BLASTRAC

MODEL
BMP-G/E250-X

February 2006

Section 1

1.1 Warnings and Symbols

This Instruction Manual uses the following symbols to draw your attention to certain information. **Please note that these symbols <u>may or may not be used on the machine</u>.**

Symbols Used:

	**Warning of a potential danger to life and limb. Always comply with the instructions and act with extra care in these cases. Along with these instructions, you should be familiar with and comply with statutory OSHA, local government, and site safety and accident prevention regulations.**
    	**Information, directions, and cautions to help prevent injury to persons or damage to property.**
	**Warning of dangerous voltages or potentially dangerous voltages**
	**Suggestions regarding Lock Out/Tag Out (LO/TO) conditions for this equipment are also referred to as the "Maintenance Mode". Many industrial and commercial facilities have developed their own conditions and rules for LO/TO with which the operator may be required to comply.** **It is the responsibility of the owner/operator of this equipment to develop a LO/TO procedure that will provide the intended element of safety. One LO/TO system will not work in all situations. Management must give**

	consideration to personnel training levels.

1.1 Warnings and Symbols (cont'd)

	**Information requiring advice or input from Blastrac.**
	**Details of important information in this Instruction Manual.**
	**Indication of necessary regular or scheduled checks pertaining to safety, maintenance, and/or operation efficiency.**
	**Troubleshooting tips and suggestions**
	**Special information concerning the economic use of the machine**

1.2 Statutory Safety Considerations

	**In addition to these Manual instructions and cautions, all statutory and other binding (law) accident prevention regulations such as OSHA, state and/or local entity articles should be a part of operator training. This type of obligation may govern, i.e. handling of hazardous materials or wearing personal safety equipment. Some of these are listed in the remainder of this Section 1.2 "Statutory Safety Considerations".**
	**Safety shoes are required. Observe all applicable local, state and federal safety regulations. Wear OSHA-approved foot protection.**
	**Eye protection is required. Observe all applicable local, state and federal safety regulations. Wear OSHA-approved safety glasses with side shields.**

1.2 Statutory Safety Considerations (cont'd)

	**Wear respirator while operating equipment. Avoid air contaminants including concrete dust. Grinding and cutting concrete produces airborne crystalline silica. Exposure to airborne crystalline silica can lead to severe repertory distress, silicosis and even death. Observe all applicable local, state and federal safety regulations. Wear OSHA approved respirator when operating this equipment.**
	**Obtain Material Safety Data Sheets (MSDS) for all work surface materials. This includes primers, all coatings, adhesives, tile materials, etc. Do not attempt to remove material without MSDS information. Consult MSDS for hazards information. Keep these MSDS with the machine.**
	**Wear ear protection when operating equipment. Noise levels of operating equipment may exceed 85 db (A). Observe all applicable local, state, and federal safety regulations. Wear OSHA-approved hearing protection.**
	**Dangerous voltages power this equipment. Operation can be safe if rules and good practices are observed.** 1. It should be standard practice that if damage to an electrical element of the machine occurs i.e. control panel, cable, etc the repair must be immediate and factory replacement parts must be used. 2. Particular attention must be given to laws pertaining to equipment grounding. The following is an excerpt from **OSHA 29CFR 1926.404(b)(1)(iii)** and should be considered a minimum guideline for inspection/repair policy for the owner/operator. This same verbiage is also present in the National Electric Code. ***The employer shall establish and implement an ensured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. This program shall comply with the following minimum requirements:*** ***(A) A written description of the program, including the specific procedures adopted by the employer, shall be available at the jobsite for inspection and copying by the Assistant Secretary and any affected employee.*** ***(B) The employer shall designate one or more competent persons . . . . .*** **The balance of this article may be found at www.osha.gov**

1.3 Primary Safety Considerations

	**USE COMMON SENSE and BE AWARE!**
	**NEVER leave the machine while it is running. Do not remove hands from the handle until the machine has come to a complete stop. Turn power off and place the machine into the "Maintenance Mode". See Section 1.5 "Safety – Under Normal Operating Conditions".**
	**Before starting any work with or on the machine, all authorized personnel must read and understand the Instruction Manual. AFTER work has started is TOO LATE. This applies in particular to those persons who only work on the machine occasionally, i.e. setting-up, maintenance, changing filters, etc.** **The Instruction Manual must be supplemented by management developed rules, including supervisory and personnel levels with notifying duties, taking special operational features into account, i.e. regarding work organization, operational sequences, personnel used, training, etc. Always keep the Instruction Manual in good condition and with the machine.** **Only personnel trained in this manner should operate this equipment.**
	**Alterations, extensions and conversions of the Blastrac® equipment requires the approval of Blastrac! This applies in particular to the installation and settings of safety devices, cabling and to welding work on any supporting parts. Use ONLY Blastrac® replacement parts!**
	**If changes affecting safety occur to the machine or its operational behavior, shut the machine off immediately. Determine the cause of the fault and correct it immediately! DO NOT attempt to operate the machine until it has been repaired.**
	**Under no circumstances should anyone ever operate these machines while under the influence of drugs, alcohol, or any medication.**
	**Personnel must not have unprotected long hair, loose clothing or jewelry, including rings. There is a risk of injury i.e. through hair, fingers, arms or clothing getting stuck or being pulled into the machine.**
	**Emphasis should be provided and checks conducted at regular intervals to ensure personnel are safety conscious and aware of all the risks and cautions in this Instruction Manual as well as operational information.**

1.3 Primary Safety Considerations (cont'd)

	**The periodic checks and inspections listed in this Manual should be performed <u>thoroughly and on time</u>. This will help ensure that the Blastrac® equipment will continue to operate efficiently, economically and safely. Failure to perform these checks and inspections will potentially foster inefficient and unsafe equipment.**
	**Never use the machine unless all safety devices and equipment affecting safety, e.g. guards, detachable safety equipment, emergency switches and dust collector is in place and <u>working</u>!**

1.4 Selecting Personnel and Their Qualifications

	**Stipulate to the machine operators their responsibility and authorize them to refuse instructions from third parties that contravene safety regulations! Personnel in training or under instruction may only operate the machine under the supervision of an experienced person!**
	**Both supervisory and operating personnel should be familiar with the location and proper use of fire suppression and extinguishing equipment on site.**
	**Before starting any work with or on the machine, all authorized personnel must read and understand the Instruction Manual. AFTER work has started is TOO LATE. This applies in particular to those persons who only work on the machine occasionally, i.e. setting-up, maintenance, changing filters, etc.** **The Instruction Manual must be supplemented by management developed rules, including supervisory and personnel levels with notifying duties, taking special operational features into account, i.e. regarding work organization, operational sequences, personnel used, training, etc. Always keep the Instruction Manual in good condition and with the machine. Only properly trained personnel should be allowed to operate this equipment.**

1.5 Safety – Considerations Under Normal Operation

	**Work on electrical parts of the machine must be preformed by a qualified electrician or by experienced persons under the supervision of a qualified electrician.**
	**ALWAYS INFORM OPERATING PERSONNEL before starting any special work or maintenance work! When work is carried out that affects the machine's operations or settings and/or the settings of the safety devices, complete compliance with this instruction manual is necessary! This is an important part of the Lock Out/Tag Out procedure mentioned below.**
	**LOCK OUT/TAG OUT or "Maintenance Mode" of a machine.** **The machine must be in a "safe" mode when troubleshooting, adjusting or maintaining the equipment. The machine state is "safe" to work on when it is unable to endanger anyone, i.e. no stored energy that might be released is present. Examples would include:** **Electrically the Main switch is disconnected, locked out and tagged out.** **Mechanically the machine and all parts of it are secure i.e. lids cannot fall, wheels cannot roll, etc.** **Any other "stored energy", such as a spring under tension has been neutralized.**
	**Before switching the machine ON, ensure no one can be endangered when the machine starts up!**
	**Check to ensure that the machine power switch is in the off position before attempting to plug the machine into the main power source! Make sure that the power plug and receptacle are compatible and that they fit securely together. If they do not securely fit together, do not operate the machine!**
 	**The machine MUST be connected to an approved dust collector such as a Blastrac® 4-54DC99, 6-54DC99 or 8-54DC99 when in operation. NEVER turn off or disconnect the dust collector when the machine is running!**
	**Always empty the dust container of the dust collector properly. Comply with waste disposal regulations. If you are unsure of current regulations contact your local authority. Always dispose of materials and supplies safely to protect the environment.**

1.5 Safety – Considerations Under Normal Operation (cont'd)

	**AVOID DANGEROUS SITUATIONS** • **Survey the work area before starting the machine for hidden obstructions and uneven cracks or joints.** • **Do not expose the machine to rain.** • **Do not use the machine in standing water conditions.** • **Keep work area well lit.** • **Do not allow the machine to cross over the edge of the concrete slab or work surface.** • **When working on uneven surfaces, pay attention not to cross over embedded floor anchors, ledges, or heaved slab joints as this may lead to machine damage, personal injury, or both.**
	**Check the system thoroughly after each transport and at least once a day for external damage and defects. As defects or problems are found qualified personnel MUST correct them immediately.**
	**In the event of an emergency, the operator should execute an Emergency Stop! A Lock Out/Tag Out or "Maintenance Mode" is necessary in the event of an emergency!**

How to Execute an Emergency Stop:

- ✓ Operate the Emergency Stop Pushbutton located on the control panel of the scarifier or, for those machines equipped with a gasoline motor, activate the dead-man safety switch by pulling the rope. This will remove all power from the machine.
- ✓ Operate the mechanical quick lift actuator on the scarifier. This will remove the scarifier drum from the work surface.
- ✓ Switch the dust collector to the off position.
- ✓ Wait until all drives come to a complete stop!
- ✓ Disconnect the main power plugs or lock out the main disconnect switches of both machines to ensure that no power is being fed to the scarifier or the dust collector.

1.6 Electrical Safety

	**When extending the main cable, use only extension cables that are dimensioned in accordance with the machine's total output and with current regulations.**
	**DO NOT ABUSE THE POWER CORD! Never pull the machine by the cord! Never allow the cord to be run over by a forklift truck or any other vehicle! Connect the power cord to the power source and power cable extensions with approved plugs only and with the machine power switch turned off.**
	**To protect against unnecessary damage, ensure that no vehicles, such as forklift trucks, can drive over the electrical cable or the dust hose!**
	**Electrical components must be checked on an ongoing basis. Electrical cables, enclosures, and safety devices should be inspected prior to every shift, EVERY day. Always inspect after transport. A thorough check of the internal terminations should be accomplished every 3 months.**
 	**If defects are found or suspected, contact a qualified electrician or your Blastrac representative. Defects such as loose connections or scorched cables must be corrected immediately.**
	**Ensure reliability of voltmeters used for troubleshooting.**

1.7 Maintenance Mode

Prior to inspecting BMP-G/E250-X components and attached components, verify that the machine is placed in Maintenance Mode as described below.

Maintenance Mode

Maintenance mode is defined as the state or condition of the BMP-G/E250-X, which minimizes mechanical and electrical hazards.

The BMP-G/E250-X should be put into Maintenance Mode prior to making adjustments or attempting any maintenance. The steps for placing the BMP-G/E250-X in maintenance mode are listed below.

1. Move the BMP-G/E250-X to level ground.
2. For E350-X: Press Off Button located in control panel.
   For G250-X: Turn switch on front of motor to Off.
3. Verify all moving parts have stopped.
4. Secure the BMP-G/E250-X against movement due to gravity.
5. For E250-X: Utilize Lock-Out/Tag-Out procedures to verify machine will not be inadvertently energized during maintenance.

Section 2

2.1 Machine Specifications

Manufacturer: Blastrac®, 13201 North Santa Fe, Oklahoma City, OK 73114

Equipment / Code Word: Blastrac Scarifier

Machine Contents upon Delivery:
Scarifier (BMP G/E250-X)
Manual (1x)
Dust Collector (option)
Dust Container (option)

Machine Type:
BMP = Model
E/G = Motor type
250-X = Working width in millimeters

Machine Dimensions

Length	38.5”
Width	17.5”
Height	44”
Weight	235 lbs.
Weight (with cutters)	255 lbs.

Working Width: 10”

Drive: Manual

2.2 Motor Specifications

BMP-G250-X Gasoline Power: 9hp

BMP-E250-X Electric Power: 5hp, 230V, 3Ø, 60 HZ, 12.4 A

2.3 Applications and Proper Use

All proper applications of these machines have been listed in **Section 3.1 “Description of Machine“.**

	**This machine has been designed for the scarifying of horizontal concrete, asphalt, and steel surfaces ONLY. All other applications are deemed to be of incorrect use! Blastrac shall not be liable for any damage resulting from incorrect use. The user is solely responsible for any risk.**

2.4 Applications and Proper Use (cont'd)

	**A dust collector system MUST be used with this scarifier. The minimum requirement of the dust collector is 200 CFM with primary filter efficiency of 99.9% @ 0.5 Microns**

2.5 Power Requirements for Electric Machine

	**If the machine is to be operated with a generator, the generator must be connected in accordance with the National Electric Code (NEC).** **Particular attention must be given to the equipment grounding conductor in the system. See Section 1.2, Page 4 "Dangerous *voltages power this equipment. Etc*" for explicit information. Only by doing this are you ensured that all safety devices will function properly and exclude the possibility of injury of personnel or of damage to electrical components.** **Maximum branch circuit protection for the BMP-E250-X is 15 amp @ 230 volt.** **Minimum extension cord conductor size is 12 AWG up to 100 feet and 10 AWG to 200 feet.**

Section 3

3.1 Description of Machine

Blastrac BMP-G/E250-X scarifiers are available with either a 230 V electric motor or a combustion engine.

BMP-G/E250-X scarifiers with a working width of 10 inches are sturdy and powerful machines that can be used only on horizontal surfaces.

The depth setting adjustment handle of the machine assures that the subsurface is protected. Fitted with the appropriate scarifier cutters, the BMP-G/E250-X scarifiers can be used for various applications, for example:

- Scarifying concrete
- Cleaning only on horizontal surfaces
- Removing coatings and adhesives
- Scoring concrete surfaces
- De-rusting metal surfaces, e.g. ship decks and tanks
- Grinding-away
- De-scaling
- Preparing surfaces for new coatings

The depth setting adjustment handle enables the efficiency of the appropriate scarifier cutters to be maximized according to the material being removed.

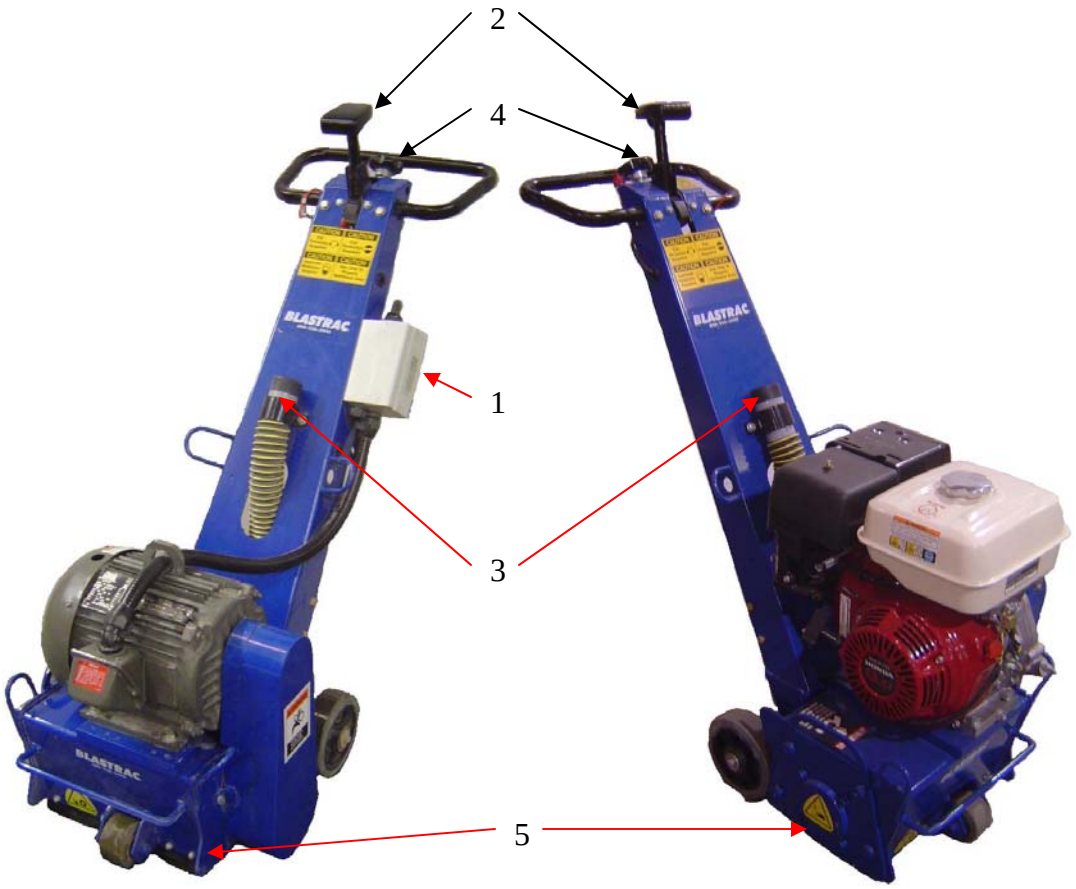


Fig. 3.1

1) Control panel (E250-X only)
2) Quick Lift Actuator
3) Dust Collector Connection
4) Depth Setting Adjustment Wheel
5) Machine Housing

3.2 Electric Control Operating Elements

The electrical switchbox shown in Figure 3.2 for the BMP-E250-X has and Green On button and a Red Off button.

1) On Button
2) Off Button

Fig 3.2

On Button: This button is provided to turn the machine on. Before switching the machine on, use the quick lift actuator to lift the scarifier drum off of the work surface in order to prevent the motor from starting or coasting under a full load.

Off Button: This button is provided to turn the machine off. Prior to turning the machine off use the quick lift actuator to lift the scarifier drum off of the work surface in order to prevent excessive wear to cutters when no actual work is being accomplished.

In addition to the On and Off buttons, there is a deadman kill switch with a lanyard located near the handle. This should be secured to the operator during operations. This switch will stop all machine functions if the operator should come out of contact with the machine. See Figure 3.3.

Fig 3.3

3.3 Mechanical Operating Elements

Quick Lift Actuator:

The BMP-G/E250-X scarifiers have a quick lift actuator for the scarifier drum (See Figure 3.1, Item 2).

The quick lift actuator can be used to lift the scarifier drum without altering the scarifier depth setting, to transport or move the scarifier or in an emergency situation.

Depth Setting Adjustment:

Turn the depth setting adjustment wheel or hand wheel to set the scarifier depth so that the individual scarifier cutters bit correctly (scratch) and the desired surface profile is obtained. The depth setting adjustment enables the scarier cutters to be set as deep as required on the surface to be treated.

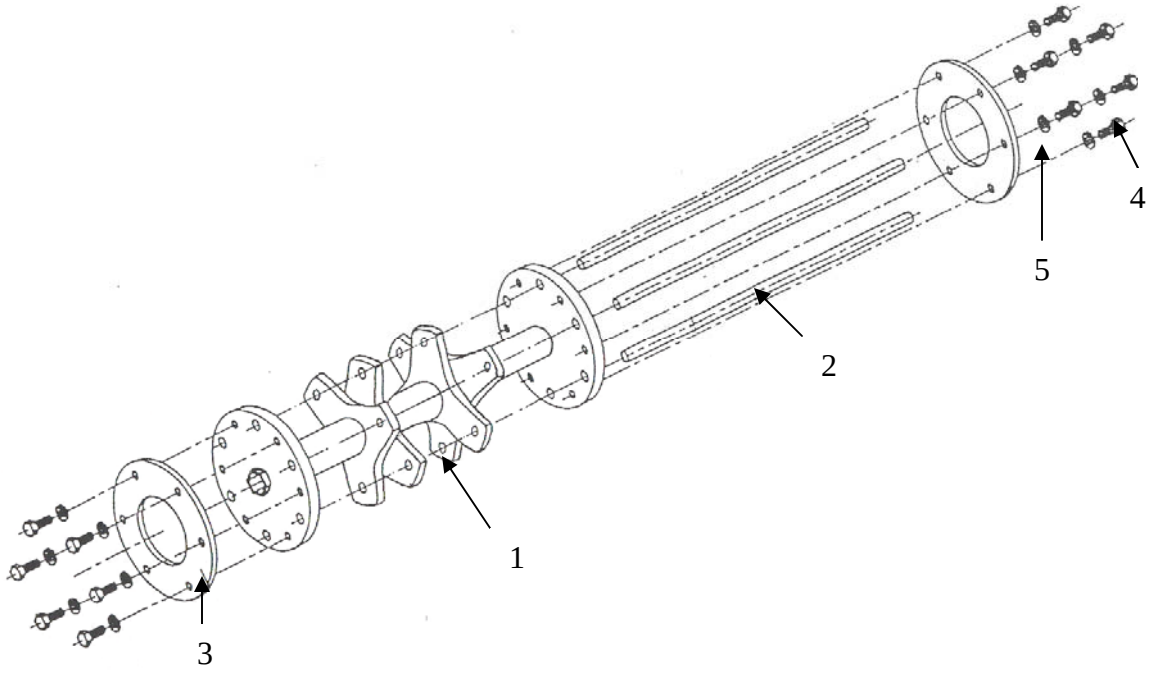
The scarifier depth should only be set “deep” enough so that the scarifier cutters are thrown up without obstruction through centrifugal force and can turn freely on their individual shaft. If the depth setting has been set correctly, the scarifier will run smoothly and evenly.

3.4 Scarifier Drum Details

The scarifier drum is the heart of the scarifier. The scarifier drum has a very simple structure. The individual scarifier cutters are slid onto their individual shaft with spacer washers as shown in the enclosed assembly plan. The washers ensure that there is sufficient clearance between the scarifier cutters.

The enclosed component-mounting diagram takes into account a required lateral play of approximately 1-3mm for the scarifier cutters.

3.4 Scarifier Drum Details (cont'd)



1	Drum
2	Shaft
3	Shaft Retainer
4	Screw
5	Lockwasher

Section 4

4.1 Transporting the Machine

When transporting the machine make sure that impact damage is avoided. Use straps to secure the machine on the vehicle. Use at least two straps and secure the machine firmly. Secure the straps over the housing at the base of the motor on the rear of the machine and trough the lugs on the front of the machine. Never secure the straps over the motor. **Make sure that the belts being used are rated to withstand the weight of the machine.**

4.2 Moving the Machine by Hand

Before moving the machine the quick lift actuator must be actuated to remove the scarifier drum from the work surface. **See Section 3.1 "Description of Machine".** With the scarifier drum raised, the machine can be moved easily by hand.

The machine is transported in parts:

- Scarifier
- Dust Collector
- General Accessories

4.3 Transporting with Lifting Gear

To move the machine with lifting gear such as a crane or elevator, note the maximum permitted weights. **Use only approved and tested slings.**

For the machine weight see **Section 2.1 "Machine Specifications"** or check the ratings plate.

4.4 Procedure for Moving the Machine During Scarifying

Refer to Section 5.2 "Starting" for all procedure related to starting the machine and moving the machine during scarifying.

Section 5

5.1 Preparations for Starting

	Regular inspections are important to prevent unscheduled downtime of the scarifier. Before starting carry out the following tests. ASSURE THE MACHINE IS IN "MAINTENANCE MODE" WHEN DORING THESE CHECKS. See Section 1.7 for "Maintenance Mode" details.

a) Verify that all machine components have been correctly assembled.
b) Verify that all screws and other fasteners are tight.
c) Check the scarifier drum for foreign material and remove.
d) Check the scarifier drum, housing and fastening screws for damage and wear.
e) Check the flexible dust collector tubing and connections for leaks and repair or replace when necessary.
f) Verify that the dust container of the dust collector is empty
g) Check the electrical connections for dirt and deposits of foreign material.
h) Check the electric motor for dirt and other contaminants.
i) Bring the scarifier and the dust collector to the surface to be scarified. To move the machine by hand, actuate the quick lift actuator. See Section 3.3 "Mechanical Operating Elements".
j) Check the main electrical cable for damage. Replace and repair all damaged parts before starting the machine.
k) Connect the dust hose to the scarifier and the dust collector. Use hose clamps at the connections.
l) Connect the electrical cable for the dust collector to site power connection.

	Before starting make sure that all safety guards and housings are in place and that the dust collector has been correctly connected
	Handle all plugs, cable and operating elements with care. Avoid contact with live conductors.
	If problems occur with the power supply during assembly and/or starting, contact a qualified electrician. Any work performed on electrical parts may only be carried out by qualified personnel.

5.2 Starting

	If problems occur with the power supply during assembly and/or starting, contact a qualified electrician. Any work performed on electrical parts may only be carried out by qualified personnel.
  	All persons in the vicinity of the machine when it is operating must wear protective goggle with side protectors, ear protection and safety shoes. The operator must wear close-fitting protective clothing. All persons in the vicinity of the machine when it is operating must wear a respirator.
	Before starting the machine, operating personnel must familiarize themselves with all the safety instructions in the Manual, specifically Section1 “Safety Precautions”
	If the machine has a Gas Motor, check all fluid levels such as oil before starting the machine. For further details read the enclosed owners manual for the motor.

The scarifier and the dust collector are now started in the following sequence:

a) Switch the dust collector on

b) Verify that the scarifier drum is in the “Up” position, i.e. lifted by means of the quick lift actuator.

c) Using the depth setting adjustment wheel, turn the depth setting completely back (counter-clockwise) so that the scarifier drum cannot touch the ground when the machine is lowered.

5.2 Starting (cont'd)

d) Verify that the deadman lanyard secured in place.
Connect the power cord to site power. **Assure the fuse or circuit breaker protecting this branch motor circuit does not exceed the parameters set out in Section 2.5.**

e) NOW, check the direction of rotation of the motor with the direction marking (arrow) on the motor. This can be accomplished by quickly turning the motor on and then back off (not applicable with gas motor).

f) Start the motor by pressing the "On" switch. (If the scarifier is equipped with a gasoline motor, please refer to the enclosed owner's manual for the motor.)

g) Now lower the scarifier drum slowly by means of the quick lift actuator.

h) The scarifying depth can now be set by means of the depth setting adjustment wheel. Slowly increase the depth setting until the desire surface profile is being obtained.

If excessive dust is generated, verify that the dust container of the dust collector is empty and check the dust collector hose and connections.

	If the scarifying depth is too deep it will have a negative effect on the machine. Instead of more surface removal or scarifying, the machine will run unevenly and may begin to "jump".
	By slight pushing or allowing the machine to "pull itself along the surface can now be worked with very minimal effort. The operating speed, or the feed rate, will depend on the characteristics of the surface and the desired surface profile to be obtained.

5.3 Stopping/Switching Off

a) Lift the scarifier drum from the surface by actuating the quick lift actuator.

b) Press the Off button to remove power from the scarifier. **(If the scarifier is equipped with a gasoline motor, please refer to the enclosed owner's manual for the motor).**

c) Turn the dust collector to the Off position.

d) If the BMP-G/E250-X scarifier is to be switched off for a long period of time cover the scarifier with a plastic sheet or tarp.

	Make sure that all rotating parts have come to a complete standstill and that all electrical power has been cut off or disconnected before starting any inspection or maintenance work. For further details concerning the "Maintenance Mode" see Section 1.7.

Section 6

6.1 Normal Operation

Normally, starting and operating the scarifier is the same procedure as described in Section 5 “Preparation/Starting”.

Scarifying should be carried out in parallel tracks and in such a way that the dust hose and the electric cable do not become twisted. For further details, **see Section 6.3 “Recommended Scarifying Directions”.**

To protect against unnecessary damage, ensure that no vehicles, such as forklifts, can drive over the electrical cable or the dust hose.

6.2 Information on the Drive Speed

Choosing the correct drive speed is crucial in order to obtain the desired surface profile. If the surface is uneven (e.g. different degrees of hardness or coatings with different thickness) the drive speed can be varied during scarifying to obtain a uniform surface profile.

The correct drive speed will depend on the material of the surface being scarified and the desired surface profile.

To select the correct drive speed:

1. Set the desired penetration depth by means of the depth setting adjustment wheel.
2. Inspect the surface, and begin scarifying with a relatively fast drive speed.
3. Begin to slow the drive speed until the desired surface profile is being obtained.

6.3 Recommended Scarifying Direction

1. Place the dust collector near the site power connection and place the scarifier near the dust collector.

2. Unroll the dust collector hose and connect one end to the scarifier and the other end to the dust collector.

3. Start both machines. For further details, **see Section 5 "Preparation/Starting"**

4. The scarifier should be driven in a "back-and-forth" direction, away from the dust collector, as depicted in Figure 6.1.

To avoid damage to the dust collector hose, be aware of the hose length and do not drive the scarifier out of the hose's range.

5. Finish by moving the dust collector and scarifying that area where the dust collector was stationed.

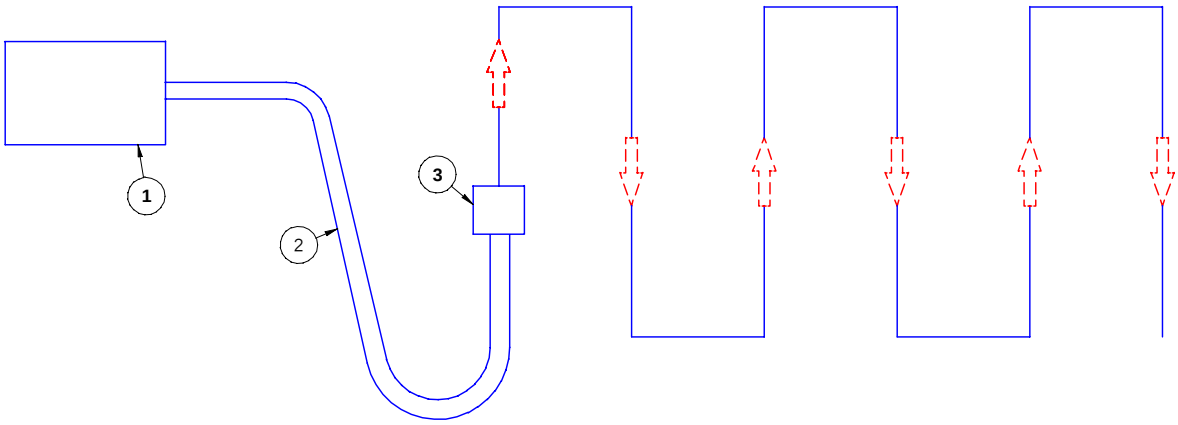


Fig 6.1

1) Dust Collector
2) Dust Hose
3) Scarifier

6.4 What To Do When Faults Occur – Emergency Stop

In the event that any fault occurs, to the scarifier or the dust collector, an emergency stop should be executed by pulling the Deadman Lanyard (See Figure 3.3) away from the machine and both machines should be placed in "Maintenance Mode". See Section 1.7 "Maintenance Mode".

All safety issues, instruction and cautions contained within this manual should be complied with at all times. See Section 1 "Safety Precautions".

In addition to these Manual instructions and cautions, all statutory and other binding (law) accident prevention regulations such as OSHA, state and/or local entity articles should be a part of operator training. This type of obligation may govern, i.e. handling of hazardous materials or wearing personal safety equipment. Some of these are listed in the Section 1.2 "Statutory Safety Considerations".

Once an emergency stop has been executed and the machine is in the "Maintenance Mode", personnel may begin troubleshooting to determine the cause of the fault. Both machines should stay in the "Maintenance Mode" until the cause of the fault has been determined and corrected.

Important: Warning for Gasoline Machines! Prevent accidental starting by removing spark plug wire when servicing, parking or transporting equipment.

6.5 Restarting After Breakdowns

All safety issues, instructions and cautions contained within this manual should be complied with at all times. See Section 1 "Safety Precautions".

For restarting the machine after a breakdown or after any maintenance work, See Section 5 "Preparation/Starting"

6.6 Measure to be Taken Before and After Storage

All safety issues, instruction and cautions contained with this manual should be complied with at all time. See Section 1 “Safety Precautions”.

Before Storing:

1. Switch the machine off. **See Section 5.3 “Stopping/Switching Off”.**
2. Protect electric motors against moisture, heat, dust and impact. **If the scarifier is equipped with a gasoline motor, please refer to the enclosed owner’s manual for the motor).**
3. Clean the machine and cover it with a plastic sheet or tarp.

After Storage:

1. Uncover machine and move the machine to an open area.
2. Clean the machine if necessary and perform all necessary regular maintenance. **See Section 7 “Maintenance).**
3. For starting the machine see **Section 5 “Preparation/Starting”.**

Section 7

7.1 Information

Before beginning any repair or maintenance work on the machine or its drive, ensue that it cannot be switched on accidentally. Set the machine into "Maintenance Mode". See Section 1.7 "Maintenance Mode.

Breakdowns caused by insufficient and unprofessional maintenance can lead to very high repair costs and long downtimes. Regular maintenance and quality-trained personnel are essential.

The machine's service life, operational efficiency and safety depend on several factors including proper and regularly scheduled maintenance.

The Maintenance and Inspection List I Section 7.2 contains information on schedules, inspections, and maintenance for normal operation. The schedule is based on daily use of the machine. If the number of working hours shown here is not reached in the corresponding period, the period may be extended. However, a complete inspection must take place every year.

Because operating conditions can vary considerably, it is not possible to state in advance how often checks for wear, inspections, maintenance, and/or repairs are necessary. A practical inspection schedule should be drawn up, taking the operating conditions into account. Blastrac technicians are available to provide more assistance in creating a practical schedule.

This manual's operating, maintenance and safety instructions must be complied with during maintenance and repair work. In particular, instructions provided with electrical and gasoline engine components must be complied with.

7.2 Maintenance and Inspection List

The following maintenance schedule should be strictly followed to insure personnel safety, as well as proper operation and efficiency.

12 hours after repairs:

- Check all safety devices for effectiveness.
- Check all accessible screw connections for correct fit and tightness.

Daily and before starting work:

- Check all power supply cable for damage.
- Check dust collector hose for damage.
- Verify that there is no foreign material in the scarifier drum.
- Verify that the dust container of the dust collector is empty.
- Check the scarifier durm, lateral axle, scarifier cutters and housing for wear.
- Check the tension of the gear belt; tighten if necessary. **See Section 7.8 "Gear Belt".**

Yearly:

- Full overhaul and cleaning of the complete machine.

If using a scarifying machine with a gasoline motor, always comply with the enclosed owner's manual for the motor.

7.3 Repairs

This Manual only describes repairs that occur during maintenance work or those repairs that are required when replacing worn parts.

As with starting for the first time, we recommend that our Blastrac personnel carry out the first repairs of all Blastrac machines. This allows the equipment users operating and maintaining the machine the opportunity to become extensively familiar with the proper repair procedures.

7.3 Repairs (cont'd)

	**If for any reason the decision is made to replace parts, please comply with the following instructions in this manual and perform all work in the sequence shown.**
	**Production losses are often more expensive than stocking critical high wear parts. Consider maintaining an inventory of critical high wear parts.**
	**Any screws, nuts, or bolts removed must be replaced with the same quality (strength, material) and design.**
	**Before beginning any repair or maintenance work on the machine or its drives, ensure that it cannot be switched on accidentally. Set the machine into the "Maintenance Mode". See Section 1.7 "Maintenance Mode"**
	**Use original Blastrac replacement parts only.**

7.4 Scarifier Drum

The scarifier drum is a highly stressed component of the machine and special attention should be paid to the drum during maintenance and repairs.

If the scarifier drum is replaced always clean and lubricate the drive shaft so that the next time the drum is replaced rust or deposits of dirt do not make the replacement more difficult. Reassemble using Dynatex Anti-Seize PN 49560 or Loctite Anti-Seize PN 767.

If the scarifier drum must be dismantled for new parts to be installed or components replaced, make sure that the arrangement of the scarifier cutters and spacers is maintained as shown in the enclosed components drawings found in **Section 10 "Spare Parts"**. In addition, make sure that the holes in the covering plate for the lateral axles are not worn out and that the screws are tight.

7.5 Scarifier Drum (cont'd)

To obtain an even, clean surface profile on the surface to be scarified:

- Ensure that the correct scarifying depth is set.
- Ensure that the machine is being driven at the correct drive speed.
- Ensure that the correct components for the scarifier drum are being used.
- Ensure that the correct scarifier cutters for that specific surface are being used.

Incorrectly installed scarifier drum will cause unbalanced machine operation and excessive wear.

- ❖ **Incorrect assembly of OEM machine parts and components voids the equipment warranty.**
- ❖ **Use of non-OEM parts and cutters voids the equipment warranty.**

7.6 Equipment for the Scarifier Drum

The examples of scarifier cutters enclosed within this manual have been extensively tested by Blastrac technicians and display an even scarified pattern.

The selection of cutter types and the component arrangement are among the most important factors for proper operation and efficiency of these machines.

An incorrect component arrangement for the scarifier drum leads to extreme wear rates and reduces machine performance. See Section 10 "Spare Part" for component mounting diagrams.

7.6 Replacing the Scarifier Drum

Before beginning any repair or maintenance work on the machine or its drives, ensure that it cannot be switched on accidentally. Set the machine into the "Maintenance Mode". See Section 1.7 "Maintenance Mode".

HOT! Friction caused by running this machine over any floor causes heat to build up in the scarifier tools and the scarifier drum. Use gloves when removing the scarifier drum to prevent a burn injury.

Removal:

1) Unscrew the fastening screws from the side panel and remove panel by pulling it away from the machine housing.
2) Pull the scarifier drum off of the drive shaft.

Installation

1) Clean the drive shaft and grease it evenly.
2) Slide the scarifier drum onto the drive shaft until it comes to a stop.

When fitting the side panel back on, make sure that the bearing unit is correctly fitted into the side panel.

Never use any of these machines without the side panel and protective guards correctly fitted and installed.

7.7 Influencing the Scarifying Pattern

The appropriate scarifying pattern depends o the surface being worked on and can be influenced by varying the scarifying depth and the drive speed.

Depending on the surface to be scarified, selection of scarifier cutters, scarifying depth and drive speed will vary. A correct selection can be obtained through trial and error, preferably on an area of the surface that is not highly visible or extremely important.

7.7 Influencing the Scarifying Pattern (cont'd)

After fitting new or different scarifier cutters onto the machine, always check the scarifying pattern. This is the only way to ensure operational efficiency and to protect against unnecessary repair costs.

7.8 Gear Belt

Before beginning any repair or maintenance work on the machine or its drives, ensure that it cannot be switched on accidentally. Set the machine into the "Maintenance Mode". See Section 1.7 "Maintenance Mode".

Removal:

- Remove the screws for the belt guard and remove guard.
- If necessary, slacken the belt tension by loosening the belt tensioner (See Figure 7.1, item #C) and remove the belt.

The gear belt is tensioned by means of a tensioner, which can be loosened and slid left or right.

Installation:

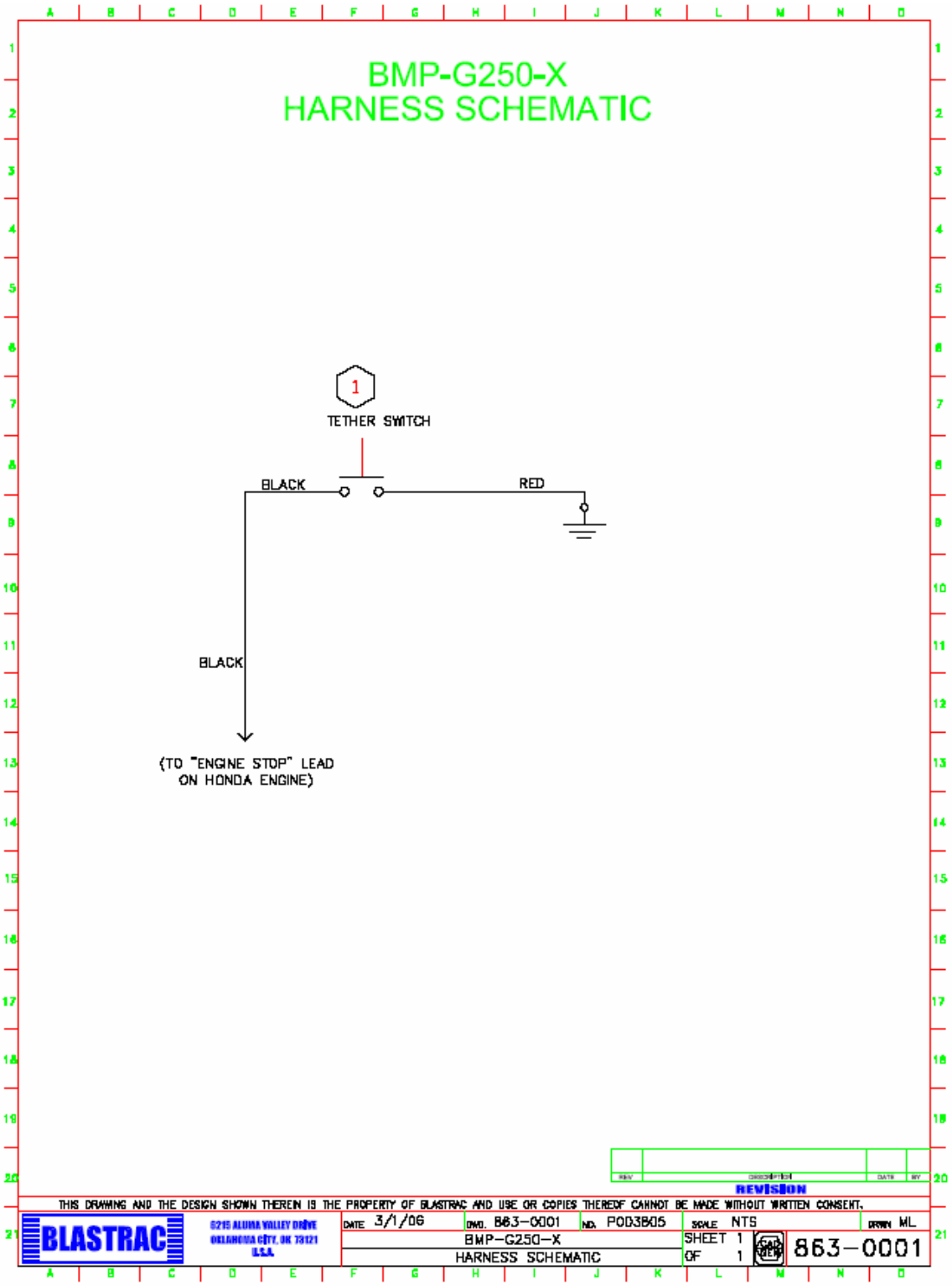
- Place the gear belt over the motor pulley and drum pulley, then move tensioner right to tension the belt.
- Make sure that the gear belt is parallel and has the correct initial tension. Depth of displacement should be about 3/16" when squeezing the belt by hand as indicated by the double arrow "B" in Figure 7.1.

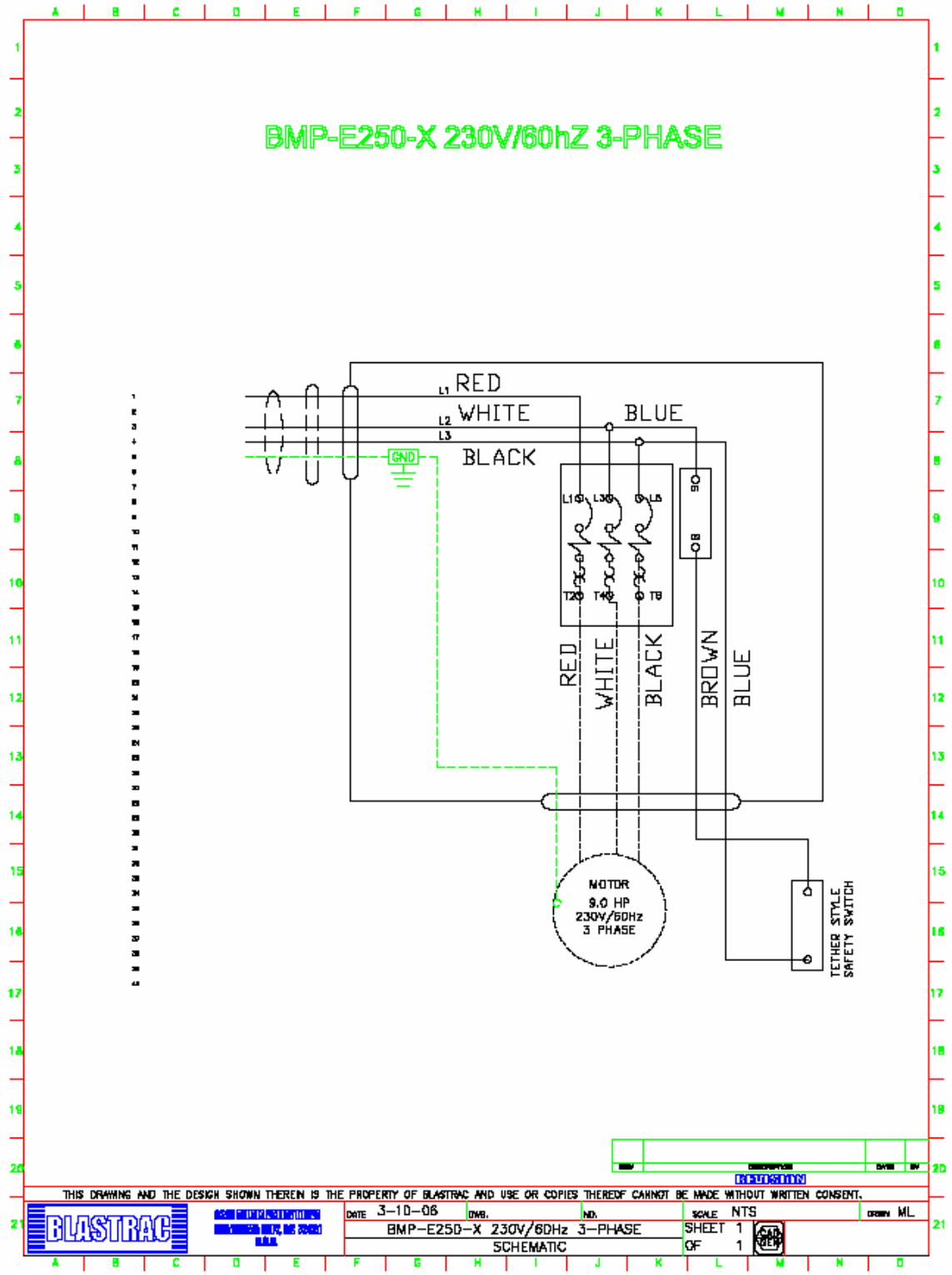
Section 8

8.1 Circuit Diagrams

8.1 Circuit Diagrams

 	**To ensure operator and personnel safety, electrical power should be completely removed or disconnected from the machine. Set the machine into the "Maintenance Mode". See Section 1.7 "Maintenance Mode".**
	**Work on the machine's electrical equipment must only be carried out by a qualified electrician or by trained personnel under the guidance and supervision of a qualified electrician.**
	**Order electrical items by referring to the circuit diagrams or by contacting you Blastrac representative.**


BMP-G250-X
HARNESS SCHEMATIC
1
TETHER SWITCH
BLACK
RED
BLACK
(TO "ENGINE STOP" LEAD
ON HONDA ENGINE)
REVISION
THIS DRAWING AND THE DESIGN SHOWN THEREIN IS THE PROPERTY OF BLASTRAC AND USE OR COPIES THEREOF CANNOT BE MADE WITHOUT WRITTEN CONSENT.
BLASTRAC
DATE 3/1/06
DWG. 863-0001
NO. P003805
SCALE NTS
DRAWN ML
BMP-G250-X
HARNESS SCHEMATIC
SHEET 1
OF 1
863-0001


BMP-E250-X 230V/60hZ 3-PHASE
L1 RED
L2 WHITE
L3 BLACK
BLUE
GND
RED
WHITE
BLACK
BROWN
BLUE
MOTOR
9.0 HP
230V/60Hz
3 PHASE
TETHER STYLE
SAFETY SWITCH
THIS DRAWING AND THE DESIGN SHOWN THEREIN IS THE PROPERTY OF BLASTRAC AND USE OR COPIES THEREOF CANNOT BE MADE WITHOUT WRITTEN CONSENT.
BLASTRAC
DATE 3-10-06
BMP-E250-X 230V/60Hz 3-PHASE
SCHEMATIC
SCALE NTS
SHEET 1
OF 1

Section 9

9.1 Troubleshooting

Before beginning any repair or maintenance work on the machine or its drives, ensure that it cannot be switched on accidentally. Set the machine into the "Maintenance Mode". See Section 1.7 "Maintenance Mode".

FAULT	POSSIBLE CASUE	REMEDIES
Excessive Vibration	Unbalanced drum	Replace worn and/or broken scarifier cutters
	Defective bearing	Check drive shaft bearing and replace if necessary
Unusual noise	Defective bearing	Check drive shaft bearing and replace if necessary
	Incorrect tension of gear belt	Check gear belt tension and alter if necessary
	Defective motor	Replace motor
Controller cannot be switched on **NOTE: Only a qualified electrician should troubleshoot the machine**	Main power connection not properly connected	Check main connection and switch on again
	Deadman lanyard not correctly attached	Check for proper connection and switch on again
	Supply voltage under voltage threshold	Correct low voltage problem or find alternate power supply
Motor does not start **NOTE: Only a qualified electrician should troubleshoot the machine**	Electric – Motor fault	If proper power is being presented to the motor, the motor windings are open, shorted or grounded and the motor must be repaired or replaced. Use only an authorized motor shop to repair motor
	Internal Combustion Motor	Refer to the enclosed owner's manual for motor

Section 10

10.1 Spare Parts List

10.2 Assembly Plans

3.1 Spare Parts List

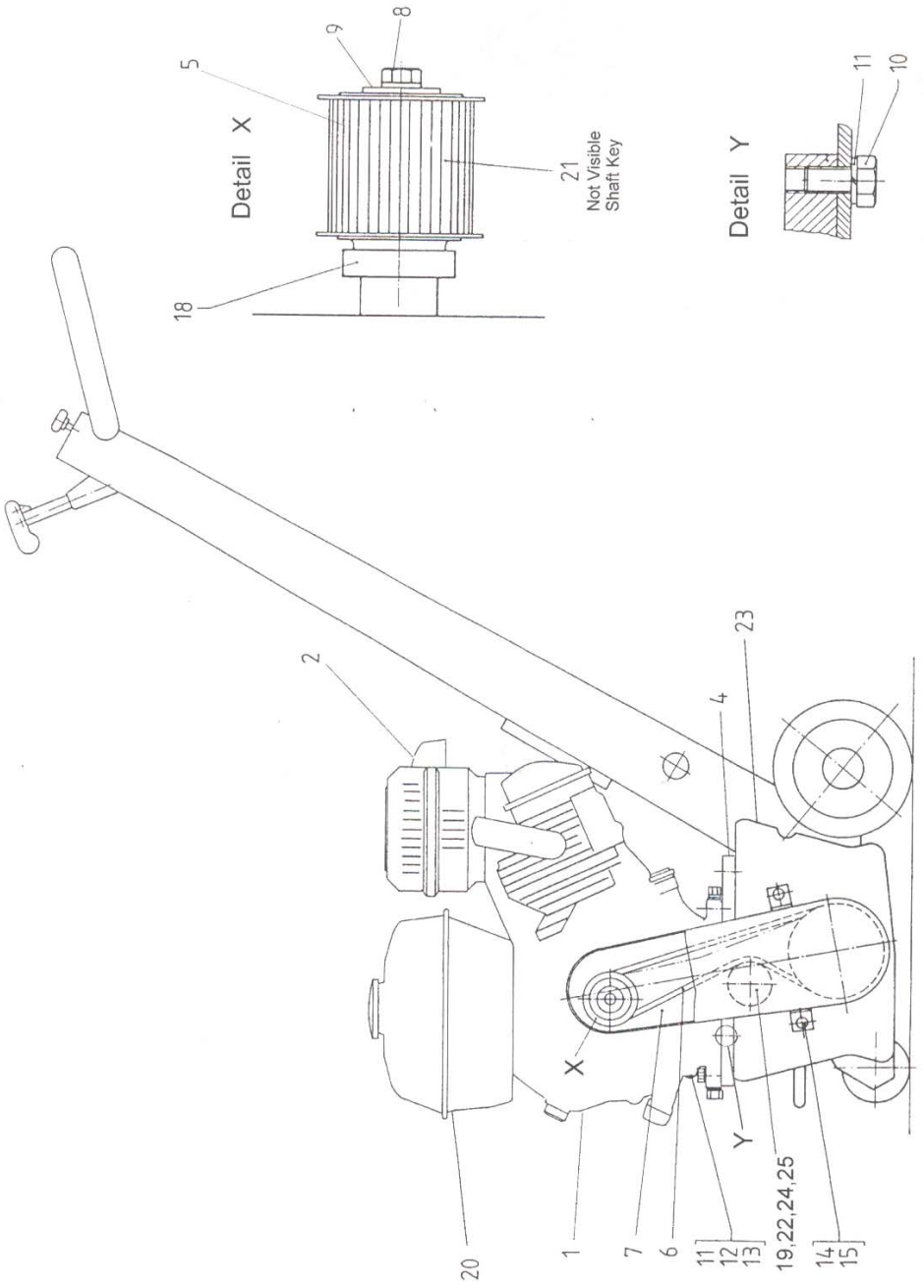
Refer to the remainder of this section

3.2 Assembly Plans

Refer to the remainder of this section

Use only sufficient scarifier cutters and spacers so that the tools can still move freely (axial plan min. 1-3mm). To avoid an unbalanced scarifier drum each shaft must have the same number of cutters and spacers.

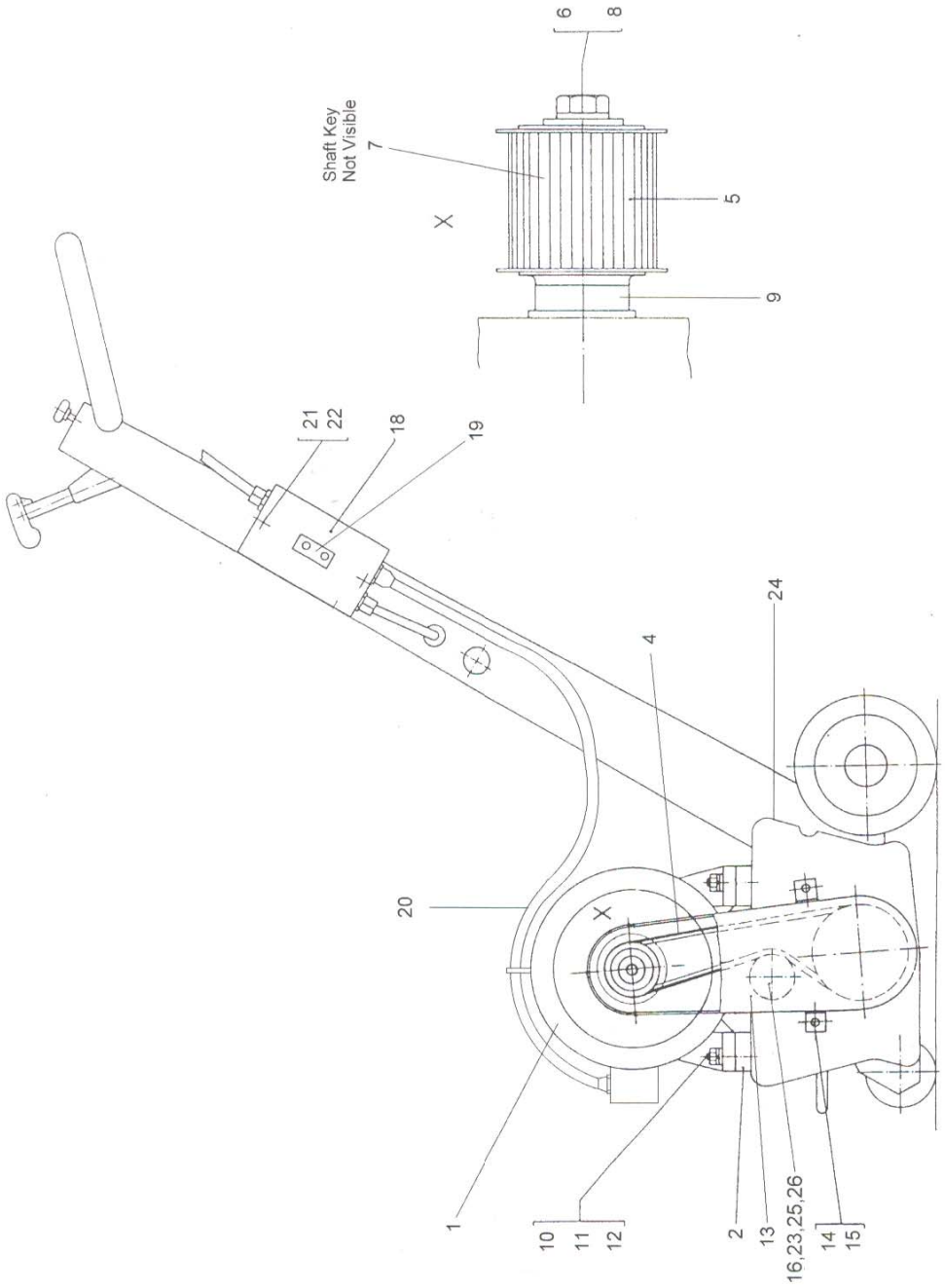
PARTS FOR GAS ENGINE



PARTS FOR GAS ENGINE

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
1	SS-999-702556	ENGINE, 9HP HONDA GX270	1
2	SS-999-701790	DEFLECTOR, MUFFLER	1
4	SS-999-795.00.75	PLATE/SOLID ENGINE MOUNT	1
5	SS-999-701534	PULLEY/UPPER TOOTED	1
6	SS-999-109376	BELT/TOOTHED 880	1
7	SS-999-706111	GUARD/BELT	1
8	SS-999-110370	SCREW/HEX 7/16UNF X 1 ¼"	1
9	SS-999-108552	WASHER/FLAT 13/30 X 1.6	1
10	SS-999-100614	SCREW/HEX M10 X 20	4
11	SS-999-104715	WASHER/LOCK M10	8
12	SS-999-108541	WASHER/FLAT 10.5/20 X 2	4
13	SS-999-101609	SCREW/HEX M10 X 35	4
14	SS-999-101599	SCREW/HEX M8 X 16	2
15	SS-999-100618	WASHER/LOCK M8	3
16	SS-999-706364	SWITCH/DEADMAN	1
18	SS-999-701532	SPACER/DISTANCE	1
19	SS-999-702473	PULLEY/TENSIONING	1
20	SS-999-HON.3690070	TANK/FUEL GX270	1
21	SS-999-HON.2027167	KEY/DRIVE SHAFT	1
22	SS-999-702468	SPACER/TENSIONING PULLEY	1
23	SS-999-702346	HOUSING	1
24	SS-999-702469	BAR/RETAINING	1
25	SS-999-107870	SCREW/HEX M12 X 90	1

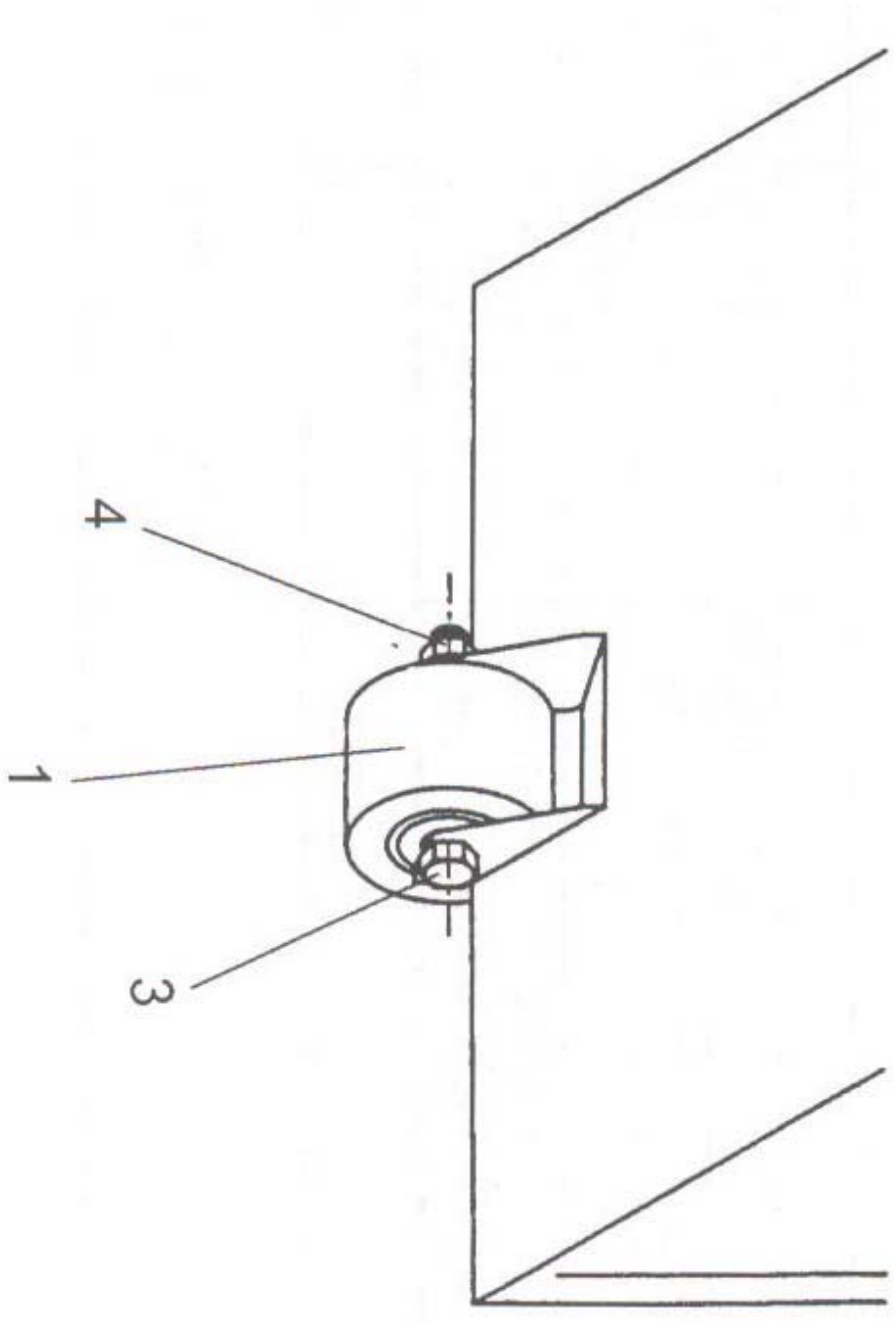
PARTS FOR ELECTRIC MOTOR
230V, 3-PHASE, 60 Hz



PARTS FOR ELECTRIC MOTOR
230V, 3-PHASE, 60 Hz

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
1	SS-999-109446	MOTOR/ELECTRIC 3-PHASE	1
2	SS-999-795.00.75	PLATE/SOLID ENGINE MOUNT	1
4	SS-999-702559	BELT/TOOTHED 840	1
5	SS-999-701535	PULLEY/UPPER TOOTHED	1
6	SS-999-110370	SCREW/HEX 7/16 UNT X 1 ½”	1
7		KEY/SHAFT ¼” X ¼” X 1.75”	1
8	SS-999-108551	WASHER/FLAT 13.0/30 X 3	1
9	SS-999-628.00.52	SPACER/DISTANCE	1
10	SS-999-101608	SCREW/HEX M10 X 30	1
11	SS-999-104715	WASHER/LOCK M10	1
12	SS-999-108541	WASHER/FLAT 10.5/21 X 2	1
13	SS-999-702377	GUARD/BELT	1
14	SS-999-101598	SCREW/HEX M8 X 12	1
15	SS-999-100618	WASHER/LOCK M8	1
16	SS-999-702473	PULLEY/TIGHTENING	1
17	SS-999-706364	SWITCH/DEADMAN	1
18	SS-999-MCC.25.KAZ	BOX/SWITCH ENCLOSURE	1
19	SS-999-MCC.25.10A	SWITCH/10AMP	1
20	SS-999-AIW.12X4CRD	COR/12/4 POWER	6
21	SS-999-MCC.25AA440	MODULE/SHUNT RELAY 440V	1
22	SS-999-MCC.25AA220	MODULE/SHUNT RELAY 220V	1
23	SS-999-702468	SPACER/BELT TENSIONING PULLEY	1
24	SS-999-702346	HOUSING	1
25	SS-999-702469	BAR/RETAINING	1
26	SS-999-107870	SCREW/HEX M12 X 90	1

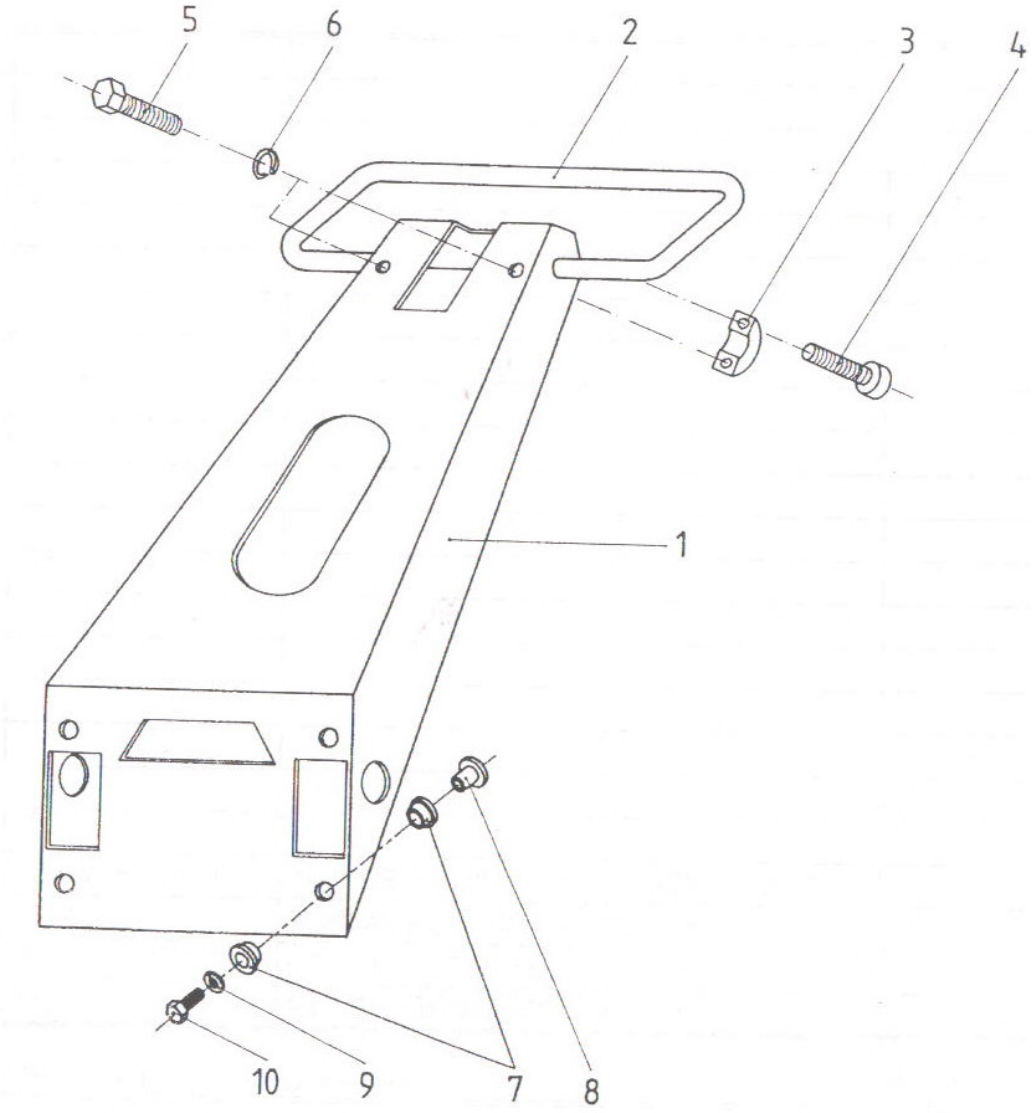
FRONT CASTER ASSEMBLY



FRONT CASTER ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
1	SS-999-109377	WHEE/FRONT COMPLETE	1
2	N/A	BUSHING/FLANGED 2pc	2
3	SS-999-107870	SCREW/HEX M12 X 90	1
4	N/A	NUT/HEX SELF LOCKING M12	1

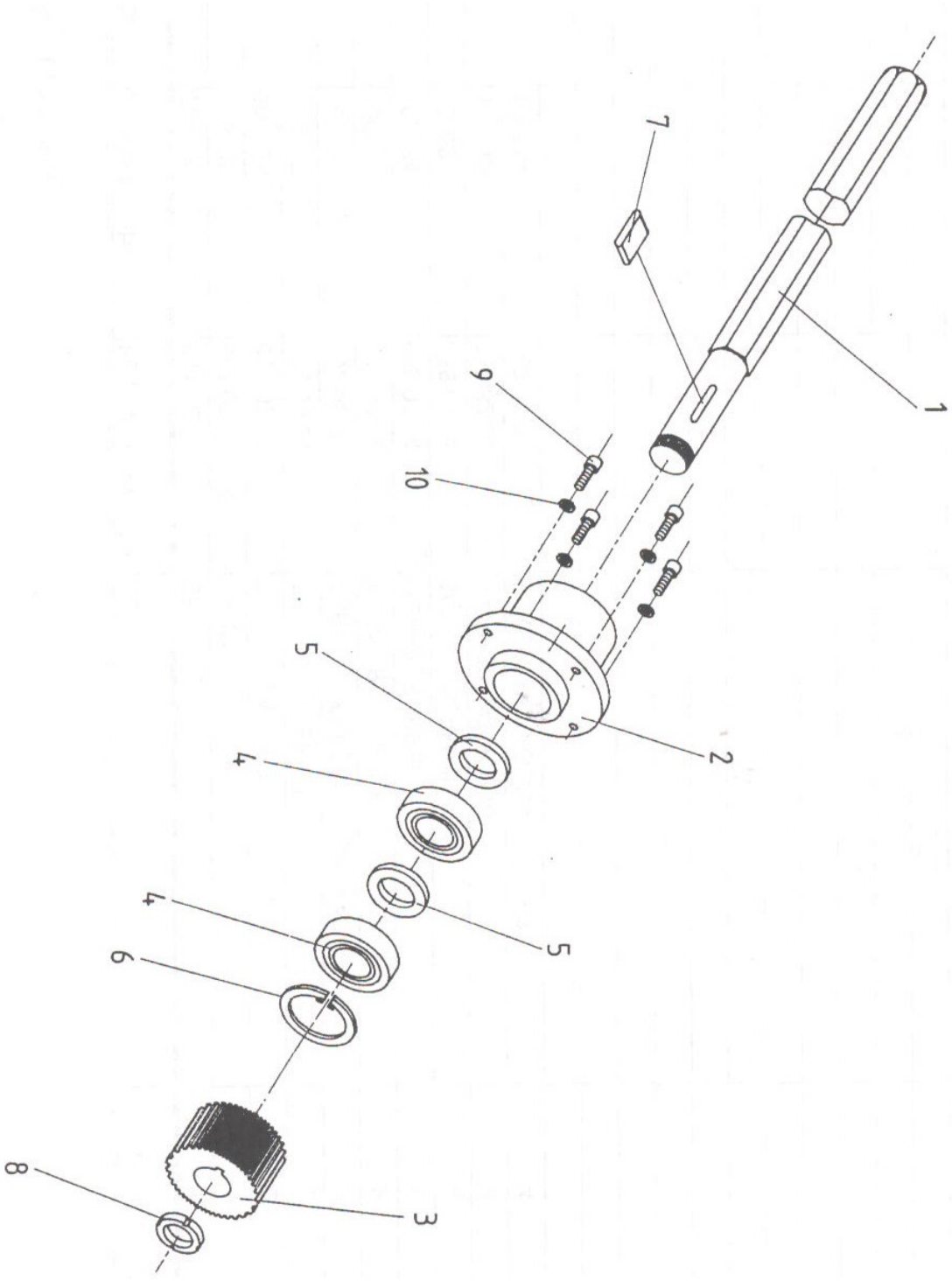
CHASSIS ASSEMBLY



CHASSIS ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
1	SS-999-706106	CHASSIS	1
2	SS-999-703006	HANDLE/BOW	1
3	SS-999-702636	RING/CLAMPING	2
4	SS-999-103175	SCREW/ALLEN M8 X 25	2
5	SS-999-107938	SCREW/HEX M8 X 40	2
6	SS-999-100618	WASHER/LOCK M8	2
7	SS-999-702624	MOUNT/RUBBER	8
8	SS-999-702625	SLEEVE/CLAMPING	4
9	SS-999-104715	WASHER/LOCK M10	4
10	SS-999-100614	SCREW/HEX M10 X 20	4

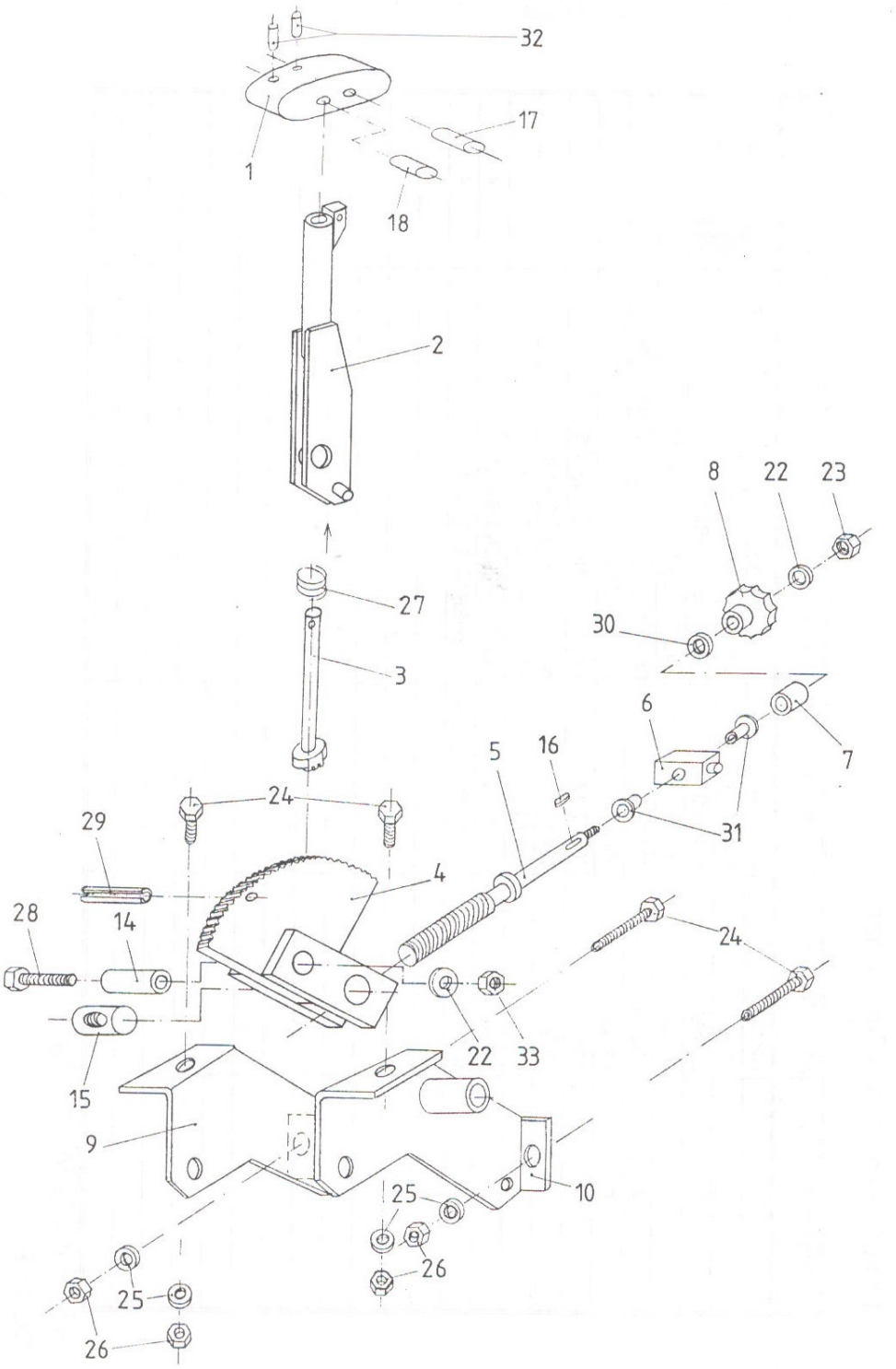
DRIVE SHAFT ASSEMBLY



DRIVE SHAFT ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
	SS-999-706130	SHAFT/HEX DRIVE ASSEMBLED	
1	SS-999-702451	SHAFT/HEX DRIVE	1
2	SS-999-702452	HOUSING/BEARING	1
3	SS-999-702347	PULLEY/LOWER TOOTHED	1
4	SS-999-108265	BEARING/DRIVESIDE 6207 RS1	2
5	SS-999-702456	RING/SPACER	2
6	SS-999-108727	RING/RETAINING 72 X 2.5	1
7	SS-999-107974	KEY/HEX SHAFT 10 X 8 X 45	1
8	SS-999-108750	NUT/SHAFT M35 X 1.5	1
9	SS-999-100598	SCREW/ALLEN M8 X 20	4
10	SS-999-102286	WASHER/SAFETY M8	4

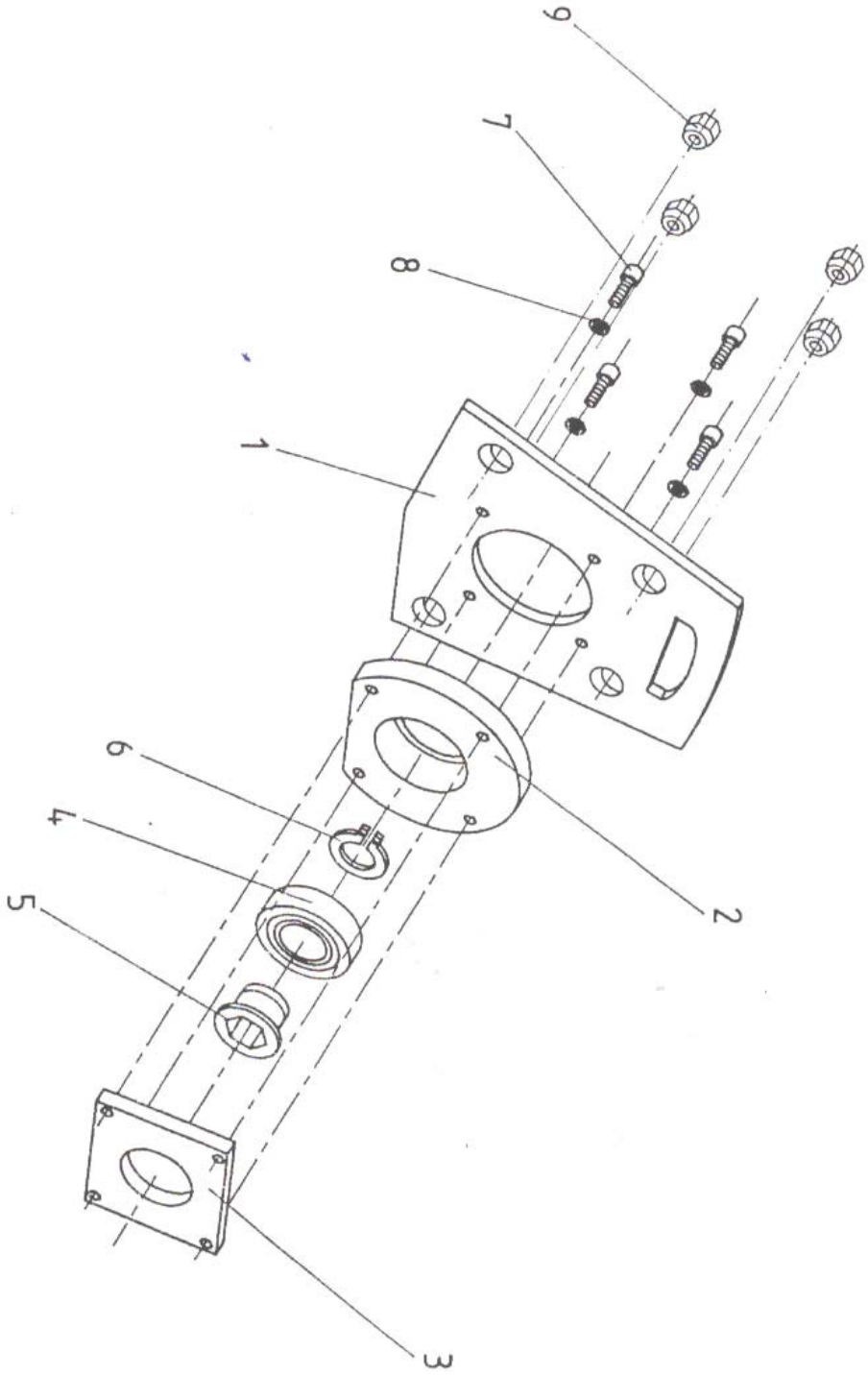
DEPTH ADJUSTER ASSEMBLY



DEPTH ADJUSTER ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
		ASSEMBLY/DEPTH CONTROL COMPLETE	
1	SS-999-706114	HANDLE/DEPTH CONTROL	1
2	SS-999-702360	LEVER/ADJUSTING	1
3	SS-999-703012	ROD/DEPTH ADJUSTING LEVER	1
4	SS-999-702359	ELEMENT/TOOTHED	1
5	SS-999-702361	SPINDLE/ADJUSING	1
6	SS-999-702355	PART/SQUARE	1
7	SS-999-703016	BUSHING	1
8	SS-999-703017	GRIP/ADJUSMENT STAR	1
9	SS-999-706109	PROFILE/BEVELED RIGHT	1
10	SS-999-706108	PROFILE/BEVELED LEFT	1
14	SS-999-702354	BUSHING BRASS	1
15	SS-999-702356	DRIVER	1
16	SS-999-107990	KEY/DEPTH ADJUST SPINDLE 4 X 4 16	1
17	SS-999-113453	PIN/CYLINDER M8 X 40	1
18	SS-999-114626	PIN/CYLINDER M6 X 40	1
22	SS-999-101670	WASHER/FLAT 8.4/16 X 1.6	2
23	SS-999-100263	NUT/ACORN M8	1
24	SS-999-102332	SCREW/HEX M6 X 16	4
25	SS-999-100302	WASHER/LOCK M6	
26	SS-999-102334	NUT/HEX M8 X 50	
27	SS-999-701637	SPRING/PRESSURE	1
28	SS-999-107940	SCREW/HEX M8 X 50	1
29	SS-999-110455	ROOPIN/M6 X 28	1
30	SS-999-110537	SPRING/SAUCER 28 X 10.2 X 1.25	1
31	SS-999-110386	BEARIN/GLACIER MB 2215 DU	2
32	SS-999-107973	PIN/ROLL	2
33	SS-999-792.61.27	NUT/NYLON LOCK M8	1

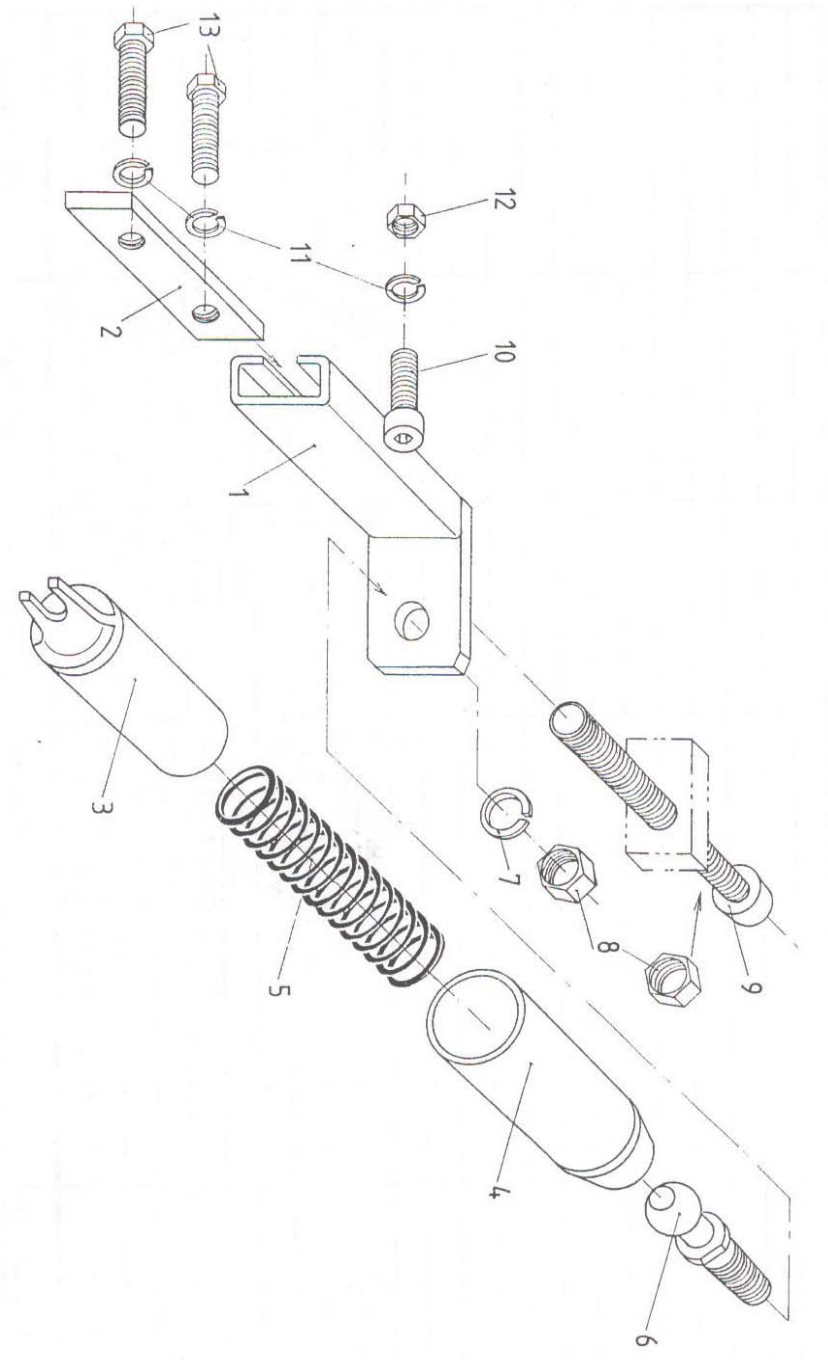
HOUSING ENDPLATE ASSEMBLY



HOUSING ENDPLATE ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
	SS-999-706131	COVER/ASSEMBLED HOUSING	
1	SS-999-706112	COVER/HOUSING	1
2	SS-999-702454	FLANGE/BEARING	1
3	SS-999-702453	WASHER/CLAMP	1
4	SS-999-108268	BEARING/SEALED 6210 2 RS	1
5	SS-999-701569	BUSH/DRIVING	1
6	SS-999-108721	RING/SAFETY M50 X 2	1
7	SS-999-105942	SCREW/ALLEN M8 X 30	4
8	SS-999-100618	WASHER/LOCK M8	4
9	SS-999-702466	NUT/TAPERED HEX M10	4

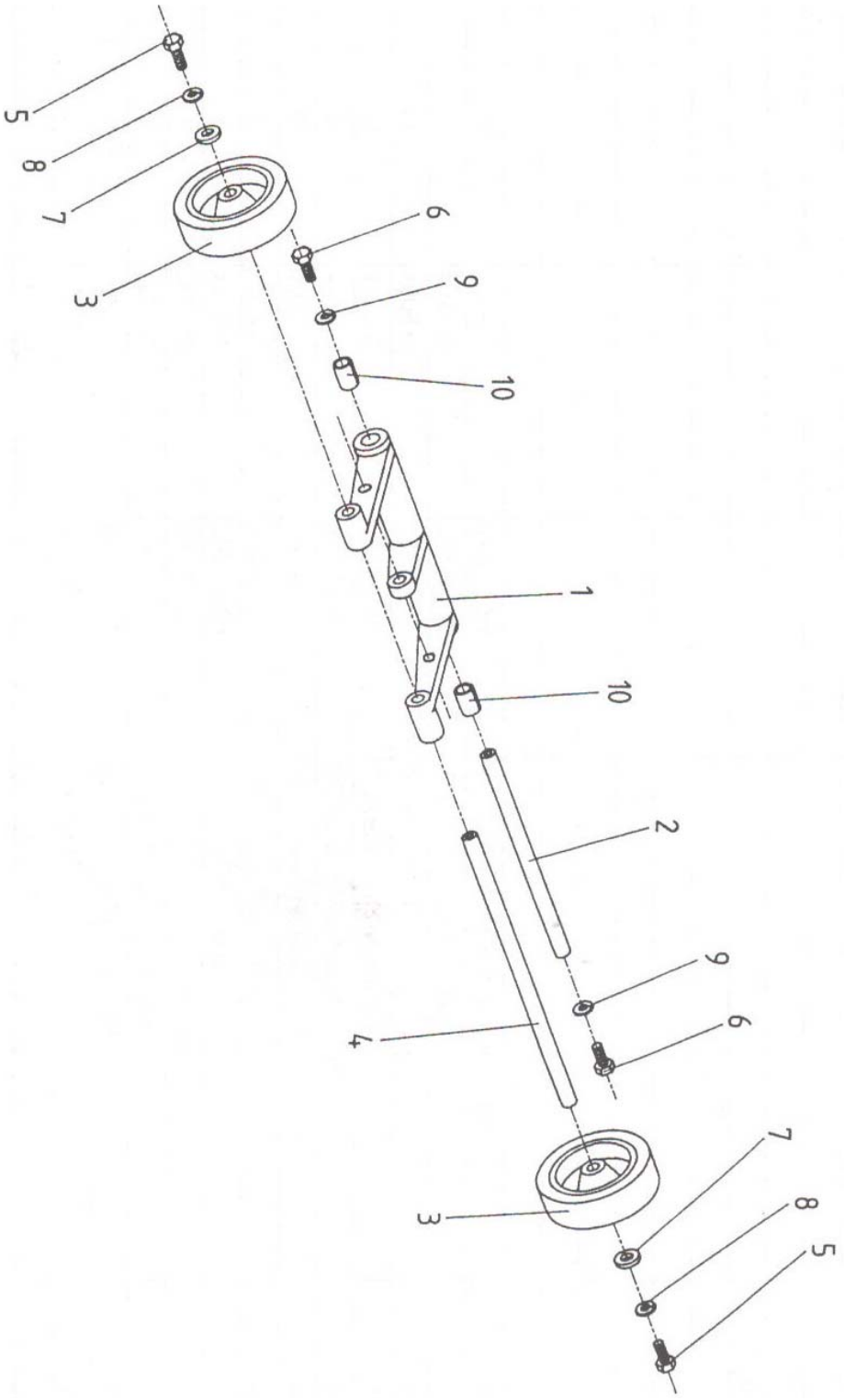
SPRING ASSEMBLY



SPRING ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
1	SS-999-702364	PROFILE/ADJUSTMEN	2
2	SS-999-703025	BRACKET	2
3	SS-999-702363	TUBE/LOWER SPRING	2
4	SS-999-702362	TUBE/UPPER SPRING	2
5	SS-999-706110	SPRING/COMPRESSION	2
6	SS-999-110390	PIVOT/BALL M16	2
7	SS-999-104715	WASHER/LOCK M10	2
8	SS-999-102287	NUT/HEX M10	4
9	SS-999-110284	SCREW/ALLEN M10 X 100	2
10	SS-999-101595	SCREW/ALLEN M8 X 10	2
11	SS-999-100618	WASHER/LOCK M8	6
12	SS-999-101822	NUT/HEX M8	2
13	SS-999-101599	SCREW/HEX M8 X 16	4

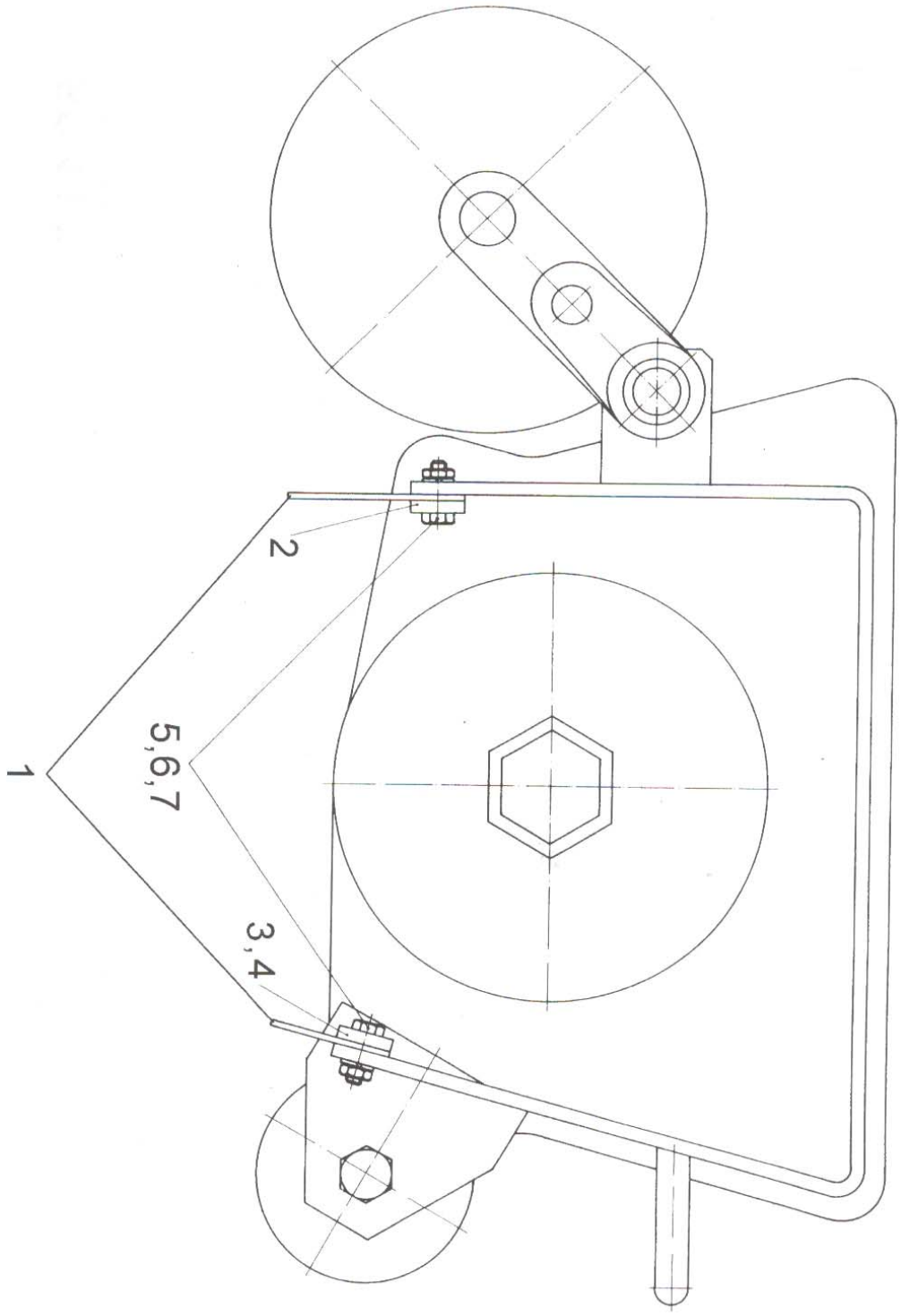
REAR CASTER ASSEMBLY



REAR CASTER ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
	SS-999-702521	BRACKET/AXLE ASSEMBLED	
1	SS-999-702457	BRACKET/AXLE	1
2	SS-999-702458	AXLE	1
3	SS-999-109452	WHEEL/ELASTIC	2
4	SS-999-702459	AXLE/WHEEL	1
5	SS-999-101600	SCREW/HEX M8 X 20	2
6	SS-999-101608	SCREW/HEX M10 X 30	2
7	SS-999-108581	WASHER M8.4 X 35 X 2.5	2
8	SS-999-100618	WASHER/LOCK M8	2
9	SS-999-104715	WASHER/LOCK M10	2
10	SS-999-108481	BUSHING/MB 1620 DU	2

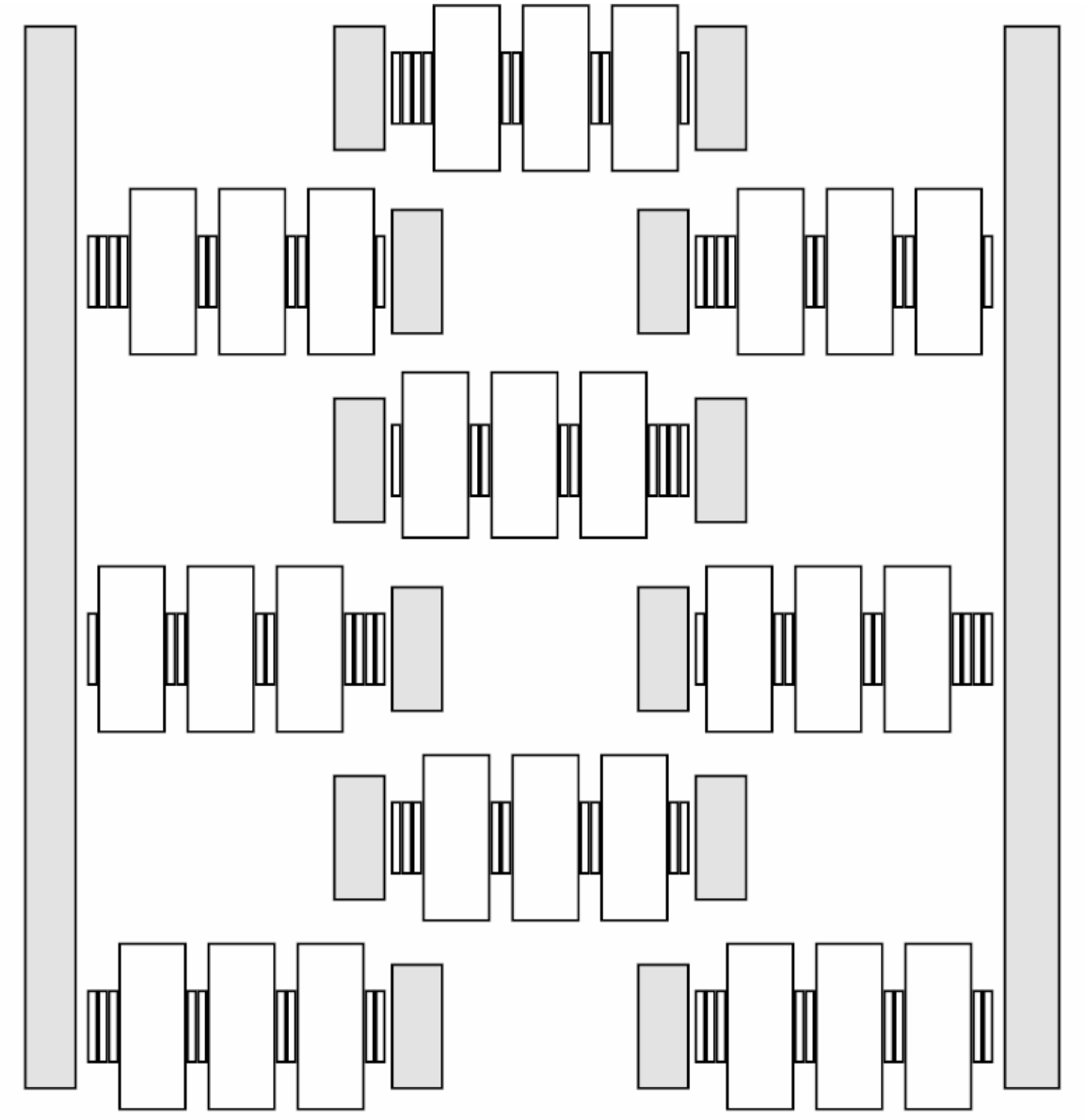
DUST SHIELD ASSEMBLY



DUST SHIELD ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY
1	SS-999-706756	SHIELD/DUST SET	1
2	SS-999-702460	BAR/REAR DUST SHIELD CLAMPING	1
3	SS-999-702462	BAR/FRONT DUST SHIELD CLAMPING (RIGHT)	1
4	SS-999-702463	BAR/FRONT DUST SHIELD CLAMPING (LEFT)	1
5	SS-999-104267	SCREW/HEX M6 X 20	8
6	SS-999-102334	WASHER/LOCK M6 X .8	8
7	SS-999-100302	NUT/HEX M6	8

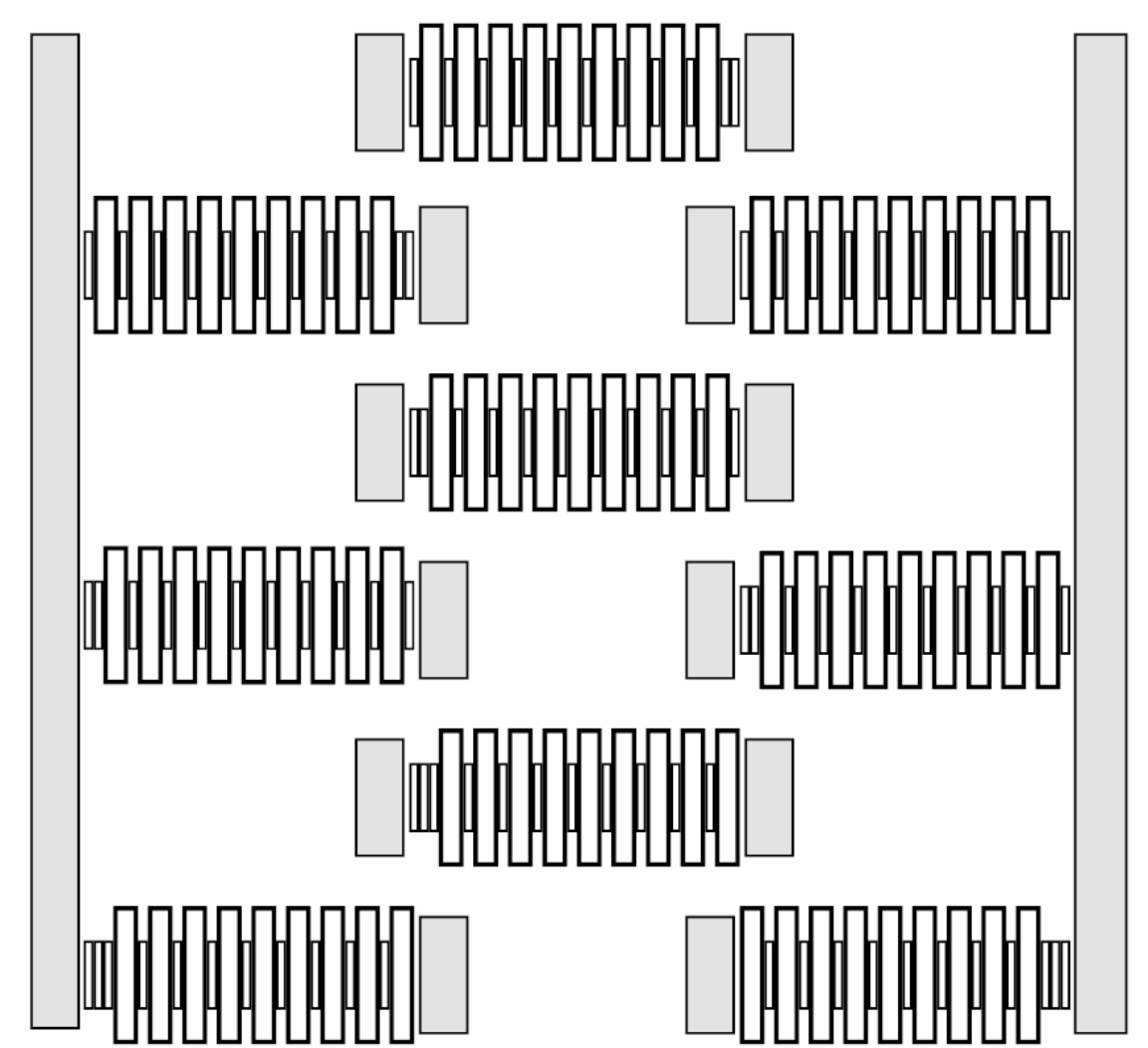
6 Point Medium Milling Cutters



Theoretical Assembly

27 cutters, 81 spacers

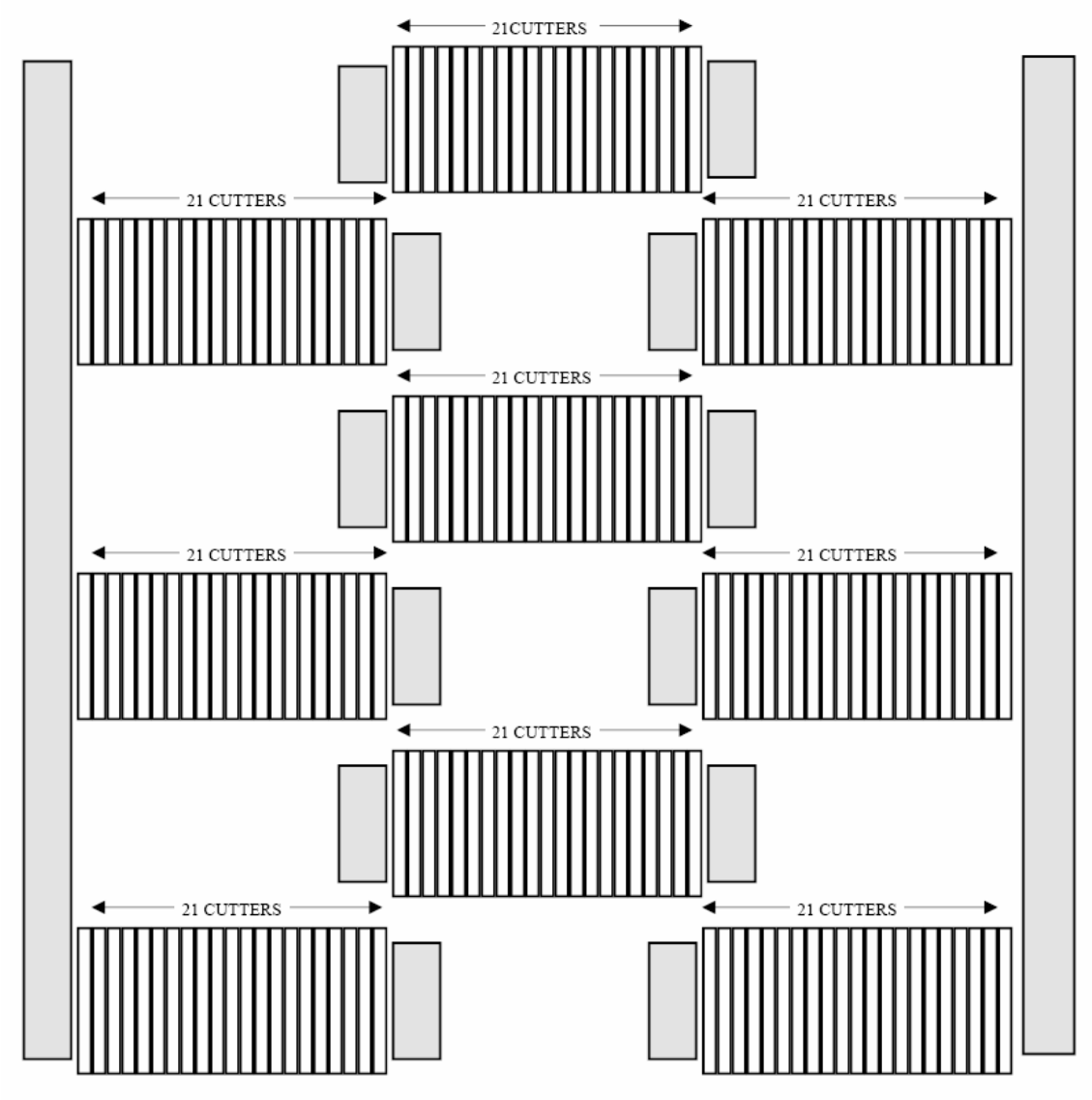
8 Point Medium Tungsten Cutters



Theoretical Assembly

81 cutters, 108 spacers

18 Point Large Star Cutters



Theoretical Assembly

189 cutters