



# Parts/Operations Manual



## PHD 95 PLASTIC PIPE FUSION TRAILER 2008 Rev

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## Table of Contents

3	.....	Introduction/Pertinent Information
4	.....	Safety Information / Warnings
5	.....	Specific Operation Instructions
11	.....	General Component Identification
16	.....	HubComponent Identification
17	.....	Brake Component Identification
18	.....	Suspension Components
19	.....	Trailer Wiring Diagram
20	.....	Dexter Axle and Brake Manual
33	.....	Trailer Warranty Information
35	.....	NHTSA Statement



## Introduction

MGS Inc. was established in 1962 by owner and president Roland Gehman. The company's corporate culture is a direct reflection of Roland's desires, capabilities, and attitudes. These attitudes have developed from his experiences and relationships with his family, education, church, volunteer groups, business associates and MGS employees. We are staffed with an extraordinary group of talented people. The members of MGS consist of : salesmen, welders, sales support personnel, press and shear operators, engineers, tow motor operators, shipping and receiving personnel, purchasing agents, production controllers, administrative personnel, supervisors, painters, mechanics, cad operators, maintenance men, truck drivers, carpenters, and managers. All of which, have an impact on who we are:

### INNOVATORS AND MANUFACTURERS OF TRANSPORTATION EQUIPMENT

#### The MGS Mission :

It is our mission to provide *the best total solution* for our customers, clients and alliance partners. These solutions are built like our products, with TEAMWORK. The combined expertise and efforts of the MGS team is what keeps us **one of a kind - not one of a group!**

### About Your Trailer

MGS Model No.	PHD-95
Description	Pipe Fusion Trailer
GAWR	7,200# each axle
GVWR	18,000#
Empty Weight	8,000#
Payload	10,000#
Tire Size	235/85R 16 LRG
Coupler	2" SAE Kingpin
Electrical Connection	6 way receptacle

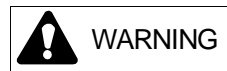
# SAFETY INFORMATION

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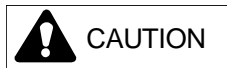
This hazard alert sign appears in this manual.  
When you see this sign, carefully read what it says.  
**YOUR SAFETY IS AT STAKE.**



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates an potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which if not avoided, may result in minor or moderate injury

## Read and Understand

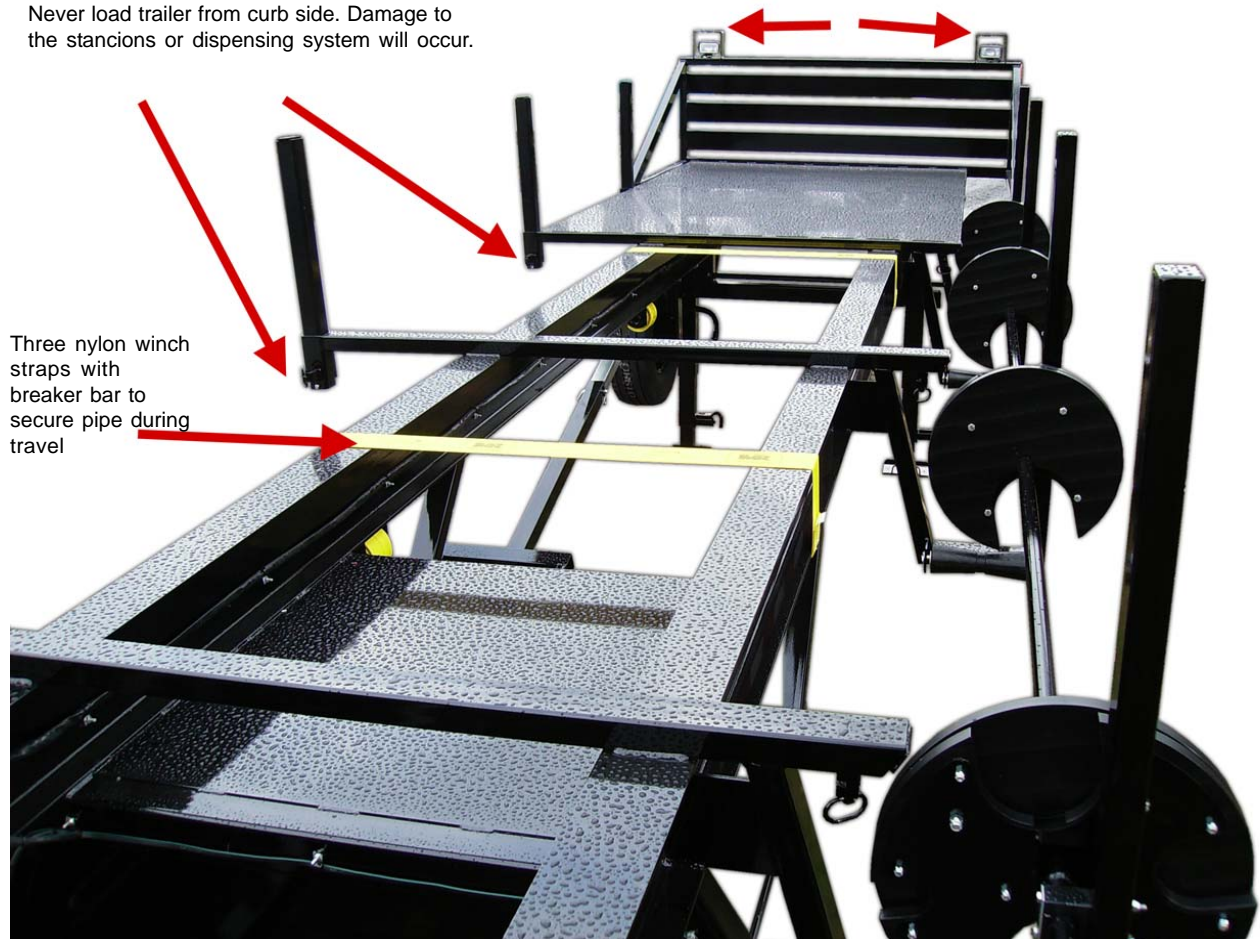
Do not operate this equipment until you have carefully read, and understand the “Safety” and “Operation” sections of this manual, and of all other equipment manuals that will be used with it. Your safety and the safety of others depends upon care and judgement in the operation of this equipment. Follow all applicable federal, state, local, and industry specific regulations. MGS Inc. cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this manual and on the machine are therefore not all inclusive. You must satisfy yourself that a procedure, tool, work method, or operating technique is safe for you and others. You should also ensure that the machine will not be damaged or made unsafe by the method of operation or maintenance you choose.

# OPERATION - LOADING-COMPONENT IDENTIFICATION

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Work lights 12V/55W  
2-front and 2-rear  
Front lights controlled by switch under Road Side Bulkhead  
Rear lights controlled by switch on upper fuser storage cabinet inside frame rail

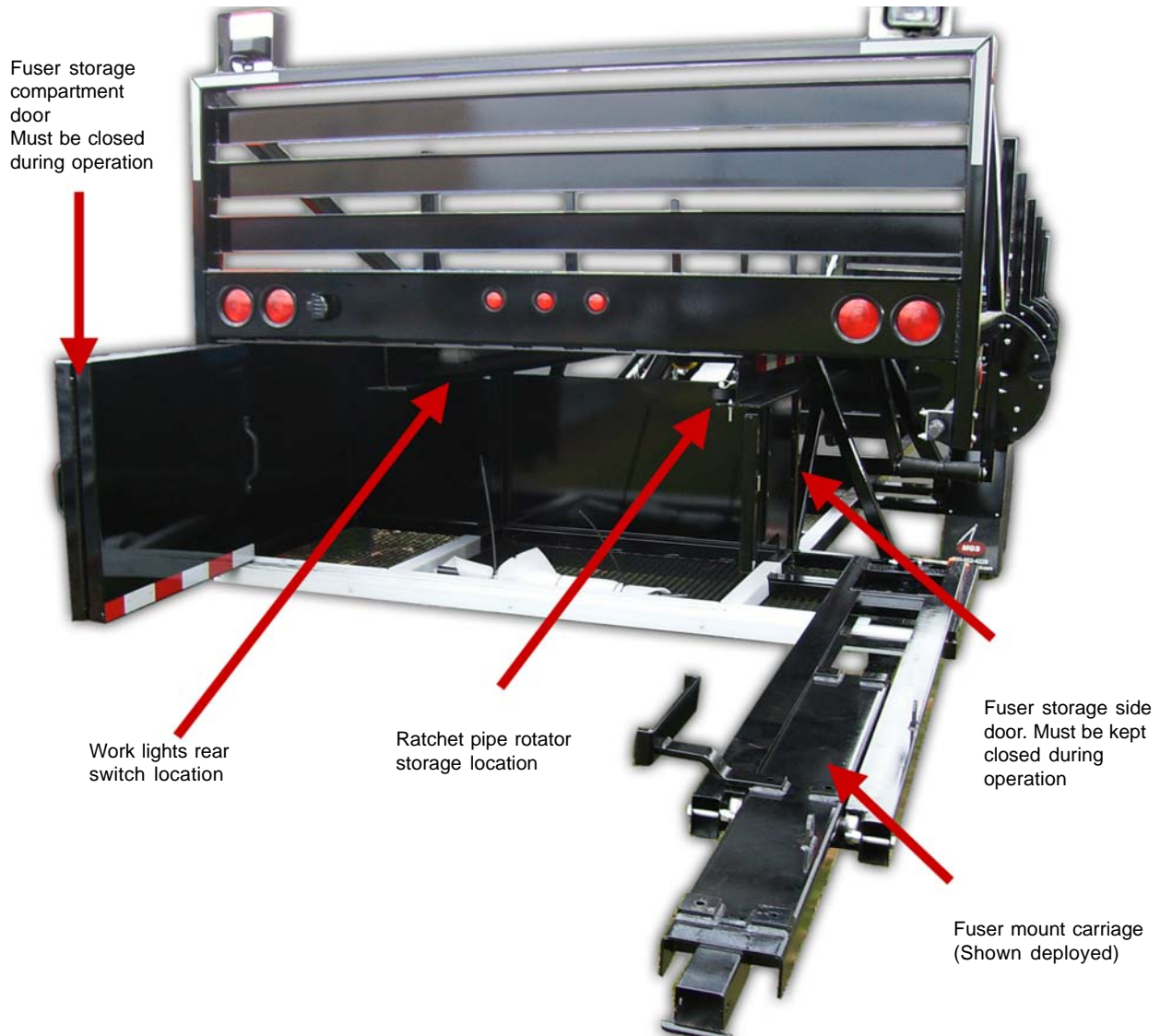
Six - drop down stancions on road side for loading. Pull spring pin and stancion will drop to the lowered position.  
Never load trailer from curb side. Damage to the stancions or dispensing system will occur.



Three nylon winch straps with breaker bar to secure pipe during travel

# OPERATION - LOADING-COMPONENT IDENTIFICATION

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# GENERATOR CABINET - COMPONENT IDENTIFICATION

Generator storage compartment is located on the road side just before the axles. It is secured with two latches. There is also a hasp to allow the addition of a padlock for security.



The bottom of the box is vented allowing use of the generator with the drawer retracted as shown in the photo to the right.

**Never attempt to run the generator with the door closed. Damage to the generator could result.**



NEVER TOW TRAILER WITH GENERATOR DOOR OPEN. DAMAGE TO THE TRAILER AND INJURY TO PERSONNEL COULD RESULT



By releasing the spring latches on both sides of the generator tray, the generator can slide out of the box for fueling and minor service without having to unbolt from trailer.



NEVER TOW TRAILER WITH GENERATOR DOOR OPEN. DAMAGE TO THE TRAILER AND INJURY TO PERSONNEL COULD RESULT



# PIPE BUGGY

Your trailer is equipped with a telescopic pipe support buggy. The buggy is stored under the trailer in front of the generator compartment as shown in *figure 1*. To remove buggy from trailer: Remove pin shown in *figure 2* and set wheels on ground. Replace pin shown in *figure 3* and pull buggy from under trailer.

The pipe supports are shown in *figure 4*. There are two pipe supports supplied. One of the supports is installed in the buggy through the slots in the frame rails directly over the axle arrow *figure 2*. Height can be adjusted by shortening and lengthening the chain attachment.

The second pipe rest is intended to be used behind the pipe buggy for greater pipe protection. An example would be at the edge of an excavated hole that the pipe is being pulled into.



*figure 1*

Location of pipe support installation slot



*figure 2*



*figure 3*

Location of pipe support installation slot



*figure 4*



*figure 5*

The pipe support buggy is intended to be attached to the tab located on the curb side rear of the trailer directly under the fuser carriage *figures 5-6*. The mount pin from the storage location can be utilized to make this attachment .



ALWAYS RETURN THE BUGGY AND PIPE SUPPORTS TO THEIR PROPER STORED LOCATIONS BEFORE TOWING THE TRAILER AT SPEEDS OVER 3 MPH. THE PIPE BUGGY TIRES ARE NOT HIGHWAY RATED. BUGGY COULD BECOME UNSTABLE AND CAUSE SERIOUS INJURY OR DEATH



*figure 6*

# PIPE DISPENSING SYSTEM

To prepare to dispense pipe, you must first choose the pipe slot that corresponds with the diameter of pipe that you are using. At right, [figure 1](#) shows the different pipe slots on the dispenser discs. There are six pipe discs on the trailer. Each pipe disc has a blockoff plate that must be positioned to reveal the desired pipe slot. These plates are adjusted by removing the four (4) 1/2" bolts in the center of the disc (the other bolts in the plate are 3/8") and rotating the blockoff plate until the proper slot is exposed. This step must be followed or pipe may jam or fail to dispense properly.



NEVER ATTEMPT TO ADJUST THE BLOCKOFF PLATES WHILE PIPE IS LOADED ON THE TRAILER. SERIOUS INJURY COULD OCCUR FROM FALLING PIPE AND MOVING MECHANISMS

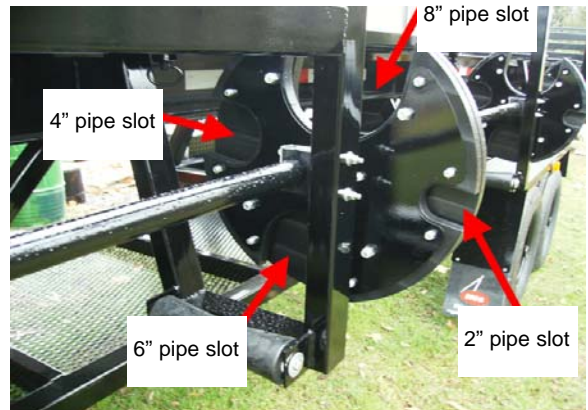
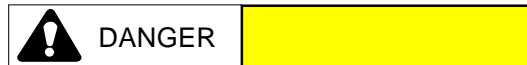


figure 7

Now that the pipe discs have been adjusted, you will need to set the pipe guides to the proper location. There are six (6) pipe guides located just above each pipe disc [figure 8](#). The guide in the photo is shown in the fully extended position. This position is intended for use when dispensing 2" pipe. The fully retracted position is intended for use when dispensing 8" pipe. There are two more detents for 4" and 6" pipe. To adjust, pull down on the pipe guide release lever and twist to lock. Slide the pipe guide to the desired position and twist to engage. You may need to pull in or out on the pipe guide to make the pipe guide release click into the locked position. It is important to perform this step prior to loading pipe onto the trailer.



NEVER ATTEMPT TO ADJUST THE PIPE GUIDES WHILE PIPE IS LOADED ON THE TRAILER. SERIOUS INJURY COULD OCCUR FROM FALLING PIPE AND MOVING MECHANISMS



figure 8

Remove the square drive ratchet shown in [figure 9](#) and install as shown in the photo. The wrench is reversible and has a ratchet mechanism that is also reversible. The pipe dispensing system should always be rotated toward the trailer body. The proper rotational direction for the ratchet handle is shown in [figure 9](#). If the ratchet does not engage, flip the directional lever to the opposite position. Always be sure to rotate the pipe discs so the pipe slot being used is not facing the bed of the trailer before attempting to load pipe. Pipe could roll into the dispenser and cause it to activate.



figure 9

## Pipe Fuser Carriage/Pipe Transport

The rear of the trailer is designed to house the fuser carriage, heater and facer. It is secured with two lockable doors: One at the rear of the trailer and one on the curb side of the trailer. these doors are secured by adding your padlock to the supplied hasp. Both doors must be opened to deploy the fuser. MGS recommends that you close both the rear and side doors after deploying the fuser to prevent damage to the doors and fuser. *Figure 10* shows the rear of the trailer as it should appear before towing the trailer on the road.



figure 10

*Figure 11* Illustrates the procedure for deploying the fuser chassis.

1. Remove lock and slide double doors to roadside of the trailer by grasping the handle on the left.
2. Swing side door toward front of trailer
3. Remove pivot pin and swing carriage to stop on outer chassis rail. Re-insert pivot pin
4. Close side door
5. Close rear door.

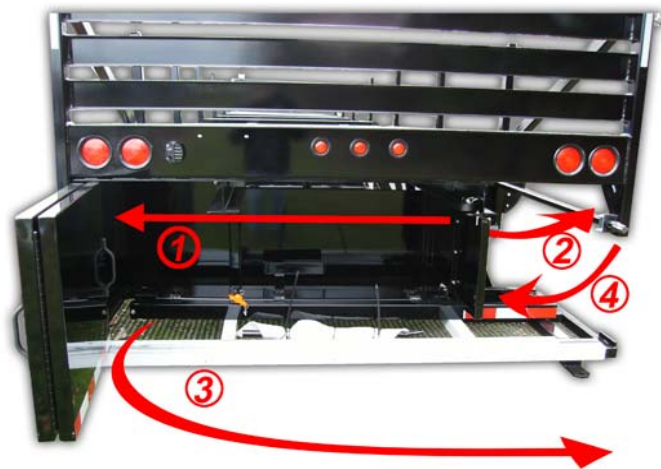


figure 11

*Figure 12* Illustrates the procedure for using the telescopic feature of the fuser carriage:

1. Remove and store locking pin
2. Slide carriage to desired position

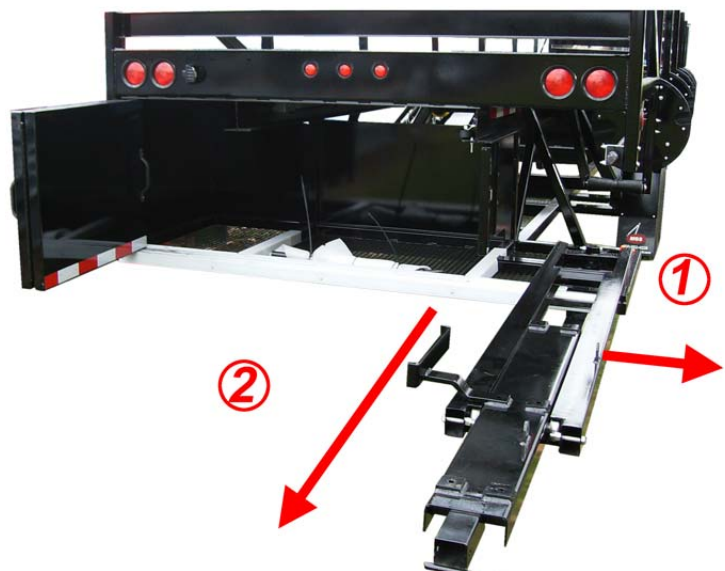
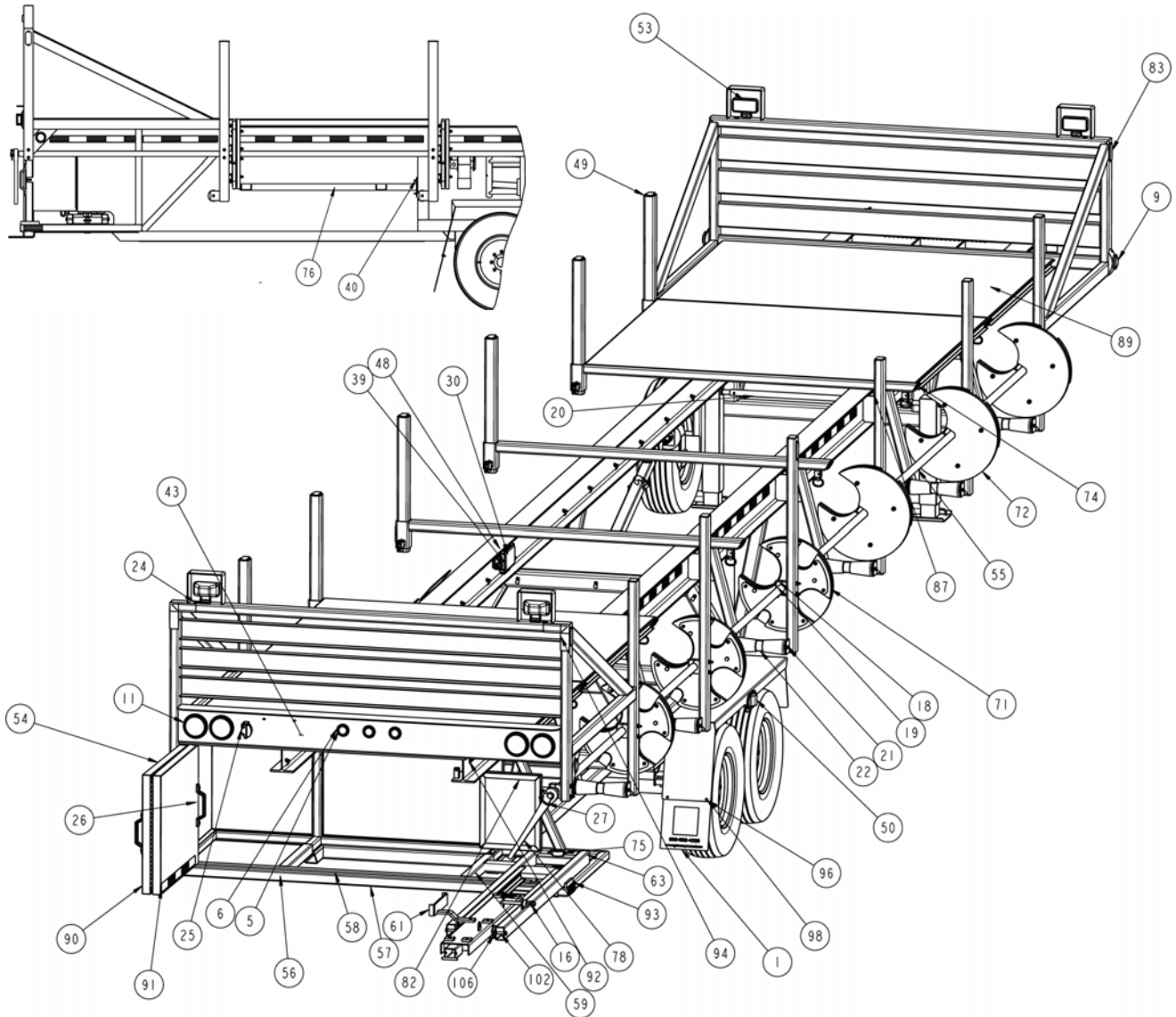


figure 12



## Component Identification



ITEM	QTY.	PART NO.	DESCRIPTION
1	2	09555	MUD GUARD
2	1	10713	BREAKAWAY SWITCH
3	1	11070	7 WAY RECEPTICAL
4	1	11071	RUBBER BOOT
5	3	11989	CLEARANCE & MARKER LAMP
6	3	12034	GROMMET (FOR CLEARANCE LAMP)
7	42	12186	HALF CLAMP, RUBBERIZED LOOM 1/2"
8	2	12709	CLEARANCE LIGHT REFLECTOR, RED
9	2	12710	CLEARANCE LIGHT REFLECTOR, YLW
10	4	12711	CLEARANCE LIGHT GROMMET KIT

## Component Identification

ITEM	QTY.	PART NO.	DESCRIPTION
11	4	12838	SEALED ASY-STOP, TURN / TAIL LIGHT
12	1	14962	CONNECTOR 6-WAY TRL. END ROUND
13	17	14992	7 CONDUCTOR WIRE, 14 GA. (QTY PER FT)
14	32	15221	LUG NUT 9/16-18 60°
15	1	16979	I.D. BAR HARNESS
16	3	18804	HEAVY DUTY HITCH PIN--5/8 x 4-1/2
17	5	19026	T&W ASSY LT235/85R16 LRG
18	7	19534	BEARING BLOCK ASSEMBLY
19	7	19535	PLATE
20	1	19621	JACK CONNECTOR PIPE
21	6	19622	ROLLER SHAFT
22	6	19623	ROLLER, 12"
23	3	19771	WINCH STRAP, 4" X 27'
24	4	20815	GROMMET
25	1	24897	LICENSE PLATE LAMP, TRUCK-LITE
26	1	27496	3-1/4 HASP & KEEPER
27	1	29843	LOCK PIN, SQUARE 3/8 X 2-1/2
28	1	32591	VIN LABEL UV OVERLAY
29	2	33398	LIGHT MOUNT
30	2	39223	COMPRESSION FITTING, #50840, 3/8" I.D.
31	1	45881	CONNECTOR CORD
32	1	46948	DECAL, NATM COMPLIANCE
33	1	46953	DECAL, TRAILER WARNING COMBO
34	1	61191	DECAL, OVERLOAD HAZARD
35	1	61353	TIRE & LOADING INFORMATION LABEL
36	1	61354	TIRE LABEL UV OVERLAY
37	1	61357	VIN LABEL
38	1	65775	WINCH BAR
39	3	68492	COMPRESSION FITTING, #50841, 1/2" I.D.
40	2	71541	3" CLAMP
41	3	72278	304 SS SASH CHAIN LANYARD, 12"
42	1	72410	GROMMET
43	1	73289	RED DOT 3-HOLE DEEP BOX, WEATHERPROOF
44	6	73575	SPLIT RING, 316 SS
45	3	74260	DOUBLE LOOP HITCH PIN CLIP
46	1	74289	BREAKAWAY BATTERY AND BOX
47	2	76572	LEVER LATCH, NO KEY
48	1	77237	JUNCTION BOX KIT
49	6	79723	POST W.A.
50	2	79725	LAMP, OVAL, TURN/MARK/CLEAR, AMBER

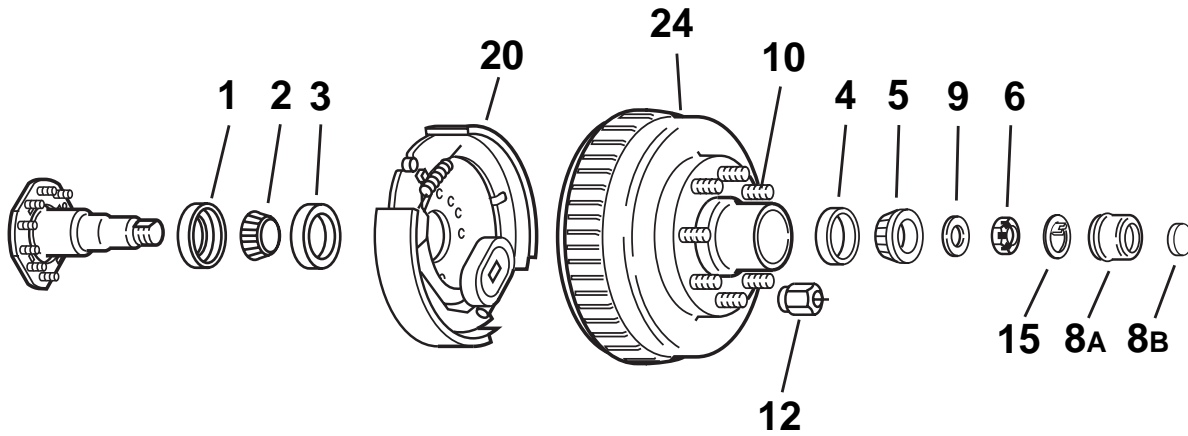
## Component Identification

ITEM	QTY.	PART NO.	DESCRIPTION
51	2	79731	PIPE BUGGY SUPPORT ASSEMBLY
52	1	79732	PIPE BUGGY
53	4	79736	HALOGEN WORK LAMP
54	1	79744	DOOR ASSEMBLY
55	1	79754	PIPE DELIVERY SHAFT W.A.
56	1	79755	TUBE CAP, REAR FRAME, SHORT
57	1	79756	TUBE CAP, REAR FRAME LONG
58	1	79757	TUBE CAP, REAR FRAME
59	1	79759	TUBE CAP, REAR FRAME, SHORT MOD
60	1	79760	GENERATOR SLIDE TRAY
61	1	79776	FUSER MOUNT ASSEMBLY
62	1	79784	PHD95 WIRING SCHEMATIC
63	1	79785	CARRIER FRAME W.A.
64	1	79792	RED DOT 4-HOLE DEEP BOX, WEATHERPROOF
65	2	79793	1 GANG WEATHERPROOF SWITCH COVER
66	1	79794	PHD95 FRONT WIRE HARNESS
67	1	79795	PHD95 FRONT MARKER/ WORK LAMP HARNESS
68	1	79796	PHD95 REAR HARNESS
69	1	79797	R.H. TURN/TAIL HARNESS, 132"
70	1	79798	L.H. TURN/TAIL HARNESS, 96"
71	6	79814	UHMW PIPE DISK
72	6	79815	UHMW STOP PLATE
73	1	79827	GENERATOR DOOR W.A.
74	6	79834	PIPE LIMITER W.A.
75	1	79846	PIVOT RETAINING RING
76	1	79860	TANK MOUNT BAR W.A.
77	1	79868	PHD95 W.A.
78	1	79870	RACHET ARM
79	1	79871	PHD95 JUMPER CORD
80	2	79967	HINGE_HALF
81	1	79967	REAR PANEL HINGE
82	1	79968	SWINGAWAY DOOR
83	4	09268A	REFLECTOR, AMBER
84	2	09268R	REFLECTOR, RED
85	1	14933_126	14 GA. 2 CONDUCTOR WIRE 126" LONG
86	11	18823-24	CONSPICUITY TAPE, RED/WHITE
87	2	18823-60	CONSPICUITY TAPE, RED/WHITE
88	3	18823-72	CONSPICUITY TAPE, RED/WHITE
89	1	18823-96	CONSPICUITY TAPE, RED/WHITE

## Component Identification

ITEM	QTY.	PART NO.	DESCRIPTION
90	1	18823-30-R	CONSPICUITY TAPE, RED/WHITE
91	1	18823-30-W	CONSPICUITY TAPE, RED/WHITE
92	1	18823-54-R	CONSPICUITY TAPE, RED/WHITE
93	2	18823-6-R	CONSPICUITY TAPE, RED
94	4	18823-6-W	CONSPICUITY TAPE, WHITE
95	24	FW03	3/8 FLAT WASHER
96	4	FWW01	1/4 FLAT WASHER, WIDE
97	4	HCS01-01	1/4-20 X 3/4 HEX HEAD CAP SCREW
98	4	HCS01-02	1/4-20 X 1 HEX HEAD CAP SCREW
99	60	HCS03-06	3/8-16 X 2 HEX HEAD CAP SCREW
100	6	HCS03-11	3/8-16 X 3-1/4 HEX HEAD CAP SCREW
101	14	HCS03-20	3/8-16 X 5-1/2 HEX HEAD CAP SCREW
102	2	HCS05-08	1/2-13 X 3 HEX HEAD CAP SCREW
103	25	HCS05-10	1/2-13 X 3-1/2 HEX HEAD CAP SCREW
104	47	NLN01	1/4-20 NYLOC NUT
105	90	NLN03	3/8-16 NYLOC NUT
106	27	NLN05	1/2-13 NYLOC NUT
107	1	PHD95	PIPE HAULING/DISPENSING TRAILER
108	8	RHB03-01	3/8-16 X 1 SQUARE NECK CARRIAGE BOLT

# 865 Hub Components



## GREASE LUBE PARTS

Item	Part No.	Description
1	010-036-00	Grease Seal
2	031-030-02	25580 Inner Bearing Cone
3	031-030-01	25520 Inner Bearing Cup
4	031-032-01	LM67010 Outer Bearing Cup
5	031-032-02	LM67048 Outer Bearing Cone
6	006-176-00	Spindle Nut
7	019-002-00	Cotter Pin
8	021-001-00	Grease Cap
9	005-023-00	Spindle Washer

## 12 X 2 BRAKES

Item	Part No.	Description
20	023-180-00 1	LH Complete Brake Assembly
	023-181-00 1	RH Complete Brake Assembly

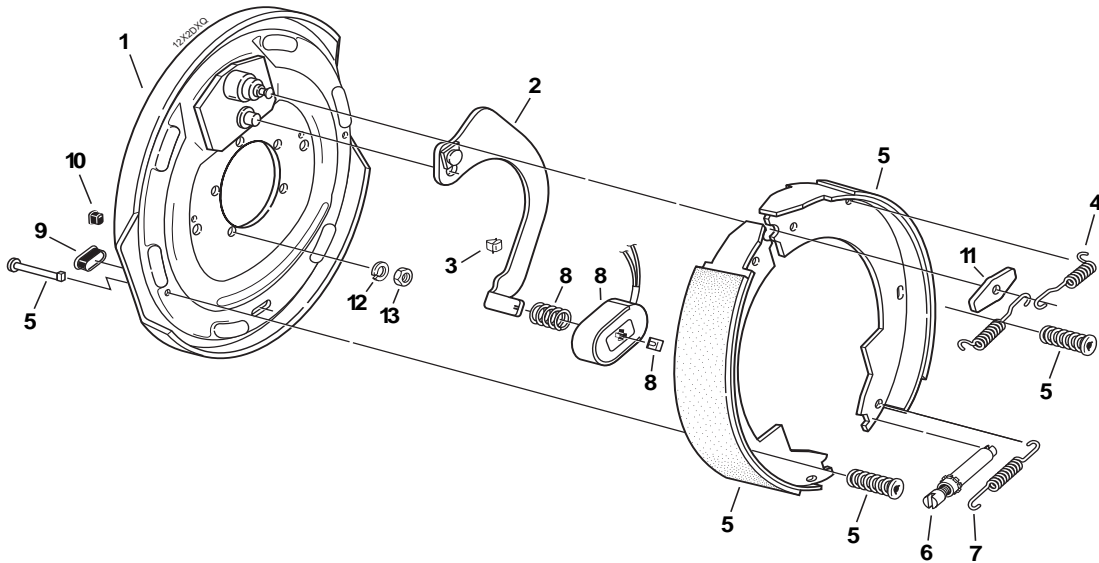
## HUBS

Item	Part No.	Description	Bolt Circle
24	008-231-18	$\frac{9}{16}$ " Stud	8 on 6.50

## STUDS & WHEEL NUTS

Item	Part No.	Description
	006-080-00 $\frac{1}{2}$ -20	60° Cone Nut
	007-122-00 $\frac{1}{2}$ -20	Press-in Studs

# 12x2" Brake Components

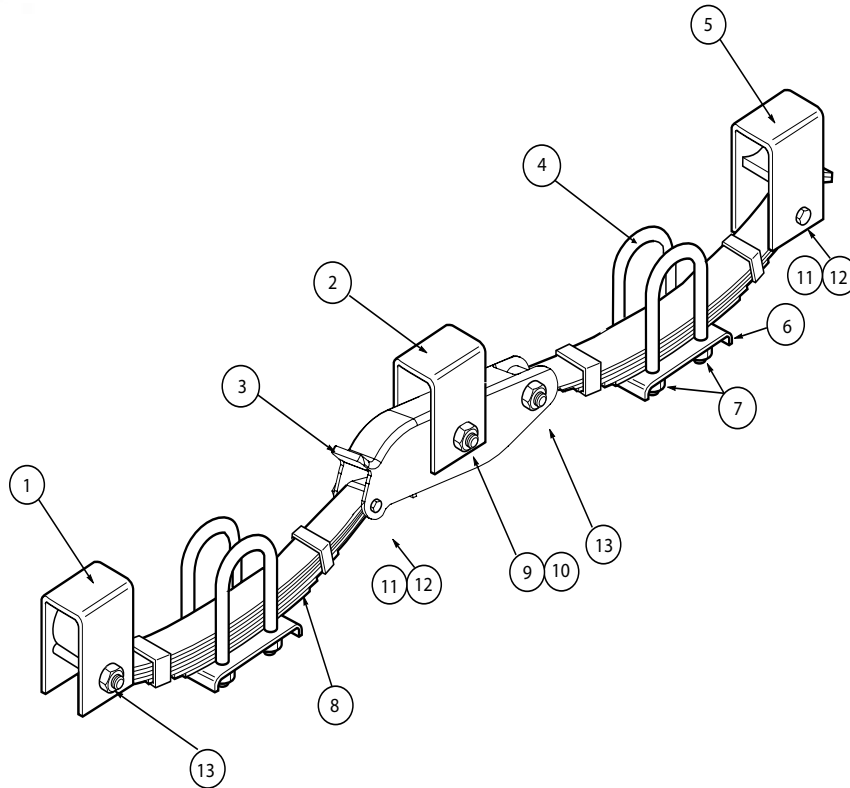


## ELECTRICBRAKE7000#

Item	Part No.	Qty/Brk	Description
0	023-180-00	1	LH Complete Brake Assembly
0	023-181-00	1	RH Complete Brake Assembly
1	036-089-10	1	Backing Plate Assembly
2	047-107-00	1	LH Actuating Lever Arm
2	047-108-00	1	RH Actuating Lever Arm
3	027-005-00	2	Wire Clip
4	046-009-00	2	Retractor Spring
5	K71-127-00	1	Shoe & Lining Kit containing: 1 #040-215-00 Primary S&L 1 #040-216-00 Secondary S&L 2 #049-011-00 Shoe Hold Down Pin #2 2 #046-077-00 Shoe Hold Down Spring & Cup
6	043-004-00	1	Adjuster Assembly
7	046-018-00	1	Adjusting Screw Spring
8	K71-125-00	1	Magnet Kit containing: 1 #042-101-01 Magnet (black wire) 1 #027-009-00 Magnet Clip 1 #046-080-00 Magnet Spring
9	046-007-00	1	Adjuster Slot Plug
10	046-016-00	1	Wire Grommet
11	005-067-00	1	Anchor Post Washer
12	005-004-00	5	Lockwasher
13	006-010-00	5	Brake Mounting Nut

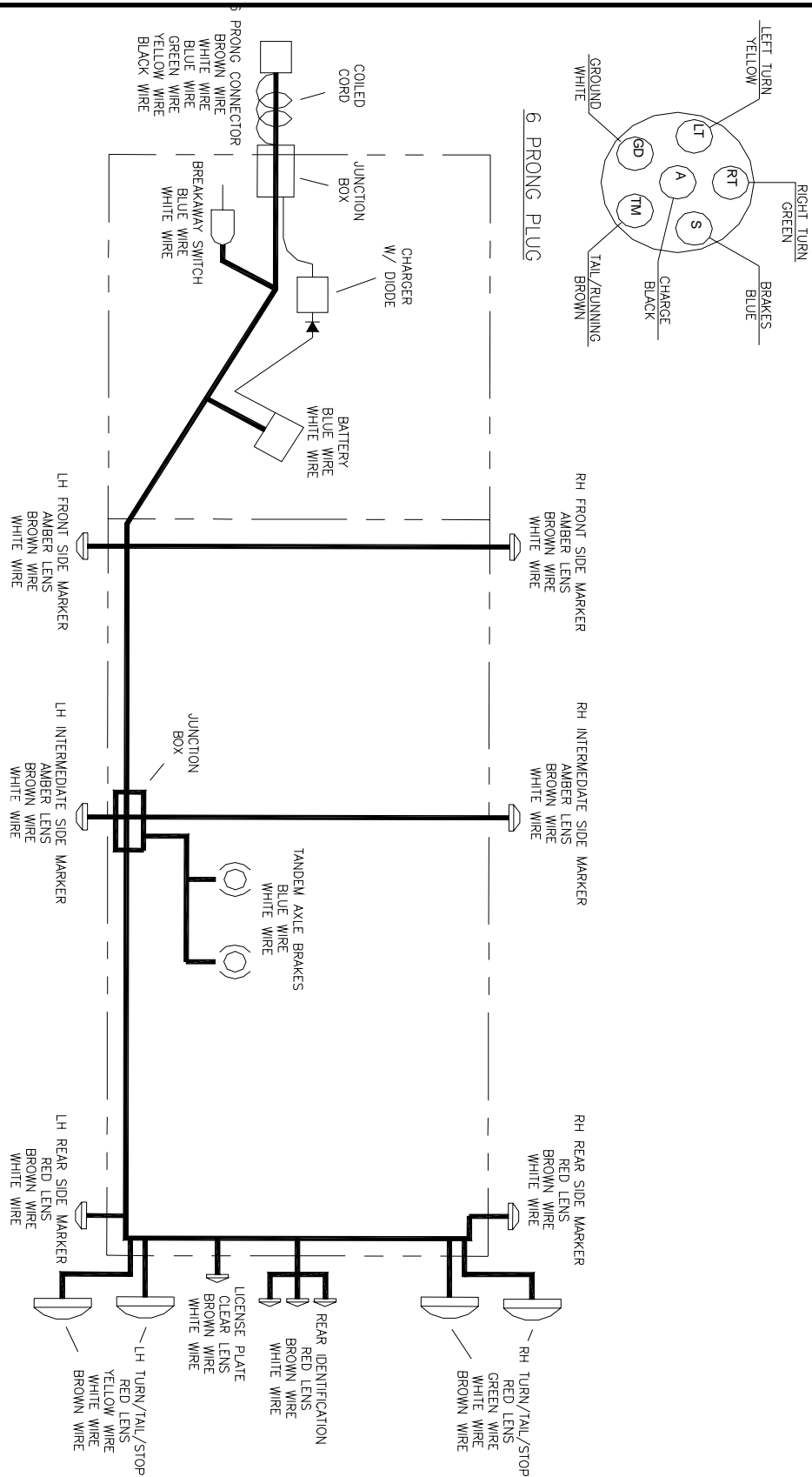
**These brakes are rated to a maximum capacity of 7000 lbs.**

# 14,000 #Suspension Components



No.	Part No.	Qty Per Trailer.	Description
1	15359	2	Front Hanger
2	15383	2	Center Hanger
3	15825	2	Equalizer
4		8	U-Bolt
5	15358	2	Rear Hanger
6		4	Tie Plate
7		16	U-Bolt Nut
8	72-32	4	3,500# Spring
9	15972	2	Equalizer Bolt
10	15973	2	Equalizer Bolt Lock Nut
11	15220	4	Keeper Bolt
12	15219	4	Keper Nut

# Trailer Wiring Diagram



**Important Safety Notice**

Appropriate service methods and proper repair procedures are essential for the safe, reliable operation of all running gear as well as the personal safety of the individual doing the work. This manual provides general directions for performing service and repair work with tested, effective techniques. Following these guidelines will help assure reliability.

There are numerous variations in procedures, techniques, tools, parts for servicing axles, as well as in the skill of the individual doing the work. This manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this manual must first establish that they neither compromise their personal safety nor the vehicle integrity by their choice of methods, tools, or parts.

Refer to your vehicle manufacturers owner's manual for additional procedures, techniques, and warnings prior to performing any maintenance or repairs.



**THIS SYMBOL WARNS OF POSSIBLE  
PERSONAL INJURY.**

**Set-up and Adjustment**

For proper performance, all new axles should have the following checked at the specified intervals:

- *Wheel Nut Torque:* at 10, 25, and 50 miles
- *Brake Adjustment:* at 200 and 3000 miles
- *Tire pressure:* to manufacturers requirements
- *Brake synchronization* - set brake controller per controller rer's )

## *Electric Brakes - Features*

Electrically actuated brakes have several advantages over other brake actuation systems.

1. They can be manually adjusted to provide the correct braking capability for varying road and load conditions.
2. They can be modulated to provide more or less braking force, thus easing the brake load on the towing vehicle.
3. They have very little lag time from the moment the tow vehicle's brakes are actuated until the trailer brakes are actuated.
4. In an emergency situation, they can provide some braking independent of the tow vehicle.

## *Operation*

The electric brakes on your trailer are similar to the drum brakes on your automobile. The basic difference is that your automotive brakes are actuated by hydraulic pressure while your electric trailer brakes are actuated by an electromagnet. With all of the brake components connected into the system, the brake will operate as follows:

When the electrical current is fed into the system by the controller, it flows through the electromagnets in the brakes. The high capacity electromagnets are energized and are attracted to the rotating armature surface of the drums which moves the actuating levers in the direction that the drums are turning.

The resulting force causes the actuating cam block at the shoe end of the lever to push the primary shoe out against the inside surface of the brake drum. The force generated by the primary shoe acting through the adjuster link then moves the secondary shoe out into contact with the brake drum.

Increasing the current flow to the electromagnet causes the magnet to grip the armature surface of the brake drum more firmly. This results in increasing the pressure against the shoes and brake drums until the desired stop is accomplished.

**Trailer Wire Size Chart**

Number of Brakes	Hitch-to-Axle Distance in Feet	Recommended Minimum Hookup Wire Size (Copper)
2		12 AWG
4	Under 30	12 AWG
4	30-50	10 AWG
6	Under 30	10 AWG
6	30-50	8 AWG

**How To Use Your Electric Brakes Properly**

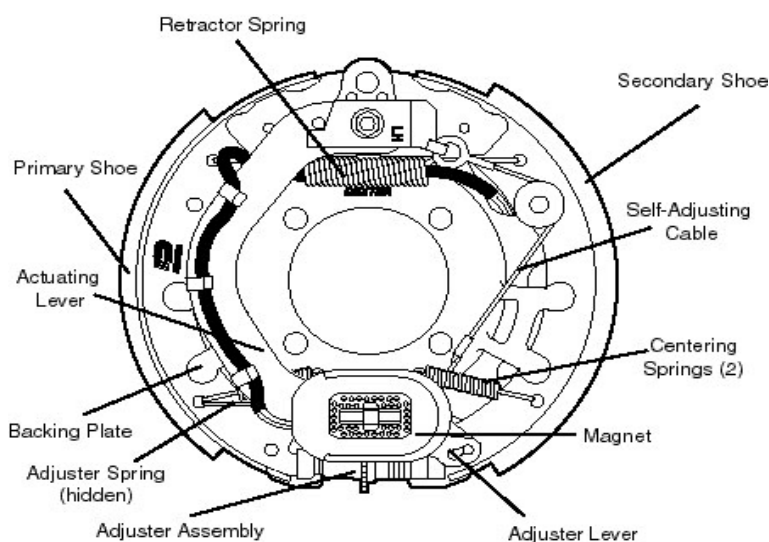
Your trailer brakes are designed to work in synchronization with your tow vehicle brakes. Never use your tow vehicle or trailer brakes alone to stop the combined load.

Your trailer and tow vehicle will seldom have the correct amperage flow to the brake magnets to give you comfortable, safe braking unless you make proper brake system adjustments. Changing trailer load and driving conditions as well as uneven alternator and battery output can mean unstable current flow to your brake magnets. It is therefore imperative that you maintain and adjust your brakes as set forth in this manual, use a properly modulated brake controller, and perform the synchronization procedure on following pages.

In addition to the synchronization adjustment detailed below, electric brake controllers provide a modulation function that varies the current to the electric brakes with the pressure on the brake pedal or amount of deceleration of the tow vehicle. It is important that your brake controller provide approximately 2 volts to the braking system when the brake pedal is first depressed and gradually increases the voltage to 12 volts as brake pedal pressure is increased. If the controller “jumps” immediately to a high voltage output, even during a gradual stop, then the electric brakes will always be fully energized and will result in harsh brakes and potential wheel lockup.

Proper synchronization of tow vehicle to trailer braking can only be accomplished by road testing. Brake lockup, grabbiness, or harshness is quite often due to the lack of synchronization between the tow vehicle and the trailer being towed, too high of a threshold voltage (over 2 volts), or under adjusted brakes.

Before any synchronization adjustments are made, your trailer brakes should be burnished-in by applying the brakes 20-30 times with approximately a 20 m.p.h. decrease in speed, e.g. 40 m.p.h. to 20 m.p.h. Allow ample time for brakes to cool between application. This allows the brake shoes and magnets to slightly “wear-in” to the drum surfaces.



*Electric brake assembly*

## To Synchronize

To insure safe brake performance and synchronization, *read the brake controller manufacturer's instructions completely before attempting any synchronization procedure.*



### CAUTION:

*Before making road tests, make sure the area is clear of vehicular and pedestrian traffic.*

Make several hard stops from 20 m.p.h. on a dry paved road free of sand and gravel. If the trailer brakes lock and slide, decrease the gain setting on the controller. If they do not slide, slightly increase the gain setting. Adjust the controller just to the point of impending brake lockup and wheel skid.

*Note: Minimum vehicle stopping distances are achieved when wheels approach lock up. Brake lock up should be avoided as it results in poor vehicle stability and control. Depending on load, brake type, wheels and tires, not all trailer brakes are capable of wheel lockup.*

If the controller is applying the trailer brakes before the tow vehicle brakes, then the controller level adjustment should be adjusted so the trailer brakes come on in synchronization with the tow vehicle brakes. For proper braking performance, it is recommended that the controller be adjusted to allow the trailer brakes to come on just slightly ahead of the tow vehicle brakes. When proper synchronization is achieved there will be no sensation of the trailer “jerking” or “pushing” the tow vehicle during braking.



### CAUTION:

*Do not adjust this control outside the parameters outlined by the brake controller manufacturer's instructions.*

## Controllers

Start by making sure the trailer brakes are properly adjusted. Some controllers have a gain control to vary the amount of current to the brakes, and a level control which sets the controller's inertia sensor to sense deceleration. The

level adjustment also can be used to vary when the trailer braking is felt. The gain or output control adjustment usually controls the maximum amount of amperage available to the brakes. This can be adjusted for varying trailer loads. The chart below details adjustments available for different brake controllers.

<b>Controller*</b>	<b>Adjustment to control brake timing</b>	<b>Adjustment for brake force</b>
Tekonsha 9030,9035, 9040,9045,9055	Level	Gain
Kelsey 81741A	Level	Gain
Draw-Tite 5100	Sync	Output

\*See manufacturers instructions

## ***General Maintenance***

### **Brake Adjustment**

Brakes should be adjusted (1) after the first 200 miles of operation when the brake shoes and drums have “seated,” (2) at 3000 mile intervals, (3) or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.

#### **CAUTION:**

*Do not lift or support trailer on any part of the axle or the suspension system.*

2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

*Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.*

4. Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes.



**CAUTION:**

*Never crawl under your trailer unless it is resting on properly placed jack stands*

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

### **Brake Cleaning and Inspection**

Your trailer brakes must be inspected and serviced at yearly intervals or more often as use and performance requires. Magnets and shoes must be changed when they become worn or scored thereby preventing adequate vehicle braking.

Clean the backing plate, magnet arm, magnet, and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs, and adjuster springs for stretch or deformation and replace if required.



**CAUTION:**

*ASBESTOS DUST HAZARD!*

*Since some brake shoe friction materials contain asbestos, certain precautions need to be taken when servicing brakes:*

1. Avoid creating or breathing dust.
2. Avoid machining, filing or grinding the brake linings.
3. Do not use compressed air or dry brushing for cleaning. (Dust can be removed with a damp brush.)

**Brake Lubrication**

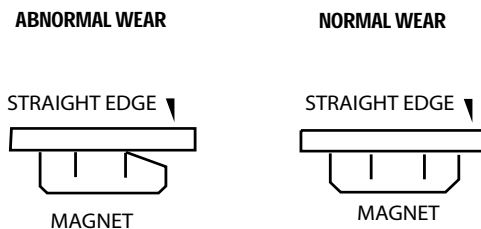
Before reassembling, apply a light film of Lubriplate or similar grease, or anti-seize compound on the brake anchor pin, the actuating arm bushing and pin, and the areas on the backing plate that are in contact with the brake shoes and magnet lever arm. Apply a light film of grease on the actuating block mounted on the actuating arm.

**⚠ CAUTION:**

*Do not get grease or oil on the brake linings, drums or magnets.*

**Magnets**

Your electric brakes are equipped with high quality electromagnets that are designed to provide the proper input force and friction characteristics. Your magnets should be inspected and replaced if worn unevenly or abnormally. As indicated below a straightedge should be used to check wear.



Even if wear is normal as indicated by your straight-edge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of the magnet. It is also recommended that the drum armature surface be re-faced when replacing magnets. Brake Magnets should also be replaced in pairs - both sides of an axle. Use only genuine Dexter replacement parts when replacing your magnets. Noted on the next page are the magnet replacement kits which will include the necessary specific instruction for replacement.

<b>Brake Size Magnet Kit No.</b> (one magnet per kit)	<b>Wire Color</b>
90 7 x 1 <sup>1</sup> / <sub>4</sub> White	K71-057-00 Since 4/
4/90 7 x 1 <sup>1</sup> / <sub>4</sub>	K71-056-00 Prior to Yellow
9/88 10 x 1 <sup>1</sup> / <sub>2</sub>	K71-057-00 Prior to White *
88 10 x 1 <sup>1</sup> / <sub>2</sub> Yellow	K71-177-00 Since 9/
Green 10 x 2 <sup>1</sup> / <sub>4</sub>	K71-104-00
White 12 x 2	K71-105-00
Black 12 x 2	K71-125-00 (7K)
Red 12 <sup>1</sup> / <sub>4</sub> x 2 <sup>1</sup> / <sub>2</sub>	K71-441-00
White 12 <sup>1</sup> / <sub>4</sub> x 3 <sup>3</sup> / <sub>8</sub>	K71-375-00 oval magnet

\* *Slight actuating arm magnet tab modification required.*

## ***Shoes and Linings***

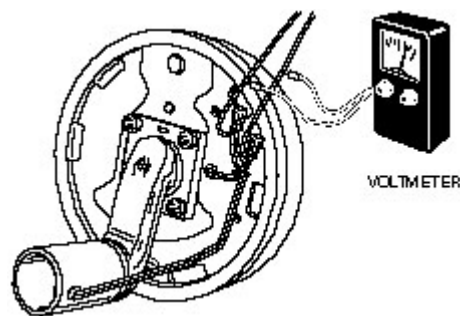
A simple visual inspection of your brake linings will tell if they are usable. Replacement is necessary if the lining is worn (to within  $\frac{1}{16}$ " or less), contaminated with grease or oil, or abnormally scored or gouged. Hairline heat cracks are normal in bonded linings and should not be a cause for concern. It is important to replace both shoes on each brake and both brakes of the same axle. This is necessary to retain the "balance" of your brakes. Contained in the chart on the next page are the Dexter replacement shoe and lining kits which will contain the specific instructions necessary for proper replacement.

## ***Troubleshooting***

Most electric brake malfunctions that cannot be corrected by either brake adjustments or synchronization adjustments can generally be traced to electrical system failure. Mechanical causes are ordinarily obvious, i.e. bent or broken parts, worn out linings or magnets, seized lever arms or shoes, scored drums, loose parts, etc. Voltmeter and ammeter are essential tools for proper troubleshooting of electric brakes.

### **How to Measure Voltage**

System voltage is measured at the magnets by connecting the voltmeter to the two magnet lead wires at any brake. This may be accomplished by using a pin probe inserted through the insulation of the wires dropping down from the chassis or by



cutting the wires. The engine of the towing vehicle should be running when checking the voltage so that a low battery will not affect the readings.

Voltage in the system should begin at 0 volts and, as the controller bar is slowly actuated, should gradually increase to about 12 volts. This is referred to as modulation. No modulation means that when the controller begins to apply voltage to the brakes it applies an immediate high voltage, which causes the brakes to apply instantaneous maximum power.

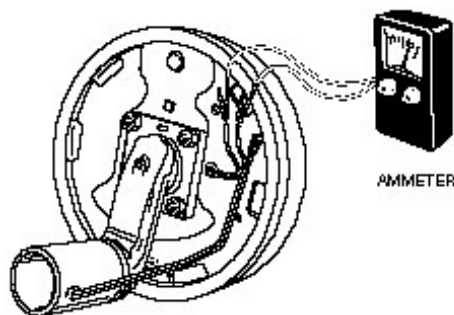
The threshold voltage of a controller is the voltage applied to the brakes when the controller first turns on. The lower the threshold voltage the smoother the brakes will operate. Too high of a threshold voltage (in excess of 2 volts as quite often found in heavy duty controllers) can cause grabby, harsh brakes.

#### **How to Measure Amperage**

System amperage is the amperage being drawn by all brakes on the trailer. The engine of the towing vehicle should be running when checking amperage.

One place to measure system amperage is at the BLUE wire of the controller which is the output to the brakes. The BLUE wire must be disconnected and the ammeter put in series into the line. System amperage draw should be as noted in the following table. Make sure your ammeter has sufficient capacity and note polarity to prevent damaging your ammeter.

If a resistor is used in the brake system, it must be set at zero or bypassed completely to obtain the maximum amperage reading.



Individual amperage draw can be measured by inserting the ammeter in the line at the magnet you want to check. Disconnect one of the magnet lead wire connectors and attach the ammeter between the two wires. Make sure that the wires are properly reconnected and sealed after testing is completed.

**By far, the most common electrical problem is low or no voltage and amperage at the brakes.** Common causes of this condition are:

1. Poor electrical connections
2. Open circuits
3. Insufficient wire size
4. Broken wires
5. Blown fuses (Fusing of brakes is not recommended.)
6. Improperly functioning controllers or resistors

Another common electrical problem is shorted or partially shorted circuits (indicated by abnormally high system amperage). These are occasionally the most difficult to find. Possible causes are:

1. Shorted magnet coils
2. Defective controllers
3. Bare wires contacting a grounded object

Finding the system short is a matter of isolation. If the high amperage reading drops to zero by unplugging the trailer, then the short is in the trailer. If the amperage reading remains high with all the brake magnets disconnected, the short is in the trailer wiring.

All electrical troubleshooting procedures should start at the controller. Most complaints regarding brake harshness or malfunction are traceable to improperly adjusted or non-functioning controllers. See your controller manufacturer's data for proper adjustment and testing procedures. If the voltage and amperage is not satisfactory, proceed on to the connector and then to the individual magnets to isolate the problem source. 12 volts output at the controller should equate to 10.5 volts minimum at each magnet. Nominal system amperage at 12 volts with magnets at

normal operating temperatures, i.e. not cold, system resistor at zero and controller at maximum gain should be as detailed in the following chart:

**Magnet Amperes Chart**

<b>Six Size</b>	<b>Brake Magnet</b>	<b>Amps/ Brakes</b>	<b>Two Brakes</b>	<b>Four Brakes</b>
	7 x 1 <sup>1</sup> / <sub>4</sub>	2.5	5.0	10.0 15.0
	10 x 1 <sup>1</sup> / <sub>4</sub>	3.0	6.0	12.0 18.0
	10 x 2 <sup>1</sup> / <sub>4</sub>	3.0	6.0	12.0 18.0
	12 x 2	3.0	6.0	12.0 18.0
	12 <sup>1</sup> / <sub>4</sub> x 2 <sup>1</sup> / <sub>4</sub>	3.0	6.0	12.0 18.0
	12 <sup>1</sup> / <sub>4</sub> x 3 <sup>3</sup> / <sub>8</sub>	3.0	6.0	12.0 18.0

## Trailer Warranty Information



Your new trailer is warranted by MGS Inc. Please contact MGS Inc. for information and assistance with warranty related issues before attempting to repair any component of the trailer. Making repairs without authorization from MGS may void your warranty.

MGS inc.  
178 Muddy Creek Church Rd.  
Denver, PA 17517  
1-800-952-4228  
[www.mgsincorporated.com](http://www.mgsincorporated.com)



## MGS 1-Year Limited Warranty

MGS Incorporated (Seller) hereby warrants, for a period of **ONE** years from the date of purchase, to the first buyer- purchaser (Purchaser) of a **MGS Trailer** manufactured by Seller (Product) that the Product shall be free from defects in material or workmanship, provided timely notice of any claim on this warranty is given to Seller by Purchaser. *Notice of any warranty claim shall be untimely if written notice of such claim is not given to Seller in writing within fifteen (15) days from the date Buyer has discovered or, with the exercise of reasonable diligence, would have discovered any such defect in material or workmanship giving rise to such warranty claim. Any claim for breach of warranty which is not timely made shall be deemed waived by purchaser.*

Provided that a timely notice of a warranty claim is made for a defect in material or workmanship rising during the warranty period. Seller shall repair or replace any defective Product or portion thereof, or, at its option, may refund the purchase price for the Product. All decisions concerning whether a Product or any portion thereof is defective and whether said defects should be repaired or the Product replaced, and the manner, method and extent of such repairs, shall be within the sole discretion of Seller. Any alteration or repair to a Product or any portion thereof made by Purchaser without the prior written approval of Seller shall be done at Buyer's own risk and expense and shall invalidate this warranty.

Seller makes no warranty in connection with any components provided with the Product subject to a separate manufacturer's warranty and any claim relating to such goods shall lie exclusively against the manufacturer of such goods.

This warranty is made in lieu of all other warranties, express, implied or statutory. **Seller expressly disclaims any warranty or merchantability or warranty of fitness for a particular purpose or use.**

The express warranty provided herein shall be Purchaser's sole and exclusive remedy for any defects in material or workmanship relating to Product. Under no circumstance shall Seller be liable to Purchaser or any other person for lost profits, additional expenses incurred in repairing or replacing the Product or any other special, incidental, indirect or consequential losses of damages of any kind. Purchaser shall have no claim under this warranty for ordinary wear and tear or for abuse, misuse, improper installation or maintenance or alteration of or repairs to the Product unless such repairs have been authorized in writing by Seller prior to said repair.

**Notice of any claim under this warranty must be made in writing and sent to Seller by certified mail, return receipt requested addressed to: MGS Incorporated, Sales Department, 178 Muddy Creek Church Road, Denver, PA 17517.**



If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying MGS Inc.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or MGS Inc.

**To contact NHTSA**, you may either call the Auto Safety Hotline toll-free at (888) 327-4236 8:00AM to 10:00PM ET Monday-Friday. Spanish speaking operators are available on the Hotline.

**Text Telephone (TTY):**  
(800) 424-9153

**Fax:**  
(202) 366-1767

**Or write to:**  
Administrator, NHTSA,  
1200 New Jersey Ave SE  
Washington, DC 20590.

You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.