



POWER REVERSE UNDERBODY SCRAPER MANUAL

REV 012420

SERIAL NUMBERS 1112-1133, 1135 & UP



TABLE OF CONTENTS

Safety warnings.....2
 Installation instructions4
 Hydraulic Requirements & Schematic5
 Maintenance Guidelines6
 Operating Instructions8
 Parts Book.....9
 Warranty Information Rear Cover

When ordering parts, please refer to the Model and Serial Numbers of the Bonnell Underbody Scraper.

They are on the back cover of this manual.

Manual No. BON-000915

SAFETY FIRST

Please read this manual before attempting to install or operate this equipment.



The symbol at left means ALERT. Any time you see this symbol, you are being warned that your safety is in danger! Please be careful!

GUIDELINES TO FOLLOW:

1. Turn off all power including truck engine when servicing or installing equipment.
2. Follow all recommended operation procedures.
3. Follow a regular maintenance schedule so that your equipment is kept in good operating condition at all times. Improper maintenance can lead to failure during operation, which makes for unsafe conditions.
4. Recognize and avoid hazardous situations during the installation, operation, maintenance, and servicing of equipment.
5. Please pay attention to, and respect, safety decals. They are there to protect you from injury.

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home, or on the highway, are caused by failure of some individual to follow simple and fundamental safety rules or regulations. For this reason, most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

A careful operator is the best insurance against an accident. The complete observance of one simple rule would prevent many thousand serious injuries each year. That rule is:

***NEVER ATTEMPT TO CLEAN, OIL, OR ADJUST
A MACHINE WHILE IT IS IN MOTION.***

NATIONAL SAFETY COUNCIL

PLEASE, ALWAYS THINK SAFETY FIRST!

The purpose of this manual is to inform the person using the unit with the necessary information to properly install, operate, and maintain this unit. These instructions cannot replace the fundamental knowledge that a person must possess in order to safely and adequately operate this unit. The person must be qualified and possess the clear thinking necessary to install and operate this equipment. Since the life of any machine depends largely upon the care it is given, we suggest that this manual be read thoroughly and referred to regularly by anyone working on or around this unit. If for any reason you do not understand the instructions, please call your authorized service center or our office at (815) 284-3819. It has been our experience that by following these installation and maintenance instructions, and by observing the operation of this equipment, you will have sufficient understanding of how to troubleshoot and correct all normal problems that you may encounter during the life of the equipment.

THE NEED FOR SAFETY CANNOT BE STRESSED ENOUGH. WE URGE YOU TO MAKE SAFETY YOUR TOP PRIORITY WHEN OPERATING THIS UNIT OR ANY OTHER EQUIPMENT.

**ACCIDENTS HURT!
ACCIDENTS COST!
ACCIDENTS CAN BE AVOIDED!**

General Installation Instructions

ESTIMATED INSTALLATION TIME - 18 HOURS

The scraper that you have received from Bonnell Industries has been completely assembled, so minimal work needs to be done to prepare the scraper for installation.

Chassis Requirements:

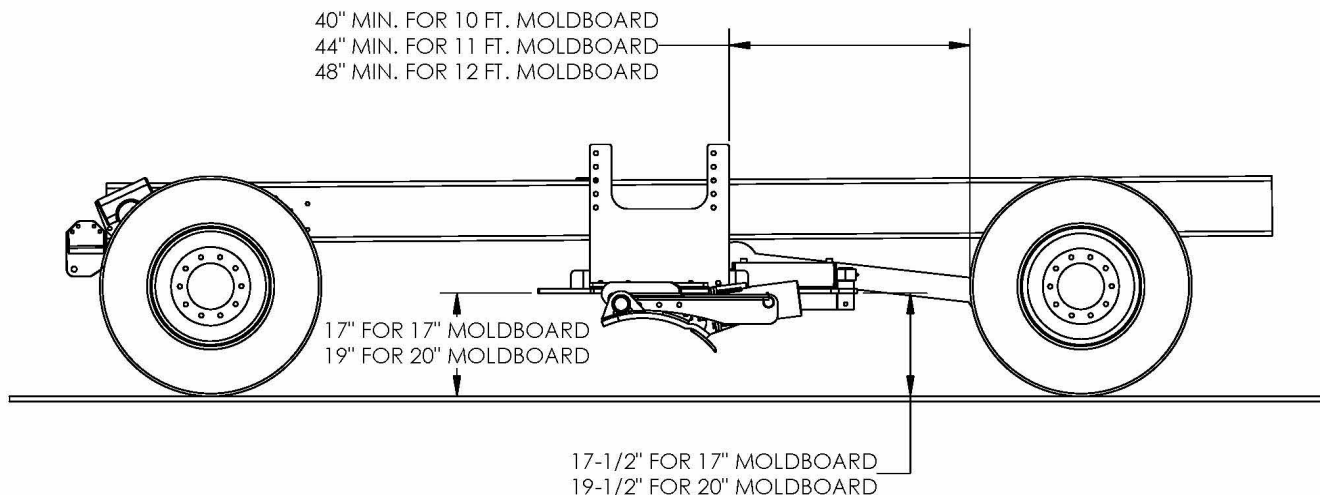
For ease of installation, the truck to receive the scraper should have the following:

- 96" ca on single axle or 120" ct on tandem axle minimum
- Vertical muffler
- 24" ground clearance
- Clean frame rails

If the scraper is being installed on a new truck, these specs will ease installation if ordered this way.

Mounting the scraper:

1. Locate the position of the hanger plates. Refer to the drawing below for locating the scraper in relation to the truck frame. Note: the hanger plates may need to be trimmed off at the top to clear factory equipment. Chassis heights vary greatly, and extra material is provided for this reason.

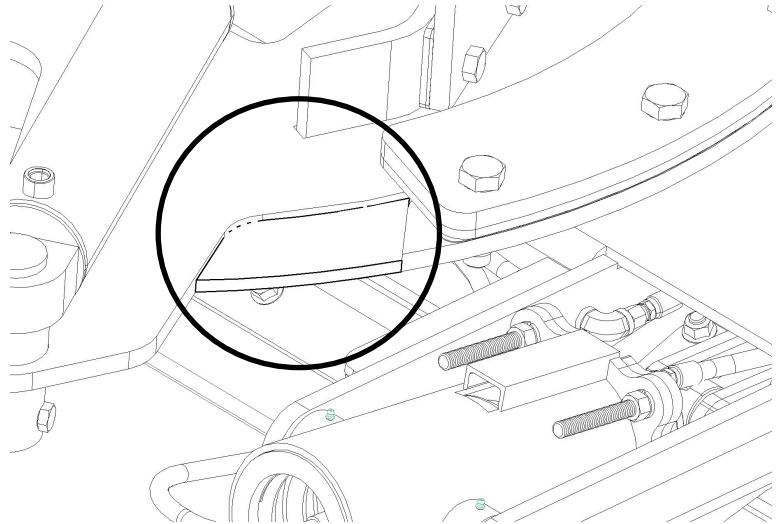


2. Drill the hanger plates and frame and bolt in place. The hanger plates are predrilled for your convenience, although other holes may be needed to match existing holes. A minimum of six 3/4" bolts per side is required for safe mounting
3. Manually reverse to verify clearance in all directions. Weld reversing stops in place. (See next page for details)
4. Install the hydraulic system. Refer to the following page for general hydraulic layout.

Reversing Stop Installation:

The scraper is designed to fully reverse each direction 45 Degrees. Reversing stops are included in the kit if the reversing direction needs to be limited for any reason. (BON-006076)

Stops may need to be trimmed to fit as necessary. Position scraper at desired limit position, trace the end of stop, and weld in place as shown. Weld stop continuous to the reversing table.



Hydraulic System Requirements:

1800 PSI Main Relief

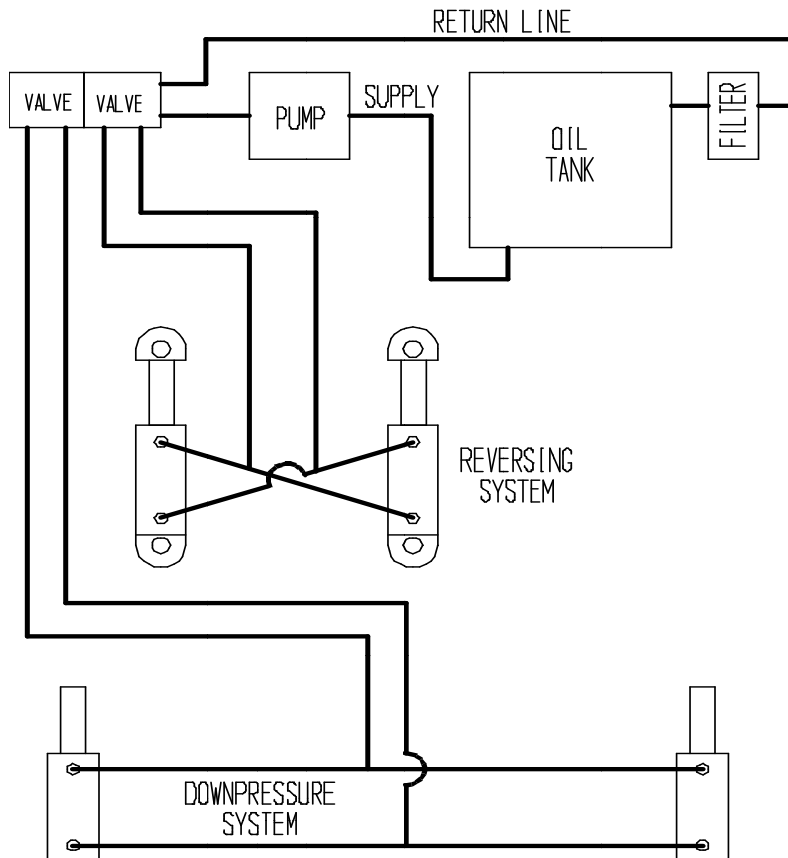
Pump Capacity – 15 GPM @ 1000 RPM

Two Functions (4-way)

500 PSI port relief on the down side of the raise/lower circuit

500 PSI port reliefs on both sides of the reversing circuit.

General Hydraulic Schematic



General Scraper Maintenance Guidelines



Caution – the following items must be checked before initial start-up of the new scraper.

Initial servicing:

- Check all bolts for tightness. Torque as required if loose.
- Check for missing or broken cotter pins.
- Grease all fittings as required.
- Verify all hydraulic fittings are tight and not leaking.
- Check all hydraulic lines for damage or kinks.

After first hour of operation and every 8 hours thereafter:

- Check all bolts for tightness. Torque as required if loose.
- Check for missing or broken cotter pins.
- Verify all hydraulic fittings are tight and not leaking.
- Check cutting edge wear.



Caution – failure to check and replace worn cutting edges will result in damage to scraper!

Underbody scrapers are susceptible to damage from corrosion due to their location under the chassis. Power wash your scraper after each use, especially the top of the reversing table, to prevent corrosion damage.

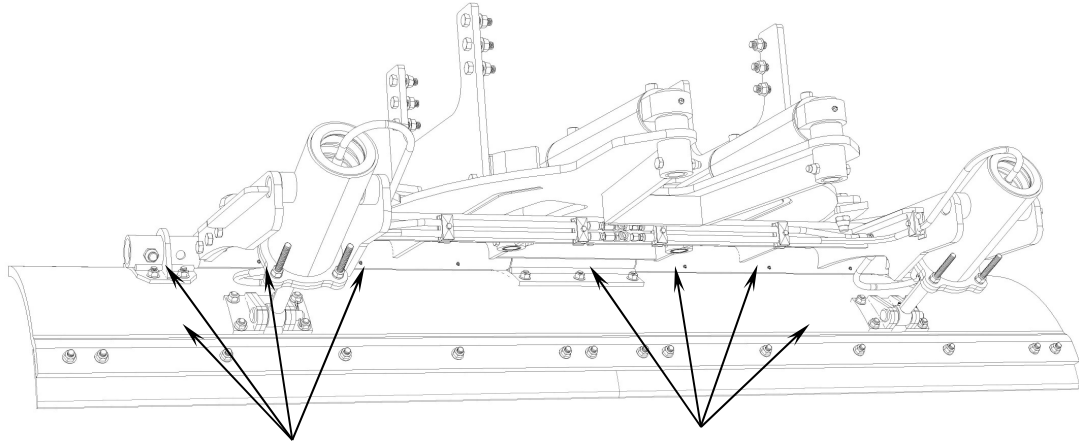
DOWN PRESSURE SPRING REPLACEMENT:

If possible, have your Bonnell Dealer service the canisters for you. They are under extreme pressure, and special tools may be required to remove and reassemble the spring assembly.

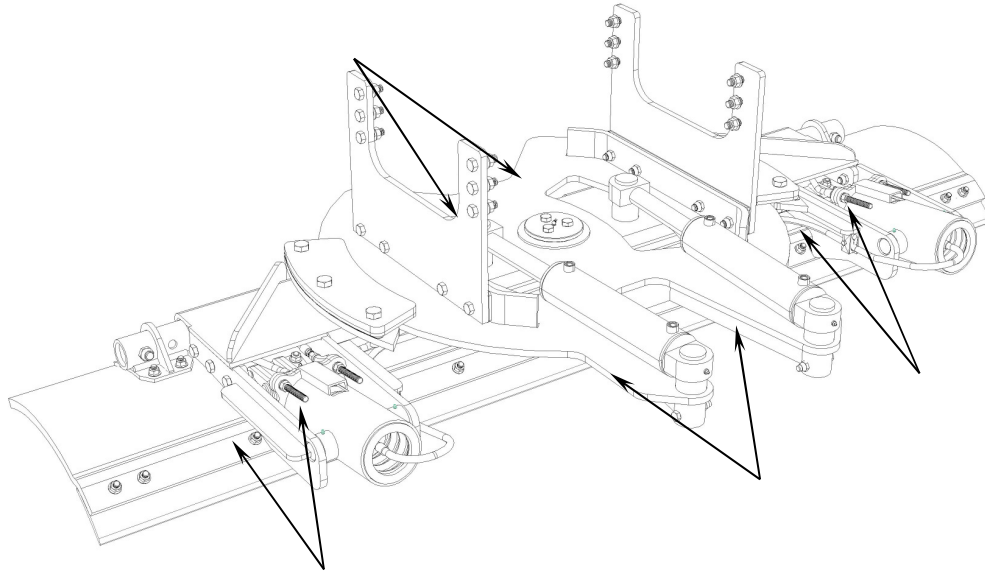


Lubrication:

The main hinge rod on the scraper is equipped with 6 grease zerks. To lubricate, set the parking brake on the vehicle and lower the scraper. With the vehicle shut off, use a grease gun to grease the zerks on the hinge rod under the hangerboard. Additionally, the live end of the down pressure cylinder has a grease fitting.



The trunnions on the down pressure cylinders as well as the cylinder ends themselves also have zerks. Additionally, the center pivot pin has a grease point. These need to be greased regularly.



Lubrication Manifolds:

Your scraper may be equipped with optional grease manifolds. These provide a complete grease maintenance center from only two easy to access positions. See pages 14-15 for more details.

General Operating Instructions

Special note: this manual is intended for use as a supplement to your specific municipal guidelines in scraper operation, and is not intended to be a “*complete snow plowing guide*”. Proper training is the key to safe and proper operation of this equipment.

Transport:

Note: depending on moldboard width, the scraper may protrude out from the side of the truck. Always have the moldboard reversed fully in the transport position, keeping the moldboard under the truck as much as possible. Use caution and good judgment – always know where the ends of the moldboard are.

Make sure the moldboard is fully retracted before transporting.

Reversing:



Warning – the moldboard should always be fully retracted when reversing the scraper! Failure to retract can damage the equipment, and thus void the warranty!

Always use caution when reversing the scraper. The scraper will protrude out farther when reversed to the straight position. Always watch for obstacles when reversing, such as cars or posts.

Scraping:

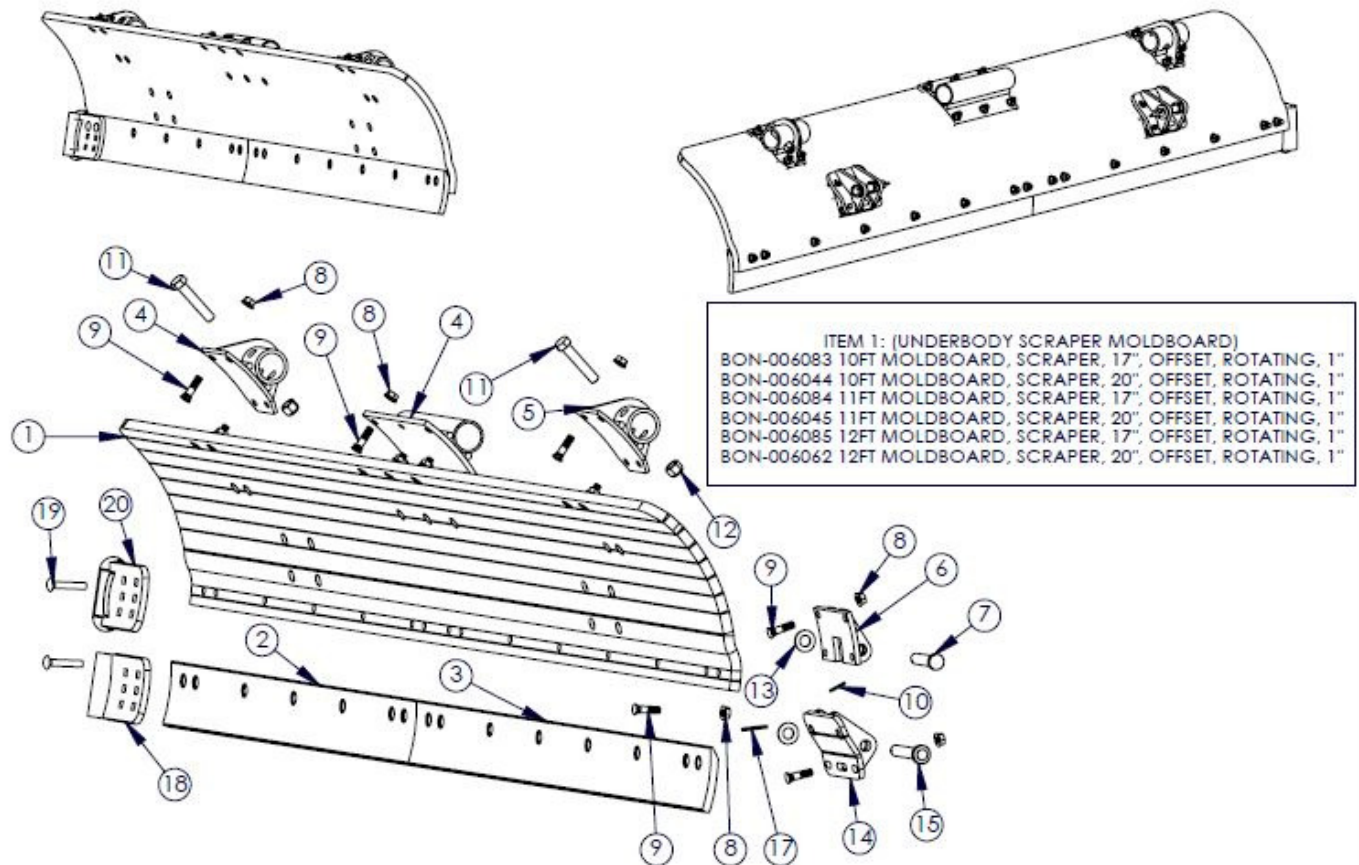
The scraper down pressure can be varied, depending on what the conditions are. The higher the pressure, the more scraping action.



Caution – always lift the scraper when going over a railroad crossing.

FILE NAME	UBS SCRAPER MOLDBOARD ASSEMBLY
DWG NAME	UBS MOLDBOARD ASSEMBLY

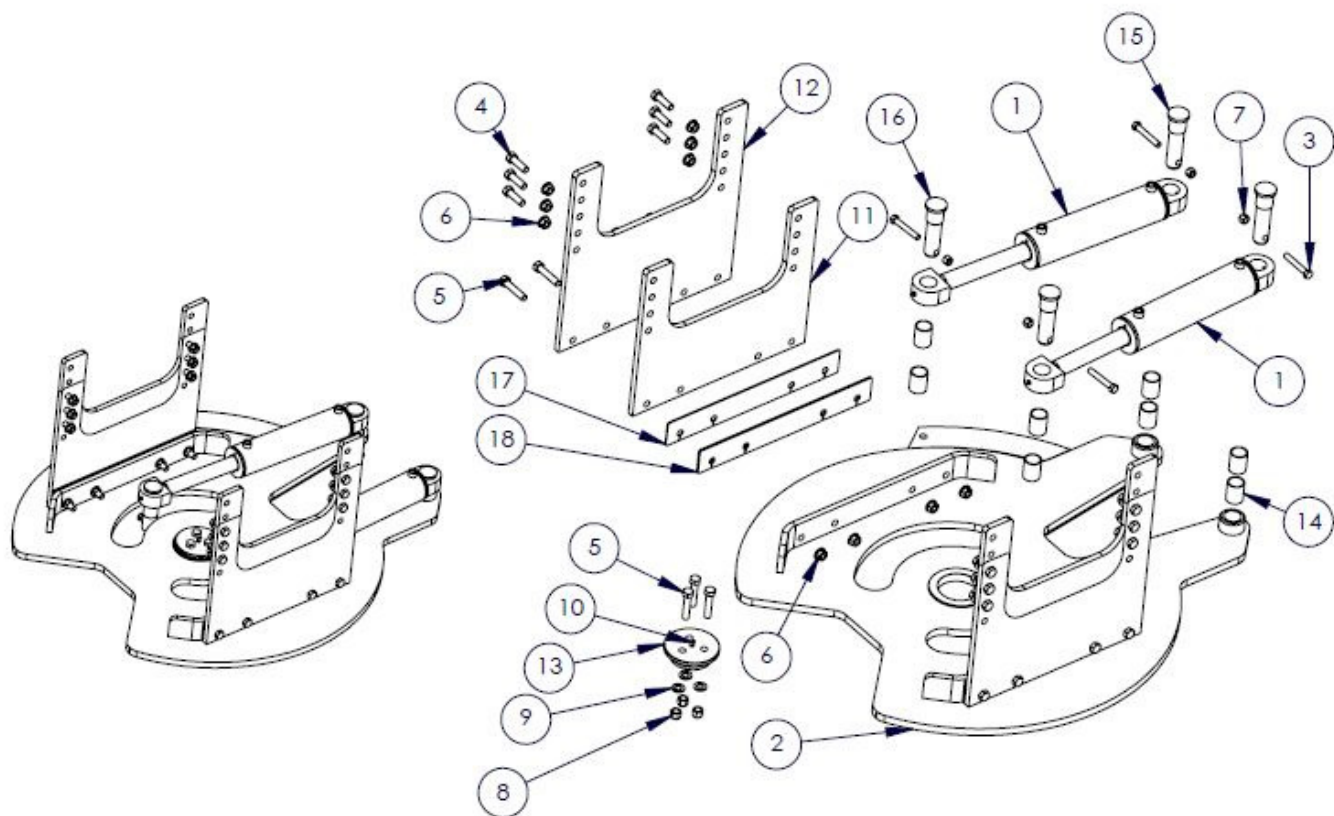
UNDERBODY SCRAPER MOLDBOARD ASSEMBLY 17" & 20" MOLDBOARDS



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1		SEE DETAIL BOX
2	1	BON-000749.5	CSB, 3/4"X6"X5' CURVED SINGLE BEVEL
3	1	BON-000749.6	CSB, 3/4"X6"X6' CURVED SINGLE BEVEL
4	1	BON-006036	CENTER HINGE WELDMENT
5	1	BON-006054	END MOLDBOARD MOUNTING HINGE FOR UNDERBODY SCRAPER
6	1	BON-006056	LIVE END CYL MTG BRKT 20" MOLDBOARD
7	1	WES-93080K	PIN, CLEVIS 1 X 5, 4-3/8" WL
8	5	BON-000307F	5/8-11 HEX FLANGED LOCK NUT
9	5	BON-000659	5/8" X 2" PLOW BOLT
10	1	BON-012407	PIN-SPRING 3/16 X 1-5/8
11	2	BON-000218	7/8-9 X 4-1/2" BOLT
12	2	BON-000323.25	NYLON INSERT LOCKNUT, 7/8-9 UNC
13	1	BON-000345SAEH	FLATWASHER, 1" SAE; HARDENED
14	1	BON-006124	LIVE END CYL MTG BRKT FITS 17" MOLDBOARD
15	1	BON-000994	PIN, 1" DIA, 5-3/4" WL
16	1	BON-000345SAEH	FLATWASHER, 1" SAE; HARDENED
17	1	BON-000602	1/4X2-1/2 ROLL PIN
18	1	BON-003230	BULLNOSE FOR UNDERBODY SCRAPER, 5/8" X 6"
19	1	BON-CB8350	5/8-11 X 3-1/2" GRADE 8 CARRIAGE BOLT
20	1	BON-003195	BULLNOSE FOR SCRAPER, 5/8" X 6" CARBIDE END

FILE NAME	UBS TABLE ASSEMBLY MANUAL
DWG NAME	UBS TABLE ASSEMBLY

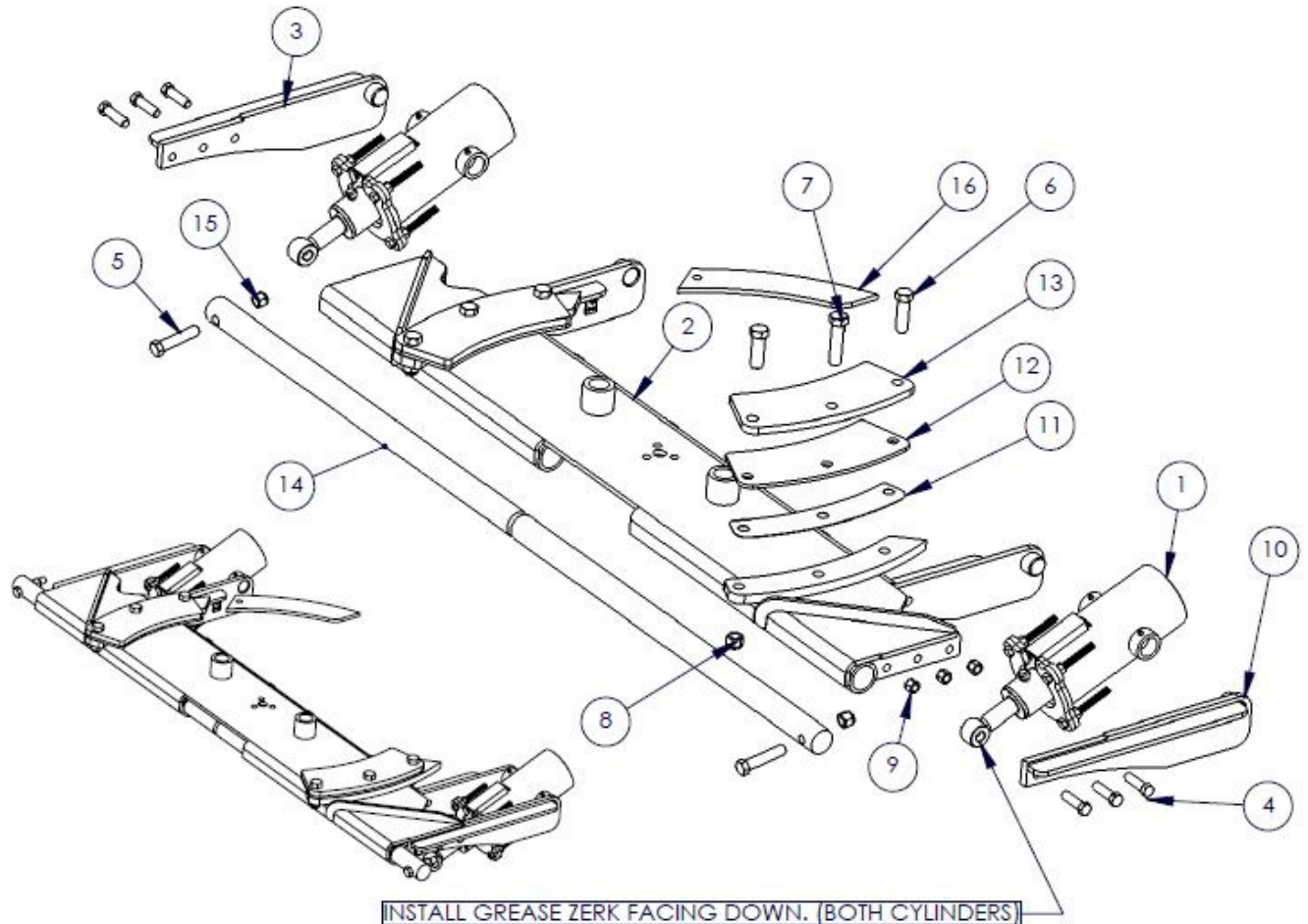
UNDERBODY SCRAPER REVERSING TABLE ASSEMBLY



ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	BON-006042	CYLINDER, HYD, 4.000" X 14.520" DA
2	1	BON-006143	REVERSING TABLE WELDMENT
3	4	BON-000161	5/8-11 X 4" BOLT
4	12	BON-000184	3/4-10 X 2-1/2" BOLT
5	11	BON-000188	3/4-10 X 3-1/2" BOLT
6	20	BON-000308F	3/4-10 FLANGED LOCK NUT
7	4	BON-000322	NYLON INSERT LOCKNUT, 5/8-11 UNC
8	3	BON-000323	NYLON INSERT LOCKNUT, 3/4-10 UNC
9	3	BON-000343.1	HARDENED SAE FLAT WASHER, 3/4
10	1	BON-000653	45 DEGREE GREASE FITTING
11	2	BON-006001	TRUCK FRAME HANGER PLATE - 21-1/2"
12	2	BON-006126	TRUCK FRAME HANGER PLATE - 26-1/2"
13	1	BON-006026	CENTER PIN 5 IN. DIA COLD ROLL
14	8	BON-006072	POLYMER SLEEVE BEARING, 2" OD X 1-3/4" ID X 2-1/2" LONG
15	2	BON-006073	REVERSING CYL REAR PIN 1-3/4 IN. DIA. STEP SHAFT
16	2	BON-006074	REVERSING CYL FRONT SHEAR PIN 1-3/4 IN. DIA. STEP SHAFT
17	1	BON-006067	SHIM, 1/8" SPACER
18	1	BON-006066	SHIM, 1/4" SPACER

FILE NAME	UBS HANGERBOARD ASSY- MANUAL
DWG NAME	UBS HANGERBOARD ASSY

UNDERBODY SCRAPER HANGERBOARD ASSEMBLY



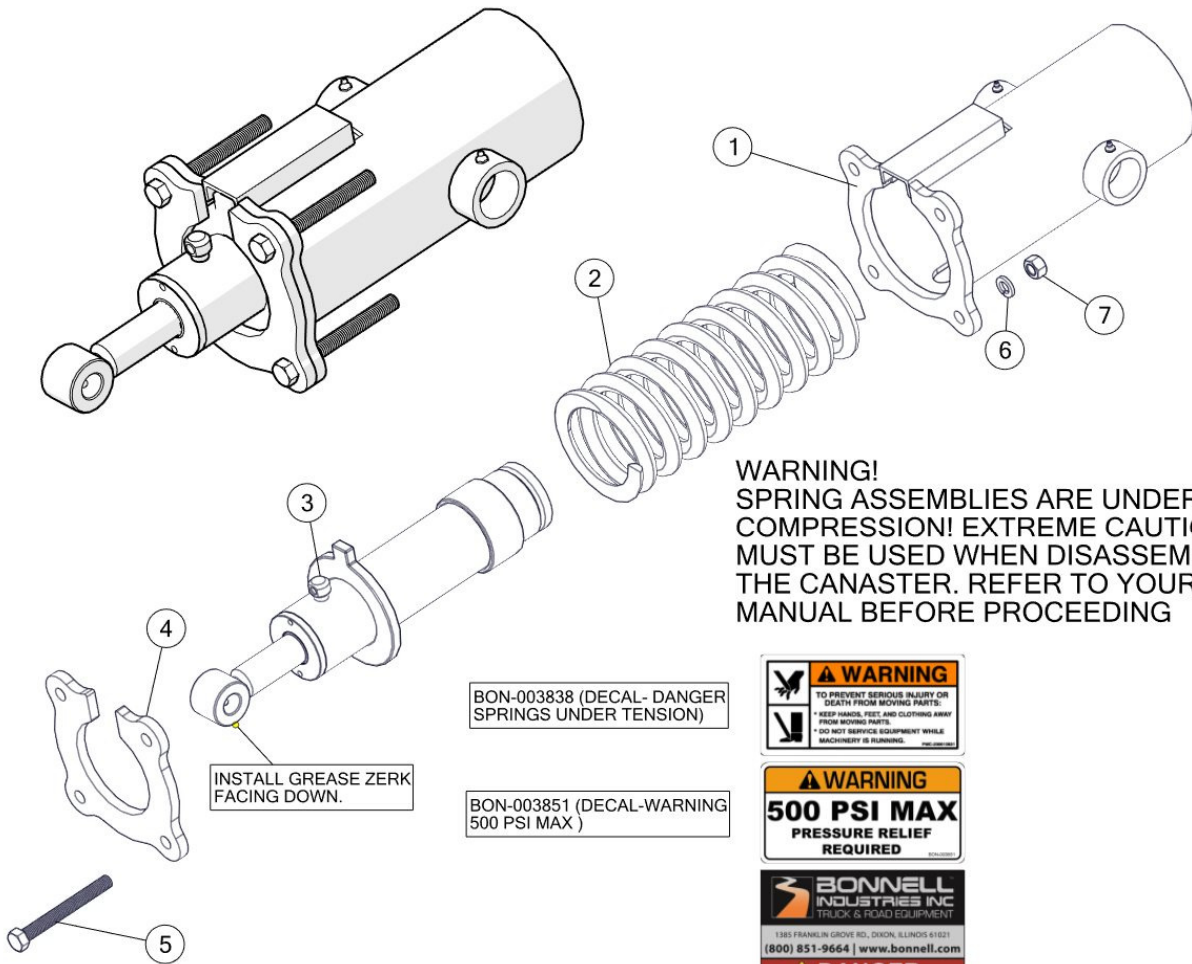
INSTALL GREASE ZERK FACING DOWN. (BOTH CYLINDERS)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	BON-006049	DOWN PRESSURE CYLINDER ASSY
2	1	BON-006131	HANGERBOARD WELDMENT, UNDER BODY SCRAPER, 2018 MODEL
3	1	BON-006052R	BOLT ON CYLINDER SUPPORT ARM WELDMENT, RIGHT HAND
4	6	BON-000186	3/4-10 X 3" BOLT
5	2	BON-000218	7/8-9 X 4-1/2" BOLT
6	4	BON-000236	1-8 X 3-1/2" BOLT
7	2	BON-000239	1-8 X 4-1/2" BOLT
8	6	BON-000310.3	NYLON INSERT LOCKNUT, 1-8 UNC
9	6	BON-000323	NYLON INSERT LOCKNUT, 3/4-10 UNC
10	1	BON-006052L	BOLT ON CYLINDER SUPPORT ARM WELDMENT, LEFT HAND
11	2	BON-006128	REVERSING SHIM PLAGE 16GA, 2018 MODEL
12	2	BON-006129	UHMW WEAR PLATE UHMW, 2018 MODEL
13	2	BON-006130	REVERSING PLATE RETAINER, 3/4" PLATE
14	2	BON-006077	MAIN HINGE ROD FOR SCRAPER 2-1/2" CRR
15	2	BON-000323.25	NYLON INSERT LOCKNUT, 7/8-9 UNC
16	1	BON-006076	SCRAPER REVERSING STOP

UNDERBODY SCRAPER DOWN PRESSURE CYLINDER ASSEMBLIES

REV 111318

UBS132-2PRPD-EXP.smg

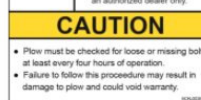


WARNING!
 SPRING ASSEMBLIES ARE UNDER
 COMPRESSION! EXTREME CAUTION
 MUST BE USED WHEN DISASSEMBLING
 THE CANASTER. REFER TO YOUR
 MANUAL BEFORE PROCEEDING

BON-003838 (DECAL- DANGER
 SPRINGS UNDER TENSION)

BON-003851 (DECAL-WARNING
 500 PSI MAX)

BON-003898 (DECAL-LOGO/WARNINGS
 COMBO FOR FLOWS)



COMPLETE ASSEMBLY PART NUMBER: BON-006049

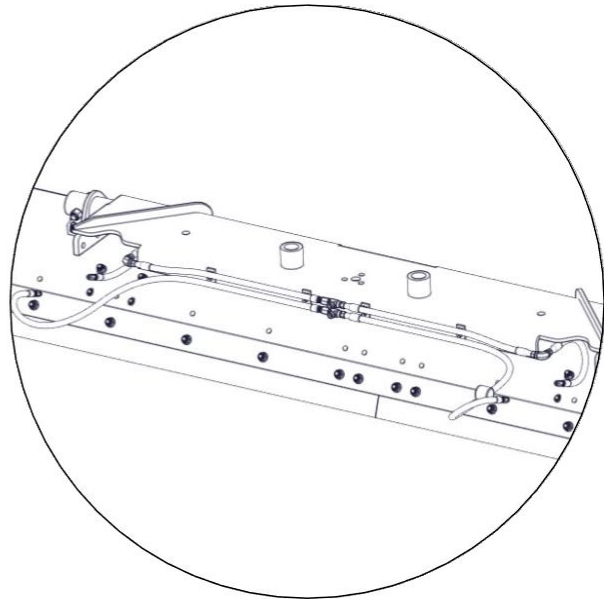
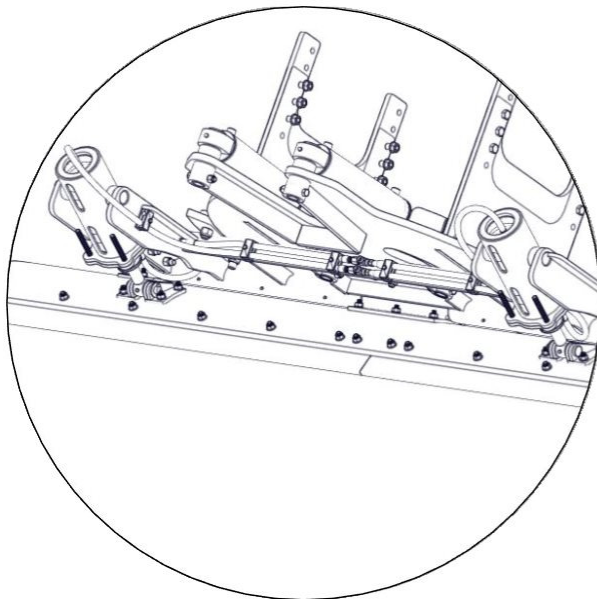
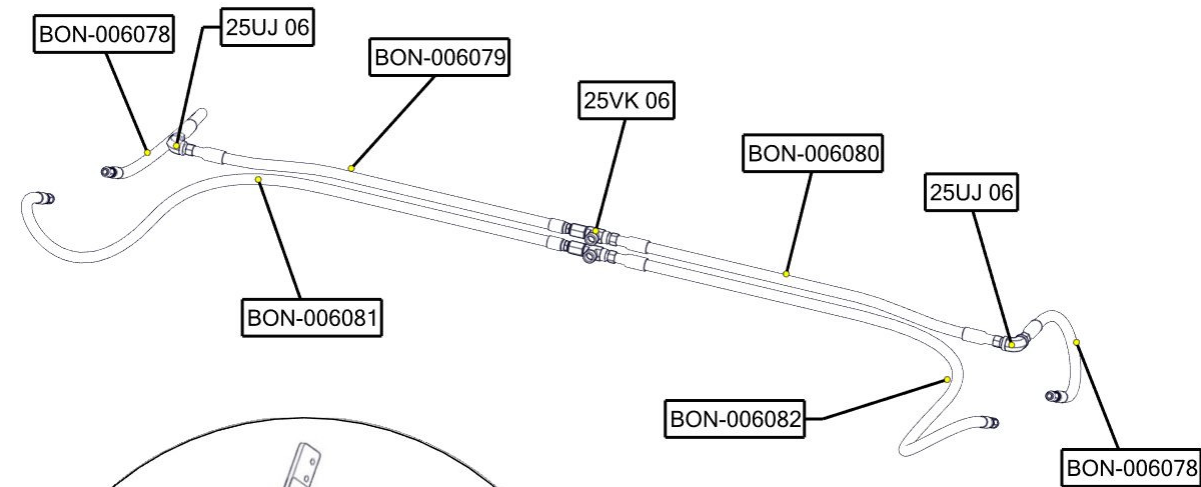
BOM ID	Qty	PartNo (config)	Description (config)
1	1	BON-006047	DOWN PRESSURE CYLINDER HOUSING
2	1	BON-006048	DOWN PRESSURE SPRING 7/8 DIA. AISI 5160H STEEL
3	1	BON-006043	CYLINDER
4	1	BON-006063	DOWN PRESSURE ASSEMBLY, BOLT ON PLATE
5	1	BON-006064	5/8"-11 TPI X 6" GR5. FULL THREAD HEX BOLT
6	1	BON-000356	LOCK WASHER, 5/8
7	1	BON-000307	HEX NUT, 5/8"-11TPI

UNDERBODY SCRAPER HYDRAULIC HOSE CALLOUTS

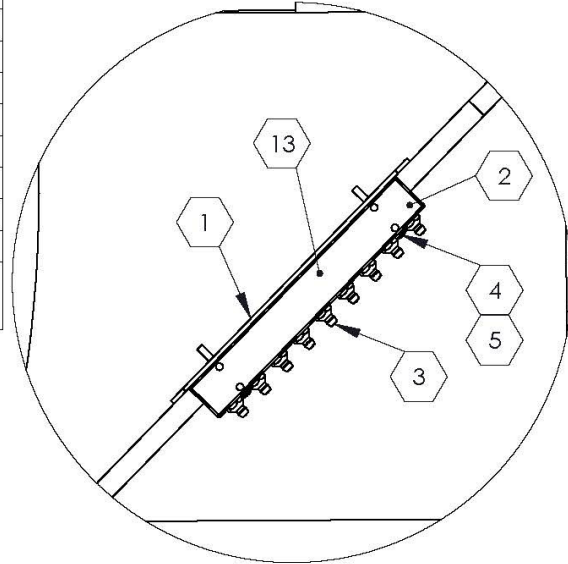
REV 072219

UBS132-2PRPD-EXP.smg

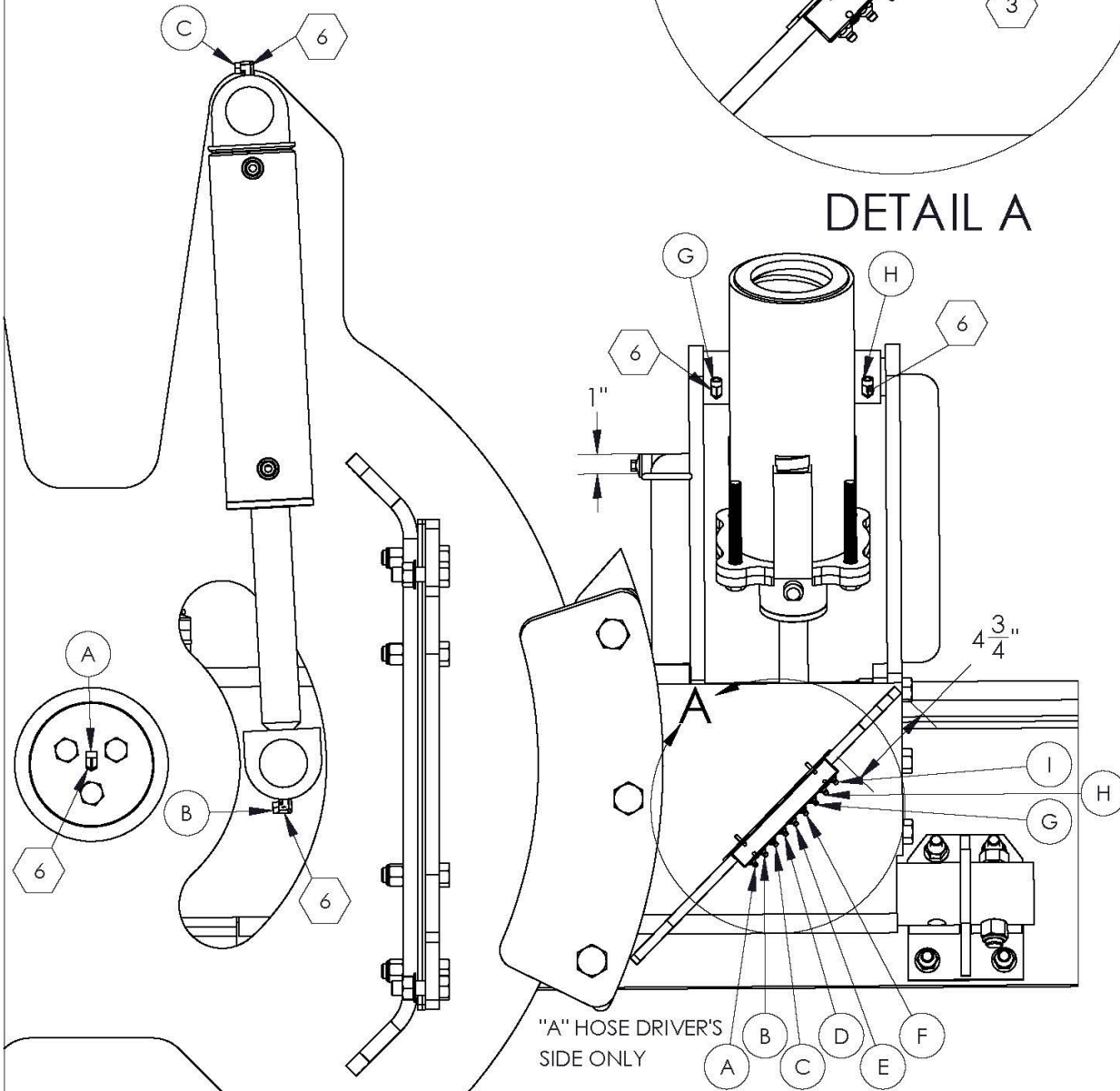
HOSE KIT PART NUMBER
BON-006061



I	BV2-002430	72"
H	BV2-002407	48"
G	BV2-002406	36"
F	BV2-002405	60"
E	BV2-002407	48"
D	BV2-002405	60"
C	BV2-002409	108"
B	BV2-002409	108"
A	BV2-002408	96"
HOSE LETTER	HOSE PART NUMBER	LENGTH



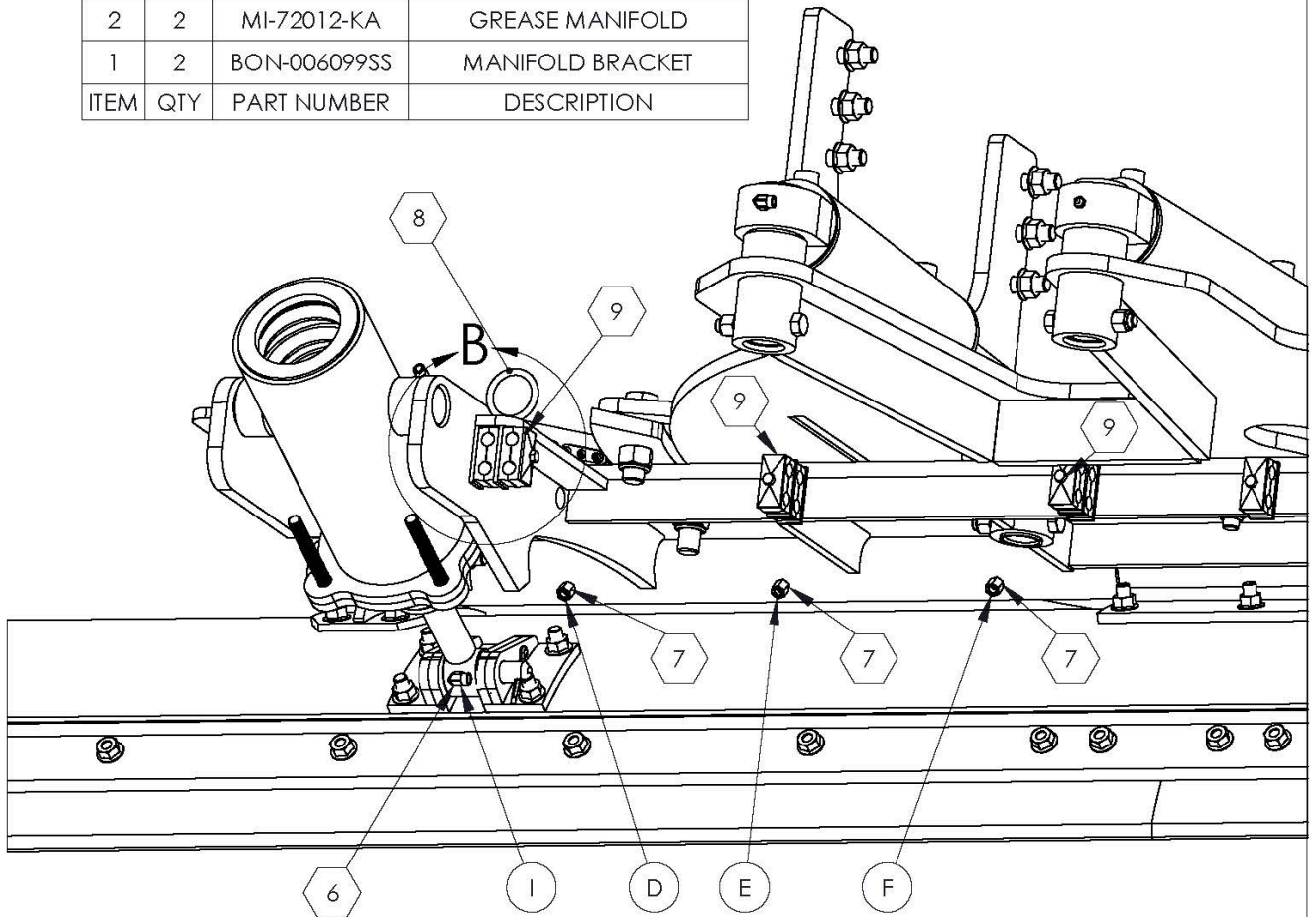
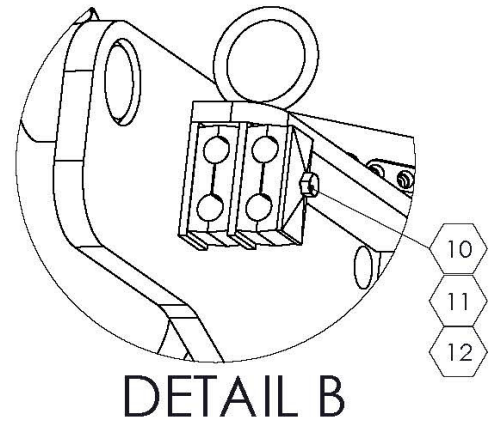
DETAIL A



**DRIVER'S SIDE ONLY SHOWN
CURB SIDE OPPOSITE, EXCEPT HOSE "A"**

BON-006100 INSTALLATION

13	1	BON-006098	DECAL KIT
12	6	BON-000337	5/16" FLAT WASHER
11	6	BON-000351	5/16" LOCK WASHER
10	6	BON-000040	5/16"X3-1/2 BOLT
9	6	BON-003190KIT	HOSE CLAMP, DOUBLE
8	2	BON-000679SS	WELDED RING, SS
7	6	BV2-001341	1/4-28X1/8"NPT ADAPTOR
6	11	5502-02-02	1/8" NPT ELBOW
5	8	---	8-32 X 1-1/2 SCREW
4	8	---	8-32 LOCK NUT
3	17	BON-000652	1/8" NPT GREASE ZERK
2	2	MI-72012-KA	GREASE MANIFOLD
1	2	BON-006099SS	MANIFOLD BRACKET
ITEM	QTY	PART NUMBER	DESCRIPTION



COMMENTS:		NAME	DATE	BONNELL INDUSTRIES	
		DRAWN	JJS 10.19.15		TITLE:
		DETAILED	JJS 10.19.15		UNDERBODY SCRAPER GREASE MANIFOLD KIT
		ENG APPR.			
FINISH WEIGHT (LBS)		MFG APPR.		DWG. NO. 01	
RAW MATL WEIGHT (LBS)		DIMENSIONS ARE IN INCHES			BON-006100
		TOLERANCES UNLESS OTHERWISE NOTED			
		FRACTIONAL	±1/16		
		BEND ANGLE	±.5°		
		SQUARENESS	±.15*		
		TWO PLACE DECIMAL	±.03		
		THREE PLACE DECIMAL	±.005		

Bonnell Industries, Inc. warrants to the original purchaser that if any part of the product proves to be defective in workmanship or material within one year of the date of original installation and is returned to us freight prepaid within 30 days after such defect is discovered and notification thereof is provided Bonnell, we will either replace or repair the defective part (our option). This warranty does not apply to damage resulting from neglect, misuse, accident or improper installation or maintenance. Charges for field service, labor, or other expenses not previously authorized and approved in writing by Bonnell Industries, Inc. will not be accepted. This warranty is exclusive and in lieu of all other warranties whether expressed or implied. Bonnell Industries, Inc. neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with this warranty, and will not be liable for consequential damages. This warranty applies only to products made and/or supplied by Bonnell Industries, Inc. and does not apply to other products not made or supplied by us and to which our products may be attaches, such as trucks. We accept no responsibility for damages to such other products, even if our product is alleged to have contributed to the damage of the other product.

Hydraulic, electrical, or other components furnished by other manufacturers and used with our products are warranted by that manufacturer and not by Bonnell Industries, Inc. the manufacturer's own warranty will apply to these parts. Hydraulic or electrical components are not to be disassembled without the express written permission of Bonnell Industries, Inc.

All defective parts returned from an end user must include the unit model, serial number, date installed, and dealer from whom purchased.

Bonnell Industries, Inc. reserves the right to make changes or improvements to its products without incurring any liability or obligation and without being required to make corresponding changes or improvements to products manufactured or sold prior to those changes or improvements.

The Bonnell Industries, Inc. Warranty Policy is subject to change without notice.

Product Information

When ordering parts, please refer to the information below.

INSTALLATION DATE:

Certificate of Origin

This product was manufactured at Bonnell Industries, Inc.,
located at 1385 Franklin Grove Rd.,
in the city of Dixon, Illinois, U.S.A.

MADE IN THE USA 