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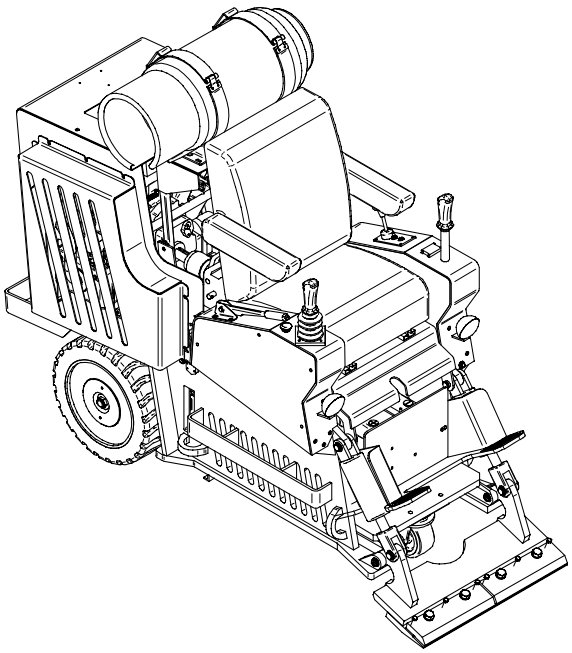
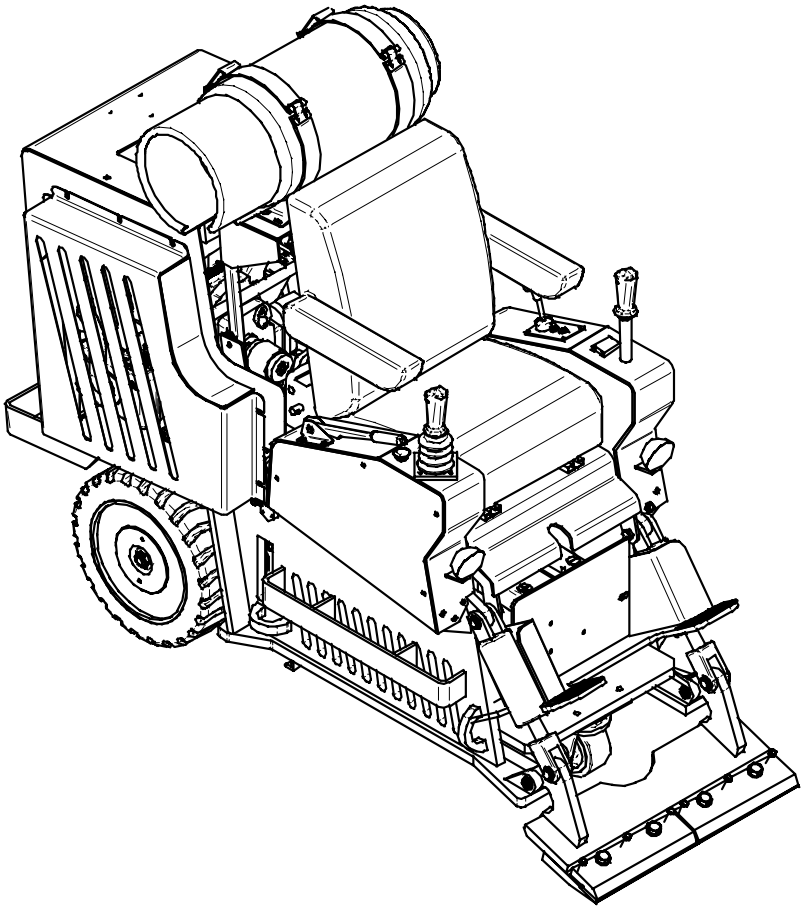


Model
BMS – 270LPII

BLASTRAC

Operating Instructions



Model
BMS – 270LPII

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Section 1

1.1 Rating

1.2 Unit Specification

1.3 Operative Range and Correct Usage

1.4 Machine Type Code

1.1 Rating

Unit/Designation: Blastrac® Multiscraper

Machine Type: BMS-270LPII

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

1.2 Unit Specification

Unit Specifications:

	Multiscraper
Length	79.50 inches
Width	30.50 inches
Height	65 inches
Weight	2,590 pounds
Wheelbase	44.19”

1.3 Operative Range and Correct Usage

The BMS-270LPII is designed to remove VAT, VCT, ceramic tile, hardwood floors, mastic and cementitious materials from horizontal surfaces. Using the multiscraper for purposes other than its intended use may result in equipment damage, property damage, and injury or death to the operator and surrounding personnel. The manufacturer will not be liable for damages, injury or death resulting from improper usage of the multiscraper by the multiscraper owner or renter.

1.4 Machine Code

BMS – 270LPII

B -- lastrac	**270 Width of Blade (27.0 inches)**
M -- ulti	**LP Liquid Propane**
S -- craper	**II Second Generation**

Section 2

2.1 Organizational Precautions

2.2 Safety Precautions/Operation

2.3 Safety Precautions/Maintenance

2.4 Precautions

2.5 Maintenance Mode

2.6 Caution Points

2.1 Organizational Precautions

The Operating Instructions should be kept in close proximity to the multiscraper. These instructions should be kept in a clean, dry area to use as a quick reference at all times. In addition to the Operating Instructions, general and legal information regarding accident prevention and environmental protection should be kept in the same location. This information should refer to regulations that pertain to the handling of dangerous materials or the need to wear protective clothing.

The personnel operating or maintaining the multiscraper must read and understand the Operating Instructions for the BMS-270LPII and additional components such as the Kohler engine that are included in this manual before operation or maintenance of this equipment.

Machine operators should be checked on a regular basis to confirm they are following safe work practices as described in this manual.

Personnel operating the BMS-270LPII should not wear long, loose hair or clothing, or jewelry of any kind, including rings that can be caught in moving parts. Operating the BMS-270LPII with disregard for common safety practices may result in serious injury or death to the operator and surrounding personnel.

All warnings and safety instructions must be kept in good readable condition.
See reference print 700-0119 for safety decal location.

If the BMS-270LPII exhibits any unusual performance from its normal operation that may relate to its safety features, the multiscraper must be stopped immediately**.** Do not operate the multiscraper without all safety devices operating correctly and all safety decals visible and legible.

Any modifications or changes to the multiscraper without prior written approval from the manufacturer could result in serious injury or death and may void the warranty. These changes apply to the structure and/or the adjustment of devices that may compromise the safety characteristics of the multiscraper. EXAMPLE: Welding should not be performed on any supporting elements, near or on fuel tanks, or on the hydraulic oil tank.

2.1 Organizational Precautions Cont'd

Spare parts must comply with the technical specifications laid out by the original manufacturer. Only original spare parts are recommended.

Periodic checks or inspections outlined in this instruction manual must be performed within the prescribed time limits.

Maintenance personnel should have the proper tools available to perform their assigned tasks.

Operating and maintenance personnel must verify availability of appropriate fire protection equipment, be properly trained in the use of the equipment and know how to contact the Fire Department or Emergency Medical Service if needed.

2.2 Safety Precautions/Operation

Normal Operation:

Avoid any mode of operation that may be unsafe!

Take precautions to ensure that the multiscraper is in good working order and that it is only operated under safe conditions.

The multiscraper should be inspected for damage and defects at least once during every working shift. Starting and stopping procedures must be followed in accordance with the Operating Instructions. Before starting the multiscraper, be sure that no person is likely to be endangered by the multiscraper movement.

DANGER: Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is an odorless and colorless and can cause injury or death if inhaled. Do not use equipment indoors without adequate ventilation. Refer to OSHA guidelines and regulations concerning maximum levels of exposure to carbon monoxide gases and other hazards associated with using internal combustion engines.

The multiscraper has been equipped with a safety switch under the seat, which requires the operator to be seated before the multiscraper can be operated. Do not attempt the start-up procedure without being seated on the machine.

WARNING: Bypassing this or any other safety devices could result in damage to the multiscraper and injury or death to the operator and surrounding personnel.

2.3 Safety Precautions/Maintenance

Adjustments, maintenance and inspection instructions given in the manual must be followed at the suggested intervals as well as recommendations for the replacement of parts or assemblies. These activities must be carried out by qualified personnel.

Before carrying out any activities that could affect multiscraper operation, changes in production, the tooling or the adjustment of the multiscraper or any related safety device**,** follow the recommendations given in this instruction manual. When the multiscraper has been put in a Maintenance Mode as outlined in Section 2.5 in order to perform maintenance or repair work, precautions must be taken to ensure that it cannot be turned on inadvertently.

Before carrying out maintenance or repair work, let the engine and the exhaust system cool down; remove all traces oil, combustible fuel or cleaning fluids from the scraper, its connections and fittings, in particular. Do not use any aggressive cleaning products. Be sure that all cleaning rags are fiber free. Retighten all loose fittings found during maintenance and repair work!

If it is necessary to dismantle safety devices during retooling, maintenance or repair work, be sure that they are reinstalled properly and working before starting the multiscraper.

Dispose of oils, liquids and used parts in accordance with local environmental regulations.

2.4 Precautions

Gases, Dust, Steam, Smoke

Do not weld, flame cut or perform grinding work on the multiscraper without written authorization from the manufacturer. The danger of fire or explosion exists when work of this nature is done. Begin maintenance work only when the multiscraper is put into its Maintenance Mode as outlined in Section 2.5.

Before welding, cutting or grinding on the multiscraper, remove all dust and combustible materials from the area and provide adequate ventilation to reduce the risk of fire or explosion.

When working in a confined space, adhere to the appropriate safety regulations.

Place fire extinguishers and fire blankets within easy reach of potential fire hazards.

DANGER: Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is an odorless and colorless and can cause injury or death if inhaled. Do not use equipment indoors without adequate ventilation. Refer to OSHA guidelines and regulations concerning maximum levels of exposure to carbon monoxide gases and other hazards associated with using internal combustion engines.

2.5 Maintenance Mode

Definition:

State or condition of the multiscraper that minimizes the danger of mechanical, electrical, pneumatic or hydraulic hazards.

Putting the multiscraper into the maintenance mode:

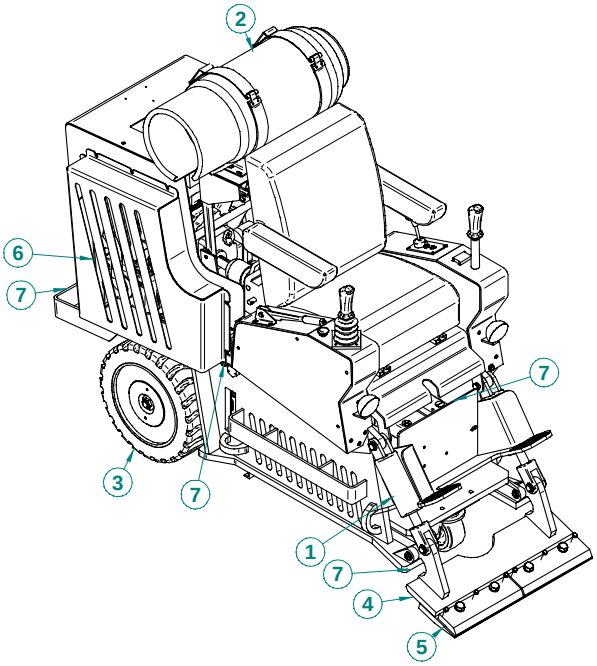
- Move the multiscraper to level ground.
- Turn off the ignition switch and remove the key.
- Set the parking brake and make sure the multiscraper cannot move.
- Wait until all drives have stopped completely.
- Depress E-Stop button.
- Close propane tank valve.
- Remove key from ignition switch.
- Let the engine, exhaust system and hydraulic components cool down.

Warning: Engine, exhaust system and hydraulic component temperatures could be in excess of 200 °F causing severe burns if touched.

2.6 Caution Points

Every multiscraper that is not used in accordance with the safety recommendations can present a danger to its operator or maintenance staff. The owner of the scraper is responsible for ensuring that all safety precautions are followed during operation and maintenance of the multiscraper, and that the necessary protective devices are used.

Below is a listing of points and areas, which demand due caution. This listing is not intended to be an all-inclusive listing of potential caution points. Operators and maintenance personnel should use caution working on, in, or around the multiscraper at all times.



1. Hydraulic Hoses
2. Flammable Fuel
3. Wheel Motion
4. Tool Movement
5. Tool
6. Hot Engine, Exhaust System, and Hydraulic Components
7. Pinch Points

2.6 Caution Points Cont'd

Only use tools that are in good operating condition. Damaged tools should be replaced.

Be certain all personnel that work with the multiscraper have the proper clothing and accessories. These include gloves, safety glasses with side shields, safety shoes and other required protective devices.

Be sure that the multiscraper operators and maintenance personnel are familiar with the following:

- Lubrication, cleaning and repair work can only be done when the multiscraper is put in a Maintenance Mode as outlined in Section 2.5.
- Do not remove protective covers, panels, or guards or open doors while any mechanical parts are moving.
- Once maintenance is finished e sure to replace all doors, panels and safety devices. Be sure all safety devices are functioning.
- Do not touch any moving parts or stand in their path.
- Before starting the multiscraper, be certain that all personnel are clear of any caution points and the operator is seated.

Section 3

3.1 Introduction

3.2 Operating Instructions

3.3 Maintenance

3.4 Scope of Delivery

3.5 Description

3.6 Operating Elements

3.7 The Tools

3.1 Introduction

Blastrac® wants to thank you for your decision to purchase the BMS-270LPII for your horizontal floor surface preparation needs.

The BMS-270LPII is designed to remove VAT, VCT, ceramic tile, wood flooring, carpeting and cementitious material from a variety of horizontal surfaces.

3.2 Operating Instructions

This manual has been written to support the operating and maintenance personnel. A good understanding of this manual will result in optimum equipment performance and proper maintenance techniques.

It is very important that all personnel operating and maintaining the BMS-270LPII read and understand this manual completely before operation or maintenance begins.

The BMS-270LPII has been manufactured for use in the U.S. In cases where personnel have an insufficient knowledge of the English language, proper training must be obtained before using the multiscraper.

Blastrac® offers a training course in order to make the operating and maintenance staff familiar with all aspects of the multiscraper.

The initial start-up should be carefully monitored. The operator must know the starting sequence of the individual systems and components and fully understand their functions.

3.3 Maintenance

Regular maintenance for the BMS-270LPII is extremely important to minimize safety risks and maximize reliable operation.

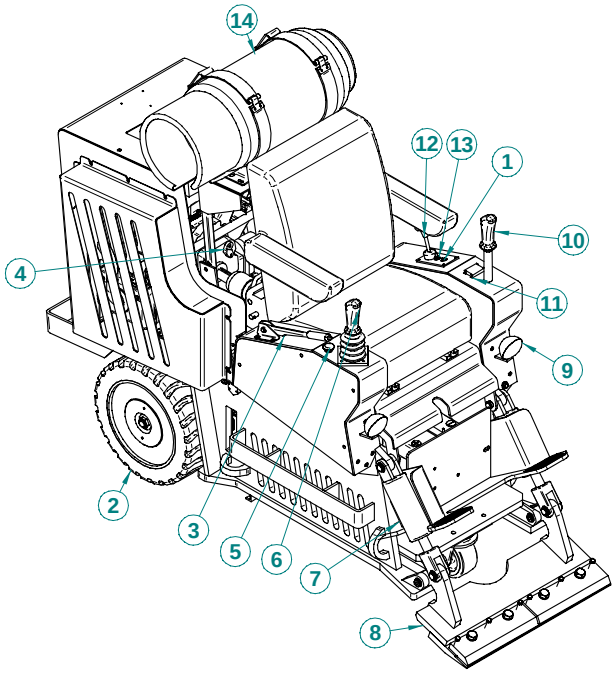
Blastrac® recommends using only original equipment repair parts that are outlined in this manual. Multiscraper owners should maintain a sufficient inventory of high wear parts to help minimize down time.

3.4 Delivery (Components)

System delivery includes:

- Multiscraper
- Tool holding fixture with four fastening bolts
- Tool as per order (Tile Buster Blade, Straight Blade, Carpet Blade, etc.)

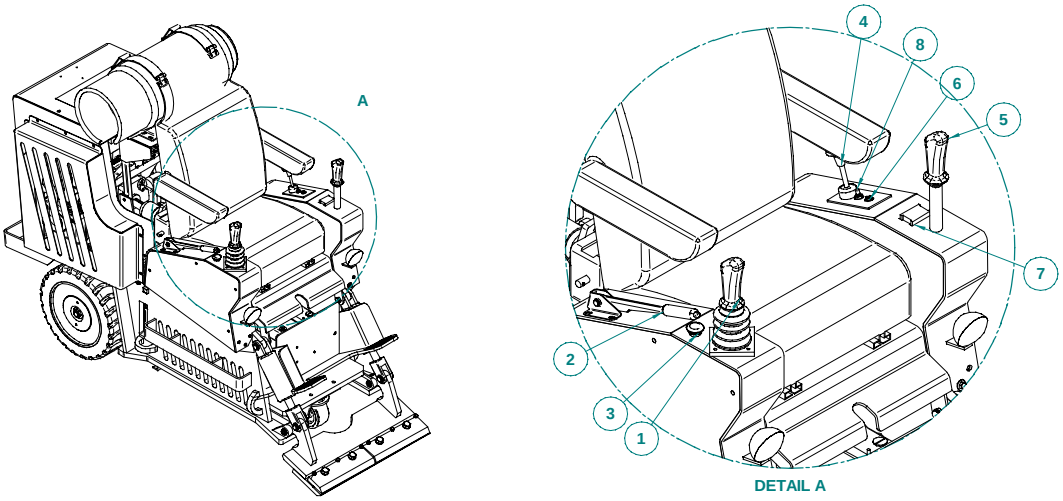
3.5 Description



1. Ignition Switch
2. Drive Wheels
3. Parking Brake Handle
4. Engine
5. "E" Stop Button
6. Motion Control Joystick
7. Lift Cylinders
8. Blade Holder
9. Lights
10. Lift/Lower Blade Control
11. Tachometer/Hour Meter
12. Engine Throttle
13. Light Switch
14. Propane Tank (LPG Type)

The Multiscraper (BMS-270LPII) is designed for horizontal floor preparation. Paint, sealing material, and even thick coatings are removed by means of a tempered steel scraper blade. Two independent drive wheels give the multiscraper a high degree of maneuverability. All elements of the multiscraper are hydraulically driven.

3.6 Operating Controls



1. Steering is controlled by means of two independently driven wheels. The driving speed is controlled by the movement of the motion control joystick.

   A. Move the joystick forward, go forward.
   B. Move to the right, turn right.
   C. Move left, turn left.
   D. Move back, go in reverse.
   E. Any intermediate movement will give dual drive according to direction of the joystick movement.

2. Parking Brake

   A. Pull lever up to set the brake.
   B. Push the button in the end of the lever. This will release the brake.

CAUTION: Parking brake is designed to prevent the multiscraper from moving after it has come to a full stop. Do not attempt to use the parking brake to stop the

3.6 Operating Controls Cont'd

3. Emergency Stop Button
   A. Push button down, all power is shut down. Multiscraper is now in the "off" mode.
   B. Lift button up to release. This will allow the engine to be restarted.

4. Throttle
   A. Push button on top and pull up to increase the engine speed (course adjustment up).
   B. Twist knob CCW to increase RPM (fine adjust up) and CW to decrease RPM (fine adjust down).
   C. Push in button on top and push knob down to reduce engine speed to idle (course adjustment down).

5. Blade Control Joystick w/ Rocker Switch
   A. Depress right side of rocker switch to lower blade.
   B. Depress left side of rocker switch to raise blade.

6. Ignition Switch
   A. All the way CCW, switch is in off position.
   B. In mid-position, switch is on.
   C. All the way CW, switch is in the start position. The switch is spring-loaded and will return to the on position when released.

7. Tachometer
   A. Digitally represents engine RPM when multiscraper is on.
   B. Digitally represents multiscraper usage time in hours.

8. Light Switch
   A. Forward position – ON.
   B. Backward position - OFF.

9. Oil Cooler Fan (under engine enclosure)
   A. Turn ignition key switch to on, mid-position, to turn on fan.
   B. Turn ignition key switch to off, full CCW position, to turn off fan.

3.7 Tools

Tool (Standard)	Application
Straight Blade	Glued plastic tile and mastic (soft)
Available in the following widths: ❑ 8 inch ❑ 12 inch ❑ 18 inch ❑ Other widths (special order)	

3.7.1 Blade Holder

This tool can be equipped with different sized blades in widths of 8 inches, 12 inches and 18 inches. The blade selection depends on the covering that is being removed. Mastic, for example, should be removed by using the wide scraper blade (12 inch or 18 inch). If the drive wheels of the multiscraper lose traction, additional weights can be added above the drive wheels. In cases where additional weight does not help, reduce the blade width.

Optional Equipment

Tool	Application
Tile Buster Blade	Ceramic Tile Removal Hardwood Floor Removal
Single/Narrow	Tough, small tile
Double/Narrow	Medium, small and large tile
Single/Wide	Medium, large tile
Double/Wide	Light, large and small tile
Weights	For traction and blade effectiveness
42 pounds each	Multiscraper maximum capacity = 34 per multiscraper

Section 4

4.1 General Information

4.2 Transport

4.3 Conditions for Initial Set-Up

4.4 Initial Set-Up

4.5 Dimensions, Space Required and Weights

4.1 General Information

Blastrac® strongly recommends that the initial start-up of the BMS-270LPII be performed or supervised by a Blastrac® representative. If a Blastrac® representative is not involved, Blastrac® will not assume any liability for damages resulting from faulty start-up or operation.

All parts of the BMS-270LPII that can be difficult to transport are equipped with lifting eyes. This allows them to be easily lifted by any appropriate lifting device. For weights and dimensions of the multiscraper, please see Section 1, "Technical Data".

4.2 Conditions for Initial Set-up

Before moving the BMS-270LPII unit to the jobsite, verify the maximum permissible load for the floor. For the weights of the BMS-270LPII parts, please see Section 1, "Technical Data".

4.3 Initial Set-Up

The initial set-up of the BMS-270LPII should be carried out in accordance with the instructions in Section 5, "Initial Operation".

4.4 Equipment Specifications

Please see "Technical Data", Section 1 for dimensions and weights of the BMS-270LPII.

Section 5

5.1 Preparations Before Initial Operation

5.2 Initial Operation

5.1 Preparations Before Initial Operation

Check for any leakage of fuel, oil or hydraulic fluid before starting any part of the multiscraper. If a leak exists, stop leak and clean dirty area before operating equipment. All protective housings (guards) should be in place and properly connected. All personnel working in close proximity to the multiscraper must wear safety glasses with side shields and safety shoes. The operator should wear tight, protective clothing.

All connectors, plugs, cables and hoses should be handled carefully. Avoid any contact with hydraulic oil.

All operating and maintenance personnel should read and understand this manual completely prior to operating or attempting maintenance on the multiscraper.

Only qualified personnel should be allowed to work on the hydraulic systems.

5.2 Initial Operation

1. After unloading multiscraper, move it to the work surface area under its own power whenever possible.

Warning: Hand push when this is the only way to get to the work area. When the multiscraper is placed on casters it will roll if on uneven floor or ground. Brakes on casters are not designed to prevent the multiscraper from moving. When moving multiscraper with casters all personnel should be clear of the path of travel for the multiscraper. If necessary, move multiscraper on casters as per instructions on reference print 700-SD0007.

2. Check the oil level in the multiscraper. The level should be in the upper third of the level indicator scale. If the oil level is lower, add oil prescribed by Blastrac® (Mobil DTE 16M down to 0ºF, Exxon Univis J26 below 0ºF) through the oil filler neck on the multiscraper tank. Do not overfill**.**

3. Make sure that the multiscraper motion control joystick is in its centered position (see Section 10.2 “Hydrostatic Pump”).

4. Adjust the seat to select the operator’s ideal sitting position by pulling lever under front of seat. This will enable the operator to reach the controls comfortably and see the work surface.

5.2 Initial Operation Cont'd

5. Be sure that all connections are secure and tighten if necessary.

6. Start multiscraper per instructions in Section 6.1 for "Start-up Procedure".

7. Operate the motion control joystick to verify that the wheels' movements are corresponding correctly to the joystick movement.

8. The initial operation is finished when all necessary readjusting work has been completed and when you are sure that all systems are working correctly.

Section 6

6.1 Start-up Procedure

6.2 Shutting Down

6.3 Maintenance Procedures

6.4 Maintenance Precautions

6.5 Start-up After Maintenance or Repair

6.6 Procedures Before and After Long Storage Time

6.1 Start-up Procedure

1. Open propane tank valve by turning knob CCW until fully open.

2. Operator must be seated in seat, with seat adjusted to a position that allows for optimum comfort and viewing of work area. The multiscraper will not start unless the operator is seated.

3. Engage parking brake (item #2, Section 3.6) to limit multiscraper movement upon starting.

4. Release E-stop button (item #3, Section 3.6).

5. Insure that motion control joystick (item #1, Section 3.6) is in its "centered" or center position (see Section 10.2 "Hydrostatic Pump").

6. Start multiscraper with ignition switch (item #6, Section 3.6).

7. Adjust throttle (item #4, Section 3.6) to desired RPM, not to exceed 3500 RPM (see Section 10.3 "Auxiliary Pump") as indicated on the tachometer (items #7, Section 3.6).

8. Turn on lights (item #8, Section 3.6).

9. Release parking brake.

10. Begin work.

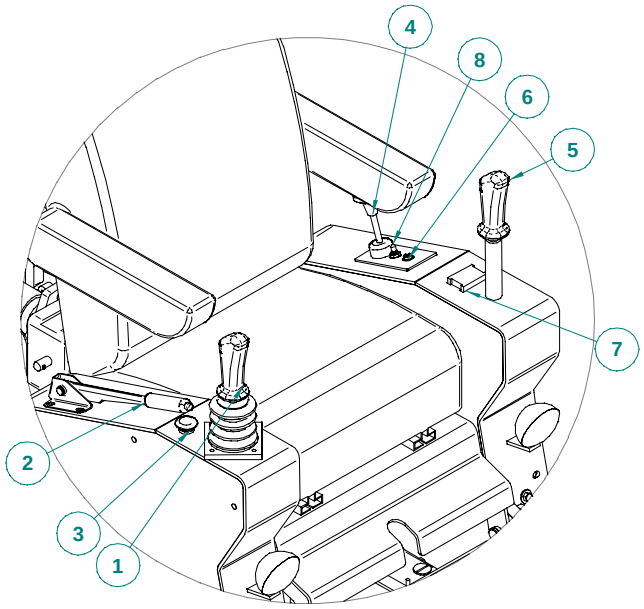
6.2 Shutting Down

See Section 3.6 for the operation and function of controls listed below.

1. Adjust throttle down to idle. (Control #4)

2. Turn ignition switch CCW to complete stop. (Control #6)

Make sure to turn switch all the way CCW until it stops. This will ensure the hydraulic oil-cooling fan is shut off.



3. Engage parking brake. (Control #2)

4. Push “E” stop button to ensure “safe” condition. (Control #3)

5. Remove the key.

6. Turn off propane tank valve. Turn knob CW all the way until closed.

7. Secure the multiscraper against accidental movement.

6.3 Operational and Maintenance Procedures

Follow all federal, state, local and plant safety guidelines when inspecting, repairing or operating this equipment. These guidelines should be followed in addition to the instructions in this manual. Before any maintenance or repair can be accomplished, the multiscraper must be put into its "Maintenance Mode" condition as described in Section 2.5.

6.4 Start-up After Maintenance or Repair

See manual, Initial Operation, Chapter 5.2.

6.5 Procedures Before and After Long Storage Time

Storage time in excess of three months.

Before Storage

- Shut down (see Shut Down Procedure, Section 6.2).
- Protect motors from dirt, dust, moisture, heat and shock.
- Clean the multiscraper and cover with protective tarp.
- Unused blank steel (inserts and scraper blades) should be covered with oil or other rust protection.

WARING: The blades are sharp and/or hot and could cause severe cuts and/or burns. To reduce the risk of severe cuts and/or burns blades should be handled with leather gloves.

After Storage

See Section 5.2, Initial Operation.

Section 7

7.1 Instructions

7.2 Maintenance and Inspection List

7.3 Repairs

7.4 Scraper

7.4.1 Changing Scraper Blade

7.4.2 Tool List for Multiscraper

7.5 Changing the Return Line Oil Filter

7.6 Lubricant Storage

7.1 Instructions

Prior to performing maintenance and inspection work read and fully understand the BMS-270LPII operating instructions.

Insufficient or improper maintenance could result in very high repair costs and long down time for the multiscraper. Regular maintenance is important for maximizing safety and cost effective performance.

The following timetable contains inspection and maintenance information that should be followed to minimize premature failure of components and maximize multiscraper performance.

This information is based on continuous operation. Refer to the hour meter on the multiscraper to determine the time the multiscraper has been in use.

Because of different operating conditions, the time intervals for normal wear, inspection, maintenance and repair cannot be exact. Individual operating conditions will necessitate more customized schedules.

Please do not hesitate to contact your Blastrac® specialist if further advice is needed.

Before any maintenance or repair work is performed on the multiscraper, precautions must be taken to ensure that the multiscraper cannot be turned on accidentally. It is recommended that the multiscraper be placed in its "Maintenance Mode" condition as outlined in Section 2.5.

WARNING: Please refer to the specific safety and maintenance recommendations throughout this manual and the manuals of the components being maintained before attempting any maintenance. Failure to adhere to these recommendations could result in equipment damage, serious injury or death.

7.2 Maintenance and Inspection List

Time Interval	Inspection Points/Maintenance
12 hours after repair work	• Check all safety devices • Check all connectors/couplings
Every three hours	• Clean all foreign matter from under scraper clamp
Daily	• Check the multiscraper for leaks • Check for hose damage • Check the oil level in the multiscraper • Check the wheel tread for dirt buildup • Check Filter gauges (drive motor must be on) • Be sure drive motor cowling is secure • Be sure E-stop and seat “dead-man” are working correctly • Be sure parking brake is working correctly
Bi-Monthly	• Perform a complete wear check on the multiscraper unit and clean the unit completely • Check that all screw connections are secure
Long storage period (maximum three months)	See Section 6.5. Contact your Blastrac® specialist
50-60 hours	• Replace the engine oil and engine oil filter
Initial change first 50 to 60 hours, then every 150 hours	• Replace the multiscraper’s hydraulic return oil filter or when the gauge “low flow”
Initial change first 500 hours, then every 1000 hours	• Replace hydraulic oil and in tank suction strainers

CAUTION: If any problems are found with areas contained in the above list, repair them immediately according to the instructions located in the Sections throughout this manual and the manuals of the specific components being maintained. Failure to adhere to these recommendations could result in equipment damage, serious injury or death.

7.3 Repairs

Blastrac® recommends supervision by a Blastrac® specialist for the initial operation of, or the first repair work to, the BMS-270LPII. This will give your maintenance staff the opportunity to receive the necessary training for your new Blastrac® equipment.

These instructions will cover routine maintenance and wear part replacement.

When changing parts in-house, observe the following instructions and the individual step-by-step procedures.

Blastrac® also recommends that you keep a sufficient inventory of wear parts as well as blade pivot parts. This will help eliminate unnecessary down time for your multiscraper and help save on overall operating costs.

When replacing nuts and bolts on the BMS-270LPII, be sure the replacements are of the same, exact quality as the original (strength, material, diameter, thread and length).

Before any maintenance or repair work can be accomplished on the multiscraper read and fully understand the BMS-270LPII operating instructions.

7.4 The Scraper

In general, the scraper tool (straight blade) supplied with the multiscraper is suitable for removing coverings or tiles that are bonded to the work surface with soft adhesives such as glue or mastic.

7.4.1 Changing the Scraper Blade and Adjusting the Clamp

WARING: The blades are sharp and/or hot and could cause severe cuts and/or burns. To reduce the risk of severe cuts and/or burns blades should be handled with leather gloves.

1. Loosen the (4) ¾ inch Hex bolts and tap both sides of the blade clamp lightly to loosen.
2. Lift up blade clamp and pull out old blade.
3. Clean all foreign matter from under and around the blade clamp.
4. Insert the new blade until it bottoms out on the corner step on the blade holder.
5. Tighten up the jackscrews until blade clamp is flat with the blade. This will allow for clamping the blade with the most holding power.
6. Tighten the ¾ inch Hex bolts. See drawing 700-SD0012.

7.4.2 Tool List for Scraper Blade Removal

1. (1) – 16 oz. Soft Face Hammer
2. (1) – 1-1/8 inch Wrench
3. (1) – 8 inch Adjustable Wrench

7.5 Changing the Hydraulic Oil Filters

7.5.1 Changing the Return Line Oil Filter Element

IT IS NOT POSSIBLE TO CLEAN THROWAWAY FILTER ELEMENTS. THESE ELEMENTS INCLUDE THE RETURN FILTER, AND THE IN-TANK CHARGE PUMP FILTERS. PAPER ELEMENTS CANNOT BE CLEANED.

1. It is recommended that the equipment be placed in its "Maintenance Mode" condition as outlined in Section 2.5.
2. Let the multiscraper cool down.

DANGER: Be sure the oil has cooled down before changing the filters. The oil temperature can be in excess of 200 deg F and will cause severe burns if touched.

3. Clean the filter housing cover thoroughly with a clean, lint-free cloth. Ensure that the area is clear of debris that may enter tank and contaminate the hydraulic oil and damage the hydraulic system. Twist slightly and remove cover from housing.

Be aware that filter housing cover is under spring pressure. Hold down while twisting and removing the housing cover.

4. Remove the filter element.
5. Check the O-ring and the support ring inside the filter housing for damage. Replace these elements, if necessary.
6. Drop in new filter cartridge.
7. Reinstall housing cover, twist to lock.

7.5 Changing Hydraulic Oil Filters Cont'd

7.5.2 Changing In-tank Suction Strainer and Suction Filters

1. It is recommended that the equipment be placed in its "Maintenance Mode" condition as outlined in Section 2.5.
2. Let the multiscraper cool down.

DANGER: Be sure the oil has cooled down before changing the filters. The oil temperature can be in excess of 200 deg F and will cause severe burns if touched.

3. Disconnect any hydraulic system components/hoses that may obstruct access to the hydraulic tank. Protect disconnected hoses from dirt and debris.
4. Clean hydraulic tank access cover thoroughly with a clean, lint-free cloth. Ensure that the tank is free of debris that may enter tank and contaminate the hydraulic oil and damage the hydraulic system.
5. Remove bolts on perimeter of the access cover and remove the cover.
6. Replace filters.
7. Re-attach hydraulic tank access cover, ensuring that all bolts are secure. Replace gasket material on access cover if necessary.

7.6 Lubricant Storage

Store new filter cartridges in their original packages to help eliminate dust and moisture contaminants and to minimize air oxidation. Store in a cool dry area.

Lubricant storage should be environmentally safe. Take special care so that lubricants cannot penetrate the ground. Used oil and other lubricants must be disposed of properly. Follow all applicable storage and disposal regulations.

Section 8

The BMS-270LPII has a standard 12 Volt DC power system. It is equipped with a 12 Volt DC gel-filled battery.

Electrical components include:

Kohler Alternator
Gel-filled Battery
Ignition
E-stop
Seat Mounted Safety Switch
Work Lights
Safety Strobe Light
Solenoid Valve
Oil cooler Fan

Section 9

9.1 Scraper Troubleshooting

9.1 Scraper Troubleshooting

WARNING: Please refer to the specific safety and maintenance recommendations throughout this manual and the manuals of the components being maintained before attempting any maintenance. Failure to adhere to these recommendations could result in equipment damage, serious injury or death.

Trouble	Possible Cause	Remedy
1. The scraper blade lifts immediately after being lowered.	**a.** Pilot operated check valve dirty **b.** Pilot operated check valve defective	**a.** Have P.O. check valve inspected and cleaned by a specialist **b.** Replace P.O. check valve
2. With idle running, the scraper is extraordinarily loud.	**a.** Air in hydraulic circuit **b.** The hydraulic components are defective.	**a.** See Trouble **12 and 14.** **b.** Have the hydraulic system checked by a specialist.
3. The scraper does not work when the pump is generating pressure above 1000 psi.	**a.** Severe blockage in wheel drive motor hoses **b.** Wheel drive motors defective	**a.** Check hoses for blockage and replace hose if necessary **b.** Call Blastrac Service Center
4. The hoses are worn.	**a.** Hose rubbing on components **b.** Hose has been exposed to poor environmental conditions	**a.** Replace and protect the hose. **b.** Replace hose and protect equipment from poor conditions
5. The multiscraper makes an unusually loud hissing or whistling noise.	**a.** Fluid is passing over relief valves **b.** Air in hydraulic circuit	**a.** This could be normal on an intermittent basis. If noise is continuous call a Blastrac Service Center. **b.** See Trouble **2, 12 and 14**
6. Too much play in the operating lever.	See possible cause 1a and 1b	See remedy **1a** and **1b**
7. Oil deposits are evident on the inner sides of the driving wheels.	**a.** The shaft seals of the wheel motors worn out. **b**. Hose fittings are loose.	**a.** Have the shaft seals replaced by a specialist. **b.** Tighten hose fitting. Replace hose or fitting if necessary

9.1 Scraper Troubleshooting Cont'd

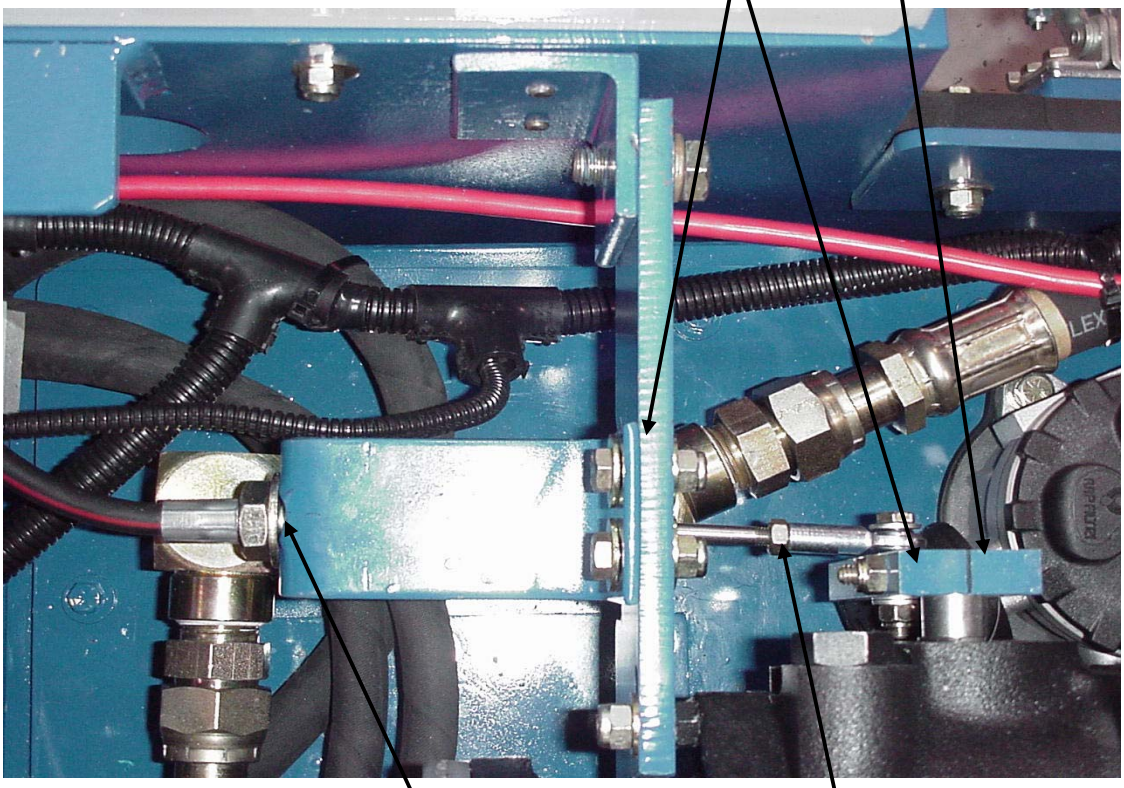
WARNING: Please refer to the specific safety and maintenance recommendations throughout this manual and the manuals of the components being maintained before attempting any maintenance. Failure to adhere to these recommendations could result in equipment damage, serious injury or death.

Trouble	Possible Cause	Remedy
8. The scraper moves when motion control joystick is centered.	**a.** One or both control cables have stretched. **b.** One or both of the rod ends are loose or out of adjustment.	**a.** Readjust cable position in cable mount. **b.** Tighten and/or readjust control cable rod ends. (See picture on page 44)
9. The scraper has no power with the Kohler engine running at 3500 rpm.	See possible cause **1a** and **1b**. **a.** Wheel drive motor pressure relief valve out of adjustment **b.** Piston pump is not developing pressure	See Remedy **1a** and **1b.** **a.** Contact Blastrac Service center immediately. **b.** Contact Blastrac Service center immediately. **Do not operate in this condition!!**
10. The scraper does not react when the motion control joystick is actuated.	See Possible cause **1a** and **1b**.	See Remedy **1a** and **1b.**
11. The scraper blade will not move when rocker switch is actuated.	**a.** Rocker switch is bad **b.** Control valve solenoid is bad **c.** Control valve is clogged **d.** Relief valve is defective or setting is wrong **e.** Multiscraper is too heavy **f.** Lift cylinder are bad	**a.** Check switch with voltage meter and replace if necessary **b.** Check solenoid with voltage meter and replace if necessary **c.** Call Blastrac Service Center **d.** Relief valve should be set at 1500psi. Have specialist replace if necessary **e.** Remove excess weight **f.** Replace lift cylinders

9.1 Scraper Troubleshooting Cont'd

WARNING: Please refer to the specific safety and maintenance recommendations throughout this manual and the manuals of the components being maintained before attempting any maintenance. Failure to adhere to these recommendations could result in equipment damage, serious injury or death.

12. The hydraulic oil is very cloudy. **Excessive air in the circuit can cause severe damage to piston pumps. Stop multiscraper and repair immediately!**	**a.** Water has entered hydraulic tank. **b.** Oil is contaminated with dirt. **c.** Air has entered the circuit.	**a.** Repair tank if necessary. Drain and clean tank thoroughly. Change oil. **b.** Drain and clean tank thoroughly. Change oil. **c.** See Trouble **2 and 14.**
13. Excessive amount of oil on chassis.	**a.** Outside oil spilled on chassis. **b.** Loose hose connections. **c.** Loose tank fittings.	**a.** Clean multiscraper thoroughly and see if oil returns. See Remedy **b and c.** **b and c.** Clean multiscraper thoroughly and tighten all hose connections and fittings.
14. Hydraulic oil and /or oil foam leaking from oil tank. **Excessive air in the circuit can cause severe damage to piston pumps. Stop multiscraper and repair immediately!**	**a.** Oil level too high. **b.** Oil level too low. **c.** Vent in return filter blocked. **d.** Air getting into hydraulic circuit.	**a.** Drain tank to correct level. **b.** Fill tank to correct level. **c.** Check for blockage. Replace if necessary. **d.** Check all suction lines. Tighten all hose connections and fittings.



Note: The position of the cable rod end may be adjusted at the cable mount and at the rod end of the cable. Make sure that the actuating arm is straight up and down when the motion control joystick is centered.

Section 10

10.1 General System Description

10.2 Hydrostatic Pump

10.3 Auxiliary Pump

10.4 Wheel Drive Motors

10.5 Control Valve Assembly

10.6 P.O. Check Valve

10.7 Oil Cooler

10.8 Return Filter

10.9 Suction Strainer

10.10 Suction Filters

10.11 Hydraulic Oil

10.1 General System Description

Please refer to Service Drawings 700-SD0008 and 700-SD0010 to aid in the description of the hydraulic system and its operation. Section 10 includes descriptions of the hydraulic components and their functions. Please refer to the specific products instructional manuals for more detailed technical and maintenance information.

The BMS-270 LPII is equipped with a hydrostatic, or closed-loop drive system with an auxiliary, open loop system for the blade lift and auxiliary tool functions. A direct shaft connected 25 hp Kohler engine using liquid propane fuel with an operating speed of 3500 rpm powers the hydraulic pumps.

A “closed loop” circuit circulates fluid through the pumps to, in this case, the drive motors and returns the fluid to the pump repeating the cycle and continuously using the same fluid to power the drive motors.

An “open loop” system pulls fluid from the hydraulic tank to the pump and to, in our case, the auxiliary functions and returns the fluid to the hydraulic tank then repeats the cycle.

WARNING: Please refer to the specific safety and maintenance recommendations throughout this manual and the manuals of the components being maintained before attempting any maintenance. Failure to adhere to these recommendations could result in equipment damage, serious injury or death.

10.2 Hydrostatic Pump

Item 1 (P002336) on Service Drawing 700-SD0010 is a tandem in-line hydrostatic pump. This variable displacement pump has a mechanical control arm connected to the swashplates. When the operator moves the motion control joystick, the swashplate tilts. This titling results in fluid flow to the pump, which is directly proportional to the operator's control movements. As the operator makes an opposite control movement the swashplate reverses its tilt angle and reverses the fluid flow. This is a tandem pump, therefore there are two pumps available for the wheel drive motors. The right drive wheel uses the rear pump of the tandem and the left drive wheel used the front pump of the tandem. The motions control joystick is mechanically connected to the pumps by a trunion shaft at all times. As viewed from the rear of the multiscraper, a left control movement will cause the right drive wheel to rotate forward and the left drive wheel to rotate in reverse turning the multiscraper to the left with a virtually zero turning radius.

WARNING: Always have the control handle in the center position when starting the BMS-270LPII. If the handle is not in the center position, the piston pump will start "on-stroke" sending a rush of fluid into the pump and causing damage to the pump. Moreover, the machine could move rapidly possibly causing serious injury or death.

Since there is natural leakage in any piston pump and the piston pumps are part of the closed loop circuit, the fluid must be replenished or the closed loop circuit would quickly run out of fluid. The hydrostatic pump is equipped with two charge pumps, one for each piston pump in the tandem set-up. As fluid is lost in the piston pumps, it is returned to the hydraulic tank via the case drains (the "D" ports of item 1). The charge pumps draw fluid from the hydraulic tank and supply the piston pumps with a constant pressure, variable flow of fluid. The charge pumps will supply the piston pumps with the required fluid flow at all times. The excess fluid not used by the piston pumps returns to the hydraulic tank by way of the case drains.

10.3 Auxiliary Pump

Item 2 (P002452) on Service Drawing 700-SD0010 is a fixed displacement gear pump. This pump is directly connected to the tandem pump and rotates at the speed of the drive motor at all times, therefore providing a fluid flow proportional to the drive motor speed. This pump is used to provide fluid and pressure to the blade lift cylinders and auxiliary functions.

CAUTION: Never run the drive motor over 3500 rpm. Speeds in excess of 3500 rpm will damage the fixed displacement gear pump.

10.4 Wheel Drive Motors

Item 3 (P002340) and Item 4 (P002339) on Service Drawing 700-SD0010 are duel rotation fixed displacement gear motors with 2000 psi internal relief valves. The motor speeds are directly proportional to the flow they receive from the piston pumps. The relief valves are set at 2000 psi to limit the torque to the drive wheels. Pressures above 2000 psi could damage the wheels and possible the multiscraper chassis. Do not attempt to change the relief valve settings.

10.5 Control Valve Assembly

Item 5 (P002433) on Service Drawing 700-SD0010 is a 2-spool control valve assembly with a 1500 psi internal relief valve. One section of the valve is controlled by an electric solenoid while the other section is control by a mechanical control handle. The rocker switch on the blade control joystick operates the electric solenoid. If the rocker switch is pushed on the left, the valve shifts and allows fluid to flow into the piston end of the cylinder causing the rod to extend and the blade to lower. Conversely, if the rocker switch is pushed to the right, the valve shifts and allows fluid to flow into the rod end of the cylinder causing the rod to retract and the blade to lift. The 2-spool valve is an open center valve. In its de-energized state, i.e. there are not control movements and the mechanical control handle is in the center position, it allows fluid to simply pass through the valve and back to the hydraulic tank. Since the relief valve is set at 1500 psi, that is the maximum pressure the valve will supply to the cylinders or auxiliary tools. The cylinders will never need more than 500 psi to 800 psi of pressure to operate properly depending on the operator and multiscraper weight. If a tool requires more than 1500 psi to operate, the relief valve can be adjusted to a maximum of 2400 psi. If the relief valve is set above 2400 psi, the resulting torque at full flow rate will severely damage the pump. Please contact a Blastrac Specialist before attempting to adjust the relief valve setting. An incorrect setting could cause damage to the hydraulic components.

If you have purchased or wish to purchase optional tools for your BMS-270LPII you will need to contact Blastrac Customer Service for details 1-800-256-3440. These tools will be available by the end of 2003. Availability is subject to change; please call Blastrac for optional tool inquiries.

The other section of the 2-spool valve controls the auxiliary tools. If you have the capability to add optional tools you will notice a mechanical handle in the 2-spool valve. This handle Shifts the spool that meters fluid into the optional tools. If the handle is in the center position, no fluid is sent to the tool. If you move the handle up, the tool will rotate in a clockwise fashion. The amount of handle movement determines the amount of fluid flow to the tool, thus determining the speed of the tool. Conversely, if you move the handle down the tool will rotate in a counter-clockwise fashion. Again, the amount of handle movement determines the amount of fluid flow to the tool, thus determining the speed of the tool.

WARNING: Always have the motion control joystick in the center position before starting the BMS-270LPII. If the motion control joystick is not in the center, the tool will turn when the multiscraper is started, possibly injuring the operator or other personnel and damaging the tool or pump.

10.6 P.O. Check Valve

Item 6 (P002436) on Service Drawing 700-SD0010 is a duel pilot operated check valve. When there is no outside pressure, i.e. if the rocker switch on the blade control joystick is not pushed, the check valve prevents the cylinders from moving. When the rocker switch is pushed the fluid will flow on one side of the cylinder and the pilot line will detect the fluid pressure and open the hydraulic line on the other side of the cylinder to release the fluid from other side of the cylinder, thus allowing the cylinder to move. When the rocker switch is released, the cylinders again lock in place.

10.7 Oil Cooler

Item 7 (P002373) on Service Drawing 700-SD0010 is a oil cooler with 30 psi bypass valves. The oil from the gear pump, Item 2, is always going through the oil cooler while the drive motor is on. The volume of oil passing through the oil cooler is dependant on the drive motor rpm. The oil cooler is an air-over-oil cooler with the air being supplied by a 12 volt DC fan. The 30 psi bypass valves will open if the pressure of the hydraulic oil exceeds 30 psi. For example, if the temperature outside is extremely cold and the hydraulic fluid has become thick, the pump will have a hard time pushing the oil through the cooler, thus increasing the pressure. This increased pressure could cause damage to the pump, therefore the oil cooler is bypassed at 30 psi and the pressure is reduced.

10.8 Return Filter

Item 8 (P000849) on Service Drawing 700-SD0010 is an in-tank return filter with a filter pressure gauge and tank vent. See drawing number 700-0121 for the location of filters and strainers. The return filter has a replaceable 10-micron filter element that filters the oil before it is put back in the hydraulic tank. The gauge should be checked at the beginning of each workday and the filter replaced if indicated by the reading on the gauge. The drive motor should be running at 3500 rpm when the gauge is checked. If the filter needs to be replaced and is not, it will reduce the flow on oil to the hydraulic tank and increase the pressure in the system. This increased pressure will result in a decrease in multiscraper performance and could possible damage the hydraulic components.

10.9 Suction Strainer

Item 9 (P002344) on Service Drawing 700-SD0010 is an in-tank 100-mesh suction strainer. See drawing number 700-0121 for the location of filters and strainers. This suction strainer is used to filter large debris from entering the hydraulic gear pump. If you notice a decrease in cylinder or auxiliary tool function it could be due to a dirty suction strainer. Moreover, if the auxiliary gear pump begins to make a growling noise the fluid level could be low or the suction strainer could be clogged. This strainer can be removed, cleaned and retuned to the hydraulic tank.

10.10 Suction Filters

Item 10 (P002454) on Service Drawing 700-SD0010 is an in-tank 40 micron suction filter. See drawing number 700-0121 for the location of filters and strainers. This filter is used to filter debris from hydraulic tank to the charge pump and ultimately to the closed loop circuit. This filter must be maintained or it will cause severe damage to the piston pumps. The gauge on top of the 90 deg elbow coming out of the tank is an indicator of the filter condition. See drawing number 700-0121 for the location of the pressure gauge. The gauge should be checked at the beginning of each workday and the filter replaced if indicated by the reading on the gauge. The drive motor should be running at 3500 rpm when the gauge is checked. If this gauge reads above 5 inHg of vacuum pressure replace the filter as soon as possible. The multiscraper can operate at a maximum of 10 inHg on this gauge. If the gauge reads above 10 inHg, the suction pressure has increased to the point where the pump can no longer supply the piston pump with enough fluid.

CAUITON: Insufficient fluid flows from the charge pump filters will cause sever damage to the piston pumps.

10.11 Hydraulic Oil

All hydraulic systems depend on clean oil operating within the specified temperature range. This hydraulic system requires a minimum of an ISO 18/15 cleanliness level, a maximum continuous operating temperature of 180 deg F and an intermittent operating temperature of 200 deg F. These temperature readings apply at the hottest point in the transmission, which are normally the case drains. Blastrac recommends that periodic oil samples are taken from the case drain hoses and analyzed.

DANGER: Be sure the oil has cooled down before taking the sample. As mentioned above, the oil temperature can be in excess of 200 deg F and will cause severe burns if touched.

The hydraulic oil will meet the above specifications when delivered from the factory, however the oil can become contaminated over time if the system is not maintained. Keep in mind that the most harmful particles are the ones that cannot be seen with the naked eye. It is extremely important that special care is taken any time the system is exposed to outside elements i.e. replacing a hose, replacing a filter or changing the hydraulic oil. Blastrac recommends that a 10-micron filter is used when adding new oil to the hydraulic tank and special care is taken to insure that no foreign particles enter the system. Please contact a Blastrac Service Center or the Blastrac Engineering Department if there are any questions concerning the hydraulic system and its components.

10.12 Needle Valve, Bi-Directional Metering

The needle valve with bi-directional metering is located in line between the P.O. check valve and the blade lift cylinders. The needle valve is meant to limit the flow of oil to and from the cylinders when an optional attachment is in use. The added weight of an attachment may cause the lift cylinders to lower at an increased rate, causing damage to the BMS-270LPII or the attachment being used.

If no attachment is in use, verify that the needle valve knob is turned counterclockwise to its fullest extent. This will ensure that the maximum amount of oil is passing through to and from the cylinders. Furthermore, a full-open setting will decrease pressure in the lines and limit the amount of oil that passes through the relief valve. Decreased flow of oil through the relief valve decreases the addition of heat to the system.

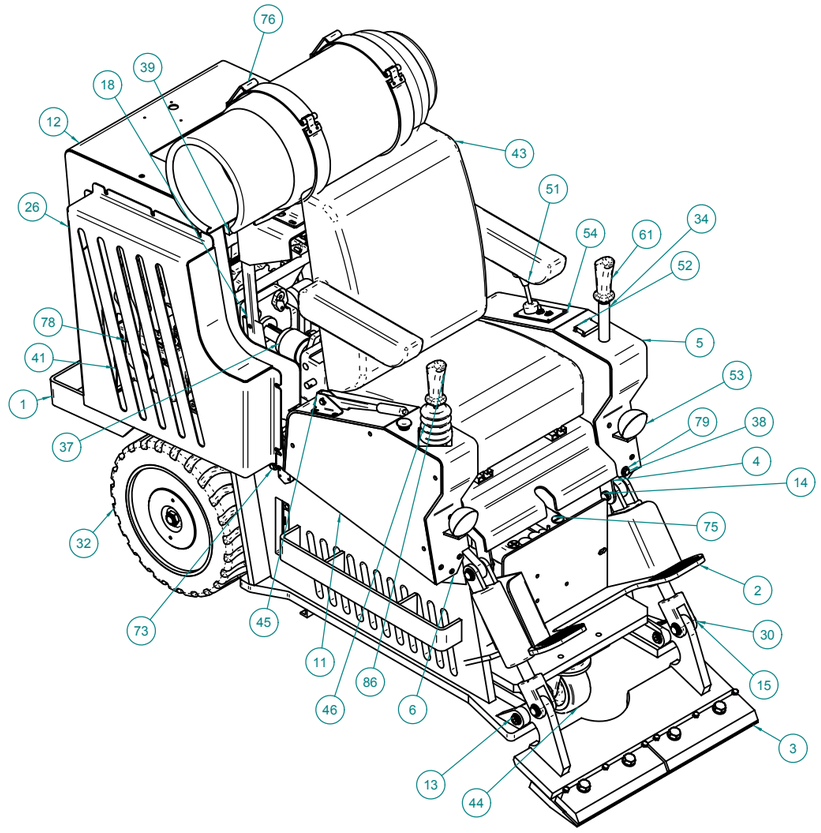
If an attachment is in use, turn the needle valve knob clockwise until the desired, controlled lowering of the lift cylinders is achieved. If adjusting from a full open position, a completely closed condition will be achieved in five turns of the knob. It is important to adjust the needle valve only enough to restrict the flow of oil to achieve controlled lowering of the lift cylinders. Excessive restriction through the needle valve will increase the amount of oil that will pass through the relief valve, creating excessive heat.

Reference Prints

Section 11

General Assembly	700-0133
Caster Placement	700-SD0007
Optional Weight Distribution	700-SD0004
Safety Decal/Nameplate Placement	700-0119
Hydraulic Schematic	700-SD0010
Electrical Schematic	700-0062
3-Dimensional Hydraulic Schematic	700-SD0014
Blade Removal/Replacement Illustration	700-SD0012

ITEM	QUANTITY	CATALOG NUMBER	DRAWING NUMBER	DESCRIPTION
86	1	P000261	--	HANDLE/CONTROL ERGONOMIC
87	2	500219	--	SCREW/CAP HEX 1/2"-13UNC
88	2	500221	--	SCREW/CAP HEX. 1/2"-13UNC
89	1	P002338	--	HYDRAULIC PUMP MOUNT
90	1	P002413	--	HYDRAULIC HOSE KIT
91	1	P002419	--	HYDRAULIC FITTING KIT
92	1	P002612		KIT/LPG 25HP KOHLER CONV.
93	1	07100040		EXHAUST PURIFIER/PTX-3
94	1	07530009		CABLE/BATTERY 56" POSITIVE LEAD (RED)
95	1	P002420		CABLE/BATTERY 24" NEGATIVE (BLACK)
96	1	P000540		CLAMP/MUFFLER EXHAUST (1-1/2"ID)
97	1	P000560		TAPE/NON-SKID 6.00IN WIDE
98	1	P002439	700-0106	HARNESS/WIRING
99	1	P002422		CABLE/PARKING BRAKE
100	1	P002418	700-0119	DECAL/NAMEPLATE PACKAGE
101	3	P002646		



ITEM	QUANTITY	CATALOG NUMBER	DRAWING NUMBER	DESCRIPTION
42	1	07510014	--	TANK PROPANE/33LB. ALUMINUM
43	1	P000463	--	SEAT / MED.w/ SAFETY SWITCH
44	1	P000257	--	CASTER / SWIVEL
45	1	P000086	--	PARKING BRAKE LEVER
46	1	P002642		CONTROL HANDLE W/ CABLES
47	2	P000129	--	BRAKE PARKING
48	2	P000568	700-0044	ROD/TIE - PARKING BRAKE ACTUATOR
49	1	P000544	700-0051	TUBE / EXHAUST EXTENSION
50	2	P002453		CASTER/RIGID W/ SINGLE BRAKE
51	1	07300001	--	CABLE/THROTTLE - VERNIER STYLE W/RELEASE
52	1	07100007	--	TACHOMETER/TINY TACH
53	2	P000462	--	LIGHTS 3 1/2" HALOGEN
54	1	P002416	700-0117	LEFT CONTROL POD FACEPLATE/THROTTLE,LIGHTS,ON -OFF
55	2	P002375	700-0084	LEVER ARM/HYDRAULIC PUMP CONTROL
56	3	502099	--	KEY/SQUARE 3/16" x .75"
57	1	P002433		2-SPOOL VALVE
58	1	P002408	700-0110	BRACKET SEAT
59	12	500116	--	WASHER/LOCK - 1/2"
60	12	03400013	--	RETAINER / RING
61	1	P002370	--	HANDLE/ W/ 3-POSITION ROCKER SWITCH
62	4	500778	--	SCREW/CAP HEX. 3/8"-16UNC
63	1	P002412	700-0114	BRAKE CABLE CLEVIS PIN/LEVER-TO-CABLE
64	6	500106	--	WASHER/FLAT-1/2"
65	1	P002436	--	VALVE/VALVE DUAL IN-LINE P.O. CHECK
66	3	500058	--	NUT/HEX 1/4"-20UNC
67	18	500060	--	NUT/HEX 3/8"-16UNC
68	8	500221	--	SCREW/CAP HEX. 1/2"-13UNC
69	16	500114	--	WASHER/LOCK 5/16"
70	9	500199	--	SCREW/CAP HEX. 3/8"-16UNC
71	16	500192	--	SCREW/CAP HEX. 5/16"-18UNC
72	13	500115	--	WASHER/LOCK 3/8"
73	2	500200	--	SCREW/CAP HEX. 3/8"-16UNC
74	8	500103	--	WASHER, FLAT 5/16" DIA.
75	1	P002437	--	BATTERY/ORBITAL 84/2 GEL BATTERY
76	1	07510005	--	BRACKET/PROPANE TANK
77	3	500953	--	WASHER/LOCK 1/4"
78	1	07100030	220-0280	MUFFLER-TIP
79	45	500104	--	WASHER/FLAT 3/8"
80	1	07530012	--	COVER/BATTERY TERMINAL (BLACK)
81	1	07530013	--	COVER/BATTERY TERMINAL (RED)
82	2	P002421	- -	BOLT/"J" 5/16-18 X 8" LONG
83	2	491969	- -	PIN/CLEVIS x 6.00"
84	2	500597	--	PIN/COTTER 1/8" X 1-1/4"
85	1	4906940	--	T-HANDLE PIN / BALL LOCK 1/2" X 2 - 1/2"

ITEM	QUANTITY	CATALOG NUMBER	DRAWING NUMBER	DESCRIPTION
1	1	P002347	700-0086	CHASSIS WELDMENT
2	1	P002388	700-0096	FOOT PLATE WELDMENT
3	1	P002360	700-0078	BLADE WELDMENT/REDESIGN
4	1	P002389	700-0097	SEAT BASE WELDMENT
5	1	P002381	700-0089	LEFT CONTROL POD WELDMENT
6	1	P002382	700-0090	RIGHT CONTROL POD WELDMENT
7	1	P002379	700-0087	LEFT SIDE CONTROL POD COVER
8	1	P002428		HYDRAULIC RESERVOIR ASSEMBLY
9	1	P002340	--	MOTOR / (CW) HYD. DRIVE w/BRAKE
10	1	P002339	--	MOTOR / (CCW) HYD. DRIVE w/BRAKE
11	1	P002380	700-0088	RIGHT SIDE CONTROL POD COVER
12	1	P002374	700-0083	COWLING/ENGINE ENCLOSURE
13	2	P000226	700-0023	PIN / BLADE PIVOT
14	2	P000475	700-0023	PIN/CLEVIS - UPPER CYLINDER
15	2	P000476	700-0023	PIN/CLEVIS - LOWER CYLINDER
16	1	P002516	--	PUMP ASSEMBLY/ P/N'S P002336 & P002452
17	1	P002406	700-0108	BRACKET LEG/LEFT SIDE
18	1	P002407	700-0109	BRACKET LEG/RIGHT SIDE
19	2	P000538	700-0038	BRACKET/MOUNTING - PARKING BRAKE ACTUATOR
20	1	P002387	700-0095	INTERIOR WEIGHT HANGER
21	1	P002441	700-0125	HOLD DOWN BAR/BATTERY
22	2	P002383	700-0091	BRACKET/PUMP SUPPORT
23	1	P002399	700-0102	SHAFT (EXTENDED)/ACTUATOR - PARKING BRAKE
24	2	P000563	700-0039	ARM/PARKING BRAKE ACTUATOR
25	1	P002400	700-0103	LEVER ARM (EXTENDED)/PARKING BRAKE ACTUATOR
26	1	P002390	700-0098	COWLING COVER POD
27	1	P002410	700-0112	MOTION CONTROL CABLE BRACKET/RIGHT SIDE
28	1	P002409	700-0111	BRACKET/MOTION CONTROL CABLE LEFT
29	1	P002411		DIRECTIONAL BLOCK/BRAKE CABLE
30	2	P000262	700-0033	CYLINDER/HYDRAULIC W/ MOD. CLEVIS & (4) BUSHINGS 1 3/8" OD X 1" ID
31	1	500117	--	WASHER/LOCK - 5/8"
32	2	P000235	700-0024	WHEEL / TIRE,HUB ASSY
33	1	P002384	700-0092	PUMP SUPPORT
34	1	P002405	700-0107	EXTENSION SHAFT/UP-DOWN CONTROL KNOB
35	2	02200003	--	COLLAR/SHAFT 3/4"B
36	1	500072	--	NUT/JAMHEX 5/8"-11UNC
37	1	P002337	--	HAYES COUPLING
38	16	500768	--	SCREW/CAP HEX. 3/8" x 1-1/4" - 16UNC
39	1	P002373	--	OIL COOLER
40	3	500177	--	SCREW/CAP HEX. 1/4"-20UNC
41	1	P001409	220-0273	ENGINE ASSEMBLY - KOHLER 25 HP

REV	ZONE	DESCRIPTION	DATE	BY

DIMENSIONAL TOLERANCES

FABRICATING (SHEARING, BURNING, PUNCHING)	WELDING & ASSEMBLY	RELATIONAL
TWO PLACE DECIMALS +/- 0.06"	TWO PLACE DECIMALS -/+ 0.06"	FLATNESS (IN OVERALL +/- 0.06"
(AND FRACTIONS)	(AND FRACTIONS)	LENGTH THROUGH 60.00")
ANGULAR (POSITIONAL) +/- 1/2"	ANGULAR (POSITIONAL) +/- 1/2"	SQUARENESS (CORNER +/- 0.12"
BEND RADIUS IS EQUAL TO MATERIAL	SLL WELDMENTS +/-0.12"	CORNER, MAX. DIFFERENCE
THICKNESS, UNLESS OTHERWISE NOTED.		IN DIAGONALS)

REV	ZONE	DESCRIPTION	DATE	BY

REVISION

NEXT ASSY - -
REF DWG - -
PART NO. BMS-270LPII

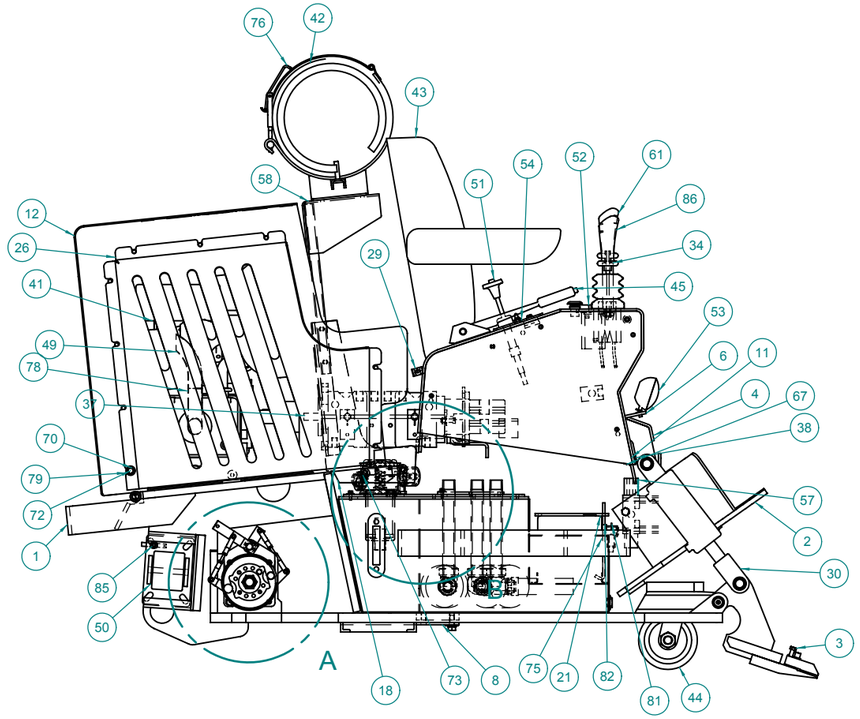
TOLERANCE MACHINING
ANGLES ± .500°
1 PL DEC ± .060
2 PL DEC ± .010
3 PL DEC ± .005

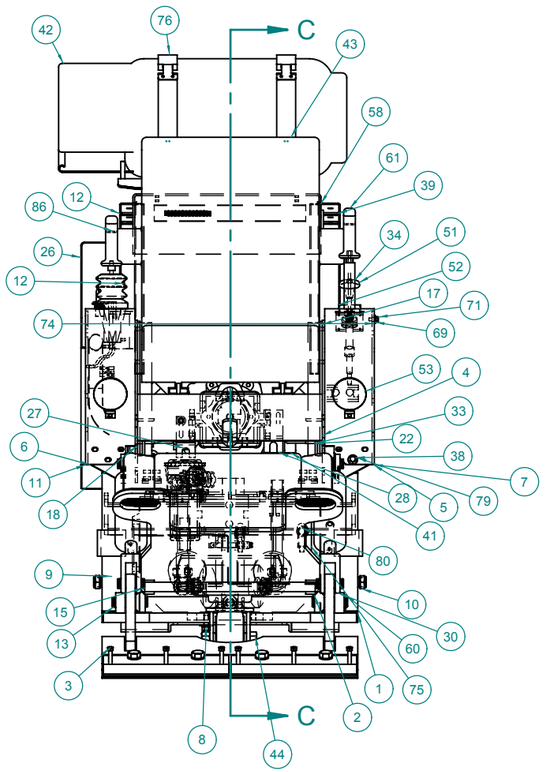
U.S. FILTER BLASTRAC
6215 ALUMA VALLEY DRIVE
OKLAHOMA CITY, OK 73121
U.S.A.

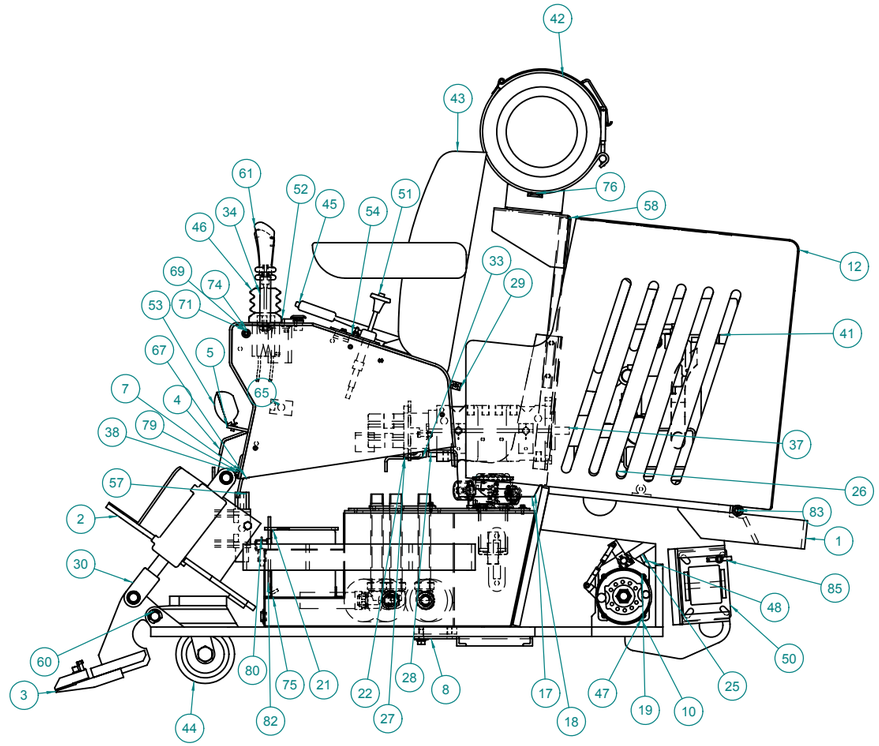
BMS-270 LPII GENERAL ASSEMBLY
BMS-270 LPII

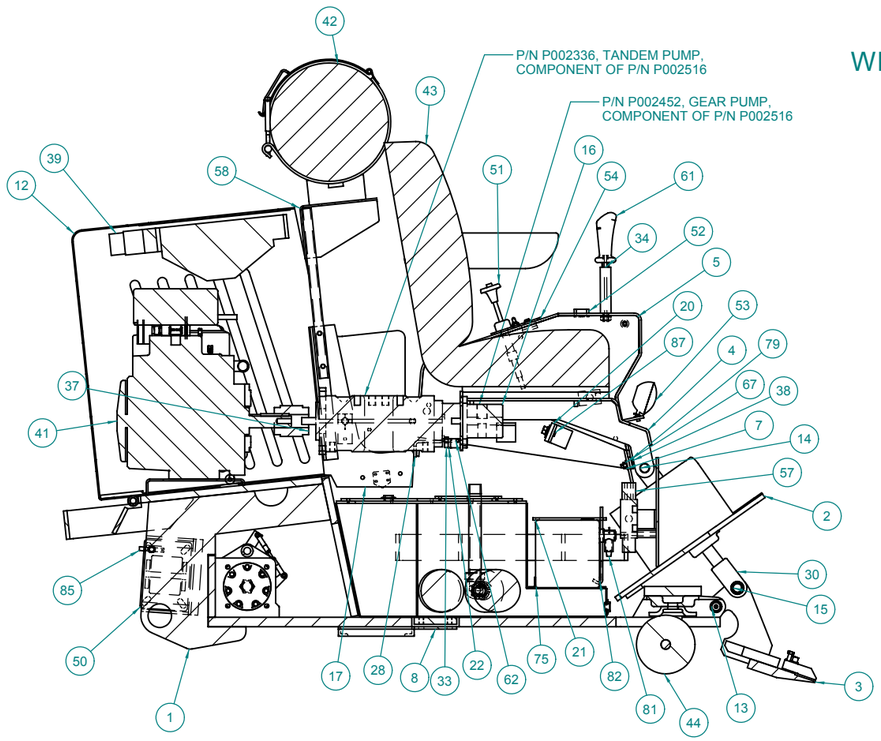
SCALE 1:8 DRWN PTR
DATE 11/08/01 SHT 1 OF 2
SOLIDWORKS GEN

700-0133



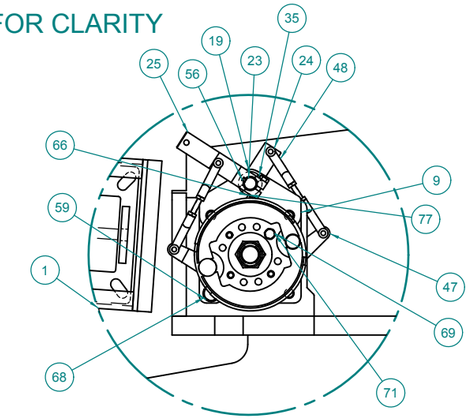




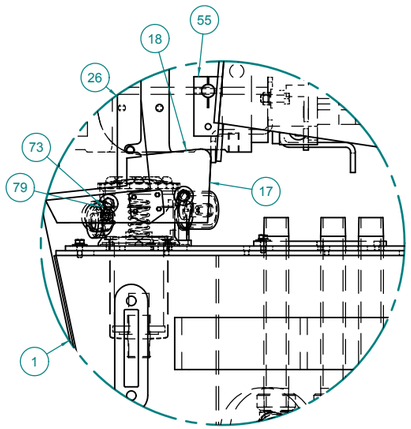


SECTION C-C

WHEELS AND SIDE PLATES REMOVED FOR CLARITY



DETAIL A
1:4



DETAIL B
1:4

REV	ZONE	DESCRIPTION	DATE	BY

DIMENSIONAL TOLERANCES

FABRICATING	WELDING & ASSEMBLY	RELATIONAL
(SHEARING, BURNING, PUNCHING)		
TWO PLACE DECIMALS +/- 0.06"	TWO PLACE DECIMALS -/+ 0.06"	FLATNESS (IN OVERALL +/- 0.06"
(AND FRACTIONS)	(AND FRACTIONS)	LENGTH THROUGH 60.00")
ANGULAR (POSITIONAL) +/- 1/2"	ANGULAR (POSITIONAL) +/- 1/2"	SQUARENESS (CORNER +/- 0.12"
BEND RADIUS IS EQUAL TO MATERIAL	SLL WELDMENTS +/-0.12"	CORNER, MAX. DIFFERENCE
THICKNESS, UNLESS OTHERWISE NOTED.		IN DIAGONALS)

REV	ZONE	DESCRIPTION	DATE	BY

REVISION

NEXT ASSY - - | REF DWG - - | PART NO **BMS-270LPII**

TOLERANCE MACHINING
ANGLES ± .500°
1 PL DEC ± .060
2 PL DEC ± .010
3 PL DEC ± .005

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6215 ALUMA VALLEY DRIVE
OKLAHOMA CITY, OK 73121
U.S.A.

BMS-270 LPII GENERAL ASSEMBLY

BMS-270 LPII

SCALE 1:8 | DRWN PTR | SIZE GEN | **700-0133**

DATE 11/08/01 | SHT 2 OF 2