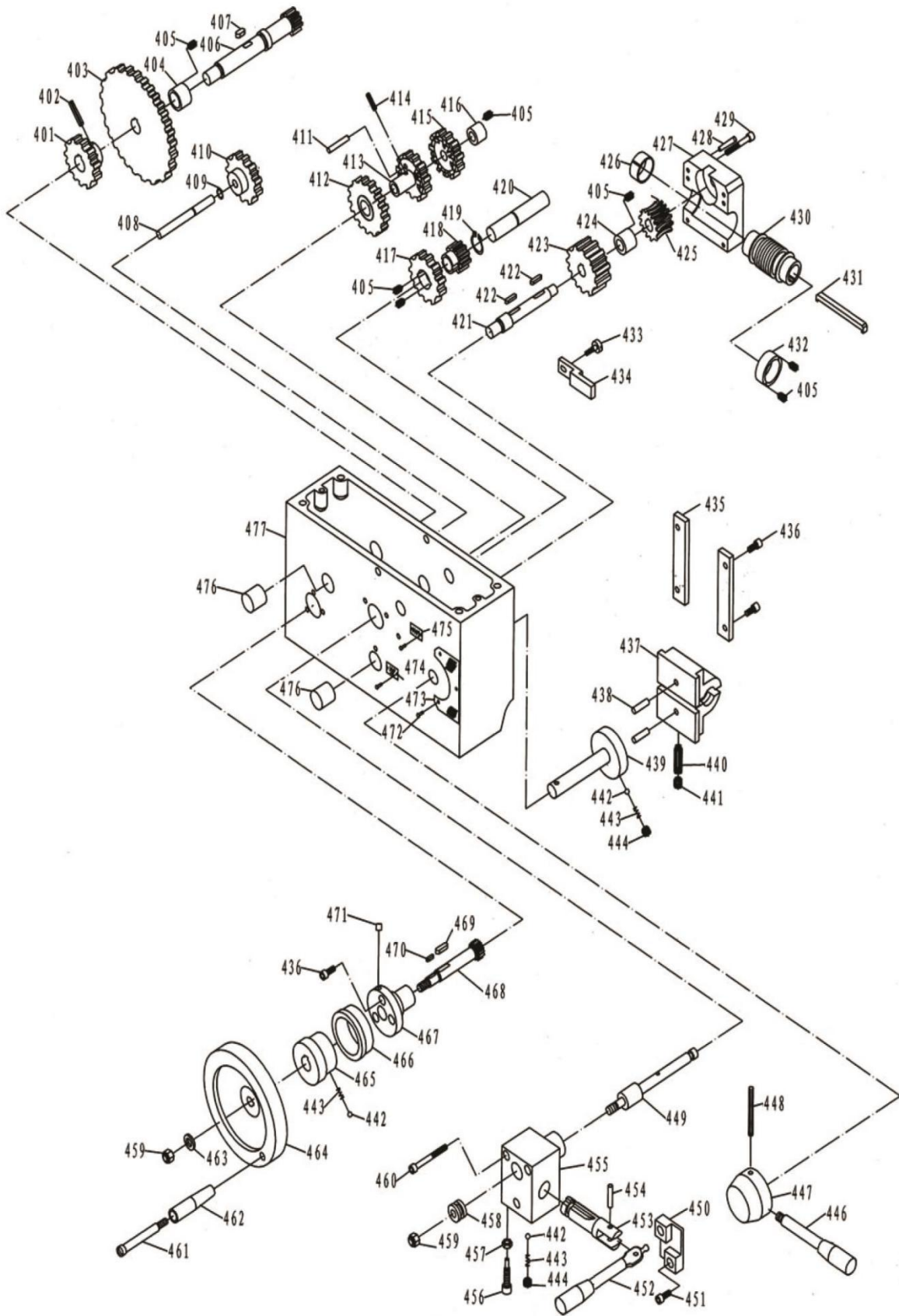
### BD-12G Parts List for Breakdown -3

Index No.	Part No.	Description	Size	Qty.
301	BD-12G-3-01	SCREW	DIN912 M8×30	8
302	BD-12G-3-02	HANDLE BASE		1
303	BD-12G-3-03	HANDLE		1
305	BD-12G-3-05	WASHER		1
306	BD-12G-3-06	POST BASE		1
307	BD-12G-3-07	STOP		1
308	BD-12G-3-08	SPRING	7×0.8×11	1
309	BD-12G-3-09	TOP SLIDE		1
310	BD-12G-3-10	GIB		1
311	BD-12G-3-11	OILLESS BEARING	1210	2
312	BD-12G-3-12	HUB		1
313	BD-12G-3-13	INDEX RING		1
314	BD-12G-44	SOCKET HD SCREW	DIN 912 M6×20	2
315	BD-12G-45	BALL	Φ5	1
316	BD-12G-3-16	SPRING	1.5×0.5×6.5	1
317	BD-12G-3-17	INDEX BASE		1
318	BD-12G-46	PIN	DIN 1481 Φ3×16	2
319	BD-12G-3-19	LEVER		1
320	BD-12G-3-20	LEVER		2
321	BD-12G-3-21	LEVER SHAFT		2
322	BD-12G-3-22	BLOCK		1
323	BD-12G-3-23	SCREW		1
324	BD-12G-47	PLUG		3
325	BD-12G-48	SET SCREW	DIN912 M6×10	3
326	BD-12G-49	OIL BALL	Φ6	7
327	BD-12G-50	SOCKET HD SCREW	DIN 912 M8×10	1
328	BD-12G-3-28	CROSS SLIDE		1
329	BD-12G-51	PULG		4
330	BD-12G-52	HEX NUT	DIN439 M6	8
331	BD-12G-53	SOCKET HD SCREW	DIN 912 M6×30	4
332	BD-12G-3-32	BLOCK		1
333	BD-12G-54	SOCKET HD SCREW	DIN912 M4×8	2
334	BD-12G-55	SOCKET HD SCREW	DIN 912 M5×6	1
335	BD-12G-3-35	SADDLE		1
336	BD-12G-3-36	WIPER		2
337	BD-12G-3-37	PLATE		2
338	BD-12G-56	SOCKET HD SCREW	DIN 912 M4×18	8
339	BD-12G-3-39	WIPER		2
340	BD-12G-3-40	PLATE		2
341	BD-12G-3-41	STRIP		1
342	BD-12G-57	SOCKET HD SCREW	DIN 912 M8×30	4
343	BD-12G-3-43	STRIP		1
344	BD-12G-3-44	STRIP		1
345	BD-12G-3-45	BRACKET		1
346	BD-12G-58	SOCKET HD SCREW	DIN 912 M5×20	3
347	TBB-51101	BEARING	51101	2
348	BD-12G-3-48	COLLAR		1
349	BD-12G-3-49	INDEX RING		1

### BD-12G Parts List for Breakdown -3

Index No.	Part No.	Description	Size	Qty.
350	BD-12G-3-50	HANDWHEEL		1
351	BD-12G-3-51	WASHER		1
352	BD-12G-59	SOCKET HD SCREW	DIN 912 M5×10	1
353	BD-12G-3-53	SPRING		1
354	BD-12G-60	SOCKET HD SCREW	DIN 912 M5×20	3
355	BD-12G-3-55	KEY	DIN 6885 4X8	1
356	BD-12G-3-56	IEADSCREW		1
357	BD-12G-3-57	GIB		1
358	BD-12G-61	SOCKET HD SCREW	DIN 912 M12×30	2
359	BD-12G-62	SOCKET HD SCREW	DIN 912 M8×40	2
360	BD-12G-63	PIN	DIN 1481 Ø4×20	1
361	BD-12G-3-61	GRADUATED COLLAR		1
362	BD-12G-3-62	T-BOLT	M10×30	2
363	BD-12G-3-63	CLAMPING RING		1
364	BD-12G-64	NUT	DIN439 M10	2
365	BD-12G-3-65	BOLT		1
366	BD-12G-65	SOCKET HD SCREW	DIN 912 M6×16	8
367	BD-12G-66	PLUG		4
368	BD-12G-3-68	SWIVEL BASE		1
369	BD-12G-67	KEY	DIN 6885 4×10	1
370	BD-12G-3-70	GEAR		1
371	BD-12G-68	SOCKET HD SCREW	DIN 912 M5×16	1
372	BD12G-372	SUPPORT		1
373	BD12G-373	SOCKET HD SCREW	M5 × 12 mm	2
374	BD12G-374	CROSS RECESSED FLAT HD SCREW	M5 × 6 mm	2
375	BD12G-375	SHAFT		1
376	BD12G-376	CHIP SHIELD		1
377	BD12G-377	HEX SLEEVE		1
378	BD12G-378	SOCKET HD SCREW	M3 × 8 mm	1
379	BD12G-379	SOCKET HD SCREW	M3 × 6 mm	2

# BD-12G Assembly Breakdown -4



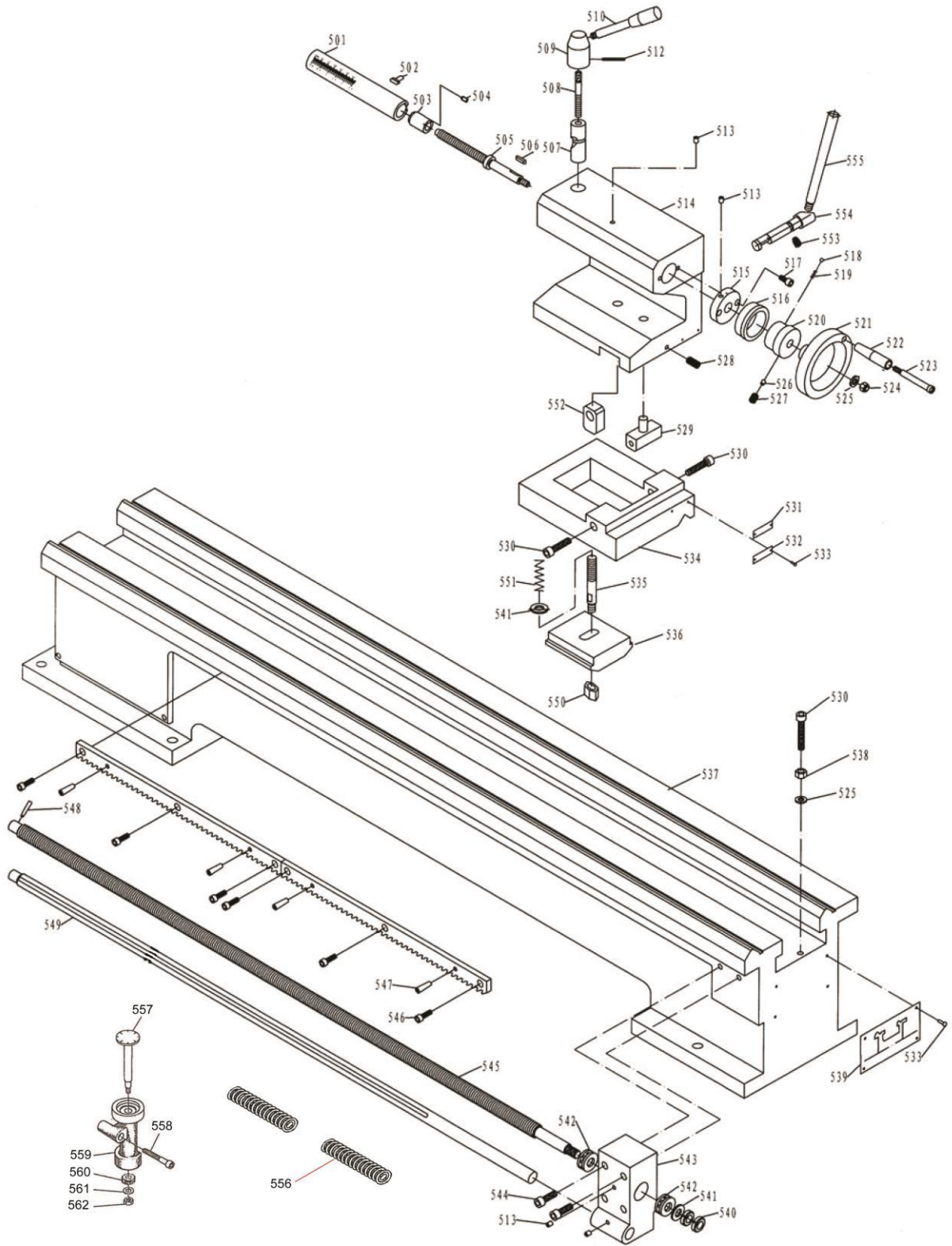
## BD-12G Parts List for Breakdown -4

Index No.	Part No.	Description	Size	Qty.
401	BD-12G-4-01	GEAR		1
402	BD-12G-69	PIN	DIN 1481 $\Phi$ 5 $\times$ 24	1
403	BD-12G-4-03	GEAR		1
404	BD-12G-4-04	WASHER		1
405	BD-12G-70	SOCKET HD SCREW	DIN912 M4 $\times$ 8	7
406	BD-12G-4-06	GEAR SHAFT		1
407	BD-12G-71	KEY	DIN 6885 4X8	1
408	BD-12G-4-08	SHAFT		1
409	BD-12G-72	SNAP RING	DIN 127 $\Phi$ 8	1
410	BD-12G-4-10	GEAR		1
411	BD-12G-4-11	SHAFT		3
412	BD-12G-4-12	GEAR		1
413	BD-12G-4-13	GEAR		1
414	BD-12G-73	PIN	DIN 1481 $\Phi$ 4 $\times$ 16	1
415	BD-12G-4-15	GEAR		1
416	BD-12G-4-16	WASHER		1
417	BD-12G-4-17	GEAR		1
418	BD-12G-4-18	GEAR		1
419	BD-12G-74	SNAP RING	DIN 127- $\Phi$ 15	1
420	BD-12G-4-20	SHAFT		1
421	BD-12G-4-21	SHAFT		1
422	BD-12G-75	KEY	DIN 6885-5 $\times$ 14	2
423	BD-12G-4-23	GEAR		1
424	BD-12G-4-24	WASHER		1
425	BD-12G-4-25	WORM		1
426	BD-12G-4-26	BEARING	2501	1
427	BD-12G-4-27	WORM BASE		1
428	BD-12G-76	PIN	DIN 1481- $\Phi$ 4 $\times$ 20	2
429	BD-12G-77	SOCKET HD SCREW	DIN 912-M4 $\times$ 30	4
430	BD-12G-4-30	WORM		1
431	BD-12G-78	KEY		1
432	BD-12G-4-32	WASHER		1
433	BD-12G-4-33	SET SCREW	DIN 912-M4 $\times$ 8	2
434	BD-12G-4-34	PLATE		1
435	BD-12G-4-35	PLATE		2
436	BD-12G-79	SOCKET HD SCREW	DIN 912-M5 $\times$ 12	7
437	BD-12G-4-37	HALF NUT		1
438	BD-12G-80	PIN	DIN 1481- $\Phi$ 6 $\times$ 18	2
439	BD-12G-4-39	CAM SHAFT		1
440	BD-12G-81	SOCKET HD SCREW	DIN 912-M6 $\times$ 20	1
441	BD-12G-82	SOCKET HD SCREW	DIN 912-M6 $\times$ 8	1
442	BD-12G-83	BALL	$\Phi$ 5	3
443	BD-12G-4-43	SPRING	0.7 $\times$ 4 $\times$ 10	3
444	BD-12G-84	SOCKET HD SCREW	DIN912-M6 $\times$ 6	2
446	BD-12G-4-46	HANDLE		1
447	BD-12G-4-47	HANDLE BASE		1
448	BD-12G-85	PIN	DIN 1481- $\Phi$ 5 $\times$ 45	1
449	BD-12G-4-49	SHAFT		1

### BD-12G Parts List for Breakdown -4

Index No.	Part No.	Description	Size	Qty.
450	BD-12G-4-50	BASE		1
451	BD-12G-86	SOCKET HD SCREW	DIN 912-M5×10	6
452	BD-12G-4-52	SHAFT HANDLE		1
453	BD-12G-4-53	SHAFT FORK		1
454	BD-12G-87	PIN	DIN 1481-Φ5×20	1
455	BD-12G-4-55	BASE		1
456	BD-12G-88	SOCKET HD SCREW	DIN912-M6X20	1
457	BD-12G-89	NUT	DIN439-M6	1
458	BD-12G-4-58	SHIFT LEVER		1
459	BD-12G-90	NUT	DIN439-M8	2
460	BD-12G-91	SOCKET HD SCREW	DIN 912-M5×35	2
461	BD-12G-4-61	SHAFT HANDLE		1
462	BD-12G-4-62	KNOB		1
463	BD-12G-92	WASHER	DIN6340-Φ 8	1
464	BD-12G-4-64	HANDWHEEL		1
465	BD-12G-4-65	SHAFT		1
466	BD-12G-4-66	GRADUATED COLLAR		1
467	BD-12G-4-67	BRACKET		1
468	BD-12G-4-68	SHAFT		1
469	BD-12G-93	KEY	DIN 6885-5×14	1
470	BD-12G-94	KEY	DIN 6885-3×10	1
471	BD-12G-95	OIL BALL	Φ 6	1
472	BD-12G-96	RIVET	Φ 2×6	3
473	BD-12G-4-73	PLATE		1
474	BD-12G-4-74	PLATE		1
475	BD-12G-4-75	PLATE		1
476	BD-12G-4-76	COLLAR		1
477	BD-12G-4-77	APRON		1

# BD-12G Assembly Breakdown -5



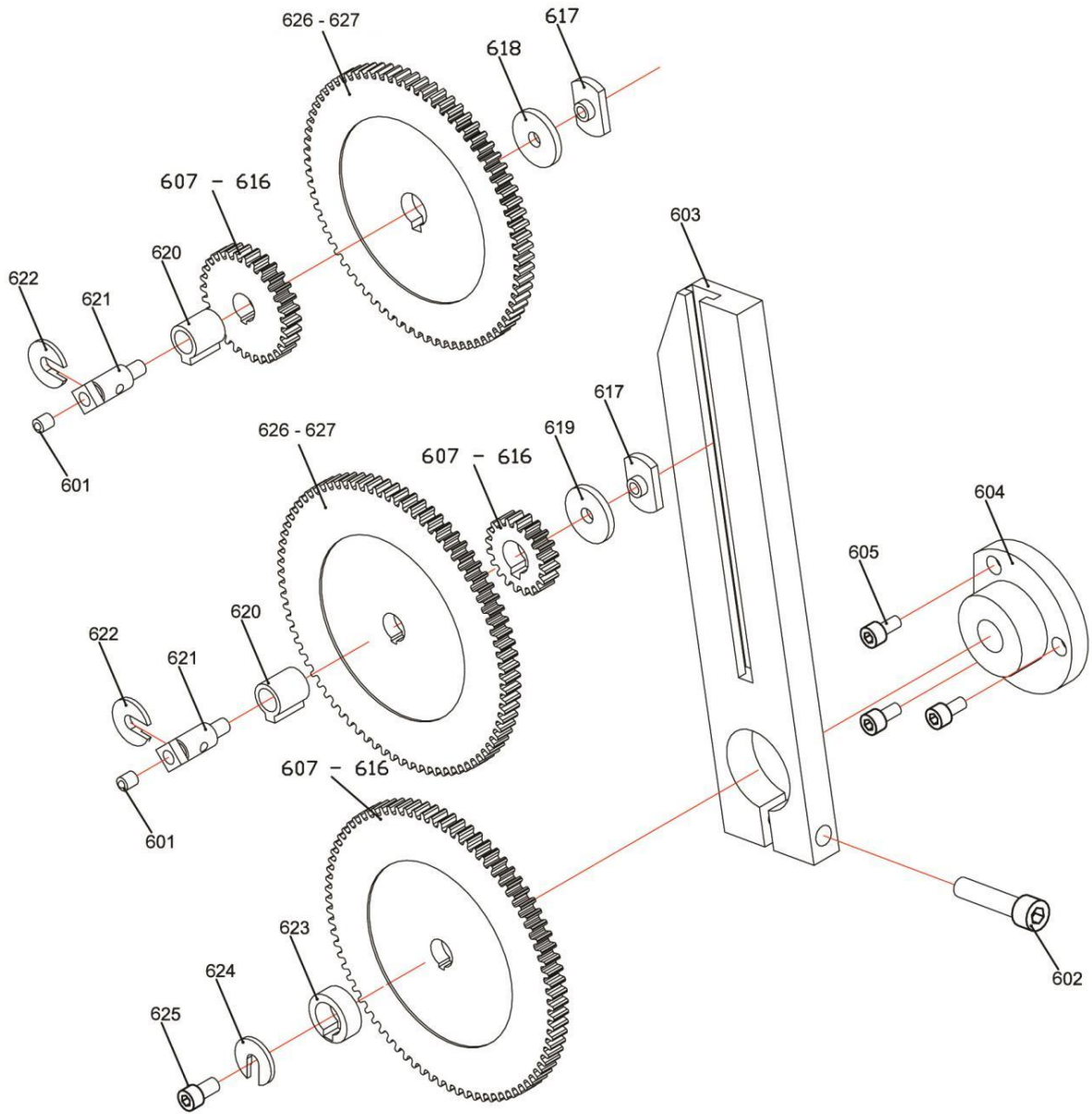
## BD-12G Parts List for Breakdown -5

Index No.	Part No.	Description	Size	Qty.
501.....	BD-12G-5-01.....	QUILL.....		1
502.....	BD-12G-97.....	KEY.....		1
503.....	BD-12G-5-03.....	NUT.....		1
504.....	BD-12G-98.....	SOCKET HD SCREW.....	DIN912-M6×10.....	1
505.....	BD-12G-5-05.....	SCREW.....		1
506.....	BD-12G-99.....	KEY.....	DIN 6885-4×10.....	1
507.....	BD-12G-5-07.....	PIVOT BLOCK.....		1
508.....	BD-12G-5-08.....	SCREW.....		1
509.....	BD-12G-5-09.....	HANDLE BASE.....		1
510.....	BD-12G-5-10.....	HANDLE.....		1
512.....	BD-12G-100.....	PIN.....	DIN 1481-Φ3×30.....	1
513.....	BD-12G-101.....	OIL BALL.....	Φ6.....	4
514.....	BD-12G-5-14.....	TAILSTOCK BODY.....		1
515.....	BD-12G-5-15.....	FLANGE COVER.....		1
516.....	BD-12G-5-16.....	INDEX RING.....		1
517.....	BD-12G-102.....	SOCKET HD SCREW.....	DIN 912-M6×10.....	2
518.....	BD-12G-103.....	BALL.....	Φ4.....	1
519.....	BD-12G-5-19.....	SPRING.....	Φ4×1×6.....	1
520.....	BD-12G-5-20.....	SLEEVE.....		1
521.....	BD-12G-5-21.....	HANDWHEEL.....		1
522.....	BD-12G-5-22.....	KONB.....		1
523.....	BD-12G-5-23.....	SCREW.....		1
524.....	BD-12G-104.....	NUT.....	DIN439-M8.....	1
525.....	BD-12G-105.....	WASHER.....	DIN6340-Φ8.....	6
526.....	BD-12G-5-26.....	BRAKE BLOCK.....		1
527.....	BD-12G-106.....	SOCKET HD SCREW.....	DIN 912-M6×10.....	1
528.....	BD-12G-107.....	SOCKET HD SCREW.....	DIN 912-M6×16.....	1
529.....	BD-12G-5-29.....	SET SCREW.....		1
530.....	BD-12G-108.....	SOCKET HD SCREW.....	DIN 912-M8×40.....	3
531.....	BD-12G-5-31.....	PLATE.....		1
532.....	BD-12G-5-32.....	PLATE.....		1
533.....	BD-12G-109.....	RIVET.....	Φ 2×6.....	8
534.....	BD-12G-5-34.....	BASE.....		1
535.....	BD-12G-5-35.....	BOLT.....		1
536.....	BD-12G-5-36.....	CLAMPING PLATE.....		1
537.....	BD-12G-5-37.....	BED.....		1
538.....	BD-12G-110.....	NUT.....	DIN439-M8.....	5
539.....	BD-12G-5-39.....	PLATE.....		1
540.....	BD-12G-111.....	NUT.....	DIN1804-M12×1.25.....	2
541.....	BD-12G-112.....	WASHER.....	DIN6340-Φ 12.....	2
542.....	TBB-51102.....	BEARING.....	51102.....	2
543.....	BD-12G-5-43.....	BRACKET.....		1
544.....	BD-12G-113.....	SOCKET HD SCREW.....	DIN 912-M8×20.....	2
545.....	BD-12G-5-45.....	FEED SHAFT.....		1
546.....	BD-12G-114.....	SOCKET HD SCREW.....	DIN 912-M6×15.....	6
547.....	BD-12G-115.....	PIN.....	DIN 1481-Φ6×22.....	4
548.....	BD-12G-116.....	PIN.....	DIN 1481-Φ4×22.....	1
549.....	BD-12G-5-49.....	SHAFT.....		1
550.....	BD-12G-117.....	NUT.....	DIN439-M12.....	1
551.....	BD-12G-5-51.....	SPRING.....	Φ13×1×62.....	1
552.....	BD-12G-5-52.....	BRAKE BLOCK.....		1
553.....	BD-12G-118.....	SOCKET HD SCREW.....	DIN912-M6×10.....	1
554.....	BD-12G-5-54.....	SHAFT.....		1
555.....	BD-12G-5-55.....	HANDLE.....		1
556.....	lead screw protective.....	65Mn.....		2
557.....	shaft.....	45.....		1



558.....	Hexagon socket Screw M6×70.....	GB7085.....	1
559.....	Disorderly buckle plate holder.....	HT200.....	1
560.....	Gear.....	45.....	1
561.....	WASHER 8.....	GB5287.....	1
562.....	HEX NUT M8.....	GB6170.....	1

# BD-12G Assembly Breakdown -6

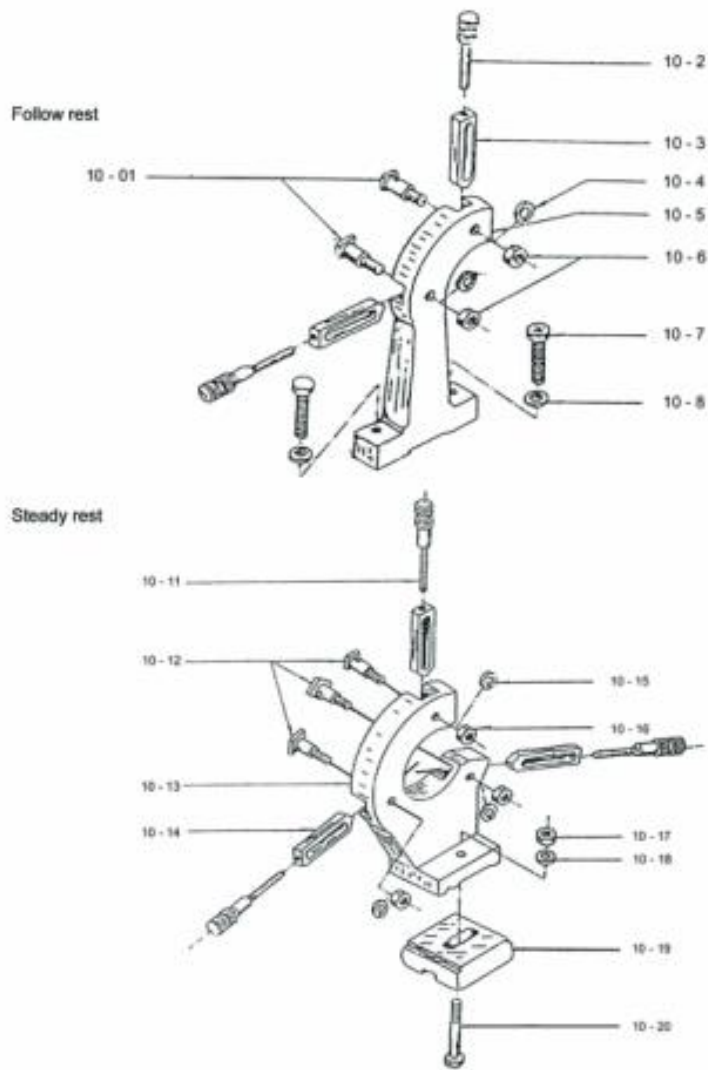


## BD-12G Parts List for Breakdown -6

Index No.	Part No.	Description	Size	Qty.
601.....	BD-12G-119.....	BALL OILER.....	Φ6.....	2
602.....	BD-12G-120.....	SOCKET HD SCREW.....	M8 × 35 mm.....	1
603.....	BD-12G-6-03.....	RAIL.....		1
604.....	BD-12G-6-04.....	BRACKET.....		1
605.....	BD-12G-121.....	SOCKET HD SCREW.....	M5 × 10 mm.....	3
607.....	BD-12G-6-07.....	GEAR.....	85.....	1
608.....	BD-12G-6-08.....	GEAR.....	80.....	1
609.....	BD-12G-6-09.....	GEAR.....	75.....	1
610.....	BD-12G-6-10.....	GEAR.....	70.....	1
611.....	BD-12G-6-11.....	GEAR.....	65.....	1
612.....	BD-12G-6-12.....	GEAR.....	60.....	2
613.....	BD-12G-6-13.....	GEAR.....	50.....	1
614.....	BD-12G-6-14.....	GEAR.....	45.....	1
615.....	BD-12G-6-15.....	GEAR.....	30.....	1
616.....	BD-12G-6-16.....	GEAR.....	20.....	1
617.....	BD-12G-6-17.....	T-NUT.....	M5.....	2
618.....	BD-12G-6-18.....	SPACER.....	1.5 mm.....	1
619.....	BD-12G-6-19.....	SPACER.....	3 mm.....	1
620.....	BD-12G-6-20.....	KEY SLEEVE.....		2
621.....	BD-12G-6-21.....	THREADED SHAFT.....		2
622.....	BD-12G-6-22.....	C-WASHER.....		2
623.....	BD-12G-6-23.....	COLLAR.....		1
624.....	BD-12G-6-24.....	C-WASHER.....		1
625.....	BD-12G-6-25.....	SOCKET HD SCREW.....	M6 × 10 mm.....	1
626.....	BD-12G-6-26.....	GEAR.....	90.....	1
627.....	BD-12G-6-27.....	GEAR.....	40.....	1

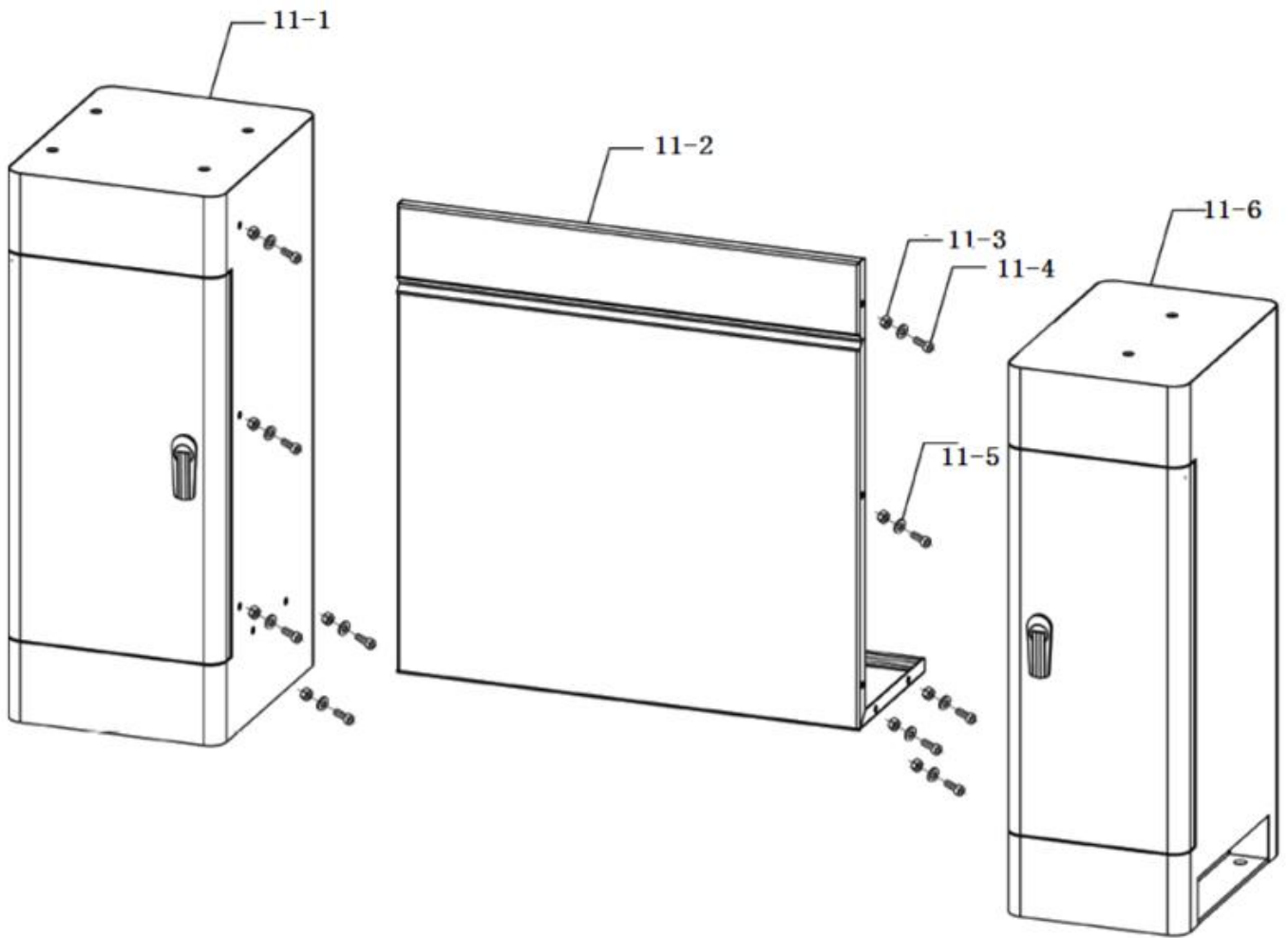
## BD-12G Parts List for Breakdown -7

Follow and steady rest



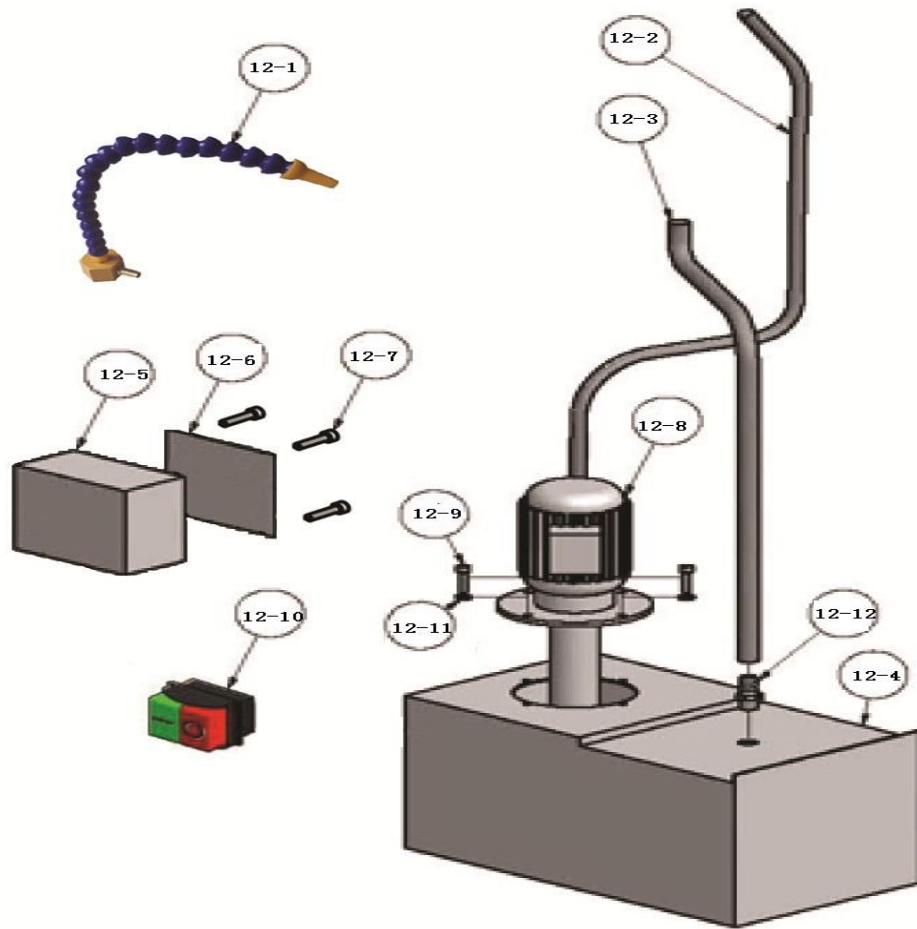
Index No.	Part No.	Description	Size	Qty.
10-01---	BD-12G-10-01	Screw		2
10-02---	BD-12G-10-02	Tightening screw		2
10-03---	BD-12G-10-03	Slide jaw		2
10-04---	BD-12G-10-04	Lock washer	10	2
10-05---	BD-12G-10-05	Rest frame		1
10-06---	BD-12G-10-06	Nut.. M10		2
10-07---	BD-12G-10-07	Screw	M8X30	2
10-08---	BD-12G-10-08	Washer	8	2
10-09---	BD-12G-10-11	Slide jaw		3
10-10---	BD-12G-10-12	Screw		1
10-11---	BD-12G-10-13	Rest frame		3
10-12---	BD-12G-10-14	Slide jaw		3
10-13---	BD-12G-10-15	lock washer	10	3
10-14---	BD-12G-10-16	NUT.. M10		3
10-15---	BD-12G-10-17	NUT.. M12		1
10-16---	BD-12G-10-18	Washer	12	1
10-17---	BD-12G-10-19	clamping claw		1
10-18---	BD-12G-10-20	screw M12x70		1

### BD-12G Parts List for Breakdown -8



Index No.	Part No.	Description	Size	Qty.
11-1----	BD-12G-11-1	Left stand		1
11-2----	BD-12G-11-2	Connection plate		1
11-3----	BD-12G-11-3	HEX NUT	GB617086-M8	10
11-4----	BD-12G-11-4	SOCKET HD SCREW	GB7085-M8X16	10
11-5----	BD-12G-11-5	WASHER	GB5287-8	10
11-6----	BD-12G-11-6	Right stand		1

## BD-12VS Parts List for Breakdown -9



Index No.	Part No.	Description	Size	Qty.
12-1----	BD-12VS-12-1.....	nozzle.....		1
12-2----	BD-12VS-12-2.....	outlet pipe.....	10.....	1
12-3----	BD-12VS-12-3.....	return pipe.....	25.....	1
12-4----	BD-12VS-12-4.....	water tank.....		1
12-5----	BD-12VS-12-5.....	electrical box.....		1
12-6----	BD-12VS-12-6.....	electrical box cover.....		1
12-7----	BD-12VS-12-7.....	socket HD screw.....	GB7085-M5X30.....	4
12-8----	BD-12VS-12-8.....	cooling pump.....		1
12-9----	BD-12VS-12-9.....	socket HD screw.....	GB7085-M5X12.....	4
12-10---	BD-12VS-12-10.....	switch.....	KJD17B.....	1
12-11---	BD-12VS-12-11.....	washer.....	GB5287-5.....	4
12-12---	BD-12VS-12-12.....	hose clip.....		1



## BD-12G Electrical Parts List

ITEM	DESCRIPTION	TYPE	SPECIFICATION	Qty.	Note
SB1	Magnetic Contactor	KJD17GF	IP-55 AC-1 18A Ue250V AC-3 15A CE	1	
SA1	Fwd/0/Rev - Switch	ZH-A	Ue 250V IEN 12A 5E4 CE	1	
KM	Contactor	LC1K0910	UI 690V IEN 20A CE	1	
TC1	Transformer	230V/24V/20VA	20VA 230VAC CE	1	
TC2	Transformer	230V-24V/20VA	20VA 230VAC CE	1	Optional
QS1	Emergency stop	LAY5	AE-15 240V IEN 10A CE	1	
SQ1	Gear Guard Switch	QKS8	AC-15 14A 250V IP54 CE	1	
SQ2	Chuck Guard Switch	LXW5-11Q1	AC-15 3A IP62 Ue380V CE	1	
SB2	Light Switch	KCD1-101	6A AC250V CE	1	Optional
HR	Work light	24V	5W AC12-24V CE	1	Optional
SA2	Pump Switch	LAY5-BE101	Ue220V IEN3.3A AC-15 CE	1	Optional
M1	Main Motor	YLJ90L4-12A	1.1Kw AC230V 6.4A IP54 CE	1	
M2	Pump	DB-12A	40W AV230V 0.9A IP54 CE	1	Optional





## Environmental protection

### Protect the environment.

Your appliance contains valuable materials which can be recovered or recycled. Please leave it at a specialized institution.



This symbol indicates separate collection for electrical and electronic equipment required under the WEEE Directive (Directive 2012/19/EC) and is effective only within the European Union.

---

## Umweltschutz

Schützen Sie die Umwelt!

Ihr Gerät enthält mehrere unterschiedliche, wiederverwertbare Werkstoffe. Bitte entsorgen Sie es nur an einer spezialisierten Entsorgungsstelle.



Dieses Symbol verweist auf die getrennte Sammlung von Elektro- und Elektronikgeräten, gemäß Forderung der WEEE-Richtlinie (2012/19/EU). Diese Richtlinie ist nur innerhalb der Europäischen Union wirksam.

---

## Protection de l'environnement

Protégez l'environnement !

Votre appareil comprend plusieurs matières premières différentes et recyclables. Pour éliminer l'appareil usagé, veuillez l'apporter dans un centre spécialisé de recyclage des appareils électriques.



Ce symbole indique une collecte séparée des équipements électriques et électroniques conformément à la directive DEEE (2012/19/UE). Cette directive n'est efficace que dans l'Union européenne.