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OPERATING MANUAL

Grinding & Polishing

Diamatic

MODEL
BMG-535
Planetary Grinder

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CONTENTS – SECTION 1

1.1 RATING

Unit / Designation: Grinding Machine

Machine Type: BMG-535

Manufacturer: Diamatic

US
13201 North Santa Fe
Oklahoma City, OK 73114
United States of America
Local: 405-478-3440
toll-free: 800-256-3440

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Utrechthaven 12
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1.2 UNIT SPECIFICATIONS

Technical Data:

Grinding Machine	BMG-535
Power Consumption	7.5 kW
Connected loads	220V, Three phase, 25.2A
Connected loads	440V, Three phase, 14.4A

Dimensions:

	BMG-535
Length	37.5 in / 950 mm
Width	23 in / 580 mm
Height	49.25 in / 1250 mm
Weight	617 lbs / 280 kg

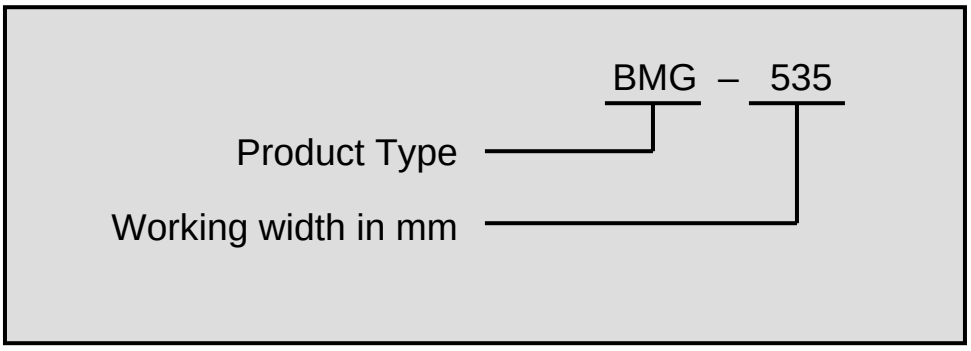
1.3 OPERATIVE RANGE AND CORRECT USAGE

The BMG-535 is exclusively designed to process horizontal surfaces. The machine must not be used for other purposes. The manufacturer will not be liable for damage resulting from incorrect usage. In these cases, the user takes responsibility for all risks.

1.4 STAND-BY SUPPLY (GENERATOR)

If the BMG-535 is to be operated using power from a generator, the generator must be operated in accordance with the current **U. S. National Electric Code guidelines or European VDE standards, as appropriate** (this applies, but is not limited to, the protective earth conductor in particular) in order to ensure that all safety devices are functioning and to eliminate possible damage to electrical components.

1.5 MACHINE TYPE DESIGNATION



CONTENTS – SECTION 2

2.1 WARNINGS AND SYMBOLS

The following denominations and symbols are used in the Operating Instructions to highlight areas of particular importance:

Symbol of operational safety.
In these Operating Instructions this symbol will be shown next to all safety precautions that are to be followed to maximize safety and equipment performance. Follow these instructions and take special care in these circumstances. In addition to these instructions, the general safety precautions and accident prevention guidelines are also to be followed.

Particular details regarding the economical use of the equipment.

Information, instructions and restrictions with regard to possible risks to persons, property or equipment.

Warning of dangerous voltages.

Indicates protective devices in electrical appliances.

Indicates where consultation with the manufacturer is required.

Instructions relating to periodic checks.

Reference to important instructions contained in the Operating Instructions.

2.2 ORGANIZATIONAL MEASURES

These Operating Instructions are to be kept with the machine, and must be within reach at all times!

In addition to these Operating Instructions, general and legal regulations regarding accident prevention and environmental protection must be complied with per local regulations.

Such duties may, for example, relate to the handling of hazardous substances, or the provision and wearing of personal protection equipment, as well as compliance with traffic regulations.

The Operating Instructions must be supplemented by other instructions, including the duty to supervise and report incidents relating to particular working practices, for example work organization, work procedures and personnel safety.

Personnel entrusted with working with the machine must read and understand the Operating Instructions before starting work, paying specific attention to the Safety information. To read these instructions after work has commenced is too late. This particularly applies to incidental activities such as setting up the equipment, carrying out maintenance work or training staff to work with the machine.

From time to time the working practices of the operators are to be checked by a supervisor, especially regarding awareness of safety and hazards.

Operators must tie back long hair, and not wear loose clothing or jewelry including rings. There is a risk of injury by items getting caught, or being drawn into moving machinery.

Use personnel protection equipment if necessary or required by local regulations! Take notice of all safety and hazard notices on the machine!

All safety and hazard notices at or on the machine must be kept complete and legible.

If safety-critical changes occur to the machine or its working method, the machine must be shut down immediately. The cause of the fault must be established and remedied.

Changes, additions or conversions to the machine must not be made, without the manufacturer's permission**!**

This applies in particular to the fitting and adjustment of safety devices.

Spare parts must comply with the technical requirements specified by the manufacturer. This is always guaranteed if original spare parts are used.

Intervals for recurring checks and inspections specified in these Operating Instructions must be complied with.

To perform maintenance work correctly, it is imperative to be equipped with the proper tools for the task.

The location and the operation of fire extinguishers must be made known on each work site.

Take note of the facilities for reporting and fighting fires.

2.3 PERSONNEL SELECTION AND QUALIFICATION

Fundamental duties:

Work on the machine may only be undertaken by trained personnel.

Only trained personnel may be employed. Note the statutory minimum age. Clearly specify the responsibilities of personnel for operation, setting up, servicing and maintenance work.

Make sure that only authorized personnel operate or work on the machine.

Define responsibilities of the machine operator, with regard to traffic safety regulations, and inform him not to take instructions from third parties who may not be complying with the local safety requirements.

Personnel, who are being trained to operate equipment, may only use the machine under constant supervision of an experienced person.

Work on electrical equipment may only be performed by a skilled electrician or by trained persons under the supervision of a skilled electrician, as well as in accordance with the local electrical engineering regulations.

2.4 SAFETY PRECAUTIONS APPLICABLE TO SOME OPERATING SEQUENCES

Do not allow any method of working that impairs safety.

Recognized official procedures have to be used to ensure the machine is operated in the safest and best conditions.

Only operate the machine when all safety devices, and related safety equipment, are present and operational**!**

Check the machine visually for any damage and defects at least once a day.

In the event of operational malfunctions the machine must be shut down immediately and secured.

Secure the work area around the machine in public areas providing a safety distance of at least 6.5 feet (2 meters) from the machine.

Faults must be immediately remedied.

Carry out the switch on, and switch off, operations in accordance with the operations manual.

Before turning on the machine verify that no one can be endangered when the machine starts up.

Do not turn off the dust collector while the machine is running.

All persons in the proximity of the machine must wear ear protectors and safety shoes. In addition, the machine operator must wear close fitting protective clothing.

Use only extension cables, used for extending the main cable, that are sized and marked in accordance with the overall power consumption of the machine and valid U. S. National Electric Code guidelines or European VDE standards, as appropriate.

2.5 SPECIAL WORK WITHIN THE SCOPE OF USE OF THE EQUIPMENT AND MAINTENANCE ACTIVITIES AS WELL AS REPAIRS DURING OPERATION

Mechanical servicing work:

Put the machine in the Safety off position as described in Section 2.6 before carrying out any service work on the machine.

Follow any special safety instructions in sections on servicing the machine. See Section 7.

Service and maintenance intervals specified in these Operating Instructions, as well as information on the replacement of parts must be undertaken and/or complied with.

These activities may only be undertaken by qualified personnel.

The operator must be given information about maintenance and work procedures before starting the cleaning process. This includes, but is not limited to the following:

- Procedures that are related to normal operation
- Methods of tools adjustment on the machine, and its safety devices,
- All “ON and OFF” functions that have to be carried out according to the operation manual
- Methods for maintenance and repair.

If the equipment is switched off in order to carry out maintenance, repair, or adjustment, it must be secured against unintended restart.

Switch OFF and disconnect the machine from the power supply.

See Section 2.6 Safety off position for specific details.

Always dispose of the contents of the dust bin or of a connected dust collector before loading the machine onto a vehicle.

Observe the local waste disposal regulations; in uncertain situations ask the next higher authority.

Do not use any aggressive cleaning materials.

Only use lint-free cleaning cloths.

Always verify that any bolted connections that were loosened during service and maintenance work are properly secure and tight.

If safety devices need to be removed or dismantled during service and repair, these safety devices must be reinstalled, and inspected immediately after completion of the servicing and repair work.

Make sure that process materials and replaced parts are disposed of safely and in an environmentally friendly manner.

Work on electrical equipment may only be performed by a skilled electrician or by trained persons under the supervision of a skilled electrician, as well as in accordance with the local electrical engineering regulations**.**

Make sure that electrical components used for replacement purposes comply with the original parts and are correctly adjusted if necessary.

2.6 DEFINITION OF THE SAFETY OFF POSITION

Definition: The machine is in a safe condition where it cannot be a hazard.

Putting the equipment in the Safety off position involves:

- Switching off the machine.
- Switching off the dust collector (if being used).
- Waiting for all drives to stop.
- Disconnecting all power from the power source.
- Securing against unintended restart.

2.7 GENERAL SAFETY CONSIDERATIONS

Any machine, if it is not used according to regulations, may be hazardous during operation, set-up and servicing. The machine owner is responsible for compliance with the safety regulations during operation and maintenance, and for the use of safety devices supplied with the machine, as well as the provision of appropriate additional safety devices!

2.8 ELECTRICAL ENGINEERING REGULATIONS

Work on electrical equipment may only be performed by a skilled electrician or by trained persons under the supervision of a skilled electrician, as well as in accordance with the local electrical engineering regulations.

Use only extension cables, used for extending the main cable, that are sized and marked in accordance with the overall power consumption of the machine and the U. S. National Electric Code guidelines or European VDE standards, as appropriate.

The electrical components of the equipment must be inspected regularly. Defects such as loose connections or scorched cables must be replaced immediately. Call a skilled electrician or our Customer Service.

A second person must be in attendance while the electrician is working on the equipment.

The work area must be secured against any third party entering the work area, by means of a red and white safety chain and a danger sign. Use only tools that are insulated against electricity.

Only start work after you are familiar with the electrical engineering regulations that apply to the local area.

Only use multi-meters that comply with the regulations when troubleshooting. From time to time check multi-meters to ensure that they are operating correctly.

CONTENTS – SECTION 3

3.1 RANGE OF APPLICATION

Typical ranges of applications for the BMG-535 are for example:

- To remove undulated concrete surfaces
- To prepare the surface for coatings
- To polish the surface
- To remove coating defects
- To remove glue residue

3.2 SCOPE OF SUPPLY

Scope of supply of the machine:

- Grinding machine (BMG-535)
- Dust hose (Optional)
- Operating manual (1x)

3.3 DESCRIPTION OF THE MACHINE

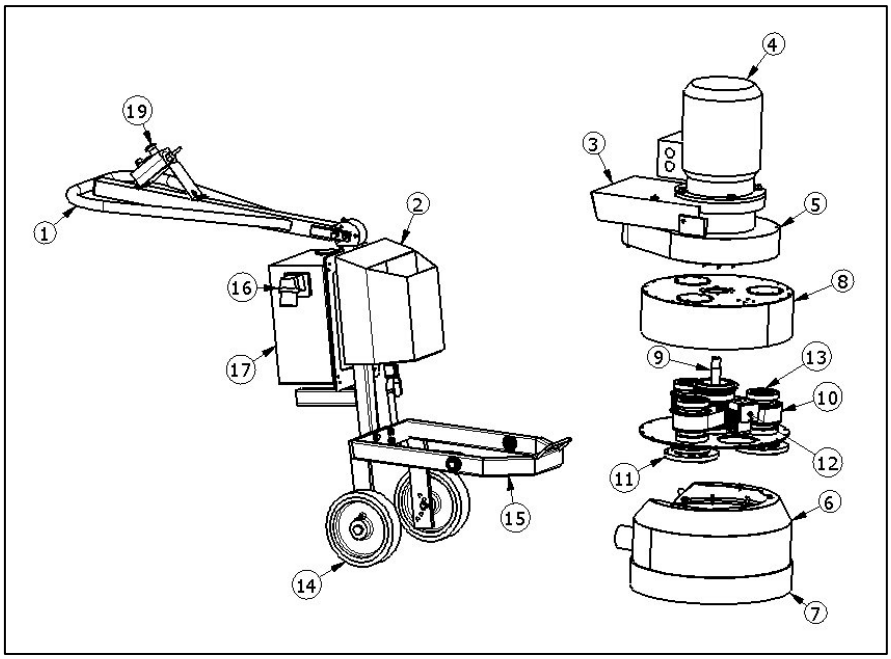


Fig. 3.1

1	Steering Handle	8	Lower Housing	15	Lower Frame
2	Water Tank	9	Center Pulley	16	Electrical Plug
3	Cover, Upper Part	10	Lower Belt	17	Control Panel
4	Motor	11	Diamond Tool Holders	18	Safety Switch
5	Motor Mount Plate	12	Lower Belt Tensioner	19	Pushbutton
6	Cover Housing	13	Pulley		
7	Dust Control Seal	14	Wheel		

The BMG-535 has a working width of 535 mm and gives excellent performance due to its economic efficiency and easy handling.

The machine is capable of leveling uneven and undulating floors. This process is suitable for an optimization of surfaces prior to blast cleaning.

Alternately, the machine can be used to smooth floor surfaces as preparation for coatings to be applied.

Depending on the application the diamond disc holder can be fitted with several different types of diamond-grinding discs.

The individual tooling heads rotate at approximately 1250 revs/min. The Lower Housing rotates at approximately 82 revs/min.

3.4 OPERATING ELEMENTS

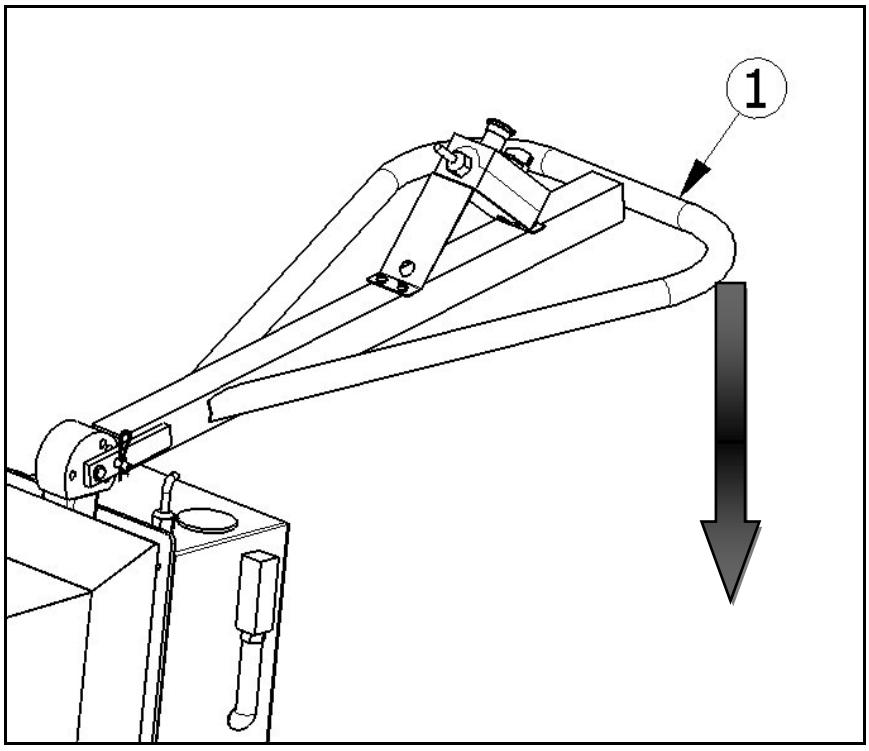


Fig. 3.2

Before Switching on the BMG-535, the front part of the grinding machine must be lifted by pushing the handgrip (1) down toward floor level till the front of the machine is approximately 4 inches (10 cm) from the ground.

3.5 ELECTRIC COMPONENTS

The Pushbutton mounted on the Steering Handle is used to control all elements of the machine. The Control Panel contains the main disconnect, safety switch, and hour meter.

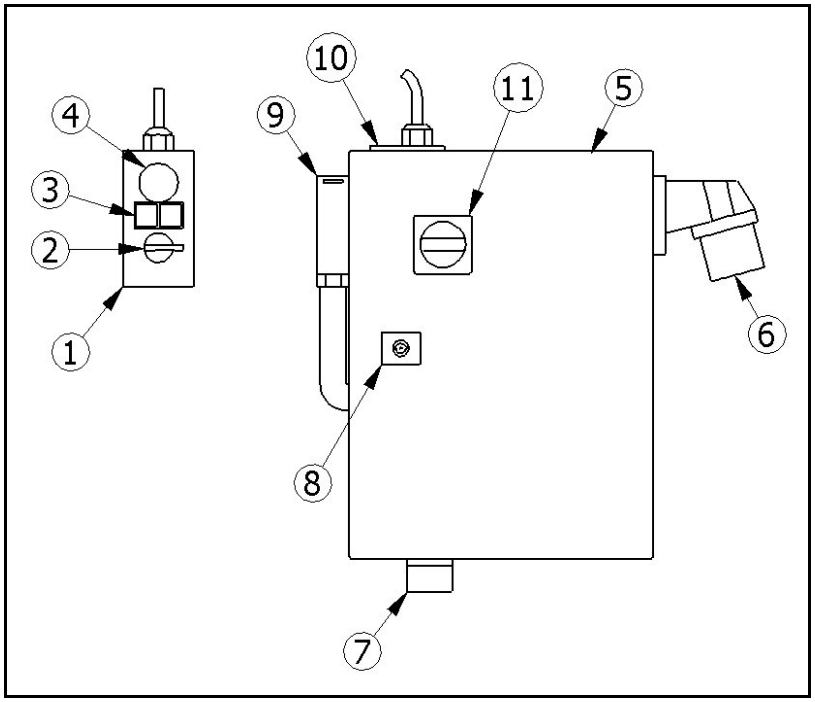


Fig. 3.3

1	Pushbutton Enclosure	5	Panel Enclosure	9	Safety Switch
2	FWD/REV Switch	6	Panel Plug	10	Hour Counter
3	Start/Stop Buttons	7	Motor Plug	11	Main Disconnect Switch
4	Emergency Stop	8	Panel Lock		

Start/Stop Buttons

The green start button turns on the machine. The red stop button turns off the machine.

Emergency Stop

This red mushroom-shaped switch when pressed will immediately cut off the power supply to the panel and motor and bring the machine to rest. To restart the machine the switch must be reset.

FWD/REV Switch

The FWD/REV switch changes the direction of rotation of the head of the machine. This switch must be changed when the head is not rotating, if it is changed during operation it could result in damage to the machine or to the work surface.

Hour Counter

The hour counter simply monitors the number of hours the machine has been in operation.

Safety Switch

This switch is spring loaded; it will turn off the power supply if the operator loses control of the machining while operating and must be worn at all times.

Main Disconnect Switch

This switch controls the flow of electricity from the power source to the panel and all subsequent electrical components.

3.6 UPPER PART

The upper part of the BMG-535 is where the drive system for the machine is located. The rotational drive is powered through a speed reduction drive belt and pulley system, which also gives rotation to the grinder head and drive to the center pulley. Upper Belt (item #3) in Figure 3.4 is set using an electronic belt tension meter at the factory and set somewhere between 200-215 Hz. The Housing Drive belt (item #9) is also set using an electronic belt tension meter at the factory and set somewhere between 160-170 Hz.

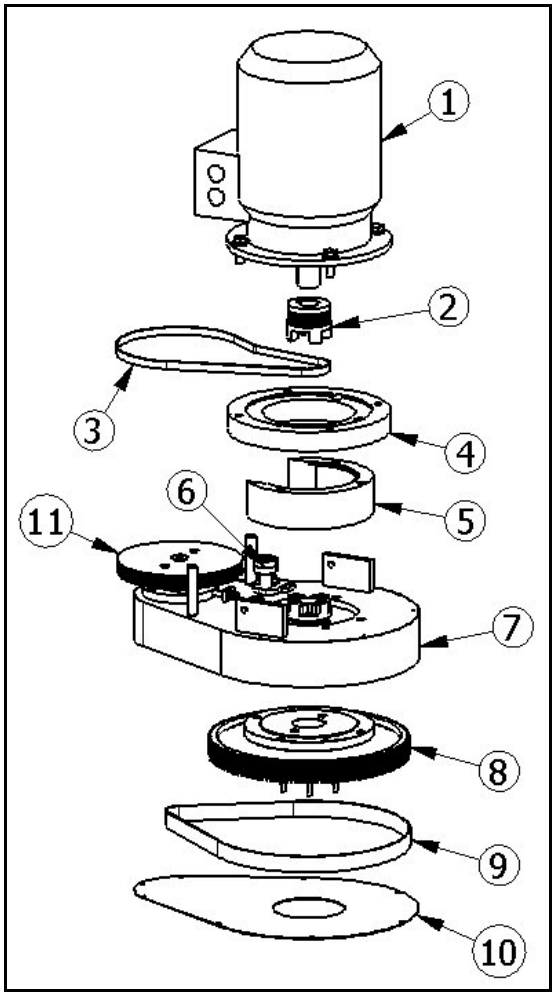


Fig. 3.4

1	Motor	5	Spider bearing	9	Tensioner upper belt
2	Coupling	6	Motor housing	10	Contra pulley
3	Flange motor seat	7	Center pulley		
4	Motor seat	8	Upper belt		

3.7 LOWER PART

The lower part of the BMG-535 is where the drive pulleys and the diamond tool holders are fitted. On the driving pulley, there is a coupling which is driven by the electric motor. Between the driving pulley and the driven pulley, there is the main drive belt. This belt is tensioned at approximately 55-60 Hz with an electronic belt tension meter. Under the pulleys there are the tool holders on which the diamond discs can be fitted. The pulleys are covered by a protective housing which also turns.

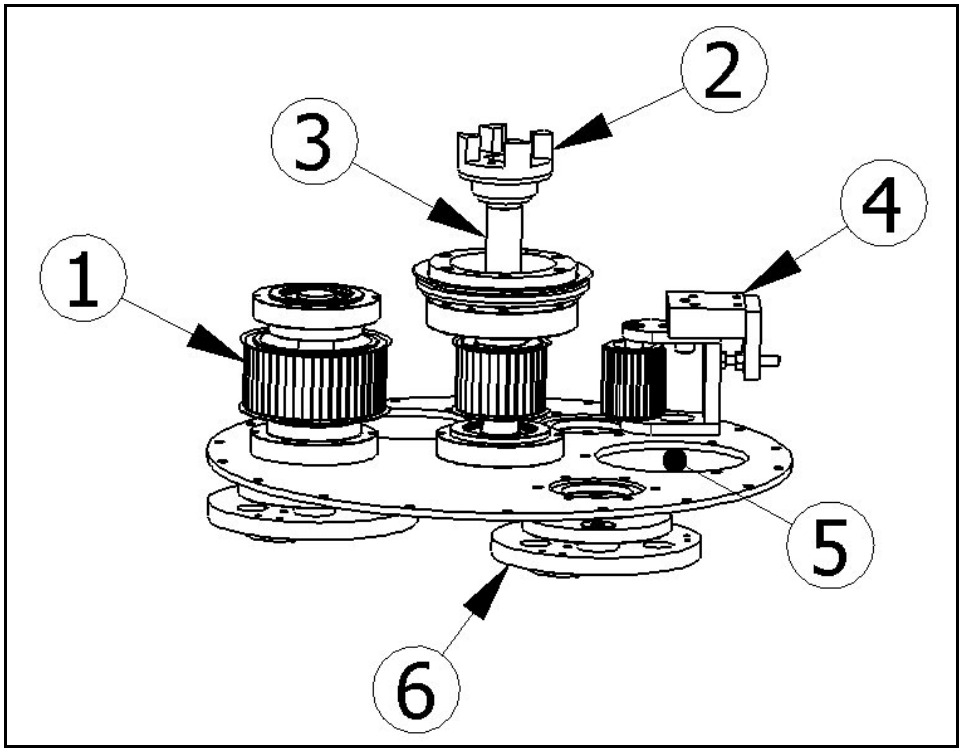


Fig. 3.5

1	Tooling Pulley	4	Tensioner Lower Belt
2	Coupling	5	Inspection Hole
3	Driving Pulley	6	Diamond Tool Holder

3.8 TENSIONER UPPER BELT

The upper belt tensioner keeps the upper belt tight. By taking off the cover of the upper part, the tensioner can be accessed.

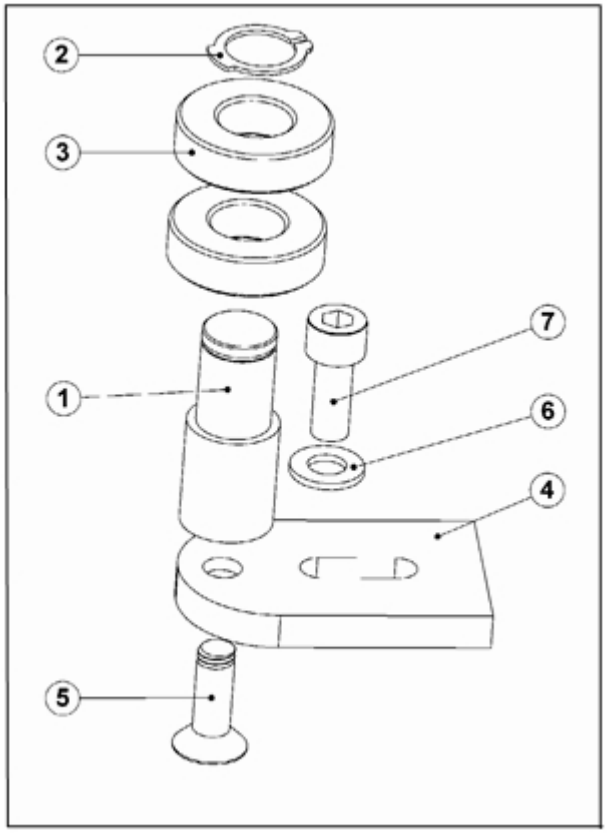


Fig. 3.6

1	Axle	5	Flat Head Socket Cap Screw
2	Retaining ring	6	Flat Washer
3	Bearing	7	Socket Head Cap Screw
4	Tensioner plate		

3.9 TENSIONER LOWER BELT

The lower belt tensioner keeps the lower belt tight. By taking off one of the two inspection hole covers at the bottom of the lower plate the tensioner can be accessed.

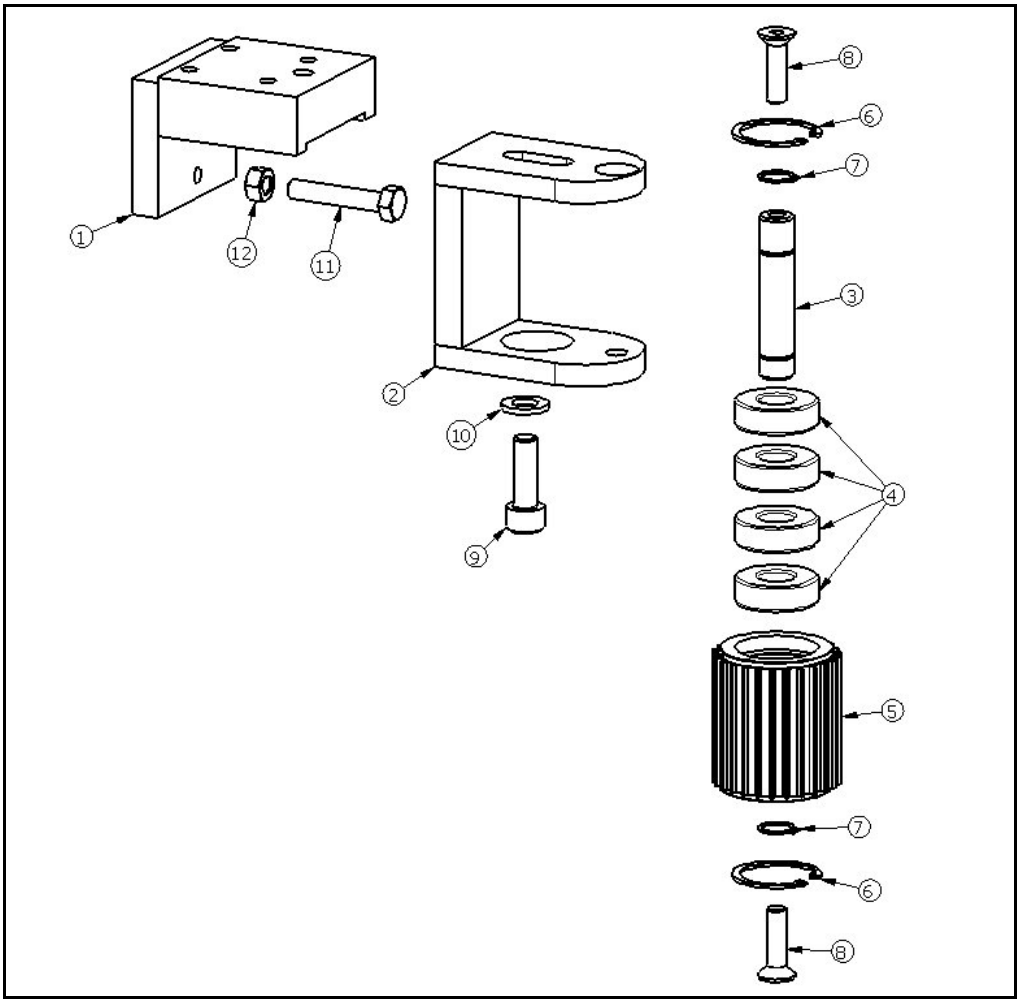


Fig. 3.7

1	Holder	6	Retaining ring	11	Hex Head Cap Screw
2	Tensioner	7	Retaining ring	12	Hex Nut
3	Axle	8	Flat Head Socket Cap Screw		
4	Bearing	9	Socket Head Cap Screw		
5	Pulley	10	Flat Washer		

3.10 TOOLING DRIVE PULLEY

There are three pulleys in the machine. Under these pulleys the diamond discs are fixed. The pulley is driven by the driving pulley through a belt. The pulley is fixed on the lower housing with screws.

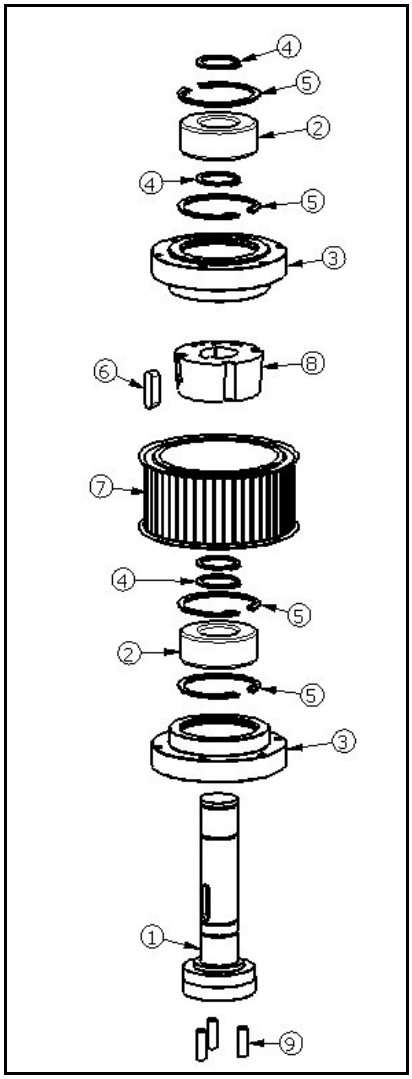


Fig. 3.8

1	Axle	4	Retaining ring	7	Pulley
2	Bearing	5	Retaining ring	8	Taper Lock Bushing
3	Bearing House	6	Key	9	Dowel Pin

3.11 CENTER PULLEY

The center pulley will slow down the speed of the lower housing. The six head cap screws connect the pulley with the lower housing.

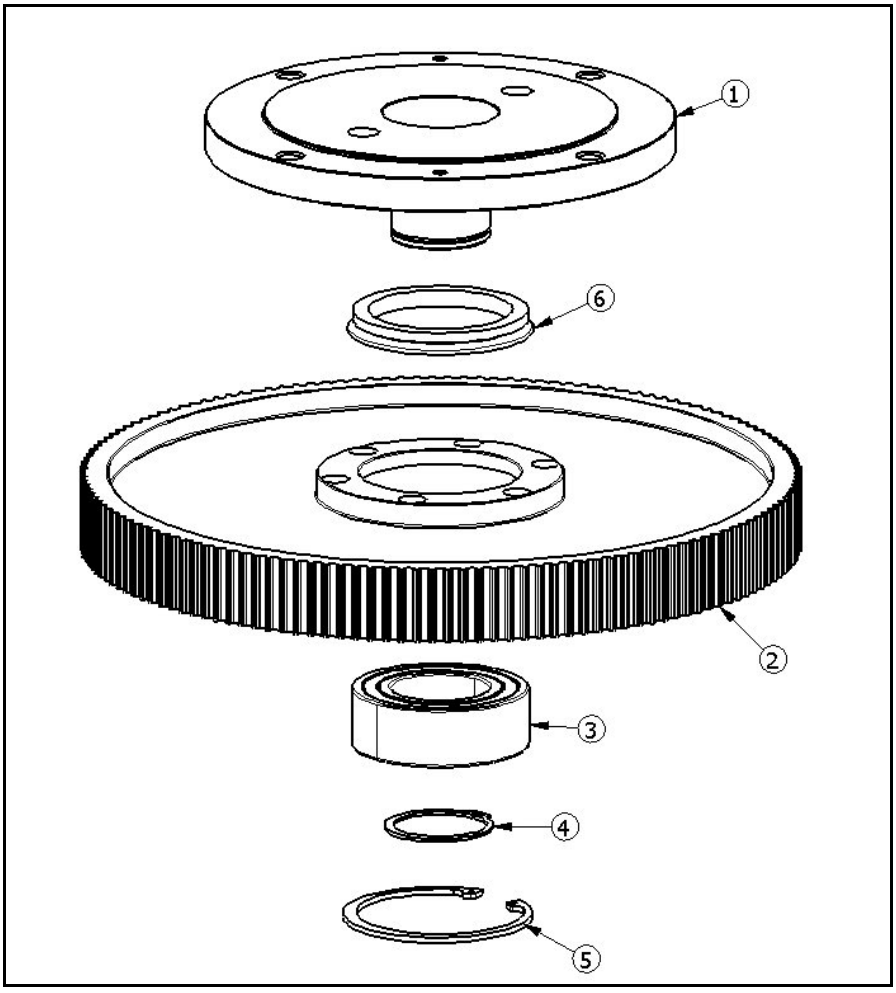


Fig. 3.9

1	Sprocket	4	Retaining ring
2	Pulley	5	Retaining ring
3	Bearing	6	V-Seal

3.12 CONTRA PULLEY

The contra pulley gives a reduction of speed to the lower housing. The belt pulley is driven by a belt from the motor pulley.

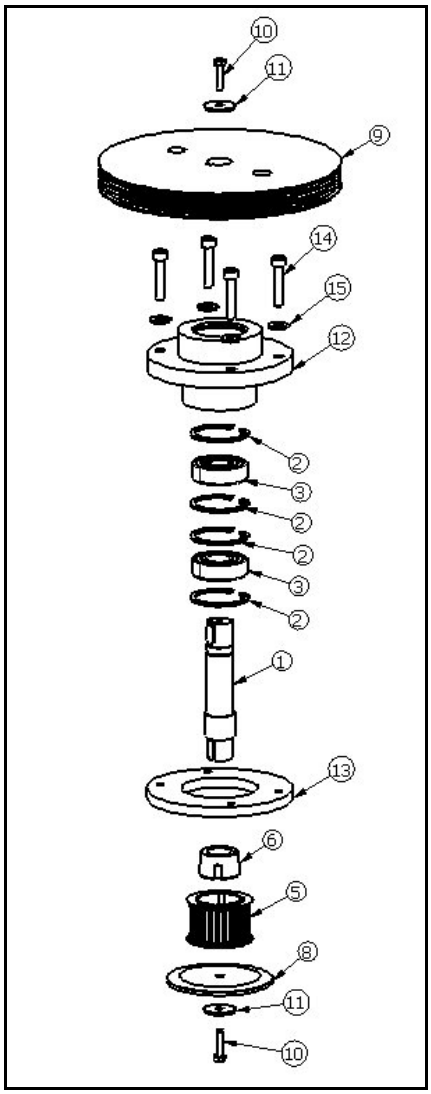


Fig. 3.11

1	Axle	6	Taper Lock Bushing	11	Flat Washer, Wide
2	Retaining Ring	7	Key	12	Bearing House
3	Bearing	8	Flange	13	Ring
4	Retaining Ring	9	Belt Pulley	14	Socket Head Cap Screw
5	Pulley	10	Hex Head Cap Screw	15	Flat Washer, Narrow

3.13 DRIVING PULLEY

On the driving pulley shaft, there is a coupling which is driven by the electric motor. The driving pulley drives the three pulleys with a belt. The pulley is fixed on the lower housing with screws.

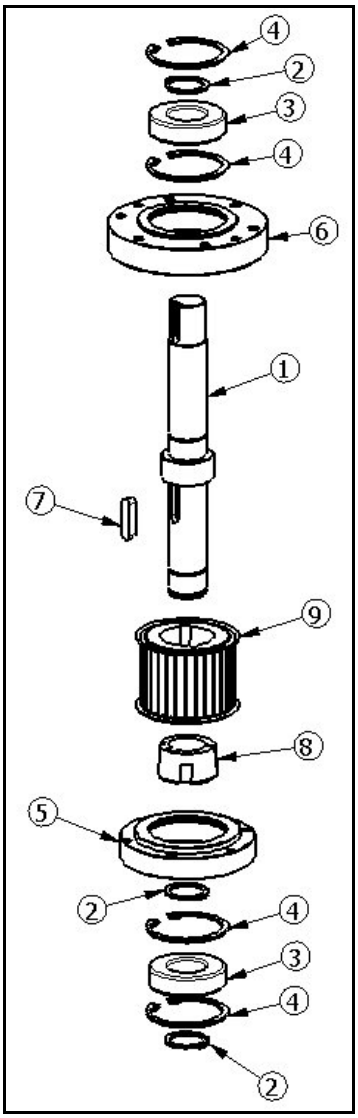


Fig. 3.11

1	Axle	5	Bearing House	9	Pulley
2	Retaining Ring	6	Bearing House		
3	Bearing	7	Key		
4	Retaining Ring	8	Taper Bushing		

3.14 DIAMOND TIPPED CUTTING TOOL HOLDER

The diamond tool holder is connected under the pulley by three bolts. There are 3 soft buffers so the energy from the diamond disc will be softened. There are three magnets to attract any iron particles. The centering stars are in place to ensure that the diamond disc cutting tools will pass each other with working clearance. The cutting tools must be locked with the three screws on each plate.

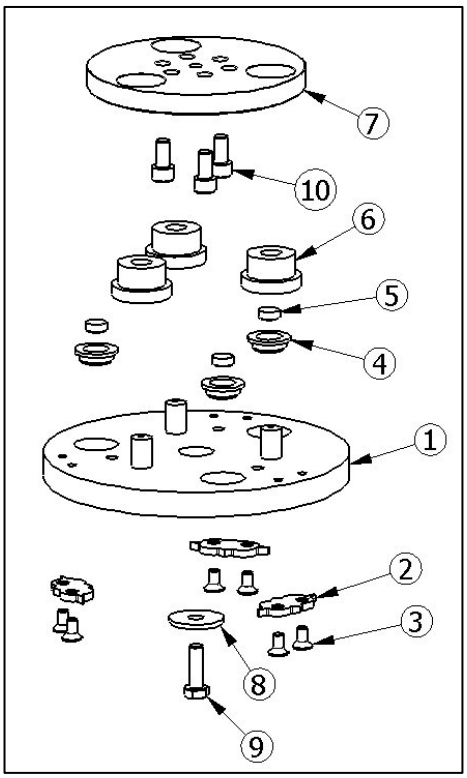


Fig. 3.12

1	Holder for Tools	5	Magnet	9	Hex Head Bolt
2	Centering Star	6	Buffer Soft	10	Socket Head Cap Screw
3	Flat Head Socket Cap Screws	7	Buffer Plate		
4	Magnet Holder	8	Flat Washer, Wide		

3.15 DIAMOND TOOLING

There are three types of tooling that can be put under the diamond tooling.

The three types are:
Diamond Segments
Polycrystalline (PCD) Diamond Segments
Polishing Resins

Diamond Segments

The diamond tools are designed for use on concrete floors. These tools can be used to prepare a floor prior to coating or as initial steps in a polishing process.

PCD Diamonds

PCD's can be used for removing epoxy, coating, and other floor coatings.

Polishing Resins

Polishing resins are used in the final step of a polishing process.

For questions about the right set for the right floor treatment, use the tool scheme chart below or contact your distributor.

3.16 CARE AND MAINTENANCE

Special care and regular maintenance of the machine are imperative for proper function and safety.

Pay attention to unusual noises or strong vibrations. Check for the cause of every big change. Call a technician if you have doubts about the cause or when a repair without a technician seems not possible without damages. Only use genuine parts.

Generally the grinding machine BMG-535 requires very little special attention regarding its maintenance.

Verify that any wastes or fiber residues do not remain in the area of the grinding disc.

Depending upon the use of the machine the pulley should be checked about every 200 hours.

Before using the machine you should always verify that all bolted connections are secure and tight.

Use of non-original replacement components or wear parts may void the machine warranty.

Notes

CONTENTS – SECTION 4

4.1 UNIT SPECIFICATIONS

Model	BMG -535
Dimension (inches)	37.5 x 23 x 49.5
Dimensions (mm)	950 x 580 x 1250
Weight	620 lbs / 280 kg

4.2 MANUAL MODE OF MOVING THE MACHINE

To move the machine, press down the handgrips of the machine (see fig.3.2) until the front part rises off the ground and the machine is well balanced. It can now be pushed around on its wheels.

The machine should only be moved around after attachments are disconnected, such as:

- Generator, (if being employed)
- Dust collection unit, (optional extra)

4.3 TRANSPORT WITH CRANES OR LIFTS

If the machine is to be transported by a crane or a fork lift, verify that the lifting strap(s) has sufficient capacity to support the weight of the machine. The gross weight is shown in Section 4.1 Unit specifications and also on the serial number plate on the machine.

Fasten any lifting slings to the lower machine frame. The lower frame is also a suitable fixing point for fastenings or tie-downs to be used during transportation of the machine on a vehicle.

4.4 TRANSPORT OF THE MACHINE WITH VEHICLE

When transporting the machine in a vehicle, always drive carefully and in a manner to avoid the machine shifting. Secure the machine with a tightening load strap over the lower frame. Use at least two load straps, and tighten down to the body of the vehicle.

4.5 OPERATION OF THE MACHINE WHILE GRINDING

The machine must always be operated in accordance with the instructions given in Section 5.2 “Initial Operation”.

CONTENTS – SECTION 5

5.1 PREPARATION FOR INITIAL OPERATION

Before start-up, all operating personnel must be familiar with the safety regulations given in this manual.

- Put the grinding machine and the filter unit onto the surface to be treated.
- Attach the appropriate diamond tooling that is required for the particular process. Please read Section 7 Maintenance of this manual.

- Using the correct cables, connect the machine and the dust collector to the electricity supply point. These electric supply points should be protected and equipped with an FI-switch. In case of doubt, ask the local safety officer.
- Check the extension cable for external damage.
- Check the dust hose for damage.
- Connect the grinding machine and the dust collector unit with the flexible dust hose. Use hose clamps at the connections.
- Make sure the dust bin of the dust collector unit is empty.

If problems with the BMG-535 arise during the assembly or start-up, call a qualified person for help. Work on electrical equipment may only be undertaken by qualified personnel.

Any machine, if it is not used according to the regulations, may be hazardous to the operating, set-up and service personnel. The equipment owner is responsible for compliance with the safety regulations during operation and maintenance of safety devices supplied with the machine as well as the provision of appropriate additional safety devices.

5.2 INITIAL OPERATION

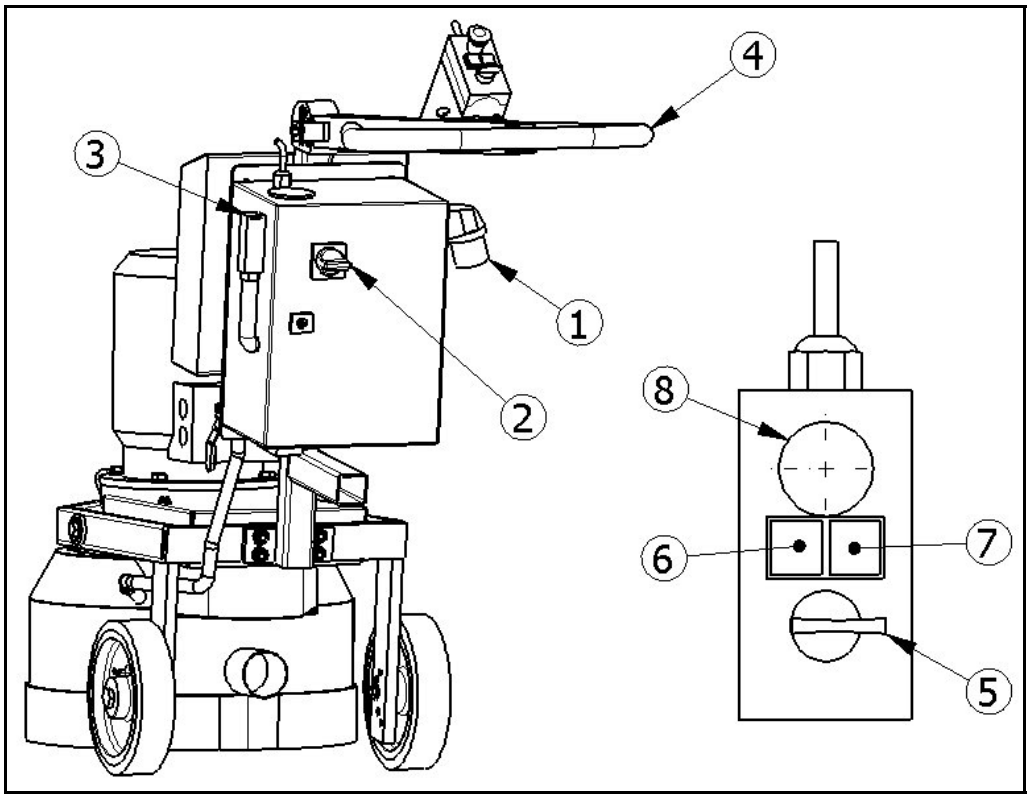


Fig. 5.1

Switching on the grinding machine:

- Make sure the motor is connected to the plug on the bottom of the panel with the supplied cord.
- Make sure the electrical disconnect switch (2) on the outside of the panel is turned to the off position.
- Connect the machine to the electrical outlet (1) with an extension cable that complies with the appropriate European or U.S. NEC guideline, as appropriate.
- Turn the electrical disconnect switch (2) on the outside of the panel to the "**ON**" position.
- Put the safety cord on to your wrist and make sure the other end is inserted into the **SAFETY SWITCH** (3).
- Press down both handgrips (4) until the front part rises approximately 4 inches (10 cm) from the ground.

- Using the "**FWD/REV**" selector switch (5) determine the head rotation direction.
- Press the green "**START**" button (6) to start the machine.
- Now let down the grinding disc on the surface gently and begin the grinding work. Move the machine slowly forward or reverse to start grinding or polishing. (See chapter 6).

Switching off the grinding machine:

- Push down on the handgrips (4).
- Push the red "**STOP**" button (7) on the operator control panel.
- In case of emergency, push the red "**EMERGENCY STOP**" button (8).

Notes

CONTENTS – SECTION 6

6.1 OPERATION

These Operating Instructions are to be kept with the machine and must be within reach at all times.

Only trained personnel may be employed. Note the statutory minimum age. Specify clearly the responsibilities of personnel for operation, set up, service and maintenance work.

Make sure that only authorized personnel operate or work on the machine.

Regular inspection is necessary to prevent unplanned down time of your grinding machine. See Section 7 Maintenance.

Pay attention to following aspects during operation of the BMG-535.

Before beginning the grinding work, verify that all bolted connections are properly secured and tight.

Before switching the machine on, make sure that all protective housings are fitted and the dust collector unit is correctly connected.

Handle all plugs, cables, hoses and operating elements carefully. Avoid contact with live wires.

Before grinding, clean the surface to be treated with a broom. There should not be any debris such as stones, cloths or standing liquid on the surface.

Any obstructions in the surface to be treated, like concrete reinforcing steel or other objects, should be removed from the work surface to prevent damage to the machine seals and diamond discs.

While using the dust collector unit, observe any special workers' protection rules, and local regulations regarding waste disposal.

The process described in Section 5.2 “Initial Operation” shall be followed during the normal start up of the BMG-535 for daily operation.

If there are any doubts as to how to start up the machine, read Sections 5.1 and 5.2 of this operating manual.

Verify that the electric cable and dust hose are clear from vehicle traffic, such as forklifts and other equipment.

6.2 SWITCHING OFF THE MACHINE

To switch off the machine, push the red “**STOP**” button on the operator control panel (7). See Figure 5.1 in Section 5.2 for additional details.

6.3 TROUBLE SHUTDOWN

In case of emergency or operating trouble, such as vibrations or loud noises, switch the machine off immediately by pushing the Emergency Stop (E-Stop) button on the operator control panel (8).

6.4 SAFETY SHUTDOWN

The machine has to be in its Safety off position before starting repair work. See Section 2.6.

Before performing inspection or maintenance work make sure that all moving machine parts are stopped. Observe the Safety off position, Section 2.6.

The local safety regulations are valid in all cases regarding the operation of the machine and will always supersede any instructions provided in this manual.

6.5 RESTARTING AFTER A FAULT

The results of all electrical repair work must be verified using the appropriate measurement techniques per the regulations stated in the European VBG4 and VDE 0701 standards or per the applicable U.S. guidelines, as appropriate. See also Section 5.2 Initial operation.

6.6 PROCEEDINGS – BEFORE AND AFTER STATIONARY PERIOD

Before a long stationary period:

If the grinding machine will be out of action for a long period of time, protect the machine during storage per the following:

- Clean the machine and cover it with a tarp.
- Protect the electric motors from moisture, heat, dust and impacts.
- Remove flexible couplings from machine to keep from warping which can cause uneven grind.

After a long stationary period:

Follow the steps listed in Section 5.1 “Initial Operation” of this manual.

Notes

CONTENTS – SECTION 7

7.1 RECOMMENDATIONS

Prior to any repair work on the machine and its drives, secure the machine against unintentional activation. Put the machine in its safety off position. Section 2.6

Failures due to inadequate or incorrect maintenance may generate very high repair costs and potentially long periods of down time for the machine. Therefore, regular maintenance is required.

Operational safety and service life of the machine depend, among other things, on proper maintenance.

The table in section 7.2 shows recommended service intervals for normal use of the machine.

The recommended time periods are based upon uninterrupted operation. When the indicated number of working hours is not achieved during the corresponding period, the period can be extended. However, a full overhaul must be carried out at least once a year.

Due to different working conditions, inspection and maintenance intervals may vary. Prepare a suitable inspection schedule considering known working conditions and experience.

Our specialists will be happy to assist with more advice.

Follow additional operating and maintenance procedures of OEM parts, if included, during your service and maintenance work.

Pay attention to special notice given in instructions for electric-motors.

7.2 MAINTENANCE AND INSPECTION LIST

Operating hours/time period	Inspection points, and maintenance instructions
12 hours after repairing	Check all accessible screw connections for tightness.
Daily and prior to starting work	Verify all safety devices are working correctly. Check the power supply cable for damage. Check the dust collector hose for damage. Check the optional water tank and system for damage, if applicable. Check grinding disk coupling and remove any foreign material and debris. Check the grinding disc and the coupling for wear. Check the countersunk head screw of the grinding disc for tightness. Check the tension of the V-belt, adjust as is required. Check the brush dust seal.
Quarterly	Clean the machine with a damp cloth.
Annually	Full overhaul and cleaning of the complete machine. Replacement of the pulley parts. (about 200 hours).

7.3 REPAIRING

As previously mentioned in Section 5.1 Initial operation, we recommend conducting initial repair work on the machine with the support of personnel, by taking this advice, maintenance personnel get the opportunity to be trained by an expert on the machine.

Only repair work that could occur within the bounds of regular operation of the machine, or work that is required to replace wear parts, will be described.

If parts or components are to be replaced, the following sequence(s) of maintenance must be followed.

It is advisable to stock all spare or wear parts that cannot be obtained quickly. As a rule, production standstill periods are more expensive than the cost for carrying the corresponding spare part.

Screws that have been removed must be replaced with those of the same quality (strength, material) and design.

Prior to any repair work on the machine and its drives, secure the machine against unintentional activation. See Section 2.6.

Use of non-original replacement components or wear parts may void the machine warranty.

7.4 GRINDING DISC REPLACEMENT/ASSEMBLY

Prior to any repair work being carried out on the machine or its drives, secure the machine against unintentional activation. See Section 2.6.

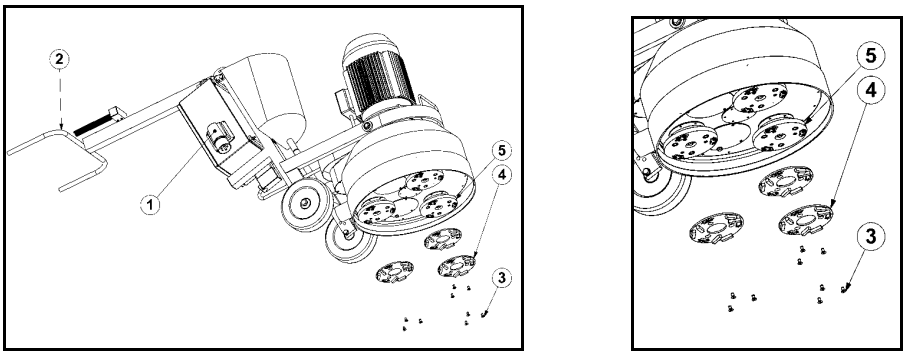


Fig. 7.1

Disassembly:

1. Make sure that the power supply is disconnect from the electrical inlet (1).
2. Tilt the machine to the back with the help of the handgrips (2) and lay it down on the chassis. You MUST add weight on the handle or otherwise secure the handle to the ground in order to prevent the machine from tipping forward during change over.
3. Unscrew the three countersunk head screws (3).
4. Remove the grinding disc downwards (4).

Assembly:

5. Clean the diamond holder thorough (5).
6. Adjust the grinding disc in the centering (4).
7. Set in and tighten the countersunk head screw (3).
8. Tilt the machine forwards.

When replacing the grinding disc, also check the condition of the drive pulley and the diamond tool holders.

Always replace any worn fasteners.

7.5 UPPER PART

Prior to any repair work being carried out on the machine or its drives, secure the machine against unintentional activation. See Section 2.6.

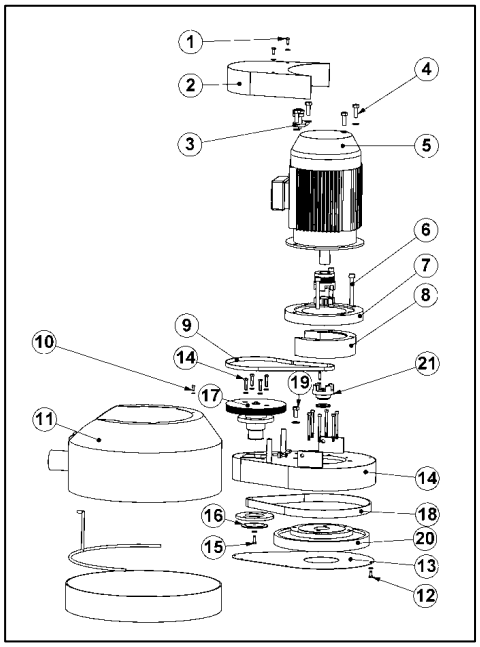


Fig. 7.2

Disassembly:

1. Unscrew the bolts (1) on the topside, to enable the protection cover (2) to be removed.
2. Disassemble the upper tensioner (3) and the bolts (4) to enable the motor (5) to be removed.
3. Unscrew the long bolts (6) so the motor adapter flange (7) and the motor mount (8) can be removed.
4. Now the belt (9) can be removed.
5. The protection cover (11) can be removed by taking out the bolts (10)
6. Unscrew the bolt (12) this will allow the under plate (13) to be removed.
7. Unscrew the bolts (14) and the bolt (15) to enable the rings (16) and the contra pulley (17) to be taken out of the upper drive.
8. Remove the belt (18).
9. The center pulley (20) can be removed by unscrewing bolt (19).
10. The coupling (21) must be taken off before you can disassembled the lower part.

Assembly:

Assemble the parts in the reverse order that they have been disassembled.

7.6 LOWER PART

Prior to any repair work being carried out on the machine or its drives, secure the machine against unintentional activation. See Section 2.6.

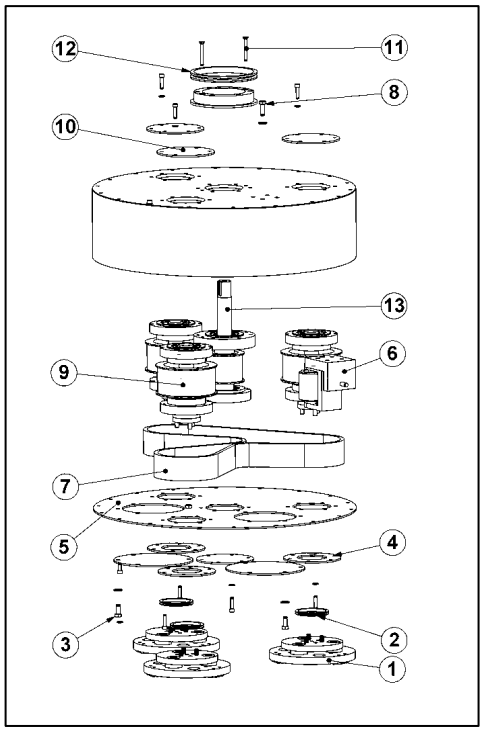


Fig. 7.3

Disassembly:

1. Disassemble the diamond tool holders (1) and take off the v-seal (2).
2. Unscrew the bolts (3) from the underside, remove the rings (4), and the lower plate (5).
3. Release the force on the lower tensioner (6), to enable the belt (7) to be removed.
4. Unscrew the bolts (8) on the upper side to enable the pulleys (9), the tensioner (6), the v-seal (12) and the rings (10) to be removed.
5. Unscrew the bolts (11) to enable the driving pulley (13) to be removed.

Assembly:

Assemble the parts in the reverse order that they have been disassembled.

7.7 TOOLING DRIVE PULLEY

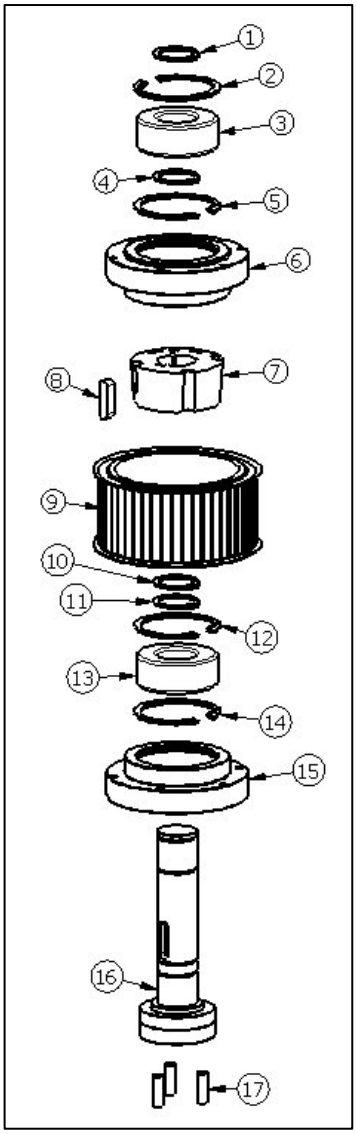
Prior to any repair work being carried out on the machine or its drives, secure the machine against unintentional activation. See Section 2.6.

Disassembly:

1. Take off the retaining ring (1).
2. Remove the assembly of the retaining ring (2), bearing (3), retaining ring (5), & bearing house (6) as one piece.
3. Take off the retaining ring (4) .
4. Unscrew the screws of the taper bush (7).
5. Remove the taper bush (7), the key (8) and the pulley (9).
6. Take off the retaining rings (10) & (11).
7. Remove the bearing housing assembly similar to step 2 but instead removing items (12), (13), (14), & (15).
8. It will be necessary to remove retaining rings (2), (5), (12), & (14) to remove bearings (3) and (13) from bearing house (6) and (15)

Assembly:

- Make sure that bearing (3,13) and bearing housing (6, 15) are clean and rub the bearings with a few drops of Loctite 609 on the inner diameter and outer diameter. When installing new dowel pins (17) be sure to apply Loctite 609 to them before pressing them into the holes in the end of the shaft to hold them in place.
- Assemble the parts in the reverse order that they have been disassembled.



7.4

7.8 OTHER MAINTENANCE

Check the dust seals for wear and replace them at the time when they no longer provide a good seal against dust emissions from the machine. This will ensure that there is no damage caused to the surrounding workspace and consequently saves additional cleanup charges from the job client.

Clean the machine with a damp cloth.

Do not use high pressure water or compressed air for cleaning the machine!

Apply Oil to the adjusting pin of the operating lever, and other moving parts with clean oil can at regular intervals

7.9 RECOMMENDED SPARES FOR STOCK

It is highly recommended, that having the following spare parts on stock will avoid unplanned downtime and/or long equipment downtime that may result from waiting for spare parts to ship.

Part No.	Description	Qty.
BG11924	Driving belt upper	1
BG11904	Driving belt middle	1
BG11928	Driving belt lower	1
See chapter 10	Diamond disc	>1

7.10 INFLUENCES ON THE GRINDING PATTERN

The grinding pattern depends upon the surface being treated.

Depending on the required surface finish specified, the tools (Diamond Wings), will have to be changed in order to produce the best result. This may be done by simply comparing the individual results of the tools.

For grinding applications, use the left-right switch of the machine every 330 sq. ft. (100m^2) to change the rotation of the grinding head). This will also provide a longer life of the diamond tools, since they will wear down more equally. Please note that this is NOT recommended for polishing applications. Changing the rotation of the heads will result in large scratches that are difficult to remove.

In the last 2mm of the diamond tools there is a loose buffer material (no diamond inside), changing the rotation helps ensure that the diamond tools do not wear in such a way that diamonds are left on one side of the grinding disc and the other side the diamonds are completely gone.

> Check the grinding pattern after new or other types of diamond tools have been fitted.
>
> By doing this, the operator can best produce efficient work, as well as save unnecessary wear and repair costs.

CONTENTS – SECTION 8

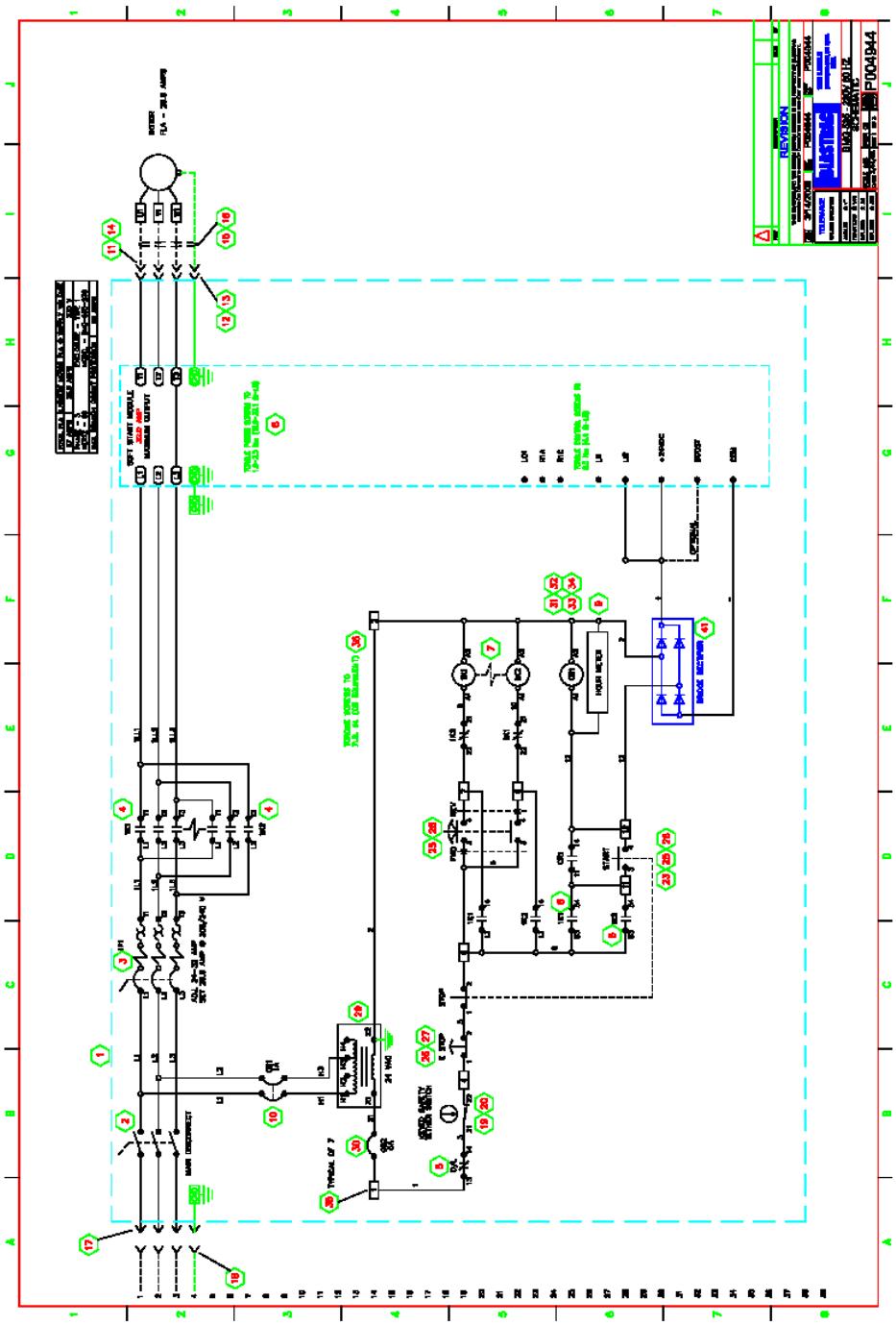
8.1 DIRECTIONS FOR ELECTRICAL ENGINEERING

Work on electrical equipment or operating materials may only be performed by a skilled electrician or by trained persons under the guidance and supervision of a skilled electrician as well as in accordance with the electrical engineering regulations.

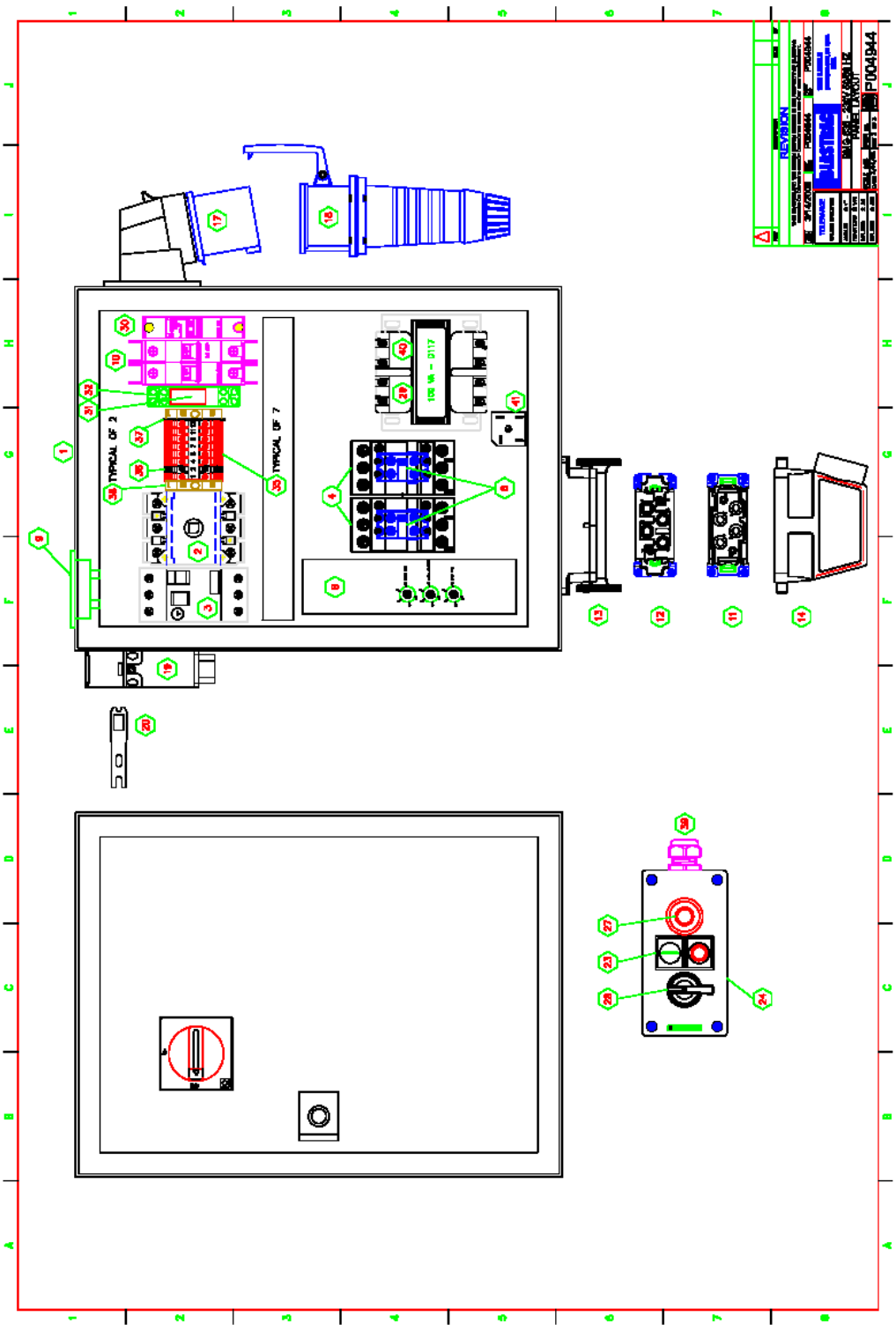
To identify electrical components, refer to the electrical schematics in Section 8.2 or call a service center.

The results of all electrical repair work must be verified using the appropriate measurement techniques per the regulations stated in the European VBG4 and VDE 0701 standards or per the applicable U.S. guidelines, as appropriate. See also Section 5.2 Initial operation.

8.2 ELECTRICAL SCHEMATICS - 230V / 50 AND 60 HZ



8.3 CONTROL PANEL LAYOUT FOR 230V / 50 AND 60 HZ



ITEM NUMBER	QTY	PN	DESCRIPTION
1	1	P005037	ENCLOSURE W/ BACKPANEL
2	1	P004841	DISCONNECT, COMPLETE, BACK PANEL MOUNTED
3	1	P005033	MANUAL STARTER
4	2	P004828	CONTACTOR
5	1	P004781	MOTOR PROTECTOR, AUX CONTACT
6	2	P004822	CONTACTOR, AUX CONTACT, TOP MOUNT
7	1	P004893	CONTACTOR, MECHANICAL INTERLOCK
8	1	P004956	SOFT START
9	1	P004989	HOUR METER, W/ GASKET
10	1	P002024	CIRCUIT BREAKER
11	1	P004959	MALE INSERT
12	1	P004960	FEMALE INSERT
13	1	P003515	BULKHEAD MOUNTING
14	1	P004958	HOOD, SIDE ENTRY
15	2	P003081	CONNECTOR
16	3	P001041	CONDUIT FLEX
17	1	P000398	INLET PLUG, PANEL MOUNT
18	1	P000402	PLUG, CORD END, IEC, FEMALE
19	1	P004790	SAFETY SWITCH, DEADMAN WITH CORD GRIP P003095 INCLUDED
20	1	P004791	SAFETY SWITCH, DEADMAN, KEY W/ TETHER AND CLIP
21	1	P001044	CONNECTOR, 1/2" STRAIGHT
22	1	P002208	CONNECTOR, 1/2" 90 DEGREE, PMA
23	1	P004786	SWITCH, DOUBLE PUSHBUTTON
24	1	P005034	ENCLOSURE, POLYCARBONATE, 3 HOLE
25	3	P005035	SWITCH, CONTACT BLOCK, 1 NO, BASE MOUNTING
26	2	P005036	SWITCH, CONTACT BLOCK, 1 NC, BASE MOUNTING
27	1	P004922	SWITCH OPERATOR, E-STOP, TURN TO RELEASE
28	1	P004904	SWITCH, SELECTOR
29	1	P005014	TRANSFORMER CONTROL
30	1	P004876	CIRCUIT BREAKER
31	1	P004879	RELAY, INTERFACE, SPDT
32	1	P004880	RELAY, INTERFACE, SOCKET
33	1	P004881	RELAY, INTERFACE, HOLD DOWN CLIP
34	1	P004882	RELAY, INTERFACE PROTECTION MODULE RC CIRCUIT
35	7	717051	TERMINAL/ RK2.5-4/TERMINAL BLOCK, RED
36	1	717052	TERMINAL/ RK2.5-4/TERMINAL BLOCK, WHITE
37	1	717048	TERMINAL/ END BARRIER, KBL6-10 AND AP2.5-10 TERMINAL BLOCK
38	2	717045	TERMINAL/ ES35, TERMINAL END STOP
39	2	P003096	CORD GRIP 1/2" LARGE W/ LOCK NUT
40	1	P004576	XFMR TERMINAL COVER
41	1	P002050	RECTIFIER, FULL WAVE BRIDGE

CONTENTS – SECTION 9

9.1 TROUBLESHOOTING – GRINDING MACHINE

Prior to any repair work on the machine or its drives, the machine must be secured against unintentional activation. Put the machine in its Safety off position. See section 2.6.

Fault	Possible Cause	Remedy
Excessive vibration	Imbalance due to worn or broken grinding tools.	Replace all worn or broken parts.
	PU-belt is too tight.	Release the tension of the upper belt.
	Screws worked loose on the grinding disk(s)	Tighten the counter-sunk head screws on the grinding disc.
Unusual noises	Defective bearing.	Check the bearing on the axle drive shaft and replace if necessary.
	Wrong tension of the belt.	Check the tension of the belt, replace the belt if necessary.
	Defective motor bearing.	Change the motor.
	Debris deposit on the coupling.	Clean the coupling.
Reduced or no grinding performance	Grinding tools have reached the maximum permissible wear.	Replace the worn parts.
	Inappropriate grinding tool for the application.	Replace the grinding tools with appropriate grinding tools for the surface to be treated.
	Too low tension of the belt.	Re-tension the belt.

9.2 TROUBLESHOOTING – ELECTRICAL SYSTEM

Work on electrical equipment or operating materials may only be performed by a skilled electrician or by trained persons under the guidance and supervision of a skilled electrician as well as in accordance with the electrical engineering regulations.

Prior to any repair work on the machine or its drives, the machine must be secured against unintentional activation. Put the machine in its Safety off position. See section 26.

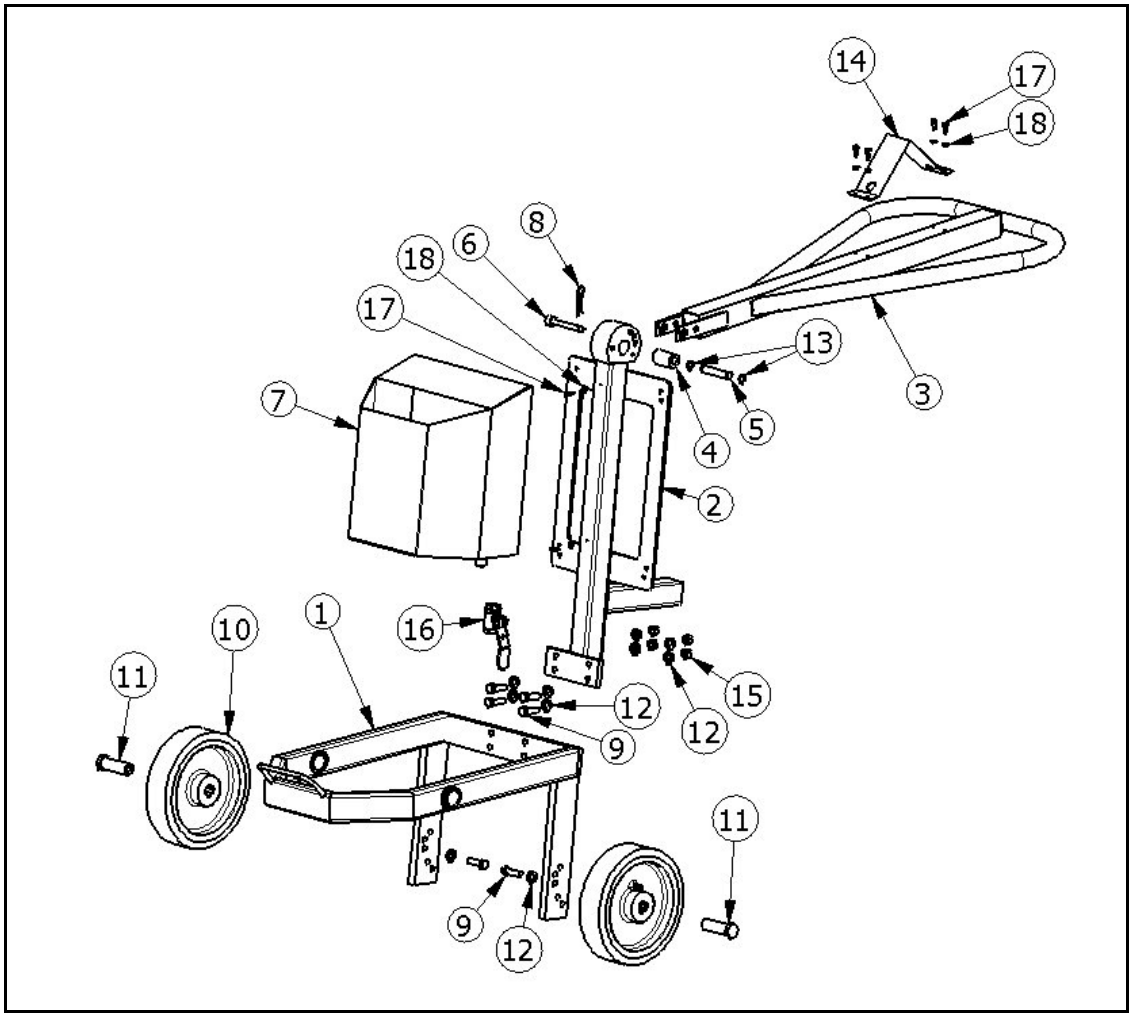
Fault	Possible Cause	Remedy
Motor does not switch on	Under voltage trip due to power interruption	Check the main power supply for proper voltage and switch on again.
	Defective Component	Troubleshoot and replace defective component.
	GFCI device tripped	Reset GFCI device and retry. If device trips again, determine cause and replace.
Motor turns off while running	Motor protection switch triggered because of overload.	Reduce additional load or increase extension cord wire size.
	Motor protector switch tripped because of low or under voltage condition.	Increase extension cord wire size.
	Motor defective.	Have motor checked by a trained professional to confirm.

Notes

CONTENTS – SECTION 10

10.1 SPARE PARTS – BMG-535

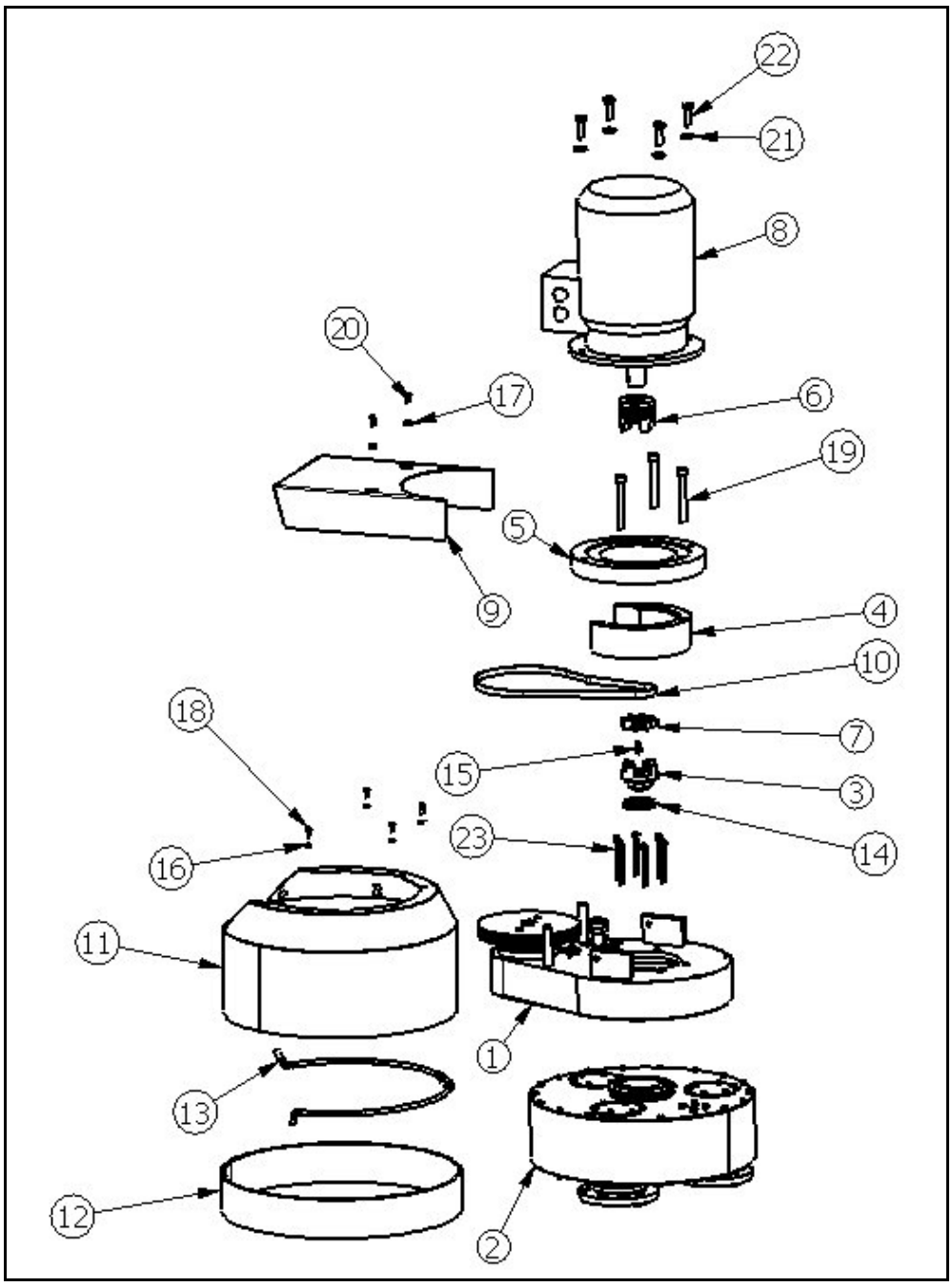
Frame Assembly



Frame Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PG-10306	MAIN FRAME ASSEMBLY	1
2	PG-10305	POWERBOX FRAME ASSEMBLY	1
3	BG005341	STEER	1
4	PA-10868	HANDLE BUSHING	1
5	BG11757	PIN	1
6	BG11750	PIN, KNURLED HANDLE	1
7	PG-10334	WATER TANK, IMPERIAL	1
8	CP-10263	HAIRPIN COTTER PIN	1
9	800838	M12 X 1.75 X 40MM HEX HEAD CAP SCREW	6
10	4501710	WHEEL	2
11	PA-10876	WHEEL SUPPORT, MAIN FRAME	2
12	800798	WASHER, 12MM, NARROW	10
13	CP-10036	15MM RETAINING RING, EXTERNAL	2
14	PA-10852	BRACKET / STEER	1
15	800842	M12 X 1.75 HEX NUT	4
16	BG11860	WATER TAP	1
17	800779	M6 X 1.0 X 16MM SOCKET HEAD CAP SCREW	6
18	800774	FLAT WASHER, 6MM, NARROW	6

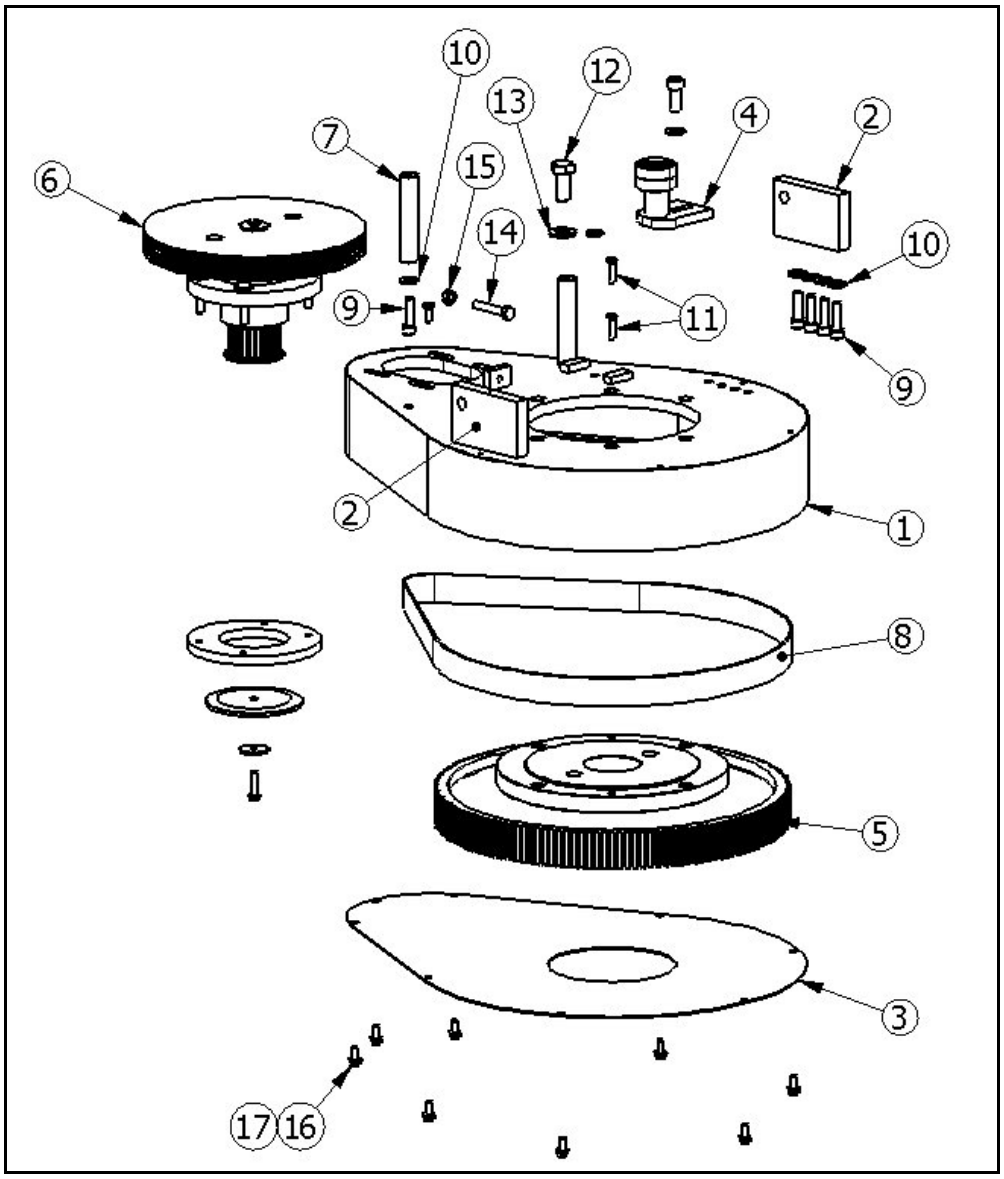
Upper & Lower Assemblies Combined



Upper & Lower Assemblies Combined

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PG-10297	UPPER ASSEMBLY	1
2	PG-10299	LOWER ASSEMBLY	1
3	PA-10249	MACHINED COUPLING	1
4	BG005311	MOTOR SEAT	1
5	BG005310	FLANGE, MOTOR SEAT	1
6	PA-10858	MOTOR COUPLING	1
7	CP-10052	SPIDER	1
8	BG11960	MOTOR	1
9	BG005347	PROTECTION CAP	1
10	BG11924	UPPER DRIVE BELT	1
11	BG005539	COVER HOUSING	1
12	BG11925	DUST RING	1
13	PG-10309	WATER PIPE ASSEMBLY (OPTIONAL)	1
14	BG11797	SEAL	1
15	BG11780	KEY	1
16	800774	FLAT WASHER, 6MM, NARROW	4
17	800775	FLAT WASHER, 8MM, NARROW	2
18	800779	M6 X 1.0 X 16MM SOCKET HEAD CAP SCREW	4
19	800830	M14 X 2.0 X 110MM SOCKET HEAD CAP SCREW	4
20	05-91578	M8 X 1.25 X 16MM HEX HEAD CAP SCREW,	2
21	5001090	FLAT WASHER, 14MM	4
22	5036870	M14 X 2.0 X 40MM HEX HEAD CAP SCREW	4
23	800857	M8 X 1.25 X 90MM SOCKET HEAD CAP SCREW	6

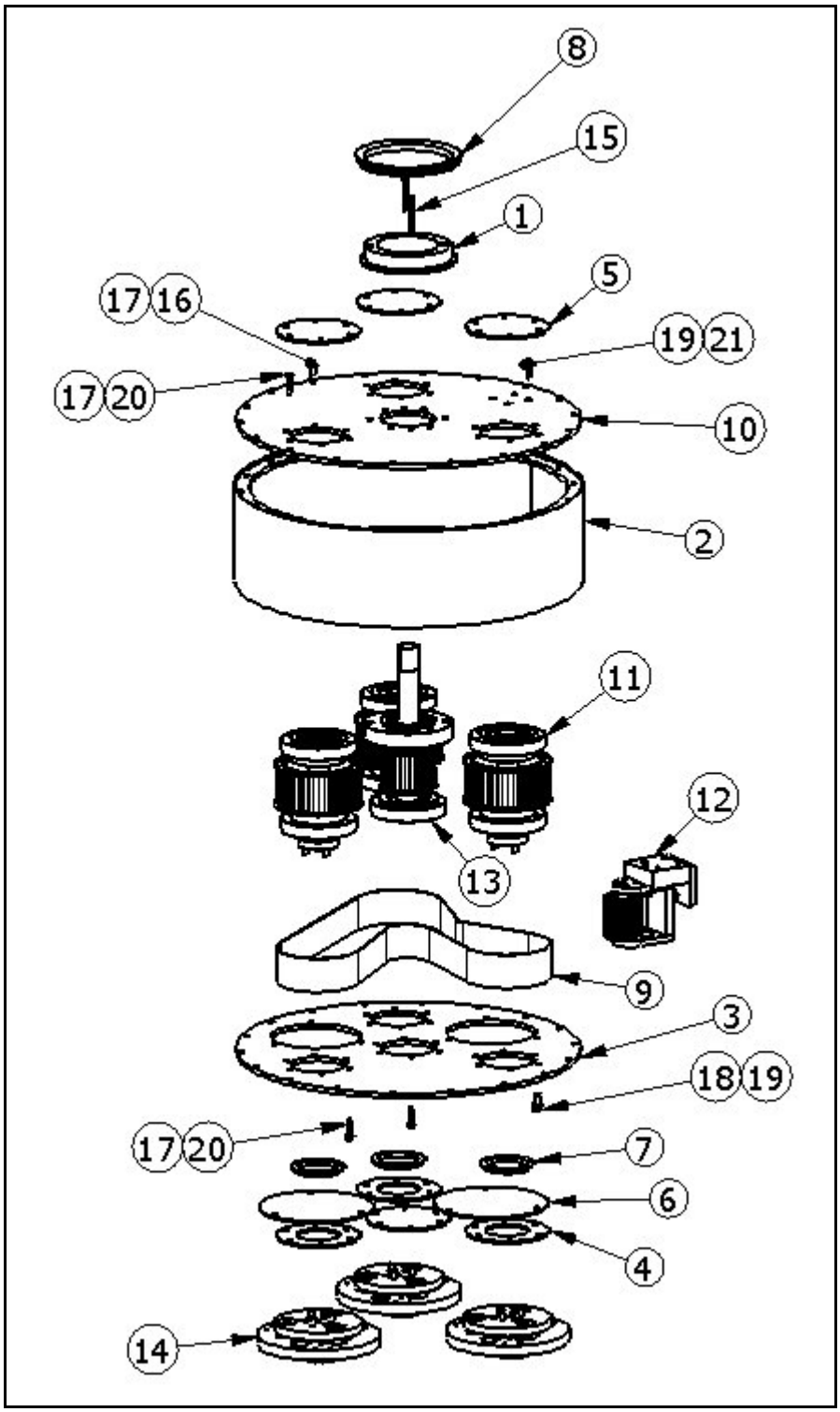
Upper Assembly



Upper Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	BG005309	MOTOR PLATE ASSEMBLY	1
2	BG005313	HOLDER	2
3	BG007834	LOWER PLATE UPPER DRIVE	1
4	PG-10044	TENSIONER UPPER BELT	1
5	PG-10300	CENTER PULLEY ASSEMBLY	1
6	PG-10301	CONTRA PULLEY ASSEMBLY	1
7	PA-10250	PROTECTION CAP SUPPORT	2
8	BG11904	MIDDLE BELT	1
9	800787	M8 X 1.25 X 30MM SOCKET HEAD CAP SCREW	6
10	800775	FLAT WASHER, 8MM, NARROW	6
11	800789	M14 X 2.0 X 30MM HEX HEAD CAP SCREW	1
12	5001090	FLAT WASHER, 14MM	1
13	800788	M8 X 1.25 X 45MM HEX HEAD CAP SCREW	1
14	5028810	M8 X 1.25 HEX NUT	1
15	5028750	M6 X 1.0 X 15MM HEX HEAD CAP SCREW	1

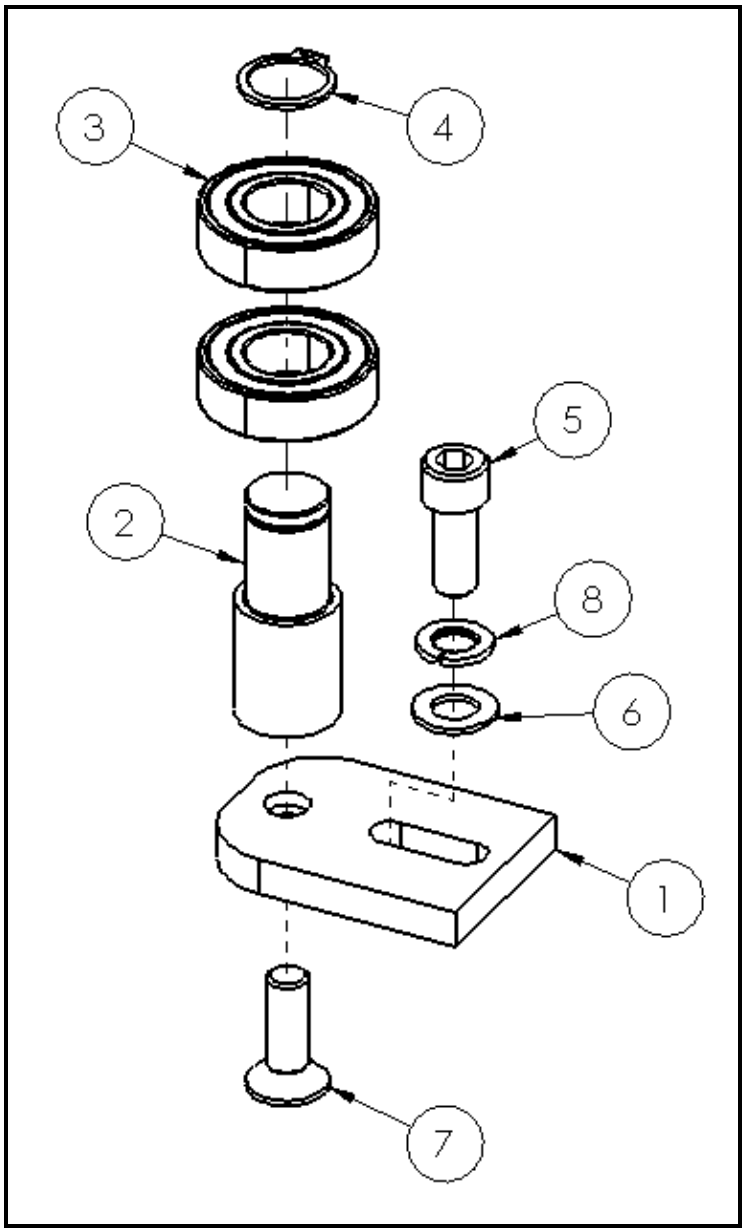
Lower Assembly



Lower Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	BG005314	ADAPTER RING	1
2	BG005322	HOUSING	1
3	BG005324	LOWER PLATE	1
4	BG005326	RING	3
5	BG005327	COVER	4
6	BG005350	INSPECTION COVER	2
7	BG11829	V-RING SEAL	3
8	BG11849	V-RING SEAL	1
9	BG11928	LOWER BELT	1
10	PA-10845	UPPER PLATE	1
11	PG-10290	TOOLING DRIVE AXLE ASSEMBLY	3
12	PG-10291	LOWER TENSIONER ASSEMBLY	1
13	PG-10292	DRIVING PULLEY ASSEMBLY	1
14	PG-10293	DIAMOND HOLDER	3
15	800840	M6 X 1.0 X 50MM FLAT HEAD SOCKET CAP SCREW	2
16	5028750	M6 X 1.0 X 15MM HEX HEAD CAP SCREW	36
17	5037600	LOCK WASHER, M6	78
18	05-91578	M8 X 1.25 X 16MM HEX HEAD CAP SCREW	6
19	800848	LOCK WASHER, M8	10
20	800839	M6 X 1.0 X 25MM HEX HEAD CAP SCREW	42
21	800803	M8 X 1.25 X 20MM HEX HEAD CAP SCREW	4

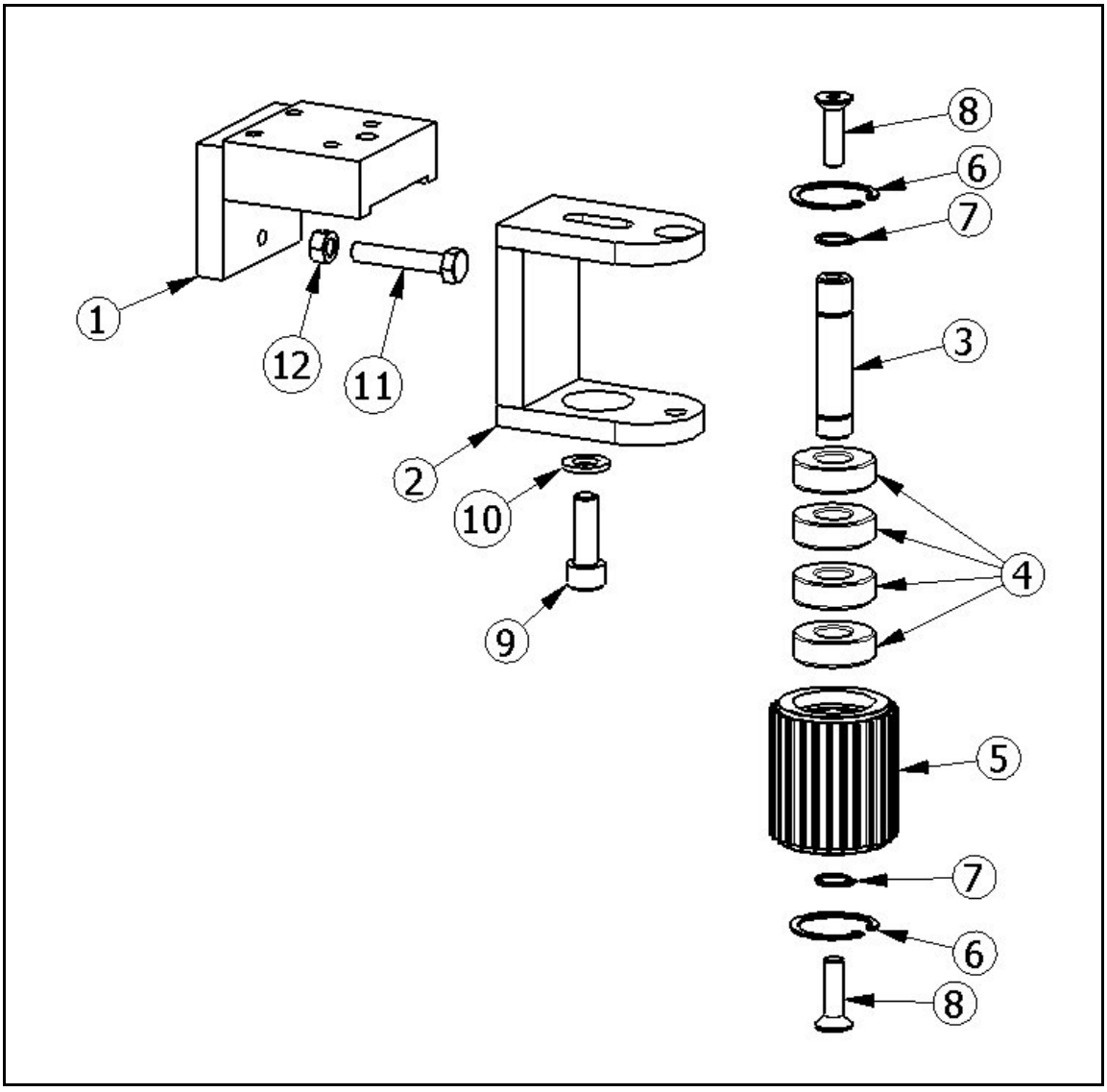
Upper Belt Tensioner



Upper Belt Tensioner

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	BG005831	TENSION PLATE	1
2	BG005830	AXLE	1
3	BG11911	BEARING	2
4	CP-10040	RETAINING RING, 20MM, EXT	1
5	800790	M10X1.5X30MM SOCKET HEAD CAP SCREW	1
6	800791	FLAT WASHER, M10, NARROW	1
7	800792	M10 X 1.5 X 30MM FLAT HEAD SOCKET CAP SCREW	1
8	4774800	LOCK WASHER, M10	1

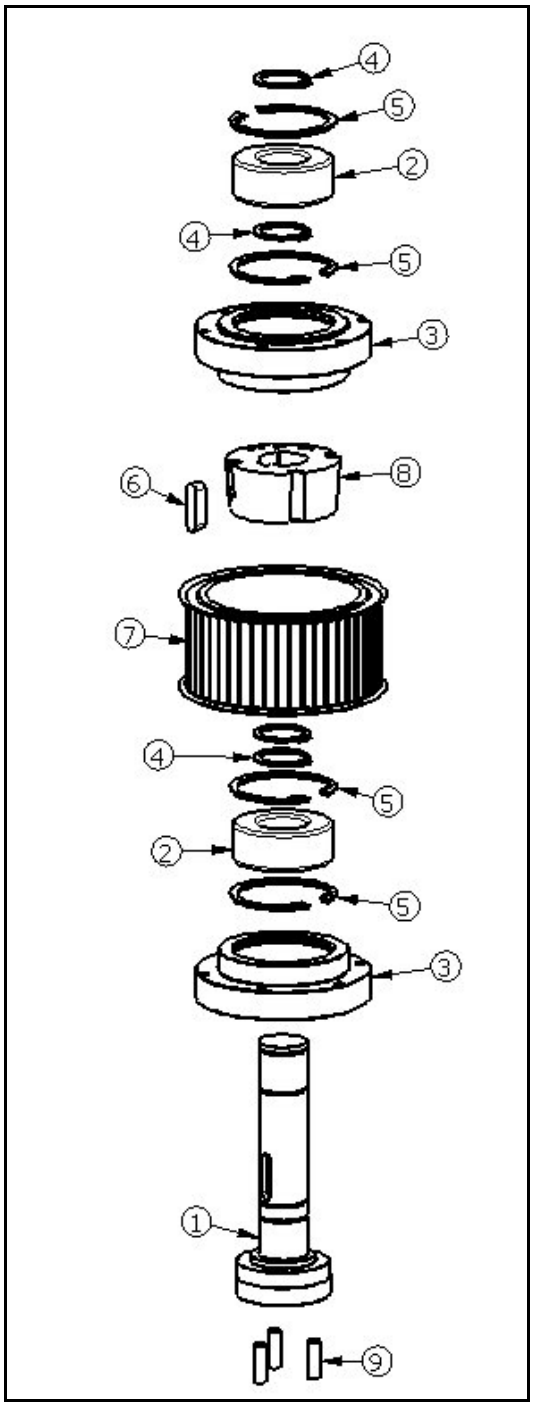
Lower Belt Tensioner



Lower Belt Tensioner

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	BG005332	HOLDER, LOWER BELT TENSIONER	1
2	BG005333	TENSIONER, LOWER	1
3	BG005337	AXLE, LOWER TENSIONER	1
4	BG11792	BEARING	4
5	BG005336	PULLEY	1
6	BG11793	RETAINING RING, 35MM, INTERNAL	2
7	BG11794	RETAINING RING, 15MM, EXTERNAL	2
8	800785	M8 X 1.25 X 30MM FLAT HEAD SOCKET CAP SCREW	2
9	800790	M10 X 1.5 X 30MM SOCKET HEAD CAP SCREW	1
10	800791	FLAT WASHER, M10	1
11	800826	M8 X 1.25 X 50MM HEX HEAD CAP SCREW	1
12	5028810	M8 X 1.25 HEX NUT	1

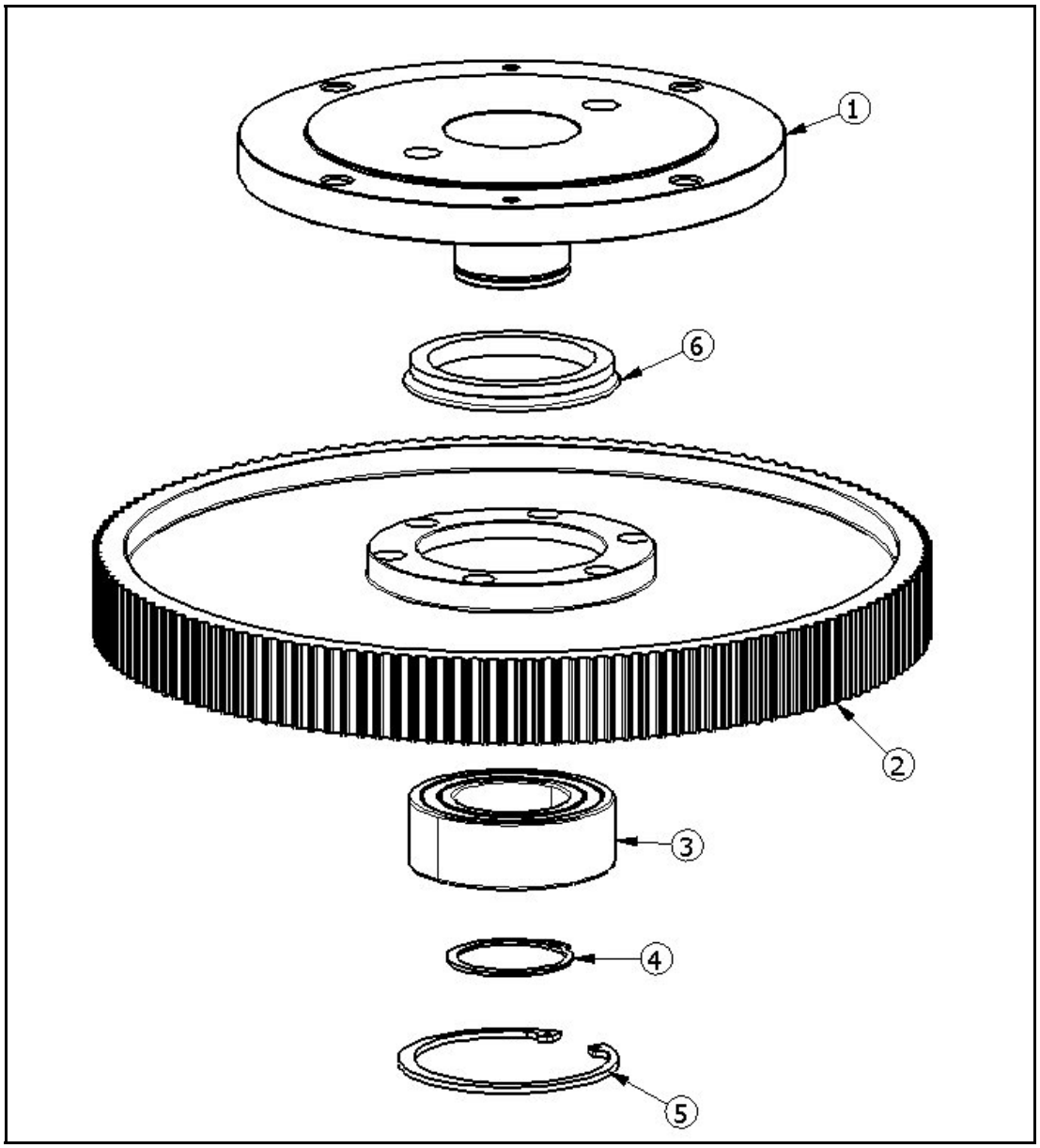
Tooling Pulley Assembly



Tooling Pulley Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PA-10921	AXLE, TOOLING DRIVE, IMPERIAL	1
2	BG11817	BEARING	2
3	BG005317	BEARING HOUSE	2
4	BG11801	RETAINING RING, 30MM, EXTERNAL	4
5	BG11814	RETAINING RING, 62MM, INTERNAL	4
6	BG11780	KEY	1
7	PA-10924	PULLEY, IMPERIAL	1
8	BG11819	TAPER LOCK BUSHING	1
9	CP-10054	DOWEL PIN	3

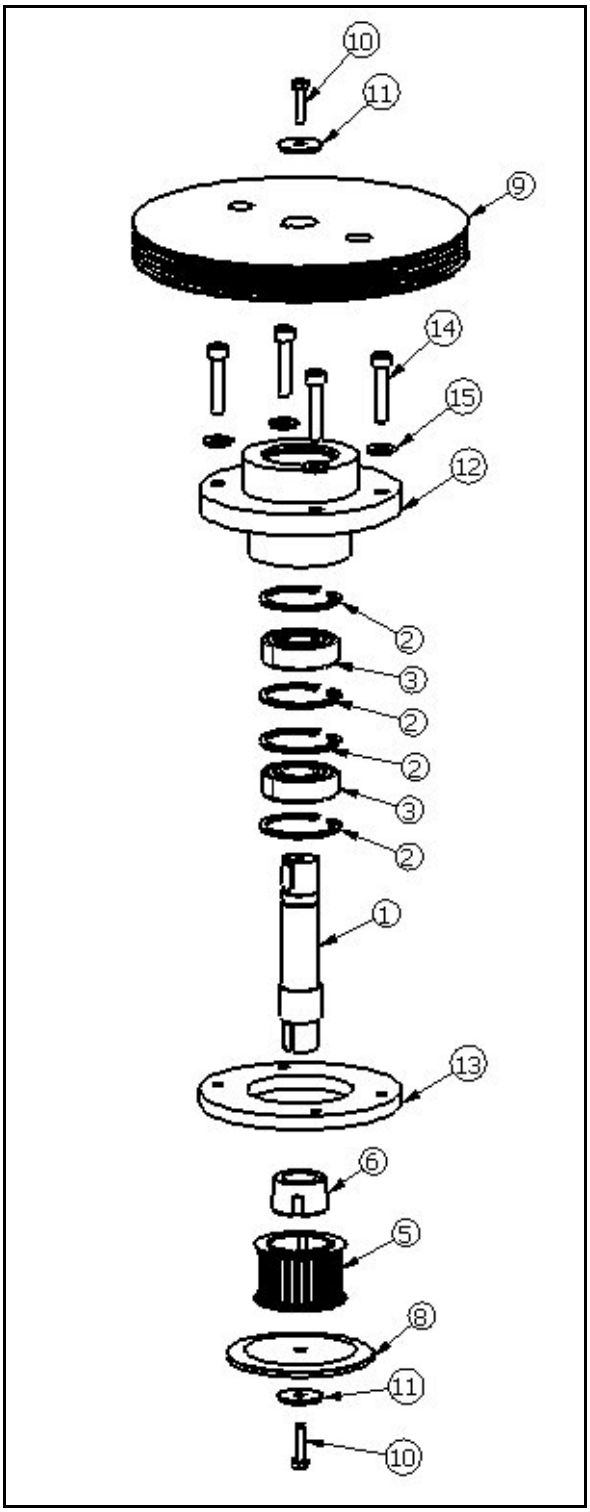
Center Pulley



Center Pulley

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PA-10875	SPROCKET	1
2	BG005306	PULLEY	1
3	BG11984	BEARING	1
4	CP-10045	RETAINING RING, EXTERNAL, 50MM	1
5	CP-10044	RETAINING RING, INTERNAL, 90MM	1
6	CP-10053	V-SEAL	1

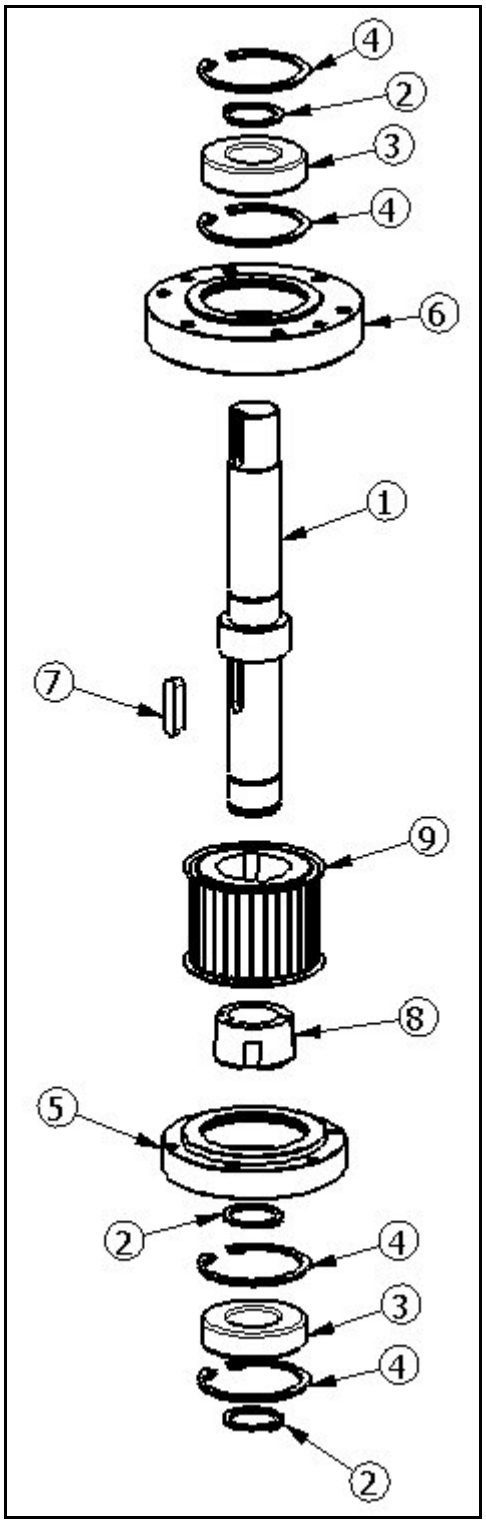
Contra pulley



Contra Pulley

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	BG005301	AXLE, CONTRA PULLEY	1
2	CP-10047	RETAINING RING, INTERNAL, 52MM	4
3	BG11881	BEARING	2
4	CP-10051	RETAINING RING, EXTERNAL, 25MM	1
5	PA-10928	PULLEY	1
6	CP-10280	BUSHING, TAPER LOCK	1
7	CP-10046	KEY	2
8	BG007804	FLANGE	1
9	BG007803	BELT PULLEY	1
10	800839	M6 X 1.0 X 25MM HEX HEAD CAP SCREW	2
11	800795	FLAT WASHER, M6, EXTRA WIDE	2
12	BG007802	BEARING HOUSE	1
13	BG007807	RING	1
14	800796	M8 X 1.25 X 40MM SOCKET HEAD CAP SCREW	4
15	800775	FLAT WASHER, M8, NARROW	4

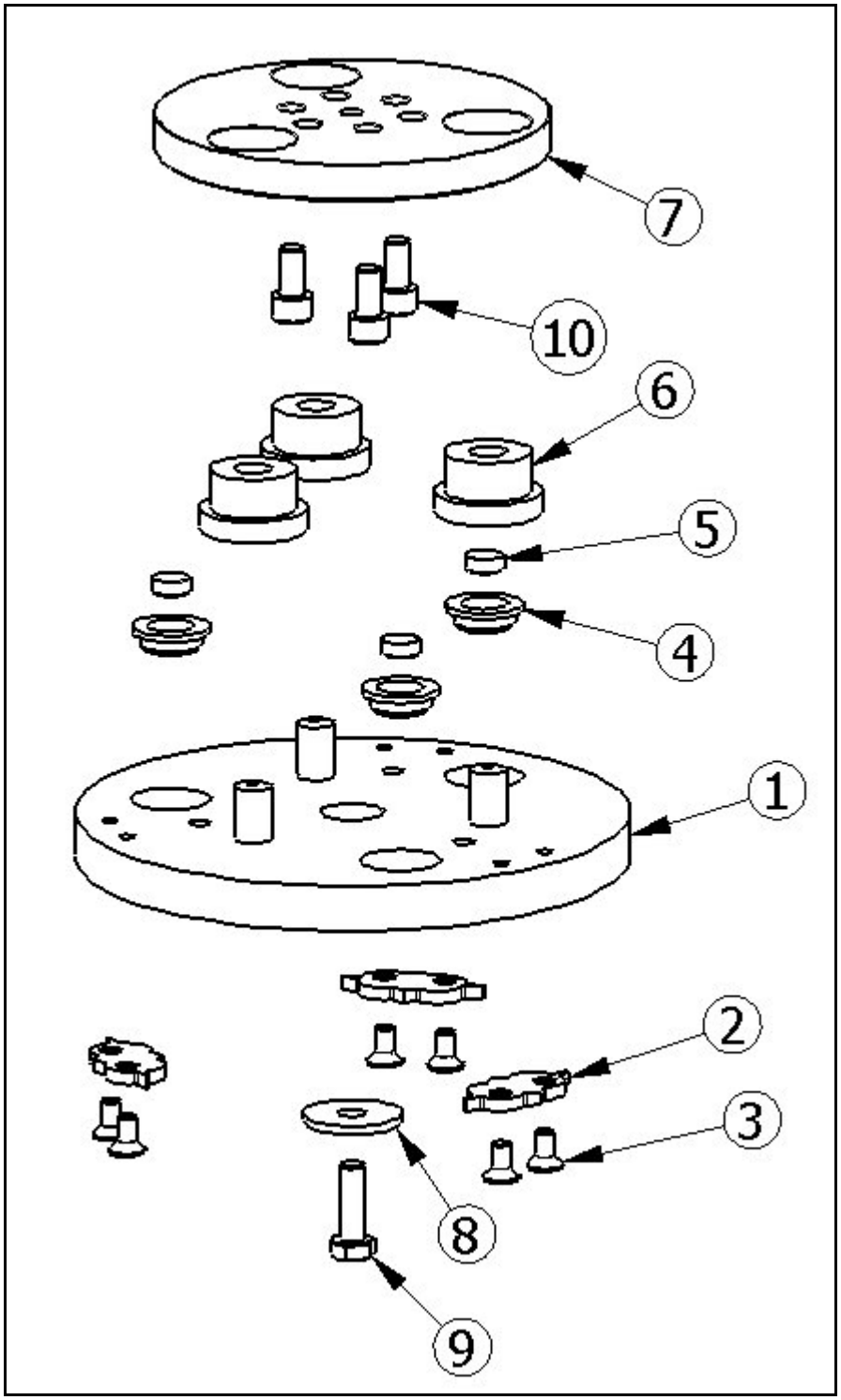
Driving Pulley



Driving pulley

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PA-10922	AXLE, DRIVING PULLEY, IMPERIAL	1
2	BG11801	RET RING, 30MM, EXTERNAL	3
3	BG11800	BEARING	2
4	BG11814	RET RING, 62MM, INTERNAL	4
5	BG005321	BEARING HOUSE	1
6	BG005315	BEARING HOUSE	1
7	BG11816	KEY	1
8	CP-10297	TAPER BUSHING	1
9	PA-10923	PULLEY	1

Diamond Plate Holder



Diamond Plate Holder

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	BG11809	TOOL HOLDER	1
2	BG11811	CENTERING STAR	3
3	800811	M6 X 1.0 X 12MM FLAT HEAD SOCKET CAP SCREW	6
4	BG11808	MAGNET HOLDER	3
5	BG11807	MAGNET	3
6	BG11806	BUFFER SOFT	3
7	BG11805	BUFFER PLATE	1
8	800827	WASHER, FLAT, M8, WIDE	1
9	800828	M8 X 1.25 X 25MM HEX HEAD BOLT	1
10	800781	M8 X 1.25 X 15MM SOCKET HEAD CAP SCREW	3