

# **SHERMAN + REILLY Revolution Series**

## PTR-7230(S)/7240(S)

### Puller Tensioner Reconstructorer

Operators Manual  
Rev. A Um2015





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- Honda GX390 Engine Manual
- Trailer Axle Manual
- Ridewell Trailer Suspension Manual

## Introduction



### Liability

Publication of this manual and the safety precautions in it does not in any way represent an all-inclusive list. It is the operator's responsibility to make sure the machine is operated in accordance with all state and local safety requirements and codes, including all applicable OSHA- (Occupational Safety and Health Administration) and EPA- (Environmental Protection Agency) regulations, as well as ANSI- (American National Standards Institute) accredited standards.

Should a problem or unsafe condition arise, shut the machine down using the normal shut-down procedure. In the event of an emergency, use the emergency stop procedure described on page 84 of this manual, and then notify the proper authorities or follow your employer's prescribed procedure for an emergency situation.

Sherman+Reilly strongly recommends that only persons who have a full understanding of the provided manual and who are competent in the use of overhead line pulling and tensioning machines; to include all applicable laws, regulations, and safety standards, be allowed to operate this machine. There are significant hazards inherent to the use of this machine; therefore, all operators should be educated on all functions, procedures, and safety measures outlined in this manual prior to their use or maintenance of this machine.

## Introduction

### Terms of Use

It is very important to all of us at Sherman+Reilly that every machine is operated in a safe manner. We have taken every precaution to guard against the possibility of an accident. To properly and safely operate this machine, it is necessary that operators and maintenance personnel read and understand the information in this manual, to include appendixes and other provided materials.

Anyone working around the machine should also, at a minimum, read the safety precautions listed in this manual. Be aware of each warning and precaution, as they are designed to help protect against injury. Taking unnecessary risks and ignoring warnings is usually the primary cause of personal injury and fatal accidents in the workplace. If you have questions regarding any operational steps or the safety of a procedure listed in this manual, contact Sherman+Reilly at 1-800-251-7780 or by email at [help@sherman-reilly.com](mailto:help@sherman-reilly.com).

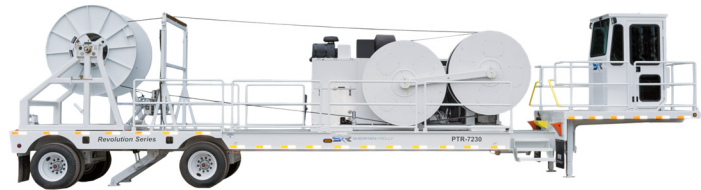


The Sherman+Reilly PTR-Series Puller/Tensioner/Reconductor are diesel engine powered, hydraulically actuated machines. This machine has variable speed and line tension controls; however, if pulling multiple conductors using a running board, the total line tension applied from all conductors must not exceed the pulling capacity of the machine.

This manual was prepared to help the operator use and service the machine in a safe manner. Responsibility for safety during operation and service rests with the person(s) performing the work. Being alert of surroundings and observing all safety precautions, including OSHA, EPA, and all rating requirements and standards is a must to help reduce the possibility of an accident. This manual is of no value if the operator does not read and understand the instructions and precautions- before starting or trying to operate the machine. The operator must be aware of the machine's capacities and limitations. It is the operator's responsibility to watch for situations and conditions which could affect the normal performance of the machine and the safety of the operating/work environment.



## Specifications



### PTR-7230 General Overview

The Sherman+Reilly™ Revolution Series PTR-7230 is a puller/tensioner/reconductor in a single unit delivering 30,000 lbs. of pulling force and tensions up to 25,000 lbs. With a maximum speed of 4 mph, the 72 inch bullwheels provide constant tension and can handle transmission-class conductors. The PTR-7230 features a fully electronic, integrated control system for precision application of force to conductors, and an integrated drum for steel hardline; no separate reel trailer is required.

This machine also allows for synchronized integration of external reel stands. The PTR-7230's heavy-duty 5th wheel trailer offers excellent ground clearance for tackling very rugged terrain. The addition of a powerful 7.1 liter, 268 HP, 6-cylinder diesel engine supplies plenty of power for the large and long pulls. The operator controls employ PLC machine control with CAN-bus technology, and uses a removable/replace-able memory card to store all relevant stringing data. The onboard computer system allows for self-diagnostics of all hydraulic circuits with results shown on a large color display.

The PTR-7230 features a Safe-Zone™ Cab providing ultimate safety and comfort for the operator. The Safe-Zone™ Cab employs a poly carbonate front window for maximum visibility while providing superior protection against impact. The cab includes climate control, a fully adjustable ergonomic seat, and all required electronic controls and gauges. The Safe-Zone™ Cab is designed to reduce operator fatigue, and provide an "off-ground" envelope for greatly reducing the risk of "touch potential" in energized environments.



### Key Features



- Fully Hydraulic/Direct Drive System
- Puller/Tensioner/Reconductor in a single unit.
- Safe-Zone™ Cab- Fully Enclosed, w/Climate Control
- 72" Bullwheels- Hydraulically Driven
- 84 in. Rope Reel with Optional 25,000 ft. (Max) Unitrex™ Synthetic Rope
- Horizontal Automatic Levelwind/Fairlead
- Centralized Engine Controls- CAN-bus technology
- Digital Controls and Self Diagnostics



## Specifications

### Specifications Details: PTR-7230

*(Dimensions, weights, and capacities listed are approximate. All specifications are subject to change without notice.)*

Maximum Pulling Capacity	30,000 lbs.
Maximum Tensioning Capacity	25,000 lbs.
Maximum Line Speed	Pulling: 4 mph. @ 16,000 lbs. / 2.3 mph @ 30,000 lbs.
Maximum Reconductor Reel Size	112 in. Diameter / 60 in. Width / <i>Contact S+R for Total Weight w/Conductor</i>
Rope Reel Dimensions	84 in. Diameter / 60 in. Width / 3,832 lbs. Weight (Empty) (Opt.) 112 in. Diameter / 60 in. Width / 5,173 lbs. Weight (Empty)
Rope Reel Capacities	.84 in. dia. Unitrex™ / 25,000 ft. on 84 in. Reel / 5,750 lbs. Rope Weight
Hardline Capacity (Maximum)	<u>20 mm. dia. Anti-Twist Steel Cable</u> / 24,250 ft. on 84 in. Reel / 29,102 lbs Total Weight
Bullwheels (2)	72 in. / 8 Groove
Bullwheel Linings	1 3/16 in. Groove Radius / Molded Neoprene / Replaceable
Drive System	Direct Drive: hydraulic motor, bullwheel
Drive System Engine	Turbocharged, diesel, 268 HP, water-cooled
Fuel Capacity	35 U.S. gallon
Hydraulic Fluid	ISO Grade 32
Hydraulic Reservoir	20 U.S. gallon
Hydraulic Fluid Filtration (3)	25 microns, two in tank return filters, one pump filter
Tensioning Brake	Hydraulic-applied, automatically controlled- per operator settings
Fail-Safe Brake	Spring-applied- released by hydraulic pressure
Fairlead Rollers / Levelwind	Single, hydraulically driven, automatically controlled, remotely adjustable
Levelwind	Hydraulically driven, automatically controlled
Operator's Safety Enclosure	Safe-Zone™ Cab, fully enclosed, dual door, climate controlled
Frame Construction	Steel, continuous-weld
Length (Overall, Nom.)	48 ft.
Width (Overall, Nom.)	8 ft., 6 in.
Height (Overall, Nom.)	12 ft., 2 in.
Weight (With Rope, Nom.)	Contact S+R
GVWR	63,391 lbs.
Suspension	Air Ride
Axle Configuration	Tandem
Wheel Configuration and Tires	Dual 275/70R 22.5
Brakes (Trailer)	Air
Towing Attachment	5 <sup>th</sup> Wheel, 2 in. king pin
Rear (R/L) Jacks (2)	Hydraulic, with shoe
Front/Nose Jack (2)	Hydraulic, vertical cylinder type, with shoe
Electrical System	Split 12/24 VDC
Battery (2)	12 V, 720 CCA, BCI group 93
Lights / Navigation	12 V, LED, U.S. DOT-approved
Tie Downs (2)	1 in. dia. steel D-Rings
Rope Tie-Offs (2)	1 in. dia. steel D-Rings
Grounding (6)	3/4 in. dia. copper-clad steel loops
Wheel Chocks	Standard
Fire Extinguisher	ABC
Color	S+R White



## Specifications



### PTR-7230S [Split Model] General Overview

The Sherman+Reilly™ Revolution Series PTR-7230S- (Split Model) is a bullwheel puller/tensioner/reconductor in a paired unit, delivering up to 30,000 lbs. of pulling force and tensions up to 25,000 lbs. With a maximum speed of 4 mph, this Revolution Series PTR's 72 inch bullwheels provide constant tension and can handle transmission-class conductors.

The PTR-7230S features a fully-electronic, integrated control system for precision application of force to conductors. This split model PTR comes with a separated reel carrying trailer that includes a pulling drum designed for synthetic rope or steel hardline. Having a separate reel carrying trailer provides a reduced equipment foot-print for storage purposes, as well as minimizing operating space in the field. The PTR is also equipped with an automatic levelwind and an optional reconductoring reel that can be used in place of the provided rope drum. Additionally, the usage of the reel carrying trailer can be bypassed altogether for use of external conductor reel stands - all under system control.

The PTR-7230S offers either a heavy-duty 5th wheel king pin hitch or a pintle eye hitch option for maximum vehicle towing compatibility, providing excellent ground clearance that can handle very rugged terrain. Also included are a powerful 7.1 liter, 268 HP 6-cylinder diesel engine, PLC machine control with CAN-bus technology, a removable/replaceable USB memory card interface for recording and storage of all relevant stringing data, and complete system self-diagnostics for all hydraulic circuits shown on the large color display.

The PTR-7230S features a Safe-Zone™ Cab providing ultimate safety and comfort for the operator. The Safe-Zone™ Cab employs a polycarbonate front window for maximum visibility while providing superior protection against impact. The cab includes climate control, a fully adjustable ergonomic seat, and all required electronic controls and gauges. The Safe-Zone™ Cab is designed to reduce operator fatigue, and provide an "off-ground" envelope for greatly reducing the risk of "touch potential" in energized environments.



### Key Features

- Fully Hydraulic/Direct Drive System
- Puller/Tensioner/Reconductor in a single unit.
- Safe-Zone™ Cab- Fully Enclosed, w/Climate Control
- 72" Bullwheels- Hydraulically Driven
- 84 in. Rope Reel with Optional 25,000 ft. (Max) Unitrex™ Synthetic Rope
- Horizontal Automatic Levelwind/Fairlead
- Centralized Engine Controls- CAN-bus technology
- Digital Controls and Self Diagnostics



## Specifications

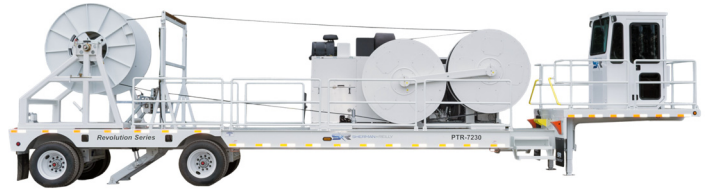
# Specifications Details: PTR-7230S [Split Model]

(Dimensions, weights, and capacities listed are approximate. All specifications are subject to change without notice.)

Maximum Pulling Capacity	30,000 lbs.			
Maximum Tensioning Capacity	25,000 lbs.			
Maximum Line Speed	Pulling: 4 mph. @ 16,000 lbs. / 2.3 mph @ 30,000 lbs.			
Maximum Reconductor Reel Size	112 in. Diameter / 60 in. Width / <i>Contact S+R for Total Weight w/Conductor</i>			
Rope Reel Dimensions	84 in. Diameter / 60 in. Width / 3,882 lbs. Weight (Empty) (Opt.) 112 in. Diameter / 60 in. Width / 5,224 lbs. Weight (Empty)			
Rope Reel Capacities	.84 in. dia. Unitrex™ / 25,000 ft. on 84 in. Reel / 5,750 lbs. Rope Weight			
Hardline Capacity (Maximum)	20 mm. dia. Anti-Twist Steel Cable / 24,250 ft. on 84 in. Reel / 29,102 lbs Total Weight			
Bullwheels (2)	72 in. / 8 Groove			
Bullwheel Linings	1 3/16 in. Groove Radius / Molded Neoprene / Replaceable			
Drive System	Direct Drive: hydraulic motor, bullwheel			
Drive System Engine	Turbocharged, diesel, 268 HP, water-cooled			
Fuel Capacity	35 U.S. gallon			
Hydraulic Fluid	ISO Grade 32			
Hydraulic Reservoir	20 U.S. gallon			
Hydraulic Fluid Filtration (3)	25 microns, two in tank <i>return filters, one pump filter</i>			
Tensioning Brake	Hydraulic-applied, automatically controlled- <i>per operator settings</i>			
Fail-Safe Brake	Spring-applied- <i>released by hydraulic pressure</i>			
Fairlead Rollers / Levelwind	Single, hydraulically driven, automatically controlled, remotely adjustable			
Levelwind	Hydraulically driven, automatically controlled			
Operator's Safety Enclosure	Safe-Zone™ Cab, fully enclosed, dual door, climate controlled			
Rear (R/L) Jacks (2)	Hydraulic, with shoe			
Front/Nose Jack (4)	Hydraulic, vertical cylinder type, with shoe			
Electrical System	Split 12/24 VDC			
Battery (2)	12 V, 720 CCA, BCI group 93			
Lights / Navigation	12 V, LED, U.S. DOT-approved			
Wheel Chocks (4)	Standard, 2 per trailer			
Fire Extinguisher (2)	ABC, one per trailer			
Color	S+R White			
Frame Construction	Steel, continuous-weld			
Reel Trailer Jack Power	13 HP Engine, hydraulic pump/reservoir			
	<b>PTR-7230S 5<sup>th</sup> Wheel</b>	<b>PTR-7230S Pintle Eye</b>	<b>RC3000X Reel Trailer</b>	<b>RC2500X Reel Trailer</b>
Length (Overall, Nom.)	34 ft., 6 in.	30 ft., 9 in.	23 ft.	21 ft., 10 in.
Width (Overall, Nom.)	8 ft., 6 in.	8 ft., 6 in.	8 ft., 6 in.	8 ft., 6 in.
Height (Overall, Nom.)	12 ft., 4 in.	11 ft.	9 ft., 10 in.	12 ft., 4 in.
Weight (Nom.)	<i>Contact S+R</i>	<i>Contact S+R</i>	<i>Contact S+R (With Rope)</i>	<i>Contact S+R</i>
GVWR	<i>Contact S+R</i>	40,000 lbs.	58,527 lbs.	40,000 lbs.
Suspension	Air Ride	Air Ride	Air Ride	Air Ride
Axle Configuration	Tandem	Tandem	Tandem	Tandem
Wheel Configuration and Tires	Dual 275/70R 22.5	Dual 275/70R 22.5	Dual 275/70R 22.5	Dual 275/70R 22.5
Brakes (Trailer)	Air	Air	Air	Air
Towing Attachment*	5 <sup>th</sup> Wheel 2 in. king pin	3 in. pintle eye	5 <sup>th</sup> Wheel, 2 in. king pin	3 in. pintle eye
Tie Downs (4)	(2) 1 in. dia. steel D-Rings	(2) 1 in. dia. steel D-Rings	(2) 1 in. dia. steel D-Rings	(2) 1 in. dia. steel D-Rings
Rope Tie-Offs (5)	(2) 1 in. dia. steel D-Rings	(2) 1 in. dia. steel D-Rings	(3) 1 in. dia. steel D-Rings	(2) 1 in. dia. steel D-Rings
Grounding (8)	(4) 3/4 in. dia. copper-clad steel loops	(4) 3/4 in. dia. copper-clad steel loops	(4) 3/4 in. dia. copper-clad steel loops	(4) 3/4 in. dia. copper-clad steel loops

\*Specifications may alter for pintle eye trailer configurations. Contact Sherman + Reilly for more information.

# Specifications



## PTR-7240 General Overview

The Sherman+Reilly™ Revolution Series PTR-7240 is a puller/tensioner/reconductor in a single unit delivering 40,000 lbs. of pulling force and tensions up to 25,000 lbs. With a maximum speed of 4 mph, the 72" bullwheels provide constant tension and handles transmission-class conductors. The PTR-7240 features a fully electronic, integrated control system for precision application of force to conductors, and an integrated drum for steel hardline; no separate reel trailer is required.

This machine also allows for synchronized integration of external reel stands. The PTR-7240's heavy-duty 5th wheel trailer offers excellent ground clearance for tackling very rugged terrain. The addition of a powerful Caterpillar C9 industrial diesel engine supplies plenty of power for the large and long pulls. The operator controls employ PLC machine control with CAN-bus technology, and uses a removable/replaceable memory card to store all relevant stringing data. The onboard computer system allows for self-diagnostics of all hydraulic circuits with results shown on a large color display.

The PTR-7240 features a Safe-Zone™ Cab providing ultimate safety and comfort for the operator. The Safe-Zone™ Cab employs a polycarbonate front window for maximum visibility while providing superior protection against impact. The cab includes climate control, a fully adjustable ergonomic seat, and all required electronic controls and gauges. The Safe-Zone™ Cab is designed to reduce operator fatigue, and provide an "off-ground" envelope for greatly reducing the risk of "touch potential" in energized environments.



## Key Features

- Fully Hydraulic/Direct Drive System
- Puller/Tensioner/Reconductor in a single unit.
- Safe-Zone™ Cab- Fully Enclosed, w/Climate Control
- 72" Bullwheels- Hydraulically Driven
- 112 in. Rope Reel with Optional 30,000 ft. (Max) Unitrex™ Synthetic Rope
- Horizontal Automatic Levelwind/Fairlead
- Centralized Engine Controls- CAN-bus technology
- Digital Controls and Self Diagnostics



## Specifications

# Specifications Details: PTR-7240

*(Dimensions, weights, and capacities listed are approximate. All specifications are subject to change without notice.)*

Maximum Pulling Capacity	40,000 lbs.
Maximum Tensioning Capacity	25,000 lbs.
Maximum Line Speed	Pulling: 4 mph. @ 16,000 lbs. / 2.3 mph @ 30,000 lbs.
Maximum Reconductor Reel Size	112 in. Diameter / 60 in. Width / <i>Contact S+R for Total Weight w/Conductor</i>
Rope Reel Dimensions	112 in. Diameter / 60 in. Width / 5,224 lbs. Weight (Empty)
Rope Reel Capacities	1.15 in. dia. Unitrex™ / 30,000 ft. on 112 in. Reel / 11,880 lbs. Rope Weight
Hardline Capacity (Maximum)	24 mm. dia. Anti-Twist Steel Cable / 20,646 ft. on 112 in. Reel / 29,999 lbs Total Weight
Bullwheels (2)	72 in. / 8 Groove
Bullwheel Linings	1 3/8 in. Groove Radius / Molded Neoprene / Replaceable
Drive System	Direct Drive: hydraulic motor, bullwheel
Drive System Engine	Turbocharged, diesel, 268 HP, water-cooled
Fuel Capacity	35 U.S. gallon
Hydraulic Fluid	ISO Grade 32
Hydraulic Reservoir	20 U.S. gallon
Hydraulic Fluid Filtration (3)	25 microns, two in tank <i>return filters, one pump filter</i>
Tensioning Brake	Hydraulic-applied, automatically controlled- <i>per operator settings</i>
Fail-Safe Brake	Spring-applied- <i>released by hydraulic pressure</i>
Fairlead Rollers / Levelwind	Single, hydraulically driven, automatically controlled, remotely adjustable
Levelwind	Hydraulically driven, automatically controlled
Operator's Safety Enclosure	Safe-Zone™ Cab, fully enclosed, dual door, climate controlled
Frame Construction	Steel, continuous-weld
Length (Overall, Nom.)	48 ft.
Width (Overall, Nom.)	8 ft., 6 in.
Height (Overall, Nom.)	12 ft., 2 in.
Weight (With Rope, Nom.)	<i>Contact S+R</i>
GVWR	<i>Contact S+R</i>
Suspension	Air Ride
Axle Configuration	Tandem
Wheel Configuration and Tires	Dual 275/70R 22.5
Brakes (Trailer)	Air
Towing Attachment	5 <sup>th</sup> Wheel, 2 in. king pin
Rear (R/L) Jacks (2)	Hydraulic, with shoe
Front/Nose Jack (2)	Hydraulic, vertical cylinder type, with shoe
Electrical System	Split 12/24 VDC
Battery (2)	12 V, 720 CCA, BCI group 93
Lights / Navigation	12 V, LED, U.S. DOT-approved
Tie Downs (2)	1 in. dia. steel D-Rings
Rope Tie-Offs (2)	1 in. dia. steel D-Rings
Grounding (6)	3/4 in. dia. copper-clad steel loops
Wheel Chocks	Standard
Fire Extinguisher	ABC
Color	S+R White



## Specifications



### PTR-7240S [Split Model] General Overview

The Sherman+Reilly™ Revolution Series PTR-7240S- (Split Model) is a bullwheel puller/tensioner/reconductor in a paired unit, delivering up to 40,000 lbs. of pulling force and tensions up to 25,000 lbs. With a maximum speed of 4 mph, this Revolution Series PTR's 72" bullwheels provide constant tension and can handle transmission class conductors.

The PTR-7240S features a fully-electronic, integrated control system for precision application of force to conductors. This split model PTR comes with a separated reel carrying trailer that includes a pulling drum designed for synthetic rope or steel hardline. Having a separate reel carrying trailer provides a reduced equipment foot-print for storage purposes, as well as minimizing operating space in the field. The PTR is also equipped with an automatic levelwind and an optional reconductoring reel that can be used in place of the provided rope drum. Additionally, the usage of the reel carrying trailer can be bypassed altogether for use of external conductor reel stands - all under system control.

The PTR-7240S is mounted on a heavy-duty 5th wheel trailer, offering excellent ground clearance that can handle very rugged terrain. Also included are a powerful Caterpillar C9 industrial diesel engine, PLC machine control with CAN-bus technology, a removable/replaceable USB memory card interface for recording and storage of all relevant stringing data, and complete system self-diagnostics for all hydraulic circuits shown on the large color display.

The PTR-7240S features a Safe-Zone™ Cab providing ultimate safety and comfort for the operator. The Safe-Zone™ Cab employs a polycarbonate front window for maximum visibility while providing superior protection against impact. The cab includes climate control, a fully adjustable ergonomic seat, and all required electronic controls and gauges. The Safe-Zone™ Cab is designed to reduce operator fatigue, and provide an "off-ground" envelope for greatly reducing the risk of "touch potential" in energized environments.



### Key Features

- Fully Hydraulic/Direct Drive System
- Puller/Tensioner/Reconductor in a Split Unit
- Safe-Zone™ Cab- Fully Enclosed, w/Climate Control
- 72" Bullwheels- Hydraulically Driven
- 112 in. Rope Reel with Optional 30,000 ft. (Max) Unitrex™ Synthetic Rope
- Horizontal Automatic Levelwind/Fairlead
- Centralized Engine Controls- CAN-bus technology
- Digital Controls and Self Diagnostics



## Specifications

# Specifications Details: PTR-7240S [Split Model]

*(Dimensions, weights, and capacities listed are approximate. All specifications are subject to change without notice.)*

Maximum Pulling Capacity	40,000 lbs.	
Maximum Tensioning Capacity	25,000 lbs.	
Maximum Line Speed	Pulling: 4 mph. @ 16,000 lbs. / 2.3 mph @ 30,000 lbs.	
Maximum Reconductor Reel Size	112 in. Diameter / 60 in. Width / <i>Contact S+R for Total Weight w/Conductor</i>	
Rope Reel Dimensions	112 in. Diameter / 60 in. Width / 5,224 lbs. Weight (Empty)	
Rope Reel Capacities	1.15 in. dia. Unitrex™ / 30,000 ft. on 112 in. Reel / 11,880 lbs. Rope Weight	
Hardline Capacity (Maximum)	24 mm. dia. Anti-Twist Steel Cable / 20,646 ft. on 112 in. Reel / 29,999 lbs Total Weight	
Bullwheels (2)	72 in. / 8 Groove	
Bullwheel Linings	1 3/16 in. Groove Radius / Molded Neoprene / Replaceable	
Drive System	Direct Drive: hydraulic motor, bullwheel	
Drive System Engine	Turbocharged, diesel, 268 HP, water-cooled	
Fuel Capacity	35 U.S. gallon	
Hydraulic Fluid	ISO Grade 32	
Hydraulic Reservoir	20 U.S. gallon	
Hydraulic Fluid Filtration (3)	25 microns, two in tank <i>return filters</i> , one <i>pump filter</i>	
Tensioning Brake	Hydraulic-applied, automatically controlled- <i>per operator settings</i>	
Fail-Safe Brake	Spring-applied- <i>released by hydraulic pressure</i>	
Fairlead Rollers / Levelwind	Single, hydraulically driven, automatically controlled, remotely adjustable	
Levelwind	Hydraulically driven, automatically controlled	
Operator's Safety Enclosure	Safe-Zone™ Cab, fully enclosed, dual door, climate controlled	
Rear (R/L) Jacks (2)	Hydraulic, with shoe	
Front/Nose Jack (4)	Hydraulic, vertical cylinder type, with shoe	
Electrical System	Split 12/24 VDC	
Battery (2)	12 V, 720 CCA, BCI group 93	
Lights / Navigation	12 V, LED, U.S. DOT-approved	
Wheel Chocks (4)	Standard, 2 per trailer	
Fire Extinguisher (2)	ABC, one per trailer	
Color	S+R White	
Frame Construction	Steel, continuous-weld	
Reel Trailer Jack Power	13 HP Engine, hydraulic pump/reservoir	
	<b><u>PTR-7240 Split Trailer</u></b>	<b><u>RC3000X Reel Trailer</u></b>
Length (Overall, Nom.)	34 ft., 6 in.	23 ft.
Width (Overall, Nom.)	8 ft., 6 in.	8 ft., 6 in.
Height (Overall, Nom.)	12 ft., 4 in.	9 ft., 10 in.
Weight (Nom.)	<i>Contact S+R</i>	<i>Contact S+R (With Rope)</i>
GVWR	<i>Contact S+R</i>	58,527 lbs.
Suspension	Air Ride	Air Ride
Axle Configuration	Tandem	Tandem
Wheel Configuration and Tires	Dual 275/70R 22.5	Dual 275/70R 22.5
Brakes (Trailer)	Air	Air
Towing Attachment	5 <sup>th</sup> Wheel, 2 in. king pin	5 <sup>th</sup> Wheel, 2 in. king pin
Tie Downs (4)	(2) 1 in. dia. steel D-Rings	(2) 1 in. dia. steel D-Rings
Rope Tie-Offs (5)	(2) 1 in. dia. steel D-Rings	(3) 1 in. dia. steel D-Rings
Grounding (8)	(4) 3/4 in. dia. copper-clad steel loops	(4) 3/4 in. dia. copper-clad steel loops

## Safety

### Hazard Overview

Please pay attention to all safety warning labels and information placards posted on the machine, components, and trailer assembly. These labels and placards are provided to assist in identifying areas containing potential hazards while also providing information regarding equipment specification and limitations. Please see below for examples:



**Warning Terms:** Are signal words in this manual that call the operator's attention to safety concerns.

The word **DANGER** indicates the information relates to a specific immediate hazard which, if disregarded, will result in severe personal injury or death.

The word **CAUTION** indicates the information pertains to a potential hazard or unsafe practice which, if disregarded, may result in minor personal injury or equipment damage.

The word **WARNING** indicates the information relates to a specific immediate hazard or unsafe practice which, if disregarded, could result in personal injury or death.

The word **NOTE** indicates the information is important to the correct operation or maintenance of the machine.

## Safety

### General Warnings

**WARNING:** Ear protection should be worn when operating machines with operator ear noise levels above 85dB.

**WARNING:** This machine must not be used as a winch for pulling another vehicle. For trailer models: this trailer must not be modified to allow towing of another trailer behind and in tandem with this trailer.

**WARNING:** California Proposition 65: Engine exhaust, some of its elements, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

**WARNING:** Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns.

**WARNING:** To prevent serious injury from hot and high pressure oil, never use your hands to check for oil leaks; use paper or cardboard. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin. If fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this form of injury, otherwise gangrene may develop.



## Safety

### Operator Safety Precautions

- Do not place any part of the body into a potential pinch point. The machine must be turned off and locked out in accordance with OSHA regulations before attempting to correct a problem, work on the machine, or perform preventive maintenance.
- Do not attempt to operate any Sherman+Reilly equipment without proper instruction, including reading and understanding the provided manual.
- Obey and enforce all warnings including OSHA requirements and ANSI standards.
- Never allow anyone to ride on the unit while it is being towed.
- Always wear proper safety equipment as required by employer.
- Never bypass safety switches or operate equipment with faulty safety devices.
- Be sure all guards and access covers are in place and secured when the machine is being operated.
- Be aware of people in the work area who may be at risk during operation.
- Know all emergency shutdown procedures.
- Do not obstruct controls or fire extinguisher and make sure fire extinguisher is fully charged.
- Never operate equipment while under the influence of any substance which could impair ability or judgment.
- Do not operate equipment if work ability is impaired by fatigue, illness, or other causes.
- Always use employer approved grounding procedures when operating the machine.
- Never use hands to check for hydraulic system leaks. Hydraulic fluid escaping under pressure can cause personal injury.
- Avoid contact with pumps, cylinders, hoses, engine components, and exhaust system.
- Do not refuel unit while the engine is running or hot.
- Keep all body parts, to include head and limbs, away from all moving parts.
- Refer to engine manufacturer's manual for all additional safety precautions which relate to engine operation and service.
- Know location and function of all controls, gauges, instruments, and protective devices.
- Never use unit to tow or winch another vehicle.
- Never use controls or hoses for hand holds.
- Do not exceed unit specifications and limitations, to include weight.
- Know where to get help in the event of an emergency or injury.
- When towing this machine/unit trailer, the driver should use caution and adjust speed based on road, weather, and terrain conditions, as well as applicable laws and speed limits.
- Do not make physical contact with rope or cable as it enters or leaves the machine or drum.
- To prevent the possibility of electrocution, do not enter or leave the unit while it is operating or allow anyone to touch or lean on the machine when in use.



## Safety

### Employer Safety Precautions

This guideline is intended to assist owners/employers to ensure equipment is serviced and operated in a safe manner. Each job site may have additional situations and conditions which need consideration.

Monitor the operators to be sure they observe and practice safety procedures and operate the support equipment as outlined in this manual.

Establish a regular inspection program which includes malfunction reports, inspection, and service records. This inspection should cover the machine condition, adjustment, and ensure all safeguards are in place and functional. Additionally, all pre/post-operation inspections should be conducted at prescribed intervals.

Make sure that any malfunction or breakdown affecting the safe operation of the equipment is properly corrected or repaired before returning the machine to service.

The employer shall provide training and instruction in chemical safety and safe methods of work before assigning workers to operate, service, or repair the machine and equipment. A record of training dates, employee names, and level of training shall be maintained. Only persons who have a full understanding of the provided manual-

(provided in English only), and who are competent in the use of overhead pulling and tensioning machines; to include all applicable laws, regulations, and safety standards, should be allowed to operate this machine. There are significant hazards inherent to the use of this machine, therefore all operators should be educated on all functions, procedures, and safety measures outlined in this manual- prior to their use or maintenance of this machine.

Employer shall utilize a lock-out/tag-out procedure which complies with OSHA Standard, Part 1910.147, Title 29 of the Code of Federal Regulations. This procedure must include control of all keys.

The employer will specifically inspect all safety equipment and protective devices on the equipment to ensure they are not bypassed or disabled. Operation of equipment will not be permitted unless all safety devices are in place and functional. The employer shall meet all appropriate information dissemination and protection requirements for the workers.



## Safety

# Chemical Safety

Exposure to chemicals during normal operation of the machine is limited; however, chemical exposure may be encountered through preventive maintenance and repair. Operators and maintenance/service personnel should take appropriate precautions, to include wearing all (PPE)- Personal Protection Equipment, prior to the operation, maintenance, or service of the machine. All Material Safety Data Sheets (MSDS's) or Safety Data Sheets (SDS's) for OEM chemicals present upon initial manufacture/shipment of machine can be made available upon request to Sherman+Reilly.

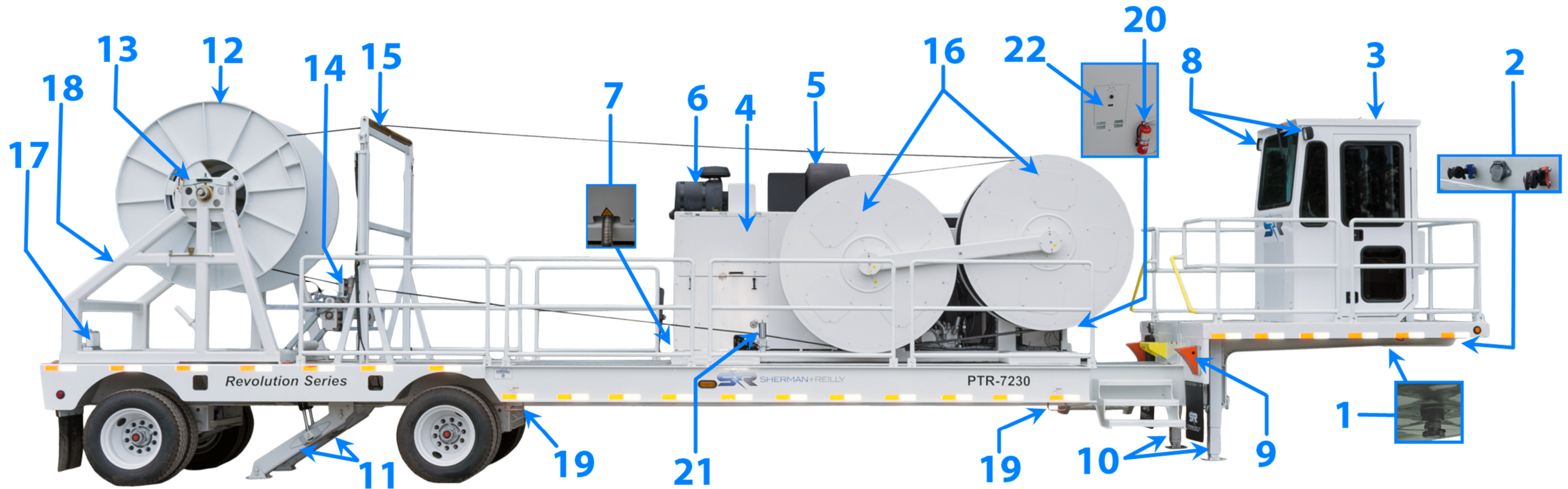
Any additional chemicals introduced to the machine or used in conjunction with maintenance or repair of the machine must have a MSDS/SDS available for work being done, and would thereby be the responsibility of the operator's employer or the organization providing the maintenance. All chemical handling and disposal should be done in accordance with environmental, federal, state, and local laws and regulations. Sherman+Reilly is not liable for the mishandling, misuse, or improper disposal of chemicals, with regard to the use or maintenance of Sherman+Reilly machines or equipment.

All responsibilities, including but not limited to: handling and disposal of chemicals, availability and maintenance of MSDS's/SDS's, labeling of chemical containers, and training of employees and operators, should be fulfilled in accordance with the Hazard Communication Act, Hazardous Materials Transportation Act, OSHA's Hazard Communication Standard- (29 CFR) Part 1910.1200, and all applicable EPA Standards and Regulations- (*additional standards may apply*). For further information on safety standards regarding chemicals see OSHA and EPA websites.



## Terms You Need to Know- [Long Models]

- |                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. King Pin Hitch</li> <li>2. Air Brake/Lights Hook-Up</li> <li>3. Safe-Zone™ Cab</li> <li>4. Hydraulic Power Engine/Pump Enclosure</li> <li>5. Engine Exhaust</li> <li>6. Engine Air Intake Filter Housing</li> <li>7. Arctic Kit Burner Exhaust</li> <li>8. Exterior Work Lighting</li> </ol> | <ol style="list-style-type: none"> <li>9. Wheel Chocks/holders (2)</li> <li>10. Front/Nose [L/R] Jacks (2)</li> <li>11. Rear [L/R] Jacks (2)</li> <li>12. Drum/Reel</li> <li>13. Drum/Reel Coupling/Retaining Bar</li> <li>14. Levelwind</li> <li>15. Drum Roller/"Hoop"</li> <li>16. Bullwheels (2)</li> </ol> | <ol style="list-style-type: none"> <li>17. Rear Fairlead</li> <li>18. Drum/Reel Stand</li> <li>19. Grounding Bracket</li> <li>20. Fire Extinguisher</li> <li>21. Fairlead</li> <li>22. Fuel Tank Fill Access Door</li> </ol> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



# 4

## Operation

### Terms You Need to Know- [Long Models]

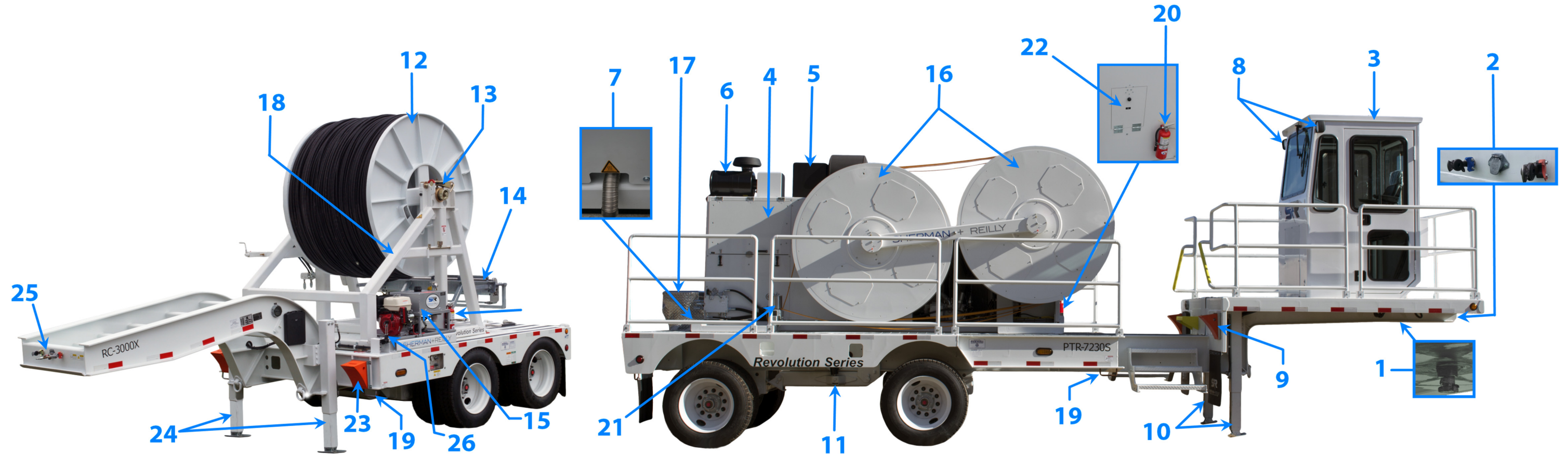


## Terms You Need to Know- [Split Models]

1. King Pin Hitch
2. Air Brake/Lights Hook-Up
3. Safe-Zone™ Cab
4. Hydraulic Power Engine/Pump Enclosure
5. Engine Exhaust
6. Engine Air Intake Filter Housing
7. Arctic Kit Burner Exhaust
8. Exterior Work Lighting
9. Wheel Chocks/holders (2)

10. Front/Nose [L/R] Jacks (2)
11. Rear [L/R] Jacks (2)
12. Drum/Reel
13. Drum/Reel Coupling/Retaining Bar
14. Levelwind
15. [RC3000X] Reel Trailer Hydraulic Power Pack
16. Bullwheels (2)
17. Hose Storage/Tool Box
18. Drum/Reel Stand

19. Grounding Bracket
20. Fire Extinguisher
21. Fairlead
22. Fuel Tank Fill Access Door
23. [RC3000X] Wheel Chocks/holders (2)
24. [RC3000X] Front/Nose [L/R] Jacks (2)
25. [RC3000X] Air Brake/Lights Hook-Up
26. [RC3000X] Hydraulic Jack Controls



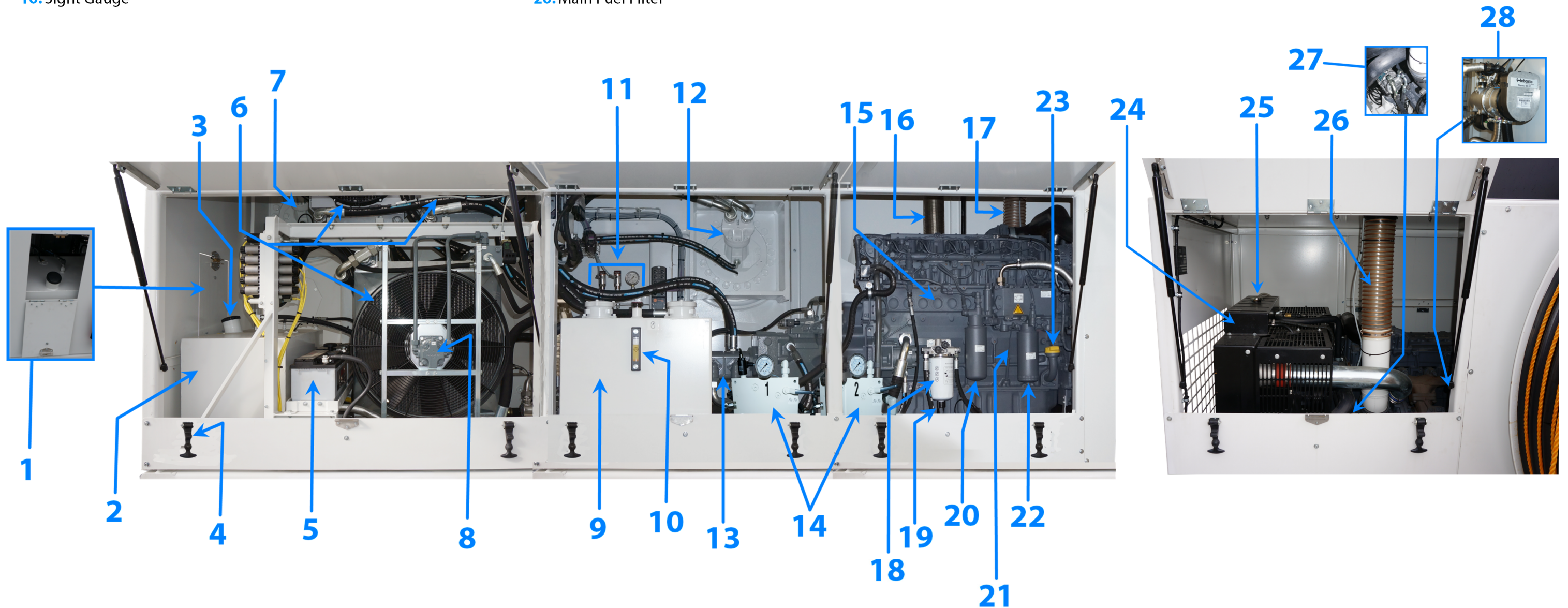
## Terms You Need to Know- [Split Models]



## Operation

### Under the Hood- [PTR-7230/7230S]

- |                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Fuel Tank Access Panel</li> <li>2. Diesel Fuel Tank</li> <li>3. Diesel Fuel Tank Cap</li> <li>4. Rubber Compartment Latches</li> <li>5. Batteries</li> <li>6. Hydraulic System Coolers</li> <li>7. Hydraulic Drive Motor</li> <li>8. Hydraulic Cooling Fan Motor</li> <li>9. Hydraulic Tank w/Filters</li> <li>10. Sight Gauge</li> </ol> | <ol style="list-style-type: none"> <li>11. Hydraulic System Gauges</li> <li>12. Hydraulic Drive Motor</li> <li>13. Hydraulic Pump</li> <li>14. Reel Engagement Hydraulic Valves- <i>(Orientation May Vary)</i></li> <li>15. Hydraulic Power Engine</li> <li>16. Engine Exhaust Pipe</li> <li>17. Engine Air Intake Pipe</li> <li>18. Engine Fuel Pre-filter/Water Separator</li> <li>19. Fuel/Water Separator Drain Cock</li> <li>20. Main Fuel Filter</li> </ol> | <ol style="list-style-type: none"> <li>21. Engine Oil Dipstick</li> <li>22. Engine Oil Filter</li> <li>23. Engine Oil Fill Port</li> <li>24. Engine Radiator</li> <li>25. Engine Radiator Cap/Fill</li> <li>26. Engine Air Intake Pipe</li> <li>27. AC Compressor</li> <li>28. Arctic Kit Burner</li> </ol> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

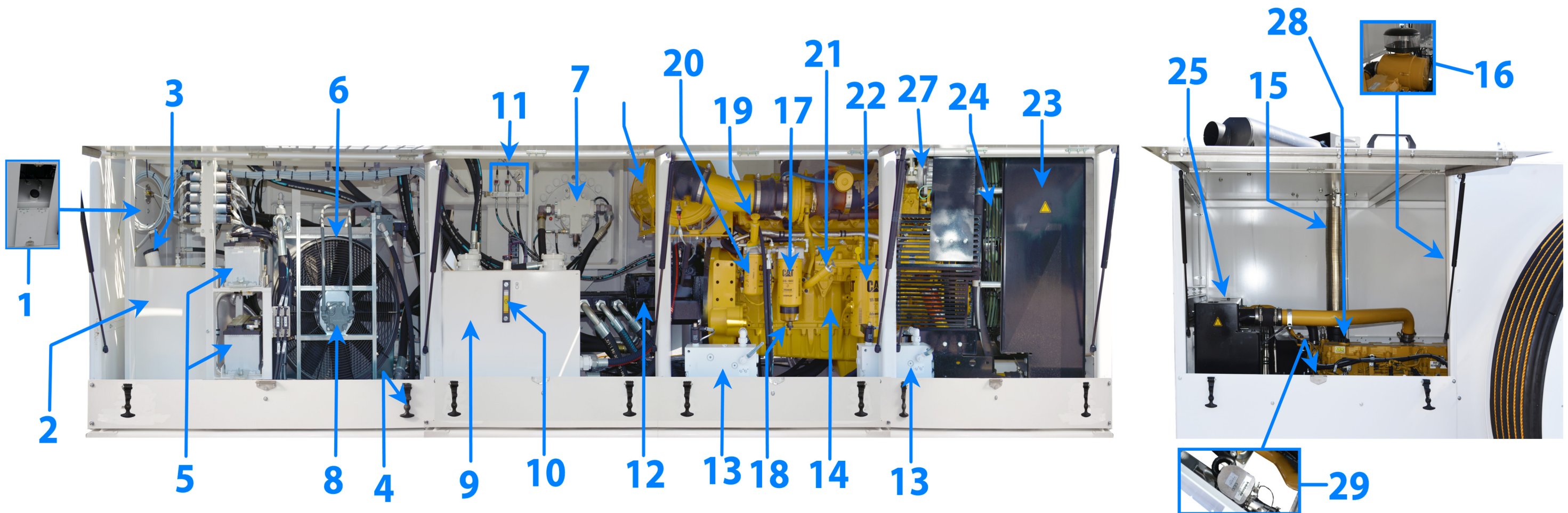


## Under the Hood- [PTR-7230]



**Under the Hood- [PTR-7240/7240S]**

- 1. Fuel Tank Access Panel
- 2. Diesel Fuel Tank
- 3. Diesel Fuel Tank Cap
- 4. Rubber Compartment Latches
- 5. Batteries
- 6. Hydraulic System Coolers
- 7. Hydraulic Drive Motor
- 8. Hydraulic Cooling Fan Motor
- 9. Hydraulic Tank w/Filters
- 10. Sight Gauge
- 11. Hydraulic System Gauges
- 12. Hydraulic Pump
- 13. Reel Engagement Hydraulic Valves- *(Orientation May Vary)*
- 14. Hydraulic Power Engine
- 15. Engine Exhaust Pipe
- 16. Engine Air Intake Pipe
- 17. Engine Fuel Primary Filter/Water Separator
- 18. Fuel/Water Separator Drain Cock
- 19. Engine Fuel Priming Pump
- 20. Engine Fuel Pre-Filter
- 21. Engine Oil Dipstick
- 22. Engine Oil Filter
- 23. Engine Radiator
- 24. Engine Radiator Cooling Fan
- 25. Engine Radiator Cap/Fill
- 26. Engine Air Intake
- 27. AC Compressor
- 28. Engine Oil Fill Port
- 29. Arctic Kit Burner



## Under the Hood- [PTR-7240]

## Operation

### Safe-Zone Cab™

The Safe-Zone Cab™ is designed to keep the operator off the ground while the equipment is in use, and is built with a polycarbonate front window, fully adjustable ergonomic seat, high-resolution color LCD screen, and a full set of electronic controls. The Safe-Zone Cab™ comes in several sizes and forms, dependent upon the machine. It is designed to reduce operator fatigue, reduce errors and injuries in the field, and also reduce the risk of “touch potential” in energized environments.



### Operators Controls



### Auxiliary Power Port

A 12-Volt DC power port has been provided on the operator control console. This port can be used to charge field radios or cellular telephones, or provide power for other similar devices.



### Ergonomic Operators Chair



**CAUTION: Do not use ammonia-based cleaners.** Use only non-ammonia-based cleaners to clean the front polycarbonate window. Using ammonia on polycarbonate will cause structural damage to the polycarbonate material, thereby degrading the impact resistance of the front window. This can create a hazard for the operator should a line brakeage situation occur.



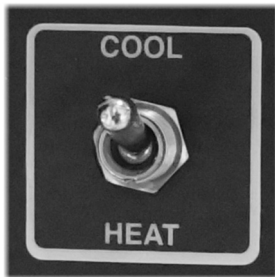


## Operation

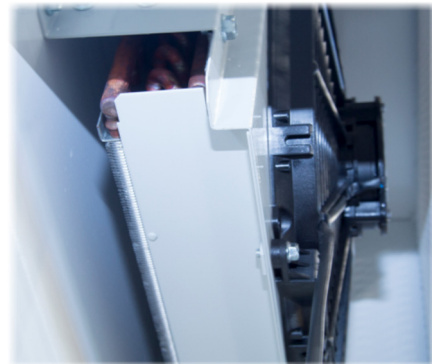
# Safe-Zone Cab™

### Climate Control System

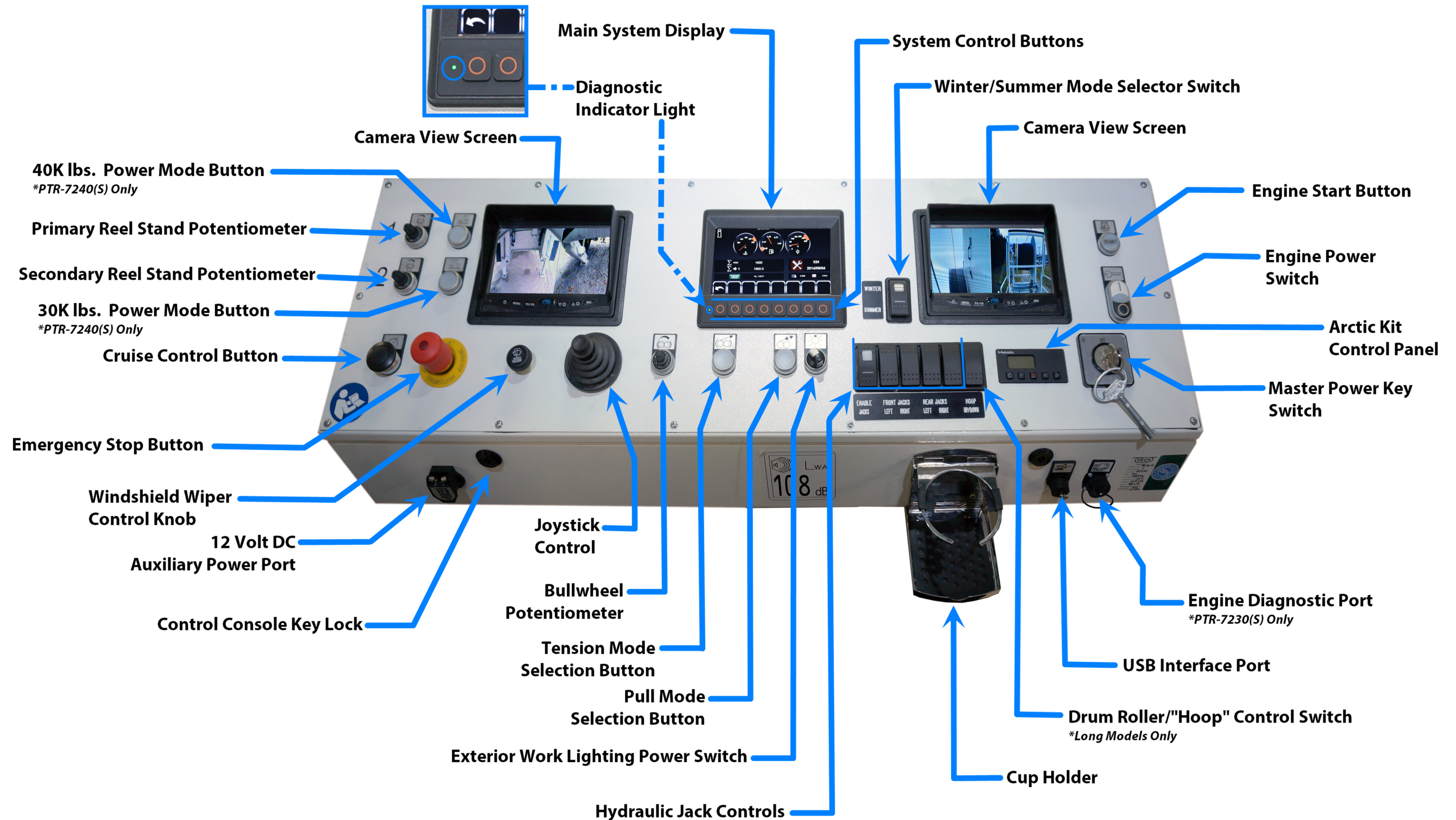
The PTR-Series Safe-Zone Cab comes equipped with a climate control system providing customized air temperature controls for both heating and cooling.



The climate control system has variable air fan speed, with overhead multidirectional vents.



### Operator Controls- [Operator Console]



## Operator Controls- [Operator Console]



## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

### Master Power Key Switch

This switch is used to control power to the operator controls. This switch must be turned to the [ON] position to start the machine.



**NOTE:** After the key switch is turned to the [ON] position, the system will begin a start-up phase, where the computer system boots up, and the ventilators, button lamps, and circuits are tested. This process takes approximately 30 seconds.

**CAUTION:** Always ensure that the master power key switch is turned to the [OFF] position when the machine is not in use. If the machine is to be left unattended, remove key from the key switch and stow in a secure place, while also securing the operators cab to prevent any unauthorized access to the controls or operation of the machine.

**CAUTION:** Before starting the machine or engaging any machine component, read and observe all safety precautions and operational procedures listed in this manual.

### Engine Power Switch

This button controls power to the engine. To turn on power to the engine, first ensure that the master power key switch is turned to the [ON] position, then push the top [I]/On button on the hydraulic engine power switch. After the engine power is engaged, the button will illuminate, and the engine control device will run through a function check. If the glow plugs are required, they will also engage automatically during this process. To turn the engine off, or turn off power to the engine, press the bottom [O]/Off button. If the [O]/Off



button is pressed during the start-up process, it will interrupt the start process, the lamp will go out, and the engine will stop.

### Engine Start Button



This button, when pressed, will start the engine. However, the button light must be on, indicating that the engine is ready to be started, prior to this button being pushed.

**NOTE:** The starter engagement is limited in time by the engine control system to reduce drain on the battery charge. If the engine starter engagement times-out, the starter try can then be repeated by pressing the [START] button again.

**NOTE:** If an engine error occurs, the engine will be stopped automatically by the system control. See *System Control Panel* section.

### Emergency Stop Button

When pushed, this red push button stops all operation functions, turning off system and engine power, while disengaging all controls. After being depressed, the button must be rotated and released to the disengaged position to restore power to the system and reengage operator controls.



**NOTE:** The emergency stop button should only be used to stop the machine in an emergency situation where there poses a risk of injury or death to personnel or to prevent equipment or property damage. When this button is pushed, line tensions can change rapidly. For more information on emergency shutdown situations see the *Emergency Stop Procedure* Section on page

84.

## Operation

# Operator Controls

*\*\*For control locations see Operator Control Panel Section on page 32.*

### Pull Mode Selection Button



This control button, when pushed, engages the line pulling mode for the machine. When this button is pressed, the button backlight will illuminate, indicating that the system computer has changed over to Pull Mode.

**NOTE:** When the system is started, it will always be in Pull Mode. This ensure that hydraulic brake will be set when the system is started.

### Joystick Control

The joystick is used in Pulling Mode to control the bullwheel/line speed and direction. To pull in the line, pull backward (toward the operator) on the joystick. To payout the line, push forward (away from the operator) on the joystick. The farther away from the center point the joystick is moved in either direction, the faster the bullwheels will turn, thereby increasing line speed. To slow the line speed from either payout or pulling directions, move the joystick closer to the center point. Once the joystick reaches the center point the bullwheel motion and line speed will stop, and the hydraulic brake will set.



### Winter/Summer Mode Switch

This switch controls the engine coolant flow for the engine, to precisely manage heat distribution for added heating of machine components.

### Maintain Speed / "Cruise" Control Button



This button, when pushed during pulling operations, will allow the operator to set a desired line speed without having to hold the joystick. Once the desired line speed is achieved with the joystick, push this button in and hold it down to lock in the current line speed. The button must be constantly held down to maintain current speed when the joystick is released. If the button is released at any time, the line speed and bullwheels will halt.

**NOTE:** To increase line speed when the Maintain Speed Control button is depressed, move the joystick in the direction of the line, (backward for pulling in, and forward for payout), until desired slowness is achieved, and then release the joystick while continuing to hold down the button. To slow line speed with the Maintain Speed Control button depressed, move the joystick in the opposite direction of the line, until the desired reduction in speed is achieved. Once speed is achieved, release the joystick, while continuing to hold down the button.

**NOTE:** To resume joystick control, after the Maintain Speed Control button is depressed, first move the speed control joystick in the direction of the line, (forward for payout, and backward for pulling), as though you were increasing line speed. As soon as there is a slight increase in line speed, immediately release the Maintain Speed Control Button. This will allow the joystick to retain control.

## Operation

# Operator Controls

*\*\*For control locations see Operator Control Panel Section on page 32.*

### ATS/Tension Mode Selection Button



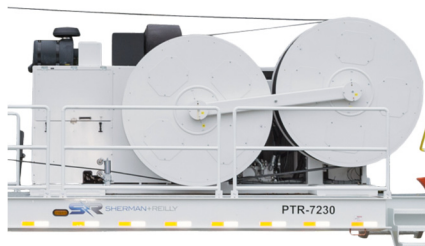
This control button, when pushed, engages the line tensioning mode for the machine- (ATS) “Automatic Tensioning System”. When this ATS/Tension Mode button is pressed for the first time, the button backlight will illuminate in a blinking pattern indicating that the system computer has changed to a “pre-tension” mode with line tension sensors On and the brake set. When the ATS/Tension Mode button is pushed a second time, the button backlight will illuminate solid indicating that the system computer has changed over to Tension Mode.

**CAUTION:** Before pushing the Tension Mode Selection Button a second time, the operator must set the pre-tension for the line. See below section.

### Bullwheel Potentiometer



This potentiometer is used to regulate the amount of tension applied by the bullwheels. When setting the amount of tensioning force, rotate the knob CW to increase and CCW to decrease.



**CAUTION:** Before pushing the ATS/Tension Mode Selection Button a second time, the operator must set the pre-tension for the line. Otherwise, as soon as the ATS/Tension Mode is engaged (button pushed a second time), the bullwheels will begin to apply tension at the current potentiometer setting. This can create either a sudden rise or drop in tension.

### Reel Stand Potentiometer



This potentiometer is used to regulate the amount of tension/braking pressure applied by the hydraulic reel stand.



**CAUTION:** Before starting the engine, ensure the Reel Stand Potentiometer is rotated CCW to the lowest setting.

When connecting an external hydraulic reel stand, this potentiometer controls the tensioning force for that reel stand.



**NOTE:** On older models with single reel engagement, always ensure that the secondary reel stand hydraulic circuit is in the disengaged or Off/Closed position, if not using it.



## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

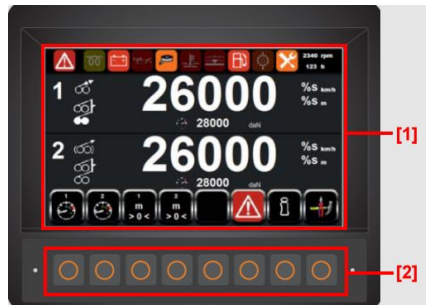
## System Control Panel



The system control panel has eight backlit soft key buttons for control of machine and computer functions. The panel is also

equipped with a seven inch widescreen high-definition color liquid crystal display showing system and operation specific information.

Once the master power key switch is turned on and the system loads, the

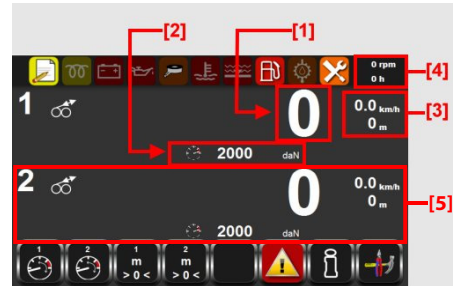


first screen the operator sees (after the S+R logo screen) is the **MAIN MENU screen**. This screen allows the operator to access the functions of the system, while also allowing access to settings and diagnostics.

[1] The display indicates all relevant information for the respective mode.

[2] Eight function buttons are arranged under the display, and the functions assigned to the individual buttons are at the lower edge of the display. Button assignment changes with the displayed screen. Only the functions which are currently authorized in operating mode are displayed. Some display fields require the input of numbers or the selection of options. To this effect, appropriate input fields are displayed, if necessary.

Regardless of the version of the machine, the display screen is always divided horizontally.



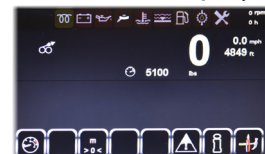
[1] The display of the pulling force is the central display element in pulling mode.

[2] The selectable limit value of overload indication is displayed directly underneath. The limit value is displayed in pulling mode only. If the pulling force in pulling mode gets close to the limit value of the overload device, the value flashes yellow and the machine drive is automatically reduced. If the limit value is exceeded, the value flashes red and the machine drive is stopped.

[3] The current rope speed and the length of the unwound or wound rope are indicated. The current counters starting from the actuation of the reset button are counted. The wound-up rope is added to the current value and the unwound rope is subtracted.

[4] Display for engine speed and operating hours is in the upper right corner.

[5] For machines with a single set of bullwheels, the lower part of the display remains empty and the page numbers at the bottom are not indicated.



## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.


## System Control Panel

### UPPER INDICATOR BAR


The bar at the top of the screen shows informational symbols pertaining to engine control functions and specific status updates. A bright luminous sign indicates a malfunction or a message.





The display fields described above are only for information purposes. If during operation one or several of the admissible machine limits are exceeded, the control immediately stops operation. If necessary, the engine is automatically switched off to protect the machine. The current malfunction will always show on the display.

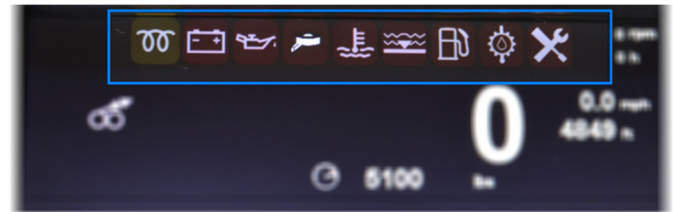
 Recording active: the recording function must have been activated previously.


 Pre-glow indicator


 Loading indicator: Indicates that the battery is not being charged


 Oil pressure indicator: "Engine oil pressure too low". This display must go out when the engine is running.


 Air filter indicator: "Dirty air filter" – clean




 Coolant temperature indicator

 Coolant level indicator: "Coolant level too low" - refill

 Diesel level indicator

 Hydraulic oil temperature indicator

 Maintenance indicator



## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### LOWER CONTROL BAR

A bar with eight fields is at the lower edge of the display.



These eight fields correspond to the buttons directly below each field. The assignment of the function fields/buttons changes with each screen.



### Back / Return Button

This button is present on all sub level screens and, when pressed, returns the user to the previous or MAIN Screen.



### Input Overload Button

This function button, when pressed, opens the overload setting screen, which allows the operator the ability to program the overload setting that limits the maximum amount of force during pulling operations. These buttons are specific to each page (1 and 2).



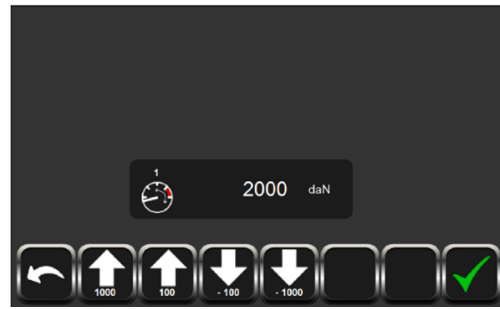
**NOTE:** The PTR-Series only has one set of bullwheels, and thus only has one active page on the main screen.

**NOTE:** These buttons and page values are only shown when the system is in pulling mode.

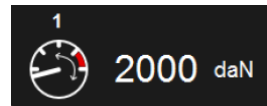


### INPUT OVERLOAD SETTINGS Screen

This screen allows the operator to set the force limitation or “overload setting” employed by the system. The system will use this setting (in pulling mode only) to limit the force from the system based on the amount programmed.



To increase or decrease the amount, press the UP and DOWN arrow buttons. The operator can increase or decrease the amount in increments of 100 or 1,000.



To apply the adjusted overload setting, once completed, press the green check mark button. This button will save the changes in the system and return the user to the MAIN screen.

**NOTE:** If no action is made on this page for a period of 10 seconds, the display returns automatically to the MAIN screen, and changes are not applied.

## Operation

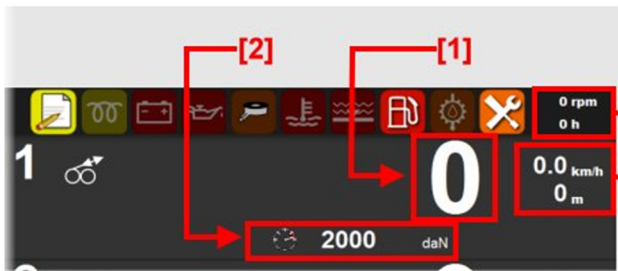
# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

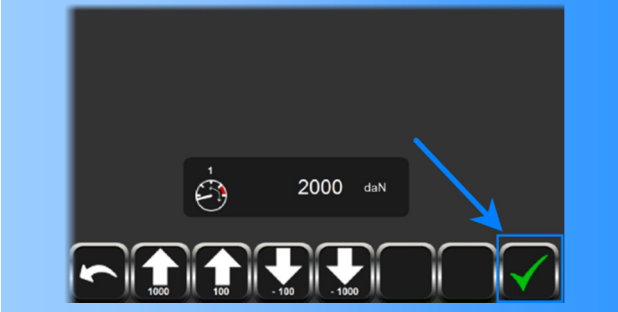
### INPUT OVERLOAD SETTINGS Screen (Cont.)

To verify that the Overload setting is applied correctly, from the MAIN screen and in Pulling Mode, view the setting listed at the bottom of the active page- (see item [2]).

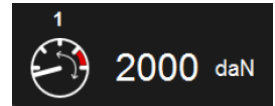


**CAUTION:** Operators should always verify that the setting changes are applied correctly prior to commencing operations.




**NOTE:** If the system times out and automatically returns the user to the MAIN screen, or the user manually presses the Back/Return button to return to the MAIN screen, the changed value will not be saved, and the new overload setting will not take effect. Operators must save the new setting before exiting the screen, before it will take effect.



If the pulling force during pulling operations gets close to the limit value of the overload device, the value flashes yellow and the machine drive is automatically reduced. If the limit value is exceeded, the value flashes red and the machine drive is stopped.



The operator can change the overload setting during pulling operations, at any time by:

1.  Accessing the INPUT OVERLOAD SETTINGS Screen.
2.  Changing the value.
3.  Saving the changes.

**The adjusted overload limit will take effect once the setting is saved.**


## Operation

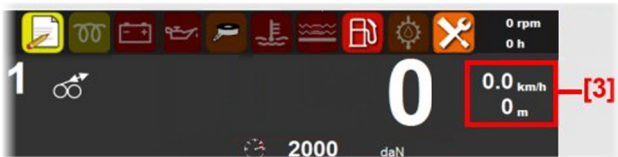
# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### Meter Counter Reset Button

 When this button is pressed, it resets the respective meter counter shown on page 1 or page 2 to “zero”. See item [3] below.



### Error Indicator and FUNCTION Screen

This symbol at the bottom left is displayed only in the case of a malfunction. Otherwise, the symbol will be grayed out. If an error occurs during operation, the error indicator will become active.

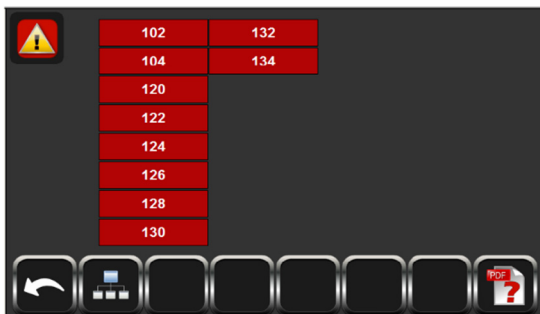


Active Indicator- (**Errors Present**)



Inactive Indicator- (**No Errors**)

When the corresponding button for the active error indicator is pressed, the system will display the error page where the operator can access individual errors.



102
104
120

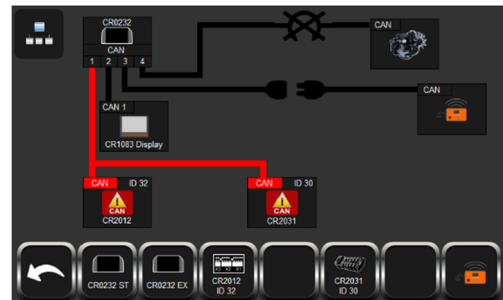
All active errors are displayed with their error number.



The presence of the [PDF ?] option indicates that error descriptions are available in clear text, as well as the reasons for the errors and repair information. To access these error descriptions, press the corresponding button for the [PDF ?] option.



Pressing the communications link button opens a screen displaying the CAN bus overview specific to the machine. If red lines are shown, this indicates a communication error, and error codes are shown.



The back/return button is present on all sub level screens and, when pressed, returns the user to the previous or MAIN Screen.

## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### INFORMATION Screen



Press the [i] symbol button to call the screen "information". This will provide additional information on the activity being performed, such as detailed engine data.



At the top of this display resides the date and time bar. This bar provides the current date and time- based on what is set in the system.



The gauge on the far right displays the engine coolant temperature.



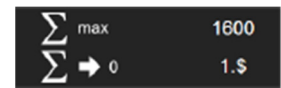
The middle gauge shows the fuel level.



The third gauge displays the hydraulic oil temperature.

**The information screen consists of the following additional display information:**

Displays full load hours as well as residual operating time.



Display of next maintenance (if due, display in orange).



Display of chassis identification number (machine number).



Display of software version of control and display.



The back/return button is present on all sub level screens and, when pressed, returns the user to the previous or MAIN Screen.

## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

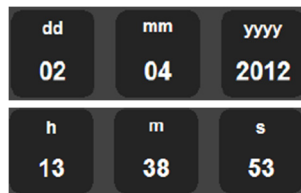
### SETTINGS Screen/Button



When this button is pressed, it will access the SETTINGS screen.



The settings screens shows information for the current date and time:



The status indicator for the data recorder is also located on this page. The status indicator tells the operator whether or not the data recorder is active or not.



The power symbol represents the status indicator. The gray indicator signifies that the data recorder is not active. The green indicator signifies that the data recorder is active. See the *Data Recorder On/Off Button* section.



The triangle symbol represents the recording intervals setting for the system. The recording interval setting is programmed using length in the measurement of feet or meters. Therefore, the values for pulling or tensioning force and velocity within the length difference are recorded every [ ] feet/meters. For longer recording segments, enter a higher number of feet/meters, and for shorter recording segments, enter a smaller number of feet/meters. For information on how to change this setting see the RECORDING INTERVALS Screen/Button section.

At the bottom of the Setting screen are multiple option buttons.



The back/return button is present on all sub level screens, and when pressed returns the user to the previous or MAIN Screen.

### TIME SETTING Screen/Button



When pressed, this button will display the TIME SETTING screen, which allows the operator that ability to change the current time for the system. The time is displayed as 24 hour time.





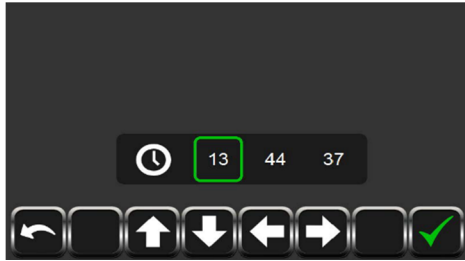
## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### TIME SETTING Screen/Button (Cont.)




To change the time in the system, use the right and left arrow buttons to move the green selection box between Hour, Minute, and Second intervals. Once an interval is selected, use the Up and Down arrow keys to adjust the number up or down.



Once the time is entered correctly, press the green check mark button to save the new time setting and return to the previous SETTINGS Screen.



 The back/return button is present on all sub level screens, and when pressed returns the user to the previous or MAIN Screen.

**NOTE:** If the Back/Return button is pressed prior to saving the changes, the changed value will not be saved, and the new time setting will not take effect. Operators must save the new time setting before exiting the screen.

### DATE SETTING Screen/Button



When pressed, this button will display the DATE SETTING Screen, which allows the operator to change the date programmed in the system.




To change the date in the system, use the right and left arrow buttons to move the green selection box between Month, Day, and Year intervals. Once an interval is selected, use the Up and Down arrow keys to adjust the setting up or down.



Once the date is entered correctly, press the green check mark button to save the new date setting and return to the previous SETTINGS Screen.



 The back/return button is present on all sub level screens and, when pressed, returns the user to the previous or MAIN Screen.

**NOTE:** If the Back/Return button is pressed prior to saving the changes, the changed value will not be saved, and the new date setting will not take effect. Operators must save the new date setting before exiting the screen.

## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

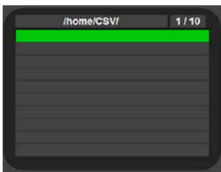
### DATA RECORDING Screen



When this button is pressed, it will display the DATA RECORDING Screen.



This screen allows the operator to see information related to the storage and transfer of recorded system data logs.



This section displays the recorded data stored in the system computer memory. Stored data will show with the file name of the record consisting of the machine number with the bullwheel number, the current date, and a two-digit counter number. A new file is created each time recording is initiated.



Status indicator "Print file"



Status indicator "Copy file on USB stick"



Pressing the [ALL] button will select all data in the memory.



Press the Up or Down arrow buttons to select the desired data.



Pressing the "Delete" button will delete the data previously selected.



When this printer button is pressed, the system will send the selected data to a printer connected to the USB port.

**NOTE:** In order for the printer function to work correctly with the available USB interface, it must be a Zeck supplied printer.



Press USB Symbol button to copy the selected data to the USB stick connected to the USB port.



The back/return button is present on all sub level screens, and when pressed returns the user to the previous or MAIN Screen.

### Data Recorder On/Off Button



This button, when pressed, will toggle between starting and stopping the data recorder. If the data recorder is active, the power icon on the screen will show green; if deactivated, the screen icon will appear gray.



**NOTE:** A Data Recording On/Off indicator is also displayed on the main menu screen.



## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### RECORDING INTERVALS Screen/Button



When this button is pressed, it will display the RECORDING INTERVALS screen. The triangle symbol represents the recording intervals setting for the system. The recording interval setting is programmed using length in the measurement of feet or meters. Therefore, the values for pulling or tensioning force and speed within the length difference are recorded every [ ] feet/meters. (See the *ADDITIONAL SETTINGS Screen/Button section for instructions on how to change from feet to meters.*)



Once on the RECORDING INTERVALS screen, the operator can change the frequency of recording intervals by changing the length.



To increase the frequency of recording segments, reduce the length by pressing the Down arrow button. To decrease the frequency of recording segments, increase the length by pressing the Up arrow button.



The outcome of these changes results in longer recording segments for a higher number of feet/meters, and shorter recording segments for a smaller number of feet/meters.

Once the changes are made, press the green check mark button to save the changes and return to the previous SETTINGS screen.



The back/return button is present on all sub level screens, and when pressed, returns the user to the previous or MAIN Screen.



**NOTE:** If the Back/Return button is pressed prior to saving the changes, the changed value will not be saved, and the new recording interval setting will not take effect. Operators must save the new recording interval setting before exiting the screen.

## Operation

# Operator Controls

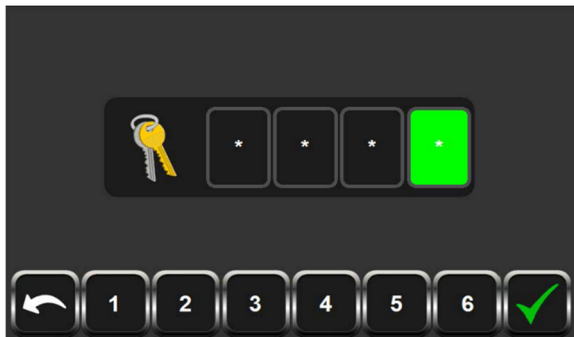
\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### ADDITIONAL SETTINGS Screen/Button



When this button is pressed, it will display a password screen. This password screen requires the user to enter a password to access the ADDITIONAL SETTINGS Screen.



There are two menus within the ADDITIONAL SETTINGS Screen: **Client Menu** and **Service Menu**. Each menu has an independent password, therefore, to access each menu the user must enter the specific password for that menu- Client or Service.

To enter a password, press a button to select a number from [1] to [6], to be populated in the green highlighted cell. Each password will be four digits in total.



Once the password is entered correctly, press the green check mark button to submit the password and access the corresponding screen (Client or Service).

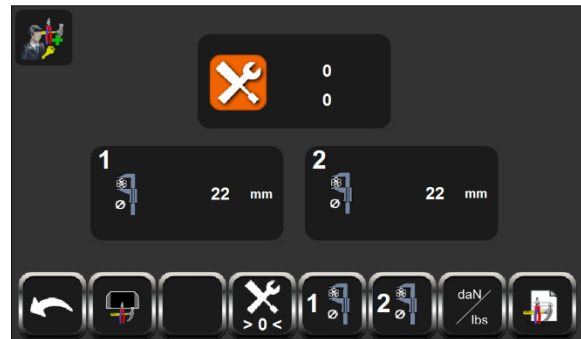


### Service Menu

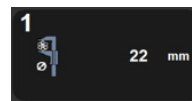
The service menu is only accessible by authorized service personnel, as this menu provide the user the ability to change critical system configurations, and complete advance system and machine diagnostics.

### Client Menu

After entering the correct password to access the Client Menu within the ADDITIONAL SETTINGS Screen, the system will display the Client Menu.



This screen indicator represents the maintenance due notification, showing the client when the next maintenance is due. If the maintenance is due, the pictogram is displayed in orange. Otherwise, the pictogram is displayed in grey.



This screen field shows the diameter of cable/rope programmed in the system.



## Operation

# Operator Controls

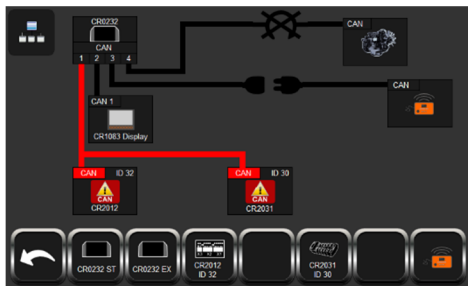
\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

### ADDITIONAL SETTINGS Screen/Button (Cont.)



Pressing this button opens the screen Input/Output- I/O Test Overview. This screen indicates the machine-specific bus topology as well as CAN network communication errors.



The selection buttons at the bottom of this screen represent communication components, and they may vary across different models and versions of the machine. Press the individual buttons to open the I/O pages of each different communication component.



This symbol represents the machine interface remote control module. Press this button to open the machine-specific I/O-remote control screen.



The back/return button is present on all sub level screens, and when pressed returns the user to the previous or MAIN Screen.



Press this key to reset the maintenance interval. "K" or "S" in the service history indicates whether the reset was made from the client-(K) menu or from the service-(S) menu.



When this button is pressed, the INPUT CABLE/ROPE DIAMETER screen populates.

### INPUT CABLE/ROPE DIAMETER Screen

When this screen is populated, the user will be able to change the cable/rope diameter by pressing the Up arrow button to increase the diameter or the Down arrow button to decrease the diameter. The available diameter setting range is between (10 mm to 80 mm) or (.40 in to 3.20 in).



Once the diameter is showing the correct value, press the green checkmark button to save the new setting and return to the Client/Service menu.



To return to the Client/Service menu without saving the new setting press the back button.

**NOTE:** If the Back/Return button is pressed prior to saving the changes, the changed value will not be saved, and the new rope/cable diameter setting will not take effect.

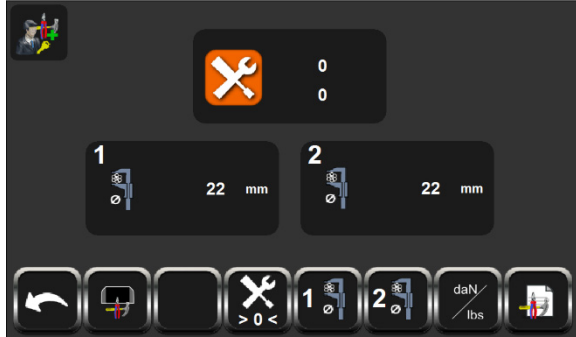
## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

## System Control Panel

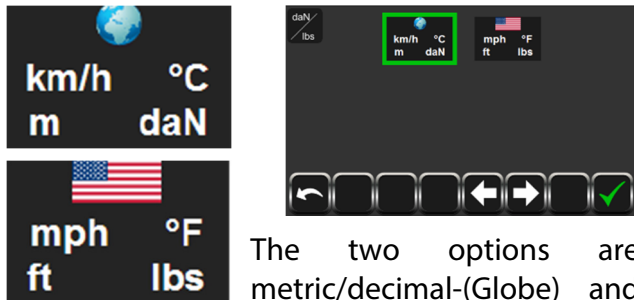
### ADDITIONAL SETTINGS Screen/Button (Cont.)



The [daN/lbs] button represents a unit change option. When this button is pressed, it will display the UNITS CHANGE Screen.

### UNITS CHANGE Screen

Once on the UNITS CHANGE Screen, the user can change the (UOM)-units of measure employed by the system.



The two options are metric/decimal-(Globe) and non-metric/customary-(USA Flag). This setting change is a global change for the system, meaning that it will affect all system displays where units of measure are displayed. Additionally, this setting will also change how the data is recorded. Once the data is recorded for an operation under one UOM, it cannot be

**NOTE:** It is recommended that the user select a suitable UOM prior to conduction operations.

changed in the system.

To select between the two unit options, use the left and right arrow buttons.



Once the selection is made, press this the green check mark button to save the selection, change the UOM's in the system, and return to the Client/Service menu.



To return to the Client/Service menu without saving the new setting press the back button.

If no change is made on this page for a period of 10 seconds, the display will return to the Client/Service menu without saving any new settings.

**NOTE:** If the Back/Return button is pressed or the screen times out prior to saving the changes, the changed value will not be saved, and the new UOM setting will not take effect.

### PARAMETER MENU Screen/Button



This icon represents the system parameters, and pressing this button from the Client/Service menu will open the PARAMETER MENU Screen. This screen allows the user to make critical parameters changes that may affect how the machine performs or functions.

**NOTE:** The parameters viewed on this screen through the Client menu can be read but not edited. **To edit the system parameters, the user must be signed in using the Service menu level password.**

## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

### USB Interface

The PTR-Series Puller/Tensioner/Reconductor comes equipped with a Universal Serial Bus (USB) 2.0 interface port for attaching USB storage devices. The PTR-Series control system is designed to record pulling, tensioning, and reconducting

operations information to its internal memory and allow transfers to a USB storage device.

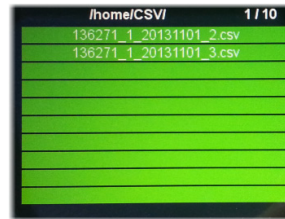
- ✓ To initiate recording, first ensure that Data Recorder is turned to ON. See DATA RECORDING Screen for instructions.

**NOTE:** Once the data recorder is turned on, the system will record all operation data in length increments based on the set recording interval to the internal memory of the system. See RECORDING INTERVALS Screen/Button section.

- ✓ Once operations are concluded, the operator can move the data from the internal memory to a USB storage device or "USB drive/stick". To do this, first insert the USB drive into the USB port. A green check mark indicator will appear just above the USB symbol once the USB drive is recognized by the system.



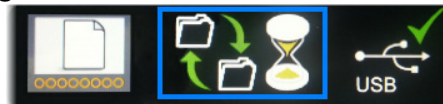
- ✓ Next, select the file(s) to transfer, using the Arrow or All Buttons.



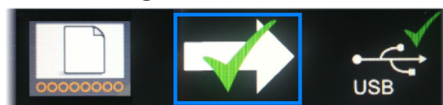
- ✓ With the file(s) selected, press the USB transfer button on the DATA RECORDING Screen to copy the selected data file(s) to the USB stick connected to the USB port.



- ✓ As the files are being transferred, the center screen image will change, showing an hour glass and folders.



- ✓ Once the file transfer is completed, the center screen image will change, back to an arrow, but with a green check mark overlaid on top.



- ✓ Remove the USB drive/stick.

**NOTE:** If copy errors are reported, this may be due to a faulty USB Drive, or that the USB drive is smaller than the data being transferred.

## Operation

# Operator Controls

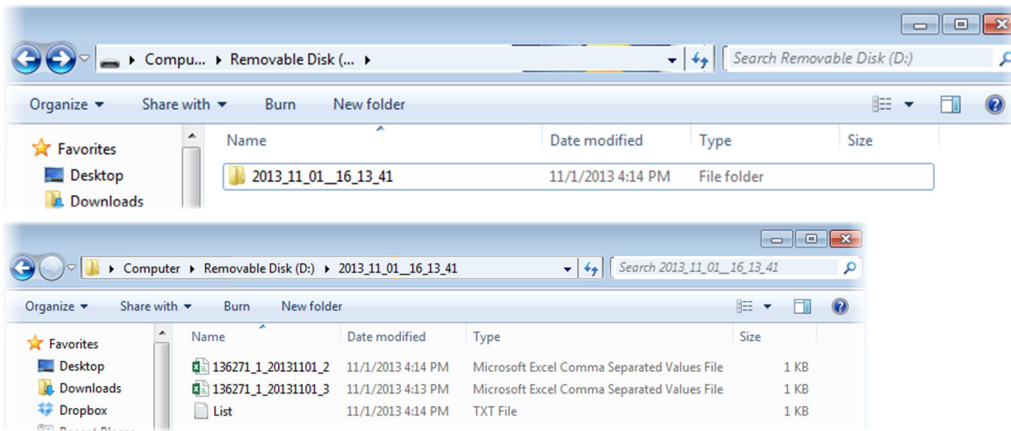
\*\*For control locations see Operator Control Panel Section on page 32.

### USB Interface (Cont.)

When the data is transferred to the USB drive/stick, it will create a folder with the data and time. Inside the folder will be the log files and another file that is a list of all of the files transferred.



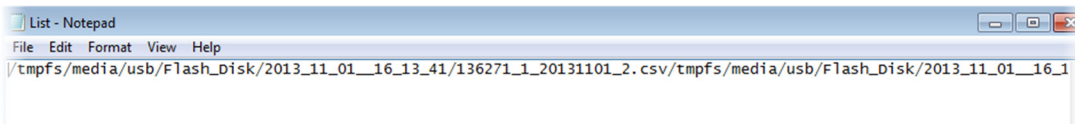
**NOTE:** The data in each file will be recorded based on the programmed (UOM)-Unit of Measure for the system. See *UNITS CHANGE Screen* section for instructions on how to change UOM.



The list file will be a (.txt- text) file. These text files can be opened with many computer programs to include: Microsoft Excel/Word, Windows Note Pad, and Oracle's Open Office.

**NOTE:** Information within the text file may be displayed differently, dependent upon which program the file is opened with. Microsoft Excel and Word will list the events in a single column by data/time stamp, whereas Note Pad will display the information in block format- making it difficult to read.

A	B	C	D	E	F	G	H	I
1	/tmpfs/media/usb/Flash_Disk/2013_11_01_16_13_41/136271_1_20131101_2.csv							
2	/tmpfs/media/usb/Flash_Disk/2013_11_01_16_13_41/136271_1_20131101_3.csv							
3								





## Operation

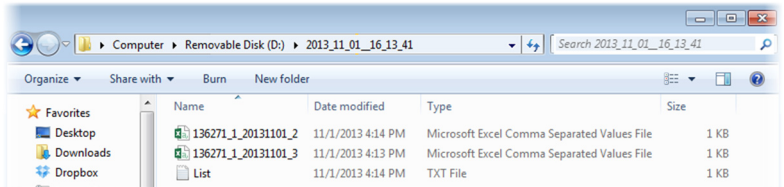
# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

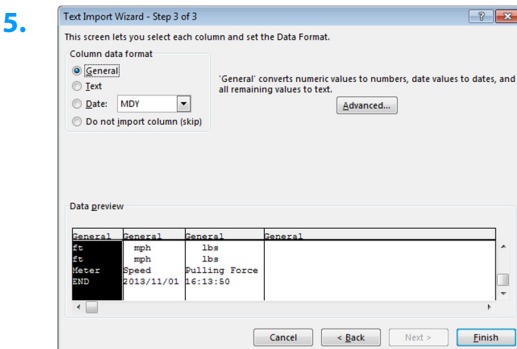
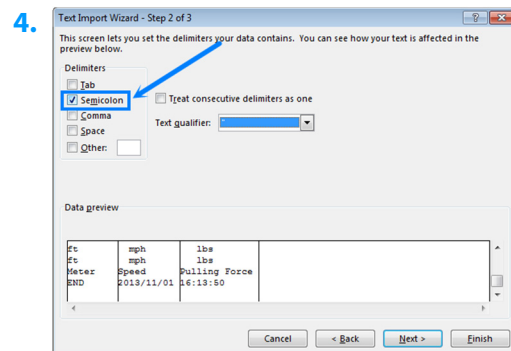
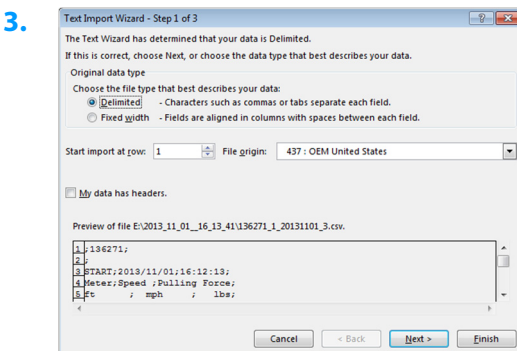
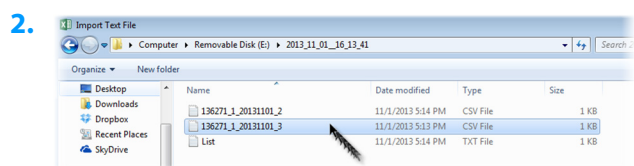
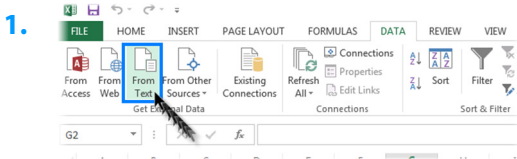
### USB Interface (Cont.)

Each log file saved to the USB drive will be a (.csv- comma separated values) file. These files can be opened with many computer programs to include: Microsoft Excel, Microsoft Access, and Oracle's Open Office Calc.

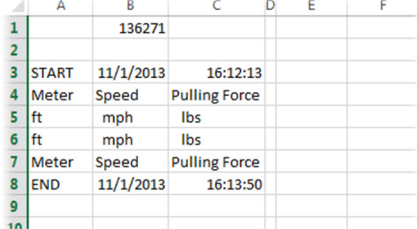
**NOTE:** Information within the log file may be displayed differently, dependent upon which program the file is opened with.



In order for the data to be properly displayed, the user must Import the files when using Microsoft Excel. The reason for this is that when importing the file, the text import wizard function will open allowing the user to select the Delimited option, along with the applicable delimiters- in this case a Semicolon. The semicolon delimiter is the default output for the PTR-Series machines, and would apply when opening the .csv files with other computer programs.



The information contained in the file is displayed with a Start and End time using increments of length. See the RECORDING INTERVALS Screen/Button section.

6. 

	A	B	C	D	E	F
1		136271				
2						
3	START	11/1/2013	16:12:13			
4	Meter	Speed	Pulling Force			
5	ft	mph	lbs			
6	ft	mph	lbs			
7	Meter	Speed	Pulling Force			
8	END	11/1/2013	16:13:50			
9						
10						

## Operation

# Operator Controls

*\*\*For control locations see Operator Control Panel Section on page 32.*

### Exterior Work Light Power Switch



This switch when turned CW will turn on the exterior work lights.



**NOTE:** The master power key switch must be turned to the on position to activate the exterior work lights.

### Windshield Wiper Control Knob



When this knob is turned CCW it will turn on the windshield wipers. The wiper motor has two speeds: Lo and High. The farther CCW the knob is turned, the faster the wiper moves. To activate the windshield cleaner spray, press and hold the knob in. When the knob is released, the spray will stop.

**NOTE:** If the knob is pressed and no fluid is sprayed, the wiper fluid level may be low or the spray heads may be clogged.



### Engine Diagnostic Port: (PTR-7230/7230S Only)



The PTR-7230/7230S machines come equipped with an Engine Diagnostic Port. This port is used by the maintenance personnel and the manufacturer to access the system for advanced external computer diagnostics.

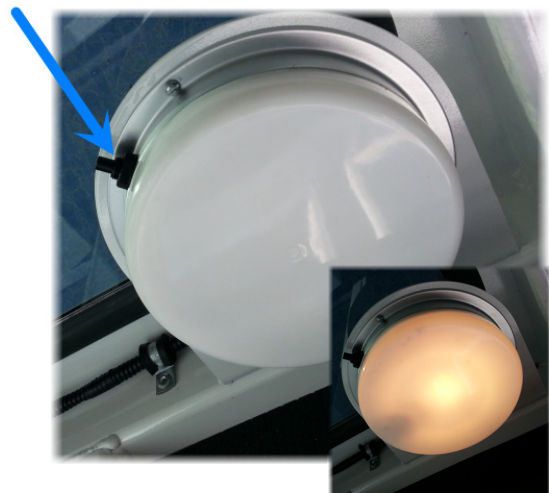
**NOTE:** The data port has two metal pins on the top to allow the data cable to be locked in place. This helps prevent the cable from unintentionally becoming detached during diagnostics.



### Interior Dome Light

This light provides interior cab lighting for the operator in low light conditions. Press the side button to toggle the light On and Off.

**NOTE:** The master power key switch must be turned to the On position to activate the interior cab light.



## Operation

# Operator Controls

*\*\*For control locations see Operator Control Panel Section on page 32.*

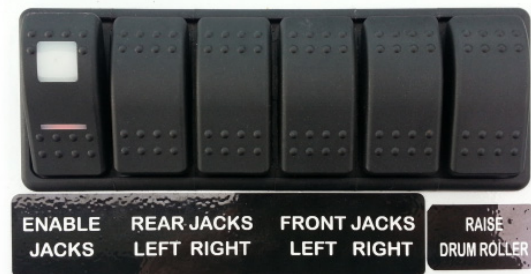
### Hydraulic Control Switches

#### **Enable Jacks:**

As a safety feature, the jack controls must be manually enabled using the [ENABLE JACKS] rocker switch to reduce the chance of unintentionally shifting the machine set height during operations. This switch, when activated, supplies power to the jack system and drum roller, as well as activating the audible warning alarm. To enable the jacks and drum roller, depress the top portion of [ENABLE JACKS] switch so that it rocks forward-(away from the operator). To disable the jacks and drum roller, depress the bottom portion of the switch so that it rocks backward-(toward the operator).

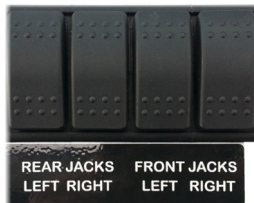


rocker switch. When the switch is released, the motion will stop.



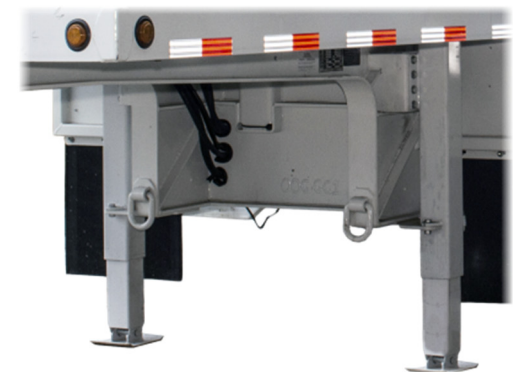
**CAUTION:** Jacks must be disabled during operations.

#### **Jack Controls:**



The PTR-Series puller-tensioner-reconductor has four hydraulically actuated jacks for ease of leveling and stabilization; two- (right and left) jacks in the front and the rear of the machine. Each jack can be operated manually from inside the cab-through the console switches. The engine must be turned on and running to enable and use the jacks.

To lower a jack, first enable the jack controls, then depress and hold the top portion of the assigned switch. When the switch is released, the motion will stop. To retract the jack, depress and hold the bottom portion of the



**CAUTION:** Ensure that all jacks are fully raised and clear of the ground before attempting to tow trailer.



## Operation

# Operator Controls

*\*\*For control locations see Operator Control Panel Section on page 32*

### Hydraulic Control Switches (Cont.)

#### **Jack Controls (Cont.):**

All models of the PTR-7230 have a view of the jacks when in motion. Operators should utilize the available jack cameras, where available. Using the provided cameras and spotters to ensure that the area is clear while moving the jacks is a critical safety measure.

**NOTE:** On models with a single center display screen, the jack view cameras will display only when the [ENABLE JACKS] switch is activated.

The rear jacks are of the anti-skid type, which reduces the change of the machine being dragged horizontally during pulling operations.



**CAUTION:** Always ensure the machine is securely anchored to an appropriate point prior to use.

**CAUTION:** Jacks must be disabled when not in use and during operations.

**CAUTION:** Ensure that all jacks are fully raised and clear of the ground before attempting to tow trailer.



View from jack camera on three display model.



View from jack camera on single display model.



## Operation

# Operator Controls

\*\*For control locations see Operator Control Panel Section on page 32.

### Hydraulic Control Switches (Cont.)

#### **Drum Roller Control:**

Stringing operations which require the pulling line or conductor to exit from the rear of the machine may create interference with the integral drum stand mounted on the rear of the trailer. To avoid this, a hydraulically-controlled drum roller or “hoop” assembly, has been provided. The roller spans the entire width of the drum, and can be raised or lowered from the operator console as necessary.



The operator can utilize the available top level camera to view the drum roller/hoop, when it is in motion.

To raise the drum roller/hoop, first enable the jack controls, then depress and hold the top portion of the [RAISE DRUM ROLLER] switch. When the switch is released, the motion will stop. To lower the drum roller/hoop, depress and hold the bottom portion of the switch.



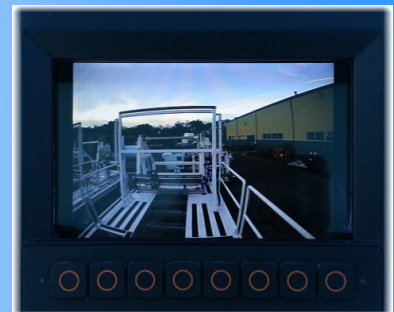
*View from top camera on three display model.*

**CAUTION:** Always lower the drum roller/hoop to its fully-retracted position prior to transporting the machine.

**NOTE:** The drum roller control switch location may vary on some models. See the Control Panel Section for control locations.

**NOTE:** On most models, the drum roller hydraulic controls are on a separate circuit, and therefore enabling the jacks/drum roller is not required prior to operating the drum roller.

**NOTE:** On models with a single center display screen, the top view camera will display only when the [CAMERA TOP VIEW] switch is activated.



*View from top camera on single display model.*

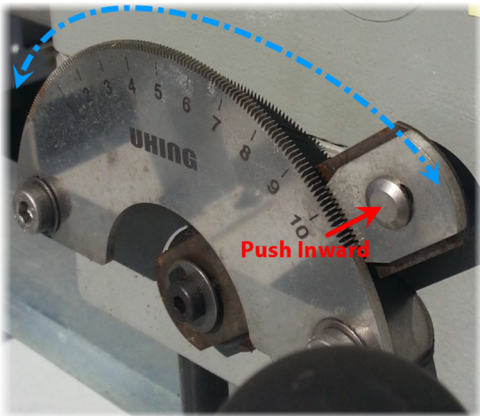
## Operation

### Levelwind

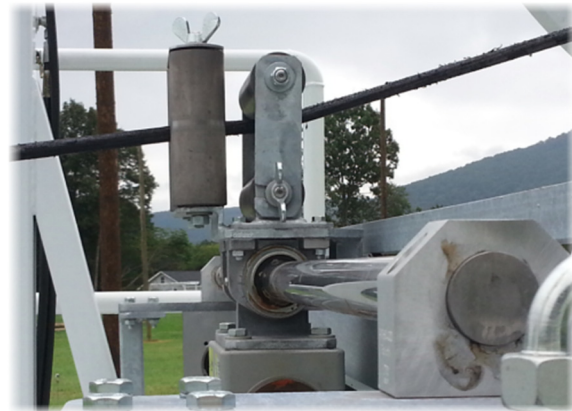
The levelwind is designed to operate automatically during pulling operations and when reconductoring using the integral reconductoring reel. The levelwind is not needed during tensioning or payout.

Prior to commencing operations where the levelwind will be used, the operator must set the rope/conductor diameter and engage the levelwind.

- ✓ To do this, first position the spring loaded dial on the bottom of the levelwind assembly to the appropriate diameter scale. (1-10)/(10mm-100mm).
- ✓ The dial must be pushed inward toward the levelwind, enough for the teeth to disengage. Then slide the dial to the appropriate diameter setting.



- ✓ To engage the levelwind, rotate the control lever CW. To disengage the levelwind, rotate the lever CCW.



- ✓ Once calibrated, set the initial lateral starting direction by positioning the bottom directional control lever to either the right or left. Right and left positions correspond with right and left motions of the levelwind.





## Operation

### Integral Reel Stand/RC3000X

The PTR-Series integral reel stand is designed for pulling, tensioning, and reconductoring operations. The reel stand is hydraulically driven, with separate tensioning controls located inside the cab.



Using the potentiometer on the operator console, the operator has the ability to set the desired tension/braking pressure applied by the reel. The reel stand forward and reverse



rotations for payout and pulling/take-up are controlled in sync with the bullwheel rotations, which are controlled by the line speed control joystick.



**CAUTION:** Before starting the engine, ensure that all Reel Stand Potentiometers are rotated CCW to the lowest setting.



The integral reel stand comes equipped with a manual brake for restricting drum/reel rotation during transport. Additionally, the manual brake serves as an emergency brake to slow unintended overspin or hold tension if hydraulics were to fail.



To set the manual brake, rotate the handle CW until tight. To release the brake rotate the handle CCW.



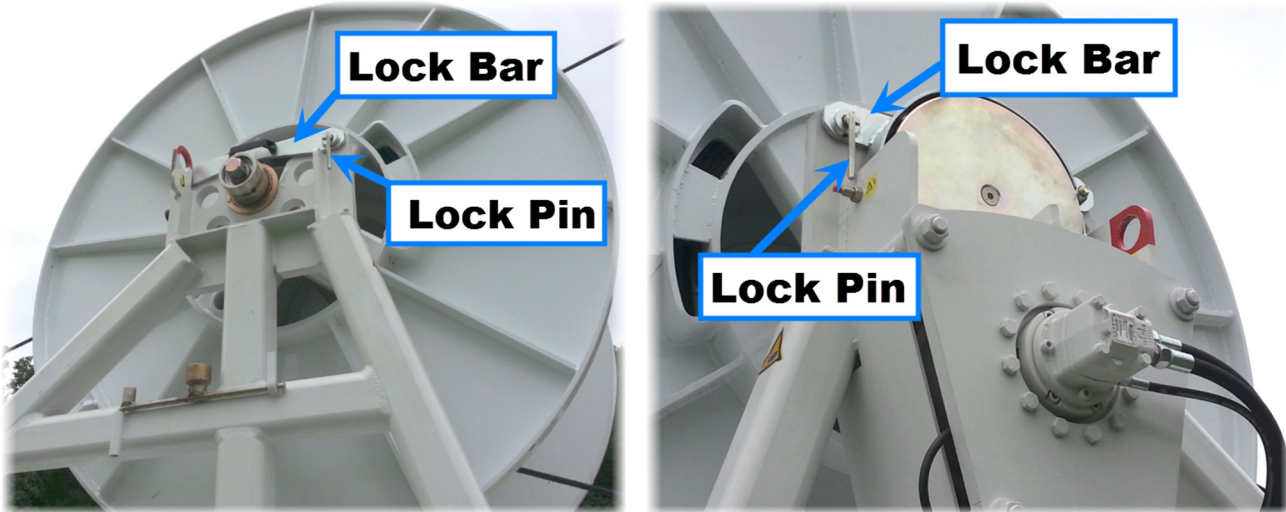
**CAUTION:** The manual brake should only be used to hold the drum during transport or in emergency situations. Never use the manual brake to hold tension during operations or for extended periods of time.

**CAUTION:** Always set the manual brake prior to transporting the machine/trailer to prevent unintended drum/reel rotations during transit.

## Operation

### Integral Reel Stand/RC3000X (Cont.)

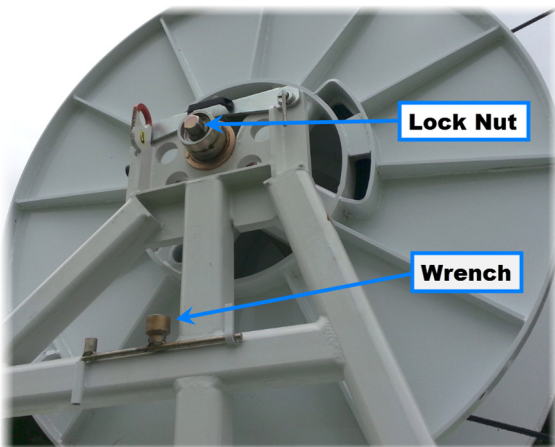
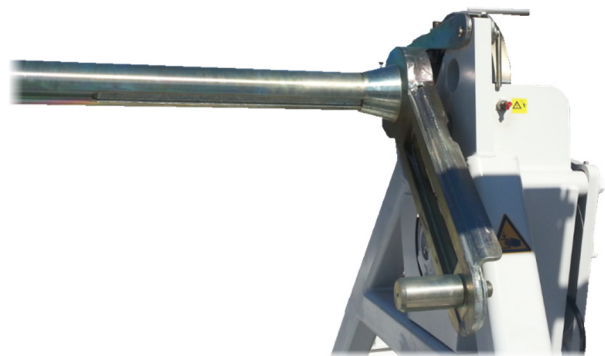
The integral reel stand also allows for changing between rope drums and conductor reels. To do this, remove the lock pin on the lock bars and lift the lock bars on both sides of the drum/reel.



Next, properly attach hooks to the drum lifting eyes, and then lift the drum/reel using appropriately rated lifting chains.

**WARNING: Injury or Death:** All personnel assisting during the lifting of heavy loads must be wearing appropriate personal protective equipment, and must remain vigilant and be ready to get clear in the event of a load shift or restraint breakage.

If transferring the drive bar assembly from a previously installed rope drum to a conductor reel, or vice versa, use the supplied wrench to loosen the lock nut on the drive bar. This will provide access to the set collar, and in turn free the bearings and cones on the shaft allowing the drive shaft to be removed.





## Operation

### Integral Reel Stand/RC3000X (Cont.)

#### Reel Stand Hydraulics

The main power unit has hydraulic control valves ([1] and [2]) that supply both the integral reel stand hydraulic circuit-[1] and the external reel stand-[2] hydraulic circuits. These must be turned to On/Opened before the reels controls will work.

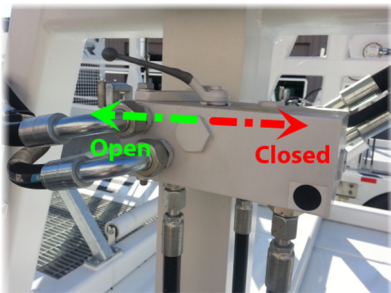
**NOTE:** To avoid creating excess heat, only open hydraulic circuits that are intended to be used.



**NOTE:** On older Split Models units, the hydraulic control valve may be located on the outside of the unit, toward the rear of the machine.



The integral reel stand and reel trailer both have another manual shut off valve located on the side of the reel stand. This valve must also be On/Opened in order to operate the reel stand and levelwind hydraulic motors.



## Operation

### External Reel Stand

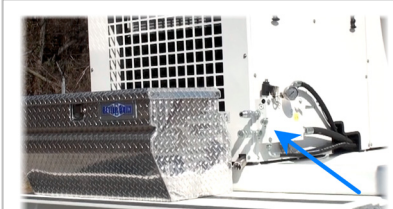
The PTR-Series have either an integral reel stand or Reel Trailer designed for use during pulling, tensioning, and reconducting operations. However, the machines also have been designed to allow separate external reel stands to be used in a similar manner as the built-in/included reel.

**NOTE:** If using an external stand, it should be positioned off the rear end of the trailer, approximately in line with the bullwheels on the trailer.

- ✓ To use an external reel stand, it must first be connected to the quick-release ports on the rear of the trailer using the correct Sherman+Reilly hose kit.



*Long Model Hook-Up.*



*Split Model Hook-Up.*

**NOTE:** Always ensure that the hydraulic hoses are properly secured to the quick release ports prior to starting the engine, and prior to engaging hydraulic circuit. Residual pressures existing in the hydraulic lines, even with valve Off, can inhibit connecting hose.



- ✓ Next, open the corresponding hydraulic control valve-[2], to initiate hydraulic flow to the external reel stand hydraulic connection. [2].



**NOTE:** On older Split Models units, the hydraulic control valve may be located on the outside of the unit, toward the rear of the machine.



**NOTE:** On some older long models, the secondary reel stand hydraulic valve may be a pull knob on the rear of the trailer. When the knob is pulled all the way out, this will disable the hydraulic controls to the integral reel stand, and route the hydraulic control and flow through the rear bumper fittings.



**NOTE:** The secondary reel stand hydraulic controls must be in the disengaged or Off/Closed position when not in use.

## Operation

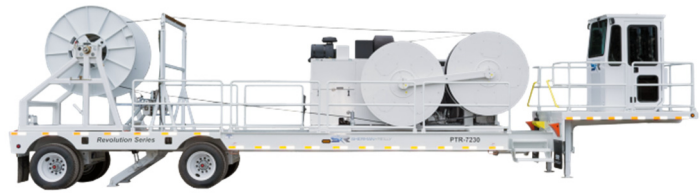
### External Reel Stand (cont.)

- ✓ Once the hydraulic valves are enabled/opened, the operator has full control of the external reel stand tension, using the reel stand potentiometer on the operators control console.



## Operation

# Quick Start Guide



## Sherman + Reilly PTR-7230(S) / PTR-7240(S)

Bullwheel Puller/Tensioner/Reconductorer – 30,000 / 40,000 lb. Capacity



### Acronym/Terms Key:

**CW** – Clockwise

**CCW** – Counter Clockwise

**DANGER** – Indicates the information relates to a specific immediate hazard which, if disregarded, will result in severe personal injury or death.

**WARNING** – Indicates the information relates to a specific immediate hazard or unsafe practice which, if disregarded, could result in personal injury or death.

**CAUTION** – Indicates the information pertains to a potential hazard or unsafe practice which, if disregarded, may result in minor personal injury or equipment damage.


**NOTE** – Indicates the information is important to the correct operation or maintenance of the machine.

### Start-Up Procedure

Step	Action	Note
<b>1</b>	<b>Perform all pre-operation inspections.</b>	
<b>2</b>	<b>Position machine, reel trailer, and reel stand components, connect hoses- (where appropriate), chock wheels, and dump trailer air.</b>	The machine should be positioned in line with the tower and centered as much as possible on the line being pulled. Wheels should be chocked to prevent rolling.
<b>3</b>	<b>Open all required hydraulic control levers</b> on the machine and reel trailer/stand.	Ensure that operating areas and danger zones are clear of personnel.
<b>4</b>	<b>Unsecure rope/conductor from reel, and release manual brake on reel stand/trailer.</b>	Rotate crank handle CCW to release brake.
<b>5</b>	<b>**Ensure that all controls</b> (levers, switches, potentiometers, etc.) <b>are in the neutral, disengaged, or Off position.</b>	If using the Arctic Warming Kit, allow the heater to complete its cycle prior to starting engine.
<b>6</b>	With the key inserted, <b>turn master power key switch CW to the [ON] position</b> , then <b>check Winter/Summer Mode switch for correct position.</b>	Wait for the system display to light up, the system to load, and diagnostics to complete.
<b>7</b>	<b>Engage power to the engine:</b> Once the display and panel lights are on, place the Engine Power switch to the [I] position.	In colder climates (below 400F), the preheat function- (glow plugs) may be needed. The glow plugs are automatically engaged once the Engine Power switch is placed in the [I] position. After the preheat cycle has concluded- the engine can be started.
<b>8</b>	<b>Start the engine</b> , by pushing the Engine Start button.	<u>Allow system to run for several (15) minutes to warm up.</u>
<b>9</b>	<b>Ensure that there are no warnings</b> listed on the system display screen.	The engine oil pressure and hydraulic pressure/flows are both monitored by the system.
<b>10</b>	<b>Level, stabilize, anchor, and ground the machine.</b>	Use the jack control buttons to level the machine.
<b>11</b>	<b>Route rope/conductor through levelwind and fairleads, thread around bullwheels, and route over hoop.</b>	Adjust drum roller/"hoop" height, as needed- <i>only available on long models.</i>



## Operation

Start Pulling Mode		
Step	Action	Note
1	Perform all Start-Up/Set-Up Procedures.	*Must include pre-operation inspections- if not already completed. <b>CAUTION:</b> Only attach running grounds to machine if the machine is properly grounded.
2	Position the levelwind head centered on the rope/conductor, set starting direction, and then engage or disengage the levelwind.	Engage the levelwind if pulling in, calibrate the levelwind with the proper rope/conductor diameter, and set the levelwind starting direction. Disengage the levelwind when paying out.
3	Ensure the system is set to Pull Mode, with the button illuminated.	The default mode for the system at start-up is Pull Mode, however, this mode can be selected by pressing the Pull Mode button.
4	Set the maximum pulling force limit to the desired setting.	Press the Input Overload button to access the Input Overload Settings screen, dial up or down the force setting, and then save/apply the setting by pressing the green check button. 
5	Set reel tension by rotating the reel potentiometer CW to increase and CCW to decrease tension.	<b>CAUTION:</b> Rotate reel potentiometers slowly, and ensure all personnel are clear of the area and are aware of line take-up.
6	Begin pulling in line by pulling the joystick backward. If payout out, push the joystick forward.	<b>NOTE:</b> A minimum of about <b>30 lbs. of pulling force (person or vehicle) is required</b> to payout the line from the machine while in Pull Mode. If there is no pull on the line when attempting to payout, the bullwheels will not have enough traction to move the rope. The rope must stay tight around the bullwheels to payout using Pull Mode, therefore reel back-tension is also recommended.
7	Continue to monitor line speed, pulling force, and the footage counter.	To stop rotation at any time, release the joystick and it will return to the center neutral position and the brake will set.

**CAUTION:** Before handling any pilot, pulling, or conductor lines attached to this machine, the operator must ensure that the hydraulic brake is set by releasing the joystick.

**WARNING:** When the line is being driven out with a truck or other off road vehicle, ensure that the payout vehicle has completely stopped prior to returning the joystick to the center neutral position to set the brake. Otherwise, serious personal injury and/or equipment damage will result. Also, limit off road vehicle speed to account for sudden accidental changes in line tension.

**CAUTION:** If operating a split model- (PTR-7230S or PTR-7240S), ensure that the hand rails on the reel trailer are lowered and secured to prevent them coming in contact with the rope or conductor.



## Operation

Start Tension Mode		
Step	Action	Note
1	<b>Perform all Start-Up/Set-Up Procedures.</b> <b>CAUTION:</b> Only attach running grounds to machine if the machine is properly grounded.	*Must include pre-operation inspections- if not already completed. For steps on changing rope drum to conductor reel, see section on Integral Reel Stand/RC3000X.
2	<b>Position the levelwind head centered on the conductor, and then disengage the levelwind.</b>	<u>Disengage the levelwind when paying out and tensioning.</u>
3	<b>Push the Tension Mode button once</b> , to engage the pretension mode of the system.	On the first depression of the Tension Mode button the button backlight will blink.
4	<b>Set the reel tension(s)</b> by rotating the corresponding reel potentiometer.	Rotate potentiometer(s) CW to increase and CCW to decrease tension.
5	<b>Set the initial bullwheel tension</b> by rotating the bullwheel potentiometer.	Rotate potentiometer CW to increase and CCW to decrease tension.
6	<b>Push the Tension Mode button again</b> , to release the hydraulic brake and engage the bullwheels.	On the second depression of the Tension Mode button the button backlight will illuminate solid.
7	<b>Continue to monitor line speed, tension force, and the footage counter.</b>	During operations, the tension setting can be adjusted instantly by rotating the bullwheel potentiometer. Rotate potentiometer CW to increase and CCW to decrease tension.

**NOTE:** To stop the conductor and set brake, first increase tension to bring the line to a stop, then press the Pull Mode button to set the hydraulic brake.

**CAUTION:** Always ensure that the hydraulic brake is set before attempting to tie off any line or conductor that is tied to or being managed by this machine. **The operator should never hold tension on the line using the drive system while the conductor is being tied off- always set the brake first.**

**WARNING:** When operating the machine, no one should stand in the danger zone between the reel and the levelwind or the reel stand and the machine, nor should anyone place hands on or near the bullwheels. In between the bullwheels is an extremely dangerous area of the machine. If any part of the body is caught between the bullwheels, or between the reel and the frame, serious injury or death may result. Keep the trailer deck clear of all personnel during operations. Always stop operations if personnel need to enter the trailer deck or danger zones of the machine.

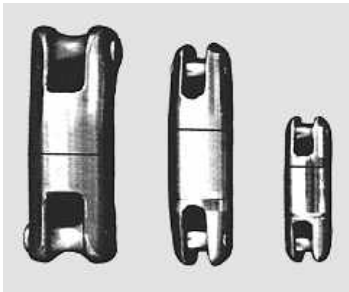
**WARNING:** Never touch a fast moving rope or conductor, whether energized or not. If clothing or gloves are snagged by moving conductor/rope, this machine has more than enough force to pull a person into a levelwind, fairlead, or bullwheels. All precautions should be taken by cordoning off all line paths and operating areas. Signs and barriers should be used where applicable, and in accordance with safety regulations. Machine operators should maintain visibility of all operating areas, using line of sight, cameras, or spotters- where applicable, and be ready to react in the event of an emergency.

## Operation

# Overhead Pulling Swivels and Cable Connections

### Information specific to rope connection:

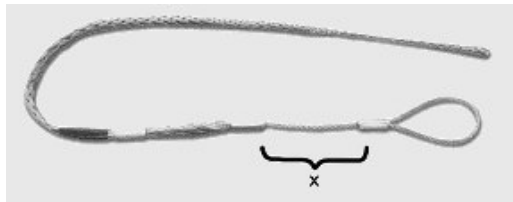
During the pulling operation, a swiveling jointing sleeve (so-called fish-shaped swivel) must be used between the pulling rope and the wire rope. Only use jointing sleeves that swivel easily at maximum pulling force.



Jointing sleeves that have an additional joint at the center and can be bent have the ideal form.

The jointing sleeve must have the tensile strength safety margin required for the pulling operation (at least four times the loading capacity). The difference between rope and jointing sleeve diameters should be as small as possible. Thereby, the jointing sleeve does not lift or stretch the conductor too much, as it overruns the grooves.

Grooved wheels with Zeck ground material made of elastic plastic allow pulling over the grooved wheels with rotational jointing sleeves, cable stockings and even with old press connectors. The jointing sleeves need not be replaced before overrunning the grooved wheels.



With cable stockings with pressed eye bolts, there is an important difference in diameter between the pressed sleeves and the "x" zone. A similar result occurs when the grooves are overrun and when the jointing sleeve runs in: The rope is lifted. This problem can be eliminated by mounting a slid-open rubber-hose over the "x" zone. Cable stockings with slid-open eye bolts are most appropriate as diameter differences are small.

### Information specific to the use of wire ropes which tend to splay:

Ropes with a relative loose outer layer tend to splay. In order to minimize this effect, observe the following:

Swivels between hoisting rope and wire rope must rotate easily even when under full strain.

The wire rope that runs out to the rope wheel at the mast must be in perfect alignment with the groove of the grooved wheel.

The drum stands must be mounted at a maximum distance to the tensioner unit whilst taking into account the hydraulic hose length.

The wire ropes coming from the drum stand to the tensioner must be slightly diverted in the rope feed.

The first rope wheel at the mast (behind the tensioner) must be vertical. In the case of diagonal pull, the rope wheel must be suspended laterally shifted in order to prevent the wire rope from touching the groove of the rope wheel.

The pulling operation should be effected with maximum sag of the wire rope.

The drum stands should – if possible, hydraulically – be slowed down. The ropes must not display any slippage on the grooved wheels of the tensioner.

## Operation

# Towing and Road Safety

### Connecting to the Tow Vehicle

- ✓ Make certain tow vehicle has the capacity and rating to tow machine safely.

**NOTE:** For approximate trailer weights see the specifications section.

- ✓ Inspect king pin for excessive wear, corrosion, cracked welds or structural damage.
- ✓ Inspect tow vehicle hitch and ensure hitch is in good working order.

- ✓ Make sure trailer brakes are operable- (See *Trailer Brakes Section on page 109*).

**WARNING:** Do not attempt to tow machine/trailer if there is any question about the condition of the hitch or trailer brakes.

- ✓ Make sure the unit is safe for towing with tires in good condition and properly inflated- (See *Trailer Tires Section on page 110*).
- ✓ Make sure there are no tools, objects, or trash items which could fall off during transport.
- ✓ Ensure that the reel brake is set to prevent the reel/drum from spinning during transport.
- ✓ Ensure that the hydraulic cut off valves for the reel controls are set to closed.
- ✓ Chock wheels on both sides of the machine/unit trailer, then start machine/unit engine- (See *Operator Controls pg.34 and Start-Up Procedure pg. 70*).



- ✓ Make sure the right and left jacks are fully retracted- (See *Jack Controls Section on page 54*).

- ✓ Open the tow vehicle hitch and back vehicle into position under the king pin. Set tow vehicle parking brake.

- ✓ Slowly retract trailer nose/hitch jacks, so that the king pin rests correctly in hitch strike plate.

**CAUTION:** Ensure that the nose/hitch jacks and all other jacks are fully retracted prior to transport.

- ✓ Ensure the hitch is secured.

**CAUTION:** The king pin and hitch strike plate are a pinch point.





## Operation

# Towing and Road Safety

### Connecting to the Tow Vehicle (cont.)

- ✓ After the trailer is secured to the vehicle, stop the machine/unit engine, and remove the key from the ignition key switch.
- ✓ Connect all appropriate air hoses for the trailer brakes, and begin charging the trailer air system.



**NOTE:** Ensure that the trailer air suspension system is set to [AUTO] mode and that the [DUMP] knob is pushed inward.



- ✓ Connect the electrical plug to the tow vehicle and check:
  - Clearance lights
  - Brake Lights
  - Turn Signals
  - Brakes

(See Trailer Assembly Section: pages 109-113)



**CAUTION:** Do not tow the machine/unit unless all the trailer lights and brakes are working correctly.



- ✓ Remove and stow the wheel chocks

**NOTE:** When towing the machine/trailer assembly, the driver should be knowledgeable and obey all applicable transportation laws and speed limits. Laws for towing speed of trailers differ widely between states, provinces, and localities.

**CAUTION:** Drivers should use caution and drive slower at night and when hazardous conditions are present, such as heavy traffic, bad weather, or uneven or rough terrain.

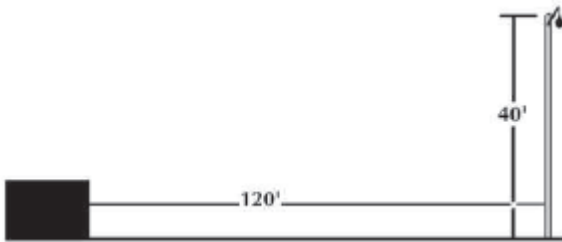
**Unless otherwise indicated by applicable laws, posted speed limits, or cautionary conditions (stated above), a recommended maximum safe operating speed for normal road conditions is 50/55mph for night/day conditions, and 30mph in residential, urban, and business districts.**

## Operation

### Positioning the Machine

The driver/operator should position the machine in a suitable location where it will be free from obstructions and clear of any obvious hazards. For overhead pulling, the puller should be approximately three times the distance of the lead block height.

**Example:** If the lead block is 40 feet high, it is recommended that the puller be positioned approximately 120 feet from the base of the pole whenever possible. By allowing the distance to the lead block as specified, this reduces the direct downward forces that would be created otherwise. In some situations, however, it may not be possible to achieve these distances- see note below.



**NOTE:** In some situations, for example; due to rough terrain, it may not be possible to achieve these safe distances from the lead block. In these situations, operators should try and achieve as much distance as possible from the lead block, and be aware of the increased down forces during operations.

The unit should be leveled as much as possible, centered on the lead block, and parallel to the line being pulled prior to beginning operations.

**CAUTION:** Trailer air suspension system should be dumped prior to operating any component of the machine. Follow all posted trailer warnings and safety precautions.

**CAUTION:** All jacks must be extended for stabilization, and the machine must be leveled prior to conduction operations.

The operator must chock all trailer wheels and dump the trailer air system prior to operations and any time the vehicle is parked. All appropriate grounding, anchoring, and protective equipment must be installed and secured to machine prior to operations.



## Operation

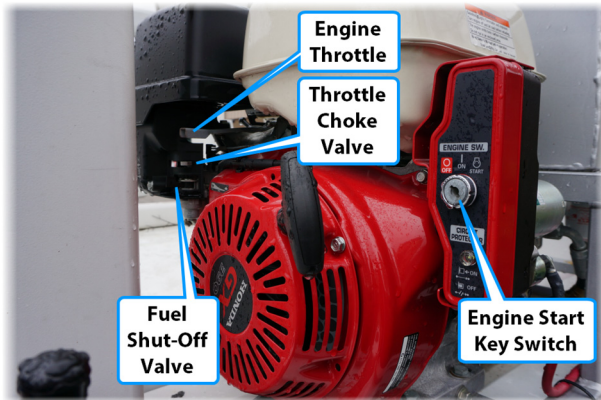


# Start-Up/Set-Up Procedure

**NOTE:** Before beginning operations, the operator must perform all pre-operation inspections. See *Pre-Operation Inspection Checklist* on page 115. Pre-operation inspections are important for the safe operation of the machine, and are required under OSHA Regulations.

**CAUTION:** Before starting the machine, it is absolutely necessary to read and observe all safety precautions listed in this manual.

- ✓ Perform all pre-operation inspections.
- ✓ Position the machine and reel trailer and/or reel stands- (where applicable), chock trailer wheels, and dump air from trailer air suspension systems. The machine should be positioned centered on the lead block, and parallel to the line being pulled prior to beginning operations. Wheels should be chocked to prevent the unit from rolling. See Positioning the Machine section on page 69.
- ✓ If operating a Split Model (PTR-7230S or PTR-7240S), start the hydraulic jack power pack engine on the reel trailer:
  1. Turn on the fuel valve.
  2. Adjust the engine choke to Closed.
  3. Adjust the engine throttle to Fast.
  4. Turn the key to start the engine.
  5. Once engine starts, reduce choke to the Open position.
- ✓ If operating a Split Model (PTR-7230S or PTR-7240S), level and stabilize the reel trailer using the available hydraulic jacks. Once the trailer jacks are down and the trailer is stabilized, turn off the hydraulic power pack engine and close the fuel valve.
- ✓ If operating a Split Model (PTR-7230S or PTR-7240S), unpack the hydraulic hoses from the tool box, and hook the reel trailer (RC-3000X) to the main pulling machine by connecting the hoses to each of the units hydraulic connections. *Skip this step if operating a long model- (PTR-7230 or PTR-7240).*
- ✓ Once all hoses are connected and while outside of the machine, ensure that all hydraulic control levers are turned to the On/Open position, if being used.



**NOTE:** On the long models (PTR-7230 and PTR-7240), it may be required to open the engine compartment to access the two main hydraulic shut off valves for the reel control(s). On the split models (PTR-7230S and PTR-7240S), the two main hydraulic shut off valves are on the rear of the pulling unit. On both models, the shut off valve at the reel (integral and trailer) is located on the street side of the reel stand frame.

**CAUTION:** Ensure that all hydraulic hoses are hooked-up and valves are turned to the On/Open position prior to operations to prevent the drive system components from overheating.



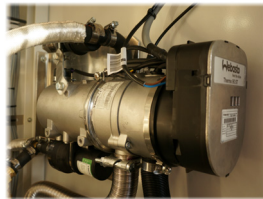
## Operation

### Start-Up/Set-Up Procedure

- ✓ Unsecure the pulling rope or conductor end on the reel trailer or reel stand.
- ✓ Release the manual reel brake by rotating the crank handle CCW.



- ✓ If using the arctic kit, start the timer for the diesel burner to begin heating the engine components. For more information on the timer or arctic kit operations, see Appendix.



**NOTE:** The arctic kit is an optional equipment add-on to assist with warming the machine engine components when operating in very cold temperatures. **This option may not be installed on all models. If not installed, skip this step.**

**CAUTION:** The arctic kit exhaust port may be positioned either to the rear or bottom of the engine compartment. In most cases, the fan can be heard; however, be aware that concentrations of diesel exhaust may be present around the engine compartment when the heater is engaged. Caution should be taken to avoid these areas when the heater is on, as this presents an inhalation hazard.

- ✓ If operating in extreme heat environments in excess of 100°F, the operator can open the outside (street side) engine compartment panels during operations to allow for improved engine compartment ventilation and cooling.



**CAUTION:** Do not leave the inside (bullwheel side) engine compartment open during operations, as this can come into contact with the pulling line or conductor. Always ensure this panel is secured prior to operations.

- ✓ Ensure that all controls (levers, switches, etc.) are in the neutral and disengaged position. Ensure that all potentiometers on the operator's console are set to their lowest setting.



**WARNING:** If the reel control potentiometers have a positive setting at the time the machine starts, any connected reels will automatically begin to rotate to apply the preset tension. This can create unanticipated line jolts as well as life threatening or severe bodily impacts to surrounding personnel if they are not aware of the line/conductor take up and/or reel spin.



## Operation

# Start-Up/Set-Up Procedure

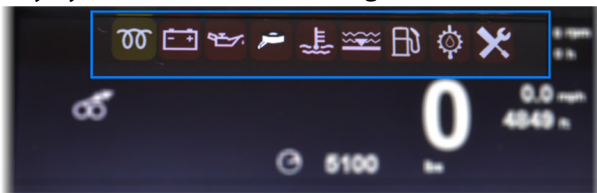
- ✓ Ensure that all personnel are free and clear of the machine's moving parts. Also, ensure that all personnel are aware of the machine start-up.

- ✓ With the key inserted, turn the Master Power Key switch to the On position. See *Operator Controls Section on page 34*.



**NOTE:** When the master power key switch is turned to the On position, the main system display will turn on and show the S+R Logo and then the Zeck screen. At this same time, the small light will blink on the bottom left hand corner of the display. This blinking light indicates that the system is conducting an initial diagnostic check of the system and communications components. Once the diagnostic is completed, the light will turn from blinking to Off. The engine power cannot be engaged during the diagnostic.

- ✓ Once the system diagnostic check is completed and the display and panel lights are on, view the main control panel screen for any system faults or warnings.



**NOTE:** If faults or warnings are found, they should be resolved prior to conducting operations- (see *Troubleshooting Section*).

- ✓ Ensure that the Engine Coolant Circulation- (Winter/Summer) Mode switch is set to the appropriate position: (Winter/Summer).

Winter: <32°F

Summer: ≥32°F

- ✓ Place Engine Power switch to the On- [ I ] position to engage engine power.



**NOTE:** The preheat function/glow plugs are automatically engaged once the Engine Power Button is placed in the On position. After the preheat cycle has concluded (about 5-10 seconds), the operator may start the engine- (See *Operator Controls Section on page 19*).



- ✓ Once the glow plug indicator goes out, the start button will illuminate and the operator may depress the Engine Start button to start the engine.



**CAUTION:** Before starting the machine, it is absolutely necessary to read and observe all safety precautions listed in this manual.

- ✓ View the main control panel screen to ensure that there are no warning messages. Also, view the engine information screen to make sure everything is working properly.



## Operation

### Start-Up/Set-Up Procedure

- ✓ With the machine started, allow the engine to run for several minutes to ensure that the engine and hydraulic components have time to warm to their standard operating temperature of 95°F/35°C. This warm up cycle is critical to the optimal efficiency of the power system, and also ensures proper fluid flows and pressures are sustained.
- ✓ Properly anchor the all machine components- (pulling machine, reel trailer, reel stands, etc.) to prevent them from moving under tension or line load.
- ✓ Properly ground the pulling machine and any coordinating reel trailers and reel stands using the available grounding brackets.

**NOTE:** Warm up times may vary dependent upon the outside ambient temperature. If ambient temperature outside is 59°F/15°C, the warm up time will be approximately 15 minutes. For temperatures at or above 95°F/35°C, the engine warm up cycle may be significantly less or not required at all. Longer warm up times may be required when temperatures are below 59°F/15°C.

**CAUTION:** Before starting operations, the power engine and hydraulic system must be warmed to approximately 95°F/35°C. If the hydraulic system is operated at temperatures below 95°F/35°C, damage or excessive wear on system components may result.



- ✓ Level and stabilize the pulling machine using the available hydraulic jacks.



**CAUTION:** All jacks must be extended for stabilization, and the machine must be leveled prior to conduction operations.

## Operation

# Start-Up/Set-Up Procedure

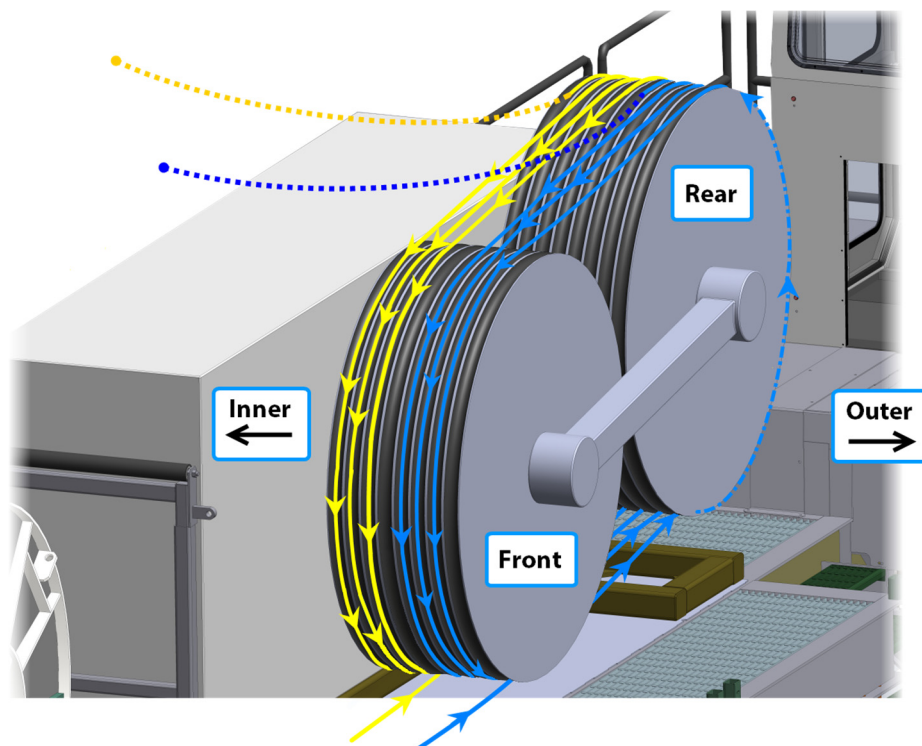
### Threading the Bullwheels:

- ✓ Thread the bullwheels using nylon or other small rope. The bullwheels can be threaded or “reeved” using either a dual or single pattern. A single pattern is appropriate for both pulling rope and conductor applications, while a dual pattern is specifically designed for conductor applications.

**NOTE:** When using a single pattern, select either side of the bullwheel to use: (4 Inner Grooves) or (4 Outer Grooves). However, be sure to alternate from one side to the other periodically over multiple operations, to promote even wear on the bullwheel linings.

**CAUTION:** When using a single pattern, the standard design is to use four of the bullwheel grooves. However, when using a single pattern, you may use up to six grooves. If more than six grooves are used, the tension and pulling force displayed may not be accurate and damage to bullwheels can occur.

- ❖ When threading the bullwheels, start by wrapping the reeving ropes in reverse of the rope/conductor path outlined below. Start from the inner most groove of the top rear (cab side) bullwheel going downward, and wrapping outward away from the engine. Once you reach the bottom outside groove of the front bullwheel, attached the reeving rope to the rope/conductor end.
- ❖ **Reeving Patterns:** On the first wrap of the rope/conductor as it come around to the front bullwheel, note the offsets as the rope/conductor approaches the top of the front bullwheel. At this point, the rope/conductor should be approaching the second or sixth groove from the outside of the front bullwheel. Note the top of the outer most groove on the front bullwheel is empty as is the top of the fifth groove.



**NOTE:** The contained instructions and illustrations are specific to “right lay” type of conductor, as well as standard pulling ropes. If using “left lay” conductor, the reeving pattern will need to be reversed for both single and dual patterns.

## Operation

# Start-Up/Set-Up Procedure

### Threading the Bullwheels (cont.):

- ✓ For integral reel stand usage, route the rope/conductor end from the reel through the levelwind head, then through the fairlead(s) directly in front of the bullwheels.



**NOTE:** Ensure that the levelwind is disengaged during payout or tensioning operations. In these situations, the levelwind head will follow the path of the line as it goes out.

**NOTE:** If using a dual wire configuration, a double fairlead must be installed.



**CAUTION:** It may be required to rotate or pull rope off of the reel, whether integral or external. Always use caution when handling pulling lines and conductor and always wear appropriate personal protective equipment to include gloves. Also, be ready to get clear of the line/machine in the event of a sudden or unanticipated reel stand rotation, rope or conductor take-up, bullwheel rotation, or line/rope brakeage. Line brakeage could have enough force to kill or seriously injure in the event it strikes a person.

**WARNING:** If the reel control potentiometers have a positive setting at the time the machine starts, any connected reels will automatically begin to rotate to apply the preset tension. This can create unanticipated line jolts as well as life threatening or severe bodily impacts to surrounding personnel if they are not aware of the line/conductor take up and/or reel spin.

- ✓ If using an external reel stand, route the rope/conductor end through the rear fairlead over the bottom roller, and then through the fairlead(s) directly in front of the bullwheels.



**Rear Fairlead**

- ✓ Once the rope/conductor end is through the fairleads and in reach of the reeving rope, tie the rope/conductor end(s) to the reeving rope end(s).

**WARNING:** When operating the machine, no one should stand in the danger zone between the reel and the levelwind or the reel stand and the machine, nor should anyone place hands on or near the bullwheels. In between the bullwheels is an extremely dangerous area of the machine. If any part of the body is caught between the bullwheels, or between the reel and the frame, serious injury or death may result. Keep the trailer deck clear of all personnel during operations. Always stop operations if personnel need to enter the trailer deck or danger zones of the machine.

**WARNING:** Never touch a fast moving rope or conductor, whether energized or not. If clothing or gloves are snagged by moving conductor/rope, this machine has more than enough force to pull a person into a levelwind, fairlead, or bullwheels. All precautions should be taken by cordoning off all line paths and operating areas. Signs and barriers should be used where applicable, and in accordance with safety regulations. Machine operators should maintain visibility of all operating areas, using line of sight, cameras, or spotters- where applicable, and be ready to react in the event of an emergency.



## Operation

# Start-Up/Set-Up Procedure

### Threading the Bullwheels (cont.):

- ✓ Once the pulling rope or conductor is tied to the reeving rope, ensure that all personnel are clear of the danger zones, then begin to rotate the bullwheels to wind the pulling rope/conductor over the bullwheels. To do this, ensure the system is in the Pull Mode, turn the reel potentiometer(s) to the minimum setting, then push the joystick forward as though you were paying out the line. Adjust the reel potentiometer(s) as needed to prevent excessive sag of the pulling rope or conductor, while applying just enough tension to keep the reeving line and rope or conductor tight around the bullwheels.

**NOTE:** Continue to monitor the rope/conductor placement in the grooves. If the rope is allowed to excessively sag, it may become tangled, or jump its groove. If this happens, you will need to stop the bullwheels, put the joystick in neutral to set the brake, and then manually fix the issue.

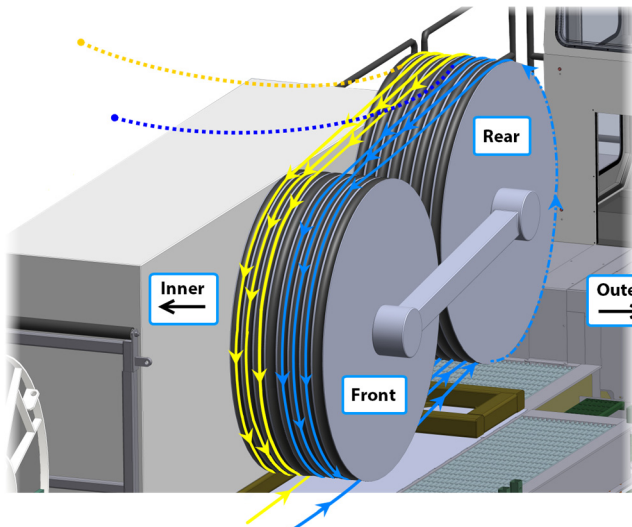
**CAUTION:** Always ensure that the joystick is in neutral with the brake set before attempting to touch bullwheels or handle lines going toward the bullwheels.

- ✓ Once the rope/conductor end reaches its lead-off point on the top inside of the rear (cab side) bullwheel, payout enough rope/conductor to reach over the hoop roller and reel if operating a long model (PTR-7230 or PTR-7240). If operating a split model (PTR-7230S or PTR-7240S) or using an external reel stand, payout enough rope/conductor to reach out to and over the reel stand or reel trailer.

**CAUTION:** Gathering the lead-off rope/conductor is a manual process, involving a person to gather the excess reeving line and rope/conductor coming off of the bullwheels. Caution should be taken to avoid all moving lines traveling toward the bullwheels.

- ✓ Once enough rope/conductor is paid out, stop the bullwheels, reel rotation, and set the brake, by placing the joystick in the center neutral position. Then cast the reeving rope (still tied to the lead-off rope/conductor) over the hoop rollers and/or reel(s).

**CAUTION:** Caution should be taken to ensure personnel are clear when casting the reeving line over reels. Reel and bullwheels should be stopped when casting the reeving line over reel.



- ✓ With the reeving line over the reel, begin payout rotations again, while pulling the line, until the rope/conductor end reaches the ground with enough slack to connect to a pilot line, pulling line, or tow vehicle. Then return the joystick to the neutral position to set the brake.

- ✓ Adjust drum roller/"hoop" height as needed.

## Operation



# Pull Mode

**NOTE:** Before beginning pulling operations, the operator must perform all pre-operation inspections. See *Pre-Operation Inspection Checklist on page 115*. Pre-operation inspections are important for the safe operation of the machine, and are required under OSHA Regulations.

Sherman + Reilly PTR-Series Puller-Tensioner-Reconductorer utilizes a hydraulically driven set of bullwheels that apply up to 30,000 lbs. or 40,000 lbs. of pulling force respectively to the pulling line. Both the PTR-7230(S) and the PTR-7240(S) come equipped with a variable speed drive system. The Pull Mode for the machine is primarily used for pulling conductor using either pulling rope or old conductor, in the case of reconductoring operations. However, the Pull Mode on the system can also be utilized for paying out rope in certain situations.

### Pulling Operations:

- ✓ Perform Start-Up/Set-Up Procedures starting on page 70.
- ✓ Attach any appropriate pulling swivels and/or grips to the pulling line.



- ✓ If pulling in old conductor and using it to pull new conductor during reconductoring operations, attach the leadoff pulling rope to the old conductor end.
- ✓ Position the levelwind on the integral reel stand or reel trailer so that the levelwind head is in line with the rope going onto the reel. Once positioned, engage the automatic levelwind by pulling the lever upward to the [I] position.



- ✓ With the levelwind engaged, calibrate the levelwind by positioning the dial so that it coordinates with the correct rope diameter.



**NOTE:** If using a leadoff rope to connect to and pull old conductor for reconductoring operations, set the levelwind calibration dial to the diameter of the old conductor.

- ✓ Once calibrated, set the levelwind starting direction by positioning the bottom directional control lever to either the right or left.



**CAUTION:** If operating a split model- (PTR-7230S or PTR-7240S), ensure that the hand rails on the reel trailer are lowered and secured to prevent them coming in contact with the rope or conductor.

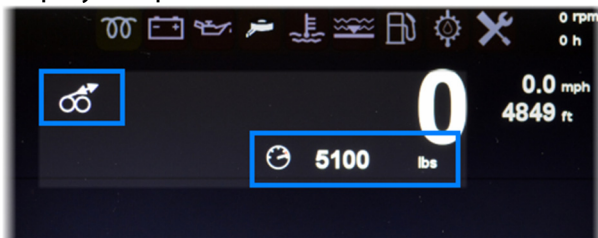


## Operation

### Pull Mode

#### **Pulling Operations (cont.):**

- ✓ Select Pull Mode on the system control panel by pressing the Pull Mode button. When the button is pressed, the button backlight will illuminate. And, the main screen will change to display the pull mode.



- ✓ Once the system is in Pull Mode, set the maximum pulling force limit to the desired setting for the machine- see *Input Overload Settings* section starting on page 39.



**CAUTION:** Pulling forces must be properly managed in order to prevent damage to rope, conductor, and equipment. It is absolutely necessary to set the maximum pulling force limit for this machine prior to conducting pulling operations.

- ✓ Set the desired reel tension by rotating the reel potentiometer(s) on the operator's console CW to increase and CCW to decrease tension. Adequate reel tension should be achieved to maintain a tight back-tension on the rope/conductor coming from the bullwheels to the reel.



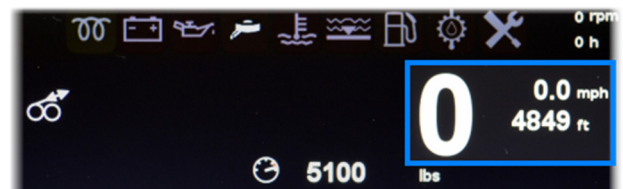
**CAUTION:** Rotate reel potentiometers slowly, and ensure all personnel are clear of the area and aware of rope take-up. Rapid increases in reel tension can create large jolts in the line and possible equipment/rope/conductor damage.

- ✓ Begin pulling the rope/conductor by slowly pulling backward on the joystick. Once rotation speed is at the desired level, the operator can depress the cruise button and release the joystick, if desired.



**NOTE:** If the joystick is released, it will return to the center neutral position. If the cruise button is not depressed prior to releasing the joystick, the bullwheel rotation will stop, and the hydraulic brake will set.

- ✓ Continue to monitor the line speed, pulling force, and the footage counter.



**NOTE:** To stop bullwheel rotation at any time, release the joystick or cruise button, and the hydraulic brake will set.

- ✓ Once the rope/conductor is pulled in and operations have concluded, release the joystick to stop bullwheel rotation and set the brake.



**CAUTION:** Before handling any pilot, pulling, or conductor lines attached to this machine, the operator must ensure that the hydraulic drum brake is set by releasing the joystick.



## Operation

# Pull Mode

### Forward Assisted Payout:

When using the Pull Mode to payout the line, the bullwheels drive the line out. This method is usefully when manually walking out the line or if driving out the line with a vehicle, where the tension required to pull the line off of the machine is greater than the available pulling force of a person or vehicle.

**NOTE:** A minimum of about **30 lbs. of pulling force (person or vehicle) is required** to payout the line from the machine while in Pull Mode. If there is no pull on the line when attempting to payout, the bullwheels will not have enough traction to move the rope. The rope must stay tight around the bullwheels to payout using Pull Mode, therefore reel back-tension is also recommended.

- ✓ Perform Start-Up/Set-Up Procedures starting on page 70.
- ✓ Attach any appropriate pulling swivels and/or grips to the pulling line. If using a tow vehicle, attached the pulling rope end to the tow vehicle.



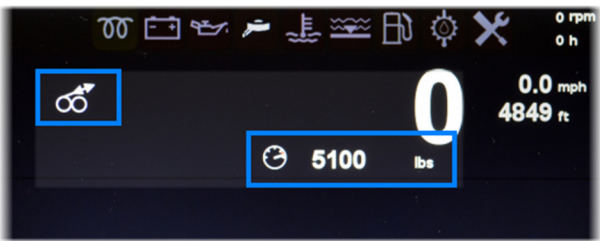
- ✓ Position the levelwind on the integral reel stand or reel trailer so that the levelwind head is in line with the rope coming off of the reel. Once positioned, disengage the automatic levelwind by pushing the lever downward to the [O] position.



**CAUTION:** If operating a split model- (PTR-7230S or PTR-7240S), ensure that the hand rails on the reel trailer are lowered and secured to prevent them coming in contact with the rope or conductor.



- ✓ Select Pull Mode on the system control panel by pressing the Pull Mode button. When the button is pressed, the button backlight will illuminate. And, the main screen will change to display the pull mode.





## Operation

# Pull Mode

### Forward Assisted Payout (cont.):

- ✓ Once the system is in Pull Mode, set the maximum pulling force limit to the lowest setting possible for the machine- See *Input Overload Settings* section starting on page 39.



**CAUTION:** Pulling forces must be properly managed in order to prevent damage to rope, conductor, and equipment. It is absolutely necessary to set the maximum pulling force limit for this machine prior to conducting pulling operations.

- ✓ Set the desired reel tensioned, by rotating the reel potentiometer(s) on the operator's console CW to increase and CCW to decrease tension. The reel tension should be minimal, but just enough to maintain a tight back-tension on the rope/conductor leading to the bullwheels.



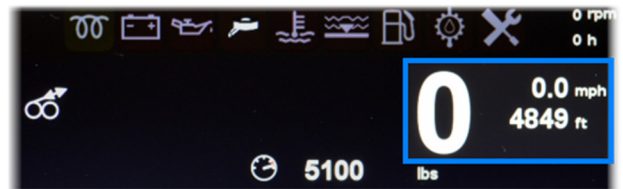
**CAUTION:** Rotate reel potentiometers slowly, and ensure all personnel are clear of the area and aware of rope take-up. Rapid increases in reel tension can create large jolts in the line and possible equipment/rope/conductor damage.

- ✓ Begin paying out the rope/conductor by slowly pushing forward on the joystick. Once rotations speed is at the desired level, the operator can depress the cruise button and release the joystick, if desired.



**NOTE:** If the joystick is released, it will return to the center neutral position. If the cruise button is not depressed prior to releasing the joystick, the bullwheel rotation will stop, and the hydraulic brake will set.

- ✓ Continue to monitor the line speed, pulling force, and the footage counter.



**NOTE:** To stop bullwheel rotation at any time, release the joystick or cruise button, and the hydraulic brake will set.

- ✓ Once the rope/conductor is paid out and operations have concluded, release the joystick to stop bullwheel rotation and set the brake.



**WARNING:** When the line is being **driven out with a truck or other off road vehicle**, ensure that the payout vehicle has completely stopped prior to returning the joystick to the center neutral position to set the brake. Otherwise, serious personal injury and/or equipment damage will result. Also, limit off road vehicle speed to account for sudden accidental changes in line tension.

**CAUTION:** Before handling any pilot, pulling, or conductor lines attached to this machine, the operator must ensure that the hydraulic brake is set by releasing the joystick.

**CAUTION:** Never payout all of the rope/conductor off of the reel; leave at least one layer of rope/conductor wrapped on the reel. Otherwise, the rope /conductor end could be pulled from its anchor point.



## Operation



# Tension Mode

**NOTE:** Before beginning tensioning operations, the operator must perform all pre-operation inspections. See *Pre-Operation Inspection Checklist* on page 115. Pre-operation inspections are important for the safe operation of the machine, and are required under OSHA Regulations.

### Rope or Conductor Payout:

- ✓ Perform Start-Up/Set-Up Procedures starting on page 70.
- ✓ Attach any appropriate pulling swivels and/or grips to the pulling rope/conductor. Next attach pulling rope to conductor, or conductor to pilot line.



- ✓ Position the levelwind on the integral reel stand or reel trailer so that the levelwind head is in line with the rope/conductor coming off of the reel. Once positioned, disengage the automatic levelwind by pushing the lever downward to the [O] position.



**CAUTION:** If operating a split model- (PTR-7230S or PTR-7240S), ensure that the hand rails on the reel trailer are lowered and secured to prevent them coming in contact with the rope or conductor.



- ✓ Select ATS/Tension Mode on the system control panel by pressing the Tension Mode button. Once the button is pressed for the first time, the button backlight will blink indicating that the system is in a pre-tension phase. The pre-tension phase allows the operator to gauge the existing line tension, and adjust the potentiometer accordingly prior to releasing the brake and applying tension to the line.



- ✓ Set the desired reel tension by rotating the reel potentiometer(s) on the operator's console CW to increase and CCW to decrease tension. The reel tension should be minimal, but just enough to maintain a tight back-tension on the rope/conductor leading to the bullwheels.



**CAUTION:** Rotate reel potentiometers slowly, and ensure all personnel are clear of the area and aware of rope take-up. Rapid increases in reel tension can create large jolts in the line and possible equipment/rope/conductor damage.

## Operation

# Tension Mode

### Rope or Conductor Payout (cont.):

- ✓ Set the initial desired bullwheel tension level by rotating the corresponding potentiometer CW to increase and CCW to decrease tension. The tension will show on the system control display as it is dialed up and down.



**NOTE:** If the initial tension is set lower than any pre-existing line tension, the bullwheels and reel will begin to payout and possible over-spin may occur.

- ✓ Once the initial tension is set, press the Tension Mode button again to release the brake and engage the bullwheels. When the button is pressed for the second time, the operator will notice the button backlight changes from blinking to solid illumination.



- ✓ During tensioning operations, continue to monitor the line speed, tension, and the footage counter.



- ✓ During operations, the tension setting can be adjusted by rotating the potentiometer CW to increase, and CCW to decrease tension. The tension will be applied and show on the system control display as it is dialed up and down.



**NOTE:** If operations must be stopped temporarily, in order to change out reel/drum, or due to other problems, and the line/bullwheels, for whatever reason, do not stop when the puller on the other end stops pulling, the operator can increase the tension until the bullwheels slow to a stop and hold the line. Once the bullwheels are stopped, press the Pull Mode button to engage the bullwheel drive system and set the hydraulic brake. Ensure tension setting is readjusted prior recommencing tensioning operations.

**CAUTION:** Never payout all of the rope/conductor off of the reel, leave at least one layer of rope/conductor wrapped on the reel. Otherwise, the rope /conductor end could be pulled from its anchor point.



- ✓ Once the rope/conductor is paid out, the line has stopped, and operations have concluded, push the Pull Mode button to engage the bullwheel hydraulic brake.



**NOTE:** By pressing the Pull Mode button, this takes the system out of tension mode. However, if the joystick is pushed or pulled while in Pull Mode, it will rotate the bullwheels.

**CAUTION:** If the Pull Mode button is pressed during tensioning mode, the hydraulic brake will set on the bullwheels and all rotation will stop. This can create a hazard if the puller on the other end is unaware of a sudden stop.

**CAUTION:** Always ensure that the hydraulic brake is set before attempting to tie off any line or conductor that is tied to or being managed by this machine. **The operator should never hold tension on the line using the drive system while the conductor is being tied off- always set the brake first.**

## Operation

### Shutdown Procedure

- ✓ Place Engine Power button to the Off/[O] position to disengage engine power.



- ✓ Once the engine is off, turn the Master Power Key Switch CCW to the OFF position and remove the key.



- ✓ If tools were used during operations, properly store them- unless further operations are planned.
- ✓ Complete all Post-Operation Inspections on page 118.

**CAUTION:** The drum/reel rope/conductor ends and must be secured prior to transport.

- ✓ Complete all towing and road safety procedures prior to towing machine- (See *Towing and Road Safety Section on page 67*).

**CAUTION:** The drum/reel manual brake must be set prior to transport.



## Operation

# Emergency Stop Procedure

In the event of an emergency, the operator must be aware of how to shut down the machine so as to avoid any additional injuries or equipment damage. In these emergency situations, the lives of linemen, work crews, surrounding bystanders, as well as the operator may become at risk-dependent upon the severity of the situation. As an operator in these situations, the level of operating knowledge and proficiency can be tested. These factors alone make this procedure one of the most important to know.

1. The first step of an emergency shut down during operations is to de-energize the drive system/engine and stop all equipment rotation and power as quickly as possible. This is done by **pushing the Emergency Stop Button** located on the control panel.



2. If the Emergency Stop Button is pushed during operations and other machines/operators are being utilized in tandem or sync with your machine, notify them as quickly as possible that an emergency has occurred and advise to halt rotations.

3. Quickly assess situation and assist any injured personnel to get free from hazards- only if safe to do so.

4. Notify proper authorities and get help.



5. Follow all employer emergency procedures.

### **Fire Extinguisher Usage:**

Most Sherman+Reilly equipment comes standard with a fire extinguisher mounted somewhere on the equipment for quick access by the operator. However, should a fire occur with S+R equipment; the **operator should only utilize the provided fire extinguisher, if trained in its use, if safe to do so, if in accordance with employer policy, and in these described situations:**

- a. To save your own life, if in jeopardy from fire.
- b. To save someone else's life, if in jeopardy as a result of a fire- but only if safe to do so.
- c. To put out small equipment fires to avoid further damage to equipment or prevent a dangerous explosion- but only if safe to do so.

**CAUTION:** Operators should exercise caution when attempting to put out fires, as **the provided extinguisher is only intended to suppress small localized fires**, and is not intended to put out or "fight" large scale fires, should one occur.

With the presence of flammable fluids and other operational environment factors, even small fires can grow out of control quickly- operators must maintain awareness of these factors.

Proper training must also be provided by employer before engaging in any firefighting efforts. Should a fire occur with Sherman+Reilly equipment, the operator should **not** use the equipment until it has been inspected for safety and approved to be returned to service- regardless of the size of the fire.



## Troubleshooting

### Quick Tips

#### **ENGINE WILL NOT START OR RUN**

- ✓ Dead battery.
- ✓ No fuel- check fuel gauge.
- ✓ Other- Refer to engine manufacturer's manual. *(Also, see General Faults section.)*

#### **REEL/DRUM WILL NOT ROTATE**

- ✓ Low system pressure drum clutch not releasing.
- ✓ Drum clutch out of adjustment.
- ✓ Obstruction between drum and inside fender/frame.
- ✓ Manual is brake set.
- ✓ Hydraulic valve(s) closed/off.
- ✓ Hoses burst or not attached.

#### **HYDRAULIC JACK CREEPS DOWN**

- ✓ If motor running, control valve seals bad.
- ✓ Motor off, or holding valve on jack is malfunctioning.

#### **UNIT WILL NOT BUILD MAXIMUM HYDRAULIC SYSTEM PRESSURE**

- ✓ Operator's pull setting set too low restricting hydraulic pressure.
- ✓ Control valve blocked or malfunctioning.
- ✓ Pump relief valve malfunctioning.
- ✓ Pump Failure.
- ✓ System pressure relief valve at the pump out of adjustment or malfunctioning.
- ✓ Contamination in hydraulic system.
- ✓ Wiring damage to pump actuators.

#### **HYDRAULIC FLUID TEMPERATURE IS ABOVE NORMAL**

- ✓ Restricted air flow to hydraulic cooler.
- ✓ Drum clutch not fully releasing.
- ✓ Contamination in hydraulic system.
- ✓ Wiring damage to the hydraulic cooling system- fan, wiring, coil, or sensor.

#### **TRAILER LIGHTS DO NOT WORK AFTER CONNECTED TO VEHICLE**

- ✓ Check vehicle/trailer wire connectors for damage or corrosion.
- ✓ The vehicle/trailer wire connectors can vary dependent upon owner/customer requirements. *(Also, see Trailer Lighting Section.)*

## Troubleshooting

The relays and fuses are located in the control panel. In order to open the control panel, the two supplied case keys will be required. Refer to the accompanying circuit diagram when checking or replacing cables, relays, fuses, thermostats or other electrical switching elements.

### General Faults

<b>Fault</b>	<b>Possible Cause</b>	<b>Solution</b>
Diesel engine does not start, and indicator lights do not come on.	The emergency stop switch is still locked after it has been pressed.	Release the emergency stop switch.
Hydraulic oil overheats > (194° F / 90° C)	Not all oil coolers are in operations.	On the control panel: check oil cooler relays and fuses.
	Cooling power of the oil cooler insufficient.	Make sure that the air circulates around the oil coolers. Covering caps must be opened. If necessary, clean oil coolers.
Function errors at the control.	Cable break, defective sensor.	See System Display and Error Codes. Exchange the relevant cable or sensor.
	Error in electronics.	Check the printed circuit.

### Engine Error Codes

<b>Code</b>	<b>Error</b>	<b>Identification</b>	<b>Description</b>
<b>1</b>	Rotary speed/speed collection errors	PickUp1	Frequency, pulse width or period outside of the normal range
<b>2</b>	Rotary speed/speed collection errors	PickUp2	Frequency, pulse width or period outside of the normal range
<b>3</b>	Rotary speed/speed collection errors	Tachometer	Frequency, pulse width or period outside of the normal range
<b>4</b>	Rotary speed/speed collection errors	Overspeed	Speed to high
<b>5</b>	Sensor failure	Setpoint device 1 (foot throttle)	Varying, incomplete or wrong data
<b>6</b>	Sensor failure	Setpoint device 1 (hand throttle)	Varying, incomplete or wrong data
<b>7</b>	Sensor failure	Charging pressure sensor	Varying, incomplete or wrong data
<b>8</b>	Sensor failure	Oil pressure sensor	Varying, incomplete or wrong data
<b>9</b>	Sensor failure	Cooling fluid sensor	Varying, incomplete or wrong data
<b>10</b>	Sensor failure	Charging air temperature sensor	Varying, incomplete or wrong data
<b>11</b>	Sensor failure	Fuel temperature sensor	Varying, incomplete or wrong data



## Troubleshooting

### Engine Error Codes (cont.):

<b>Code</b>	<b>Error</b>	<b>Identification</b>	<b>Description</b>
<b>30</b>	Functional failure: Warning	Oil pressure warning	Oil pressure too low
<b>31</b>	Functional failure: Warning	Cooling fluid temperature warning	Cooling fluid temperature too high
<b>32</b>	Functional failure: Warning	Charging air temperature warning	Charging air temperature too high
<b>33</b>	Functional failure: Warning	Oil level warning	Oil level too low
<b>34</b>	Functional failure: Warning	Cooling fluid level warning	Cooling fluid level too low
<b>35</b>	Functional failure: Warning	Warning trailing throttle	Special instructions
<b>36</b>	Functional failure: Warning	Fuel temperature warning	Fuel temperature too high
<b>40</b>	Functional failure: Warning	Oil pressure shut-off	Oil pressure too low
<b>41</b>	Functional failure: Warning	Cooling fluid temperature shut-off	Cooling fluid temperature too high
<b>42</b>	Functional failure: Warning	Charging air temperature shut-off	Charging air temperature too high
<b>43</b>	Functional failure: Warning	Oil level shut-off	Oil level too low
<b>44</b>	Functional failure: Warning	Coolant level shut-off	Coolant level too low
<b>50</b>	Error actuator	Feedback	Incorrect equipment or element
<b>52</b>	Error actuator	Reference of feedback	Not calibrated
<b>53</b>	Error actuator	Control process difference	The mechanical system does not respond correctly
<b>59</b>	Error actuator	Automatic calibration	Not calibrated
<b>60</b>	Hardware failure In-/Output	Digital output 3 (stopping magnet )	Varying, incomplete or wrong data
<b>62</b>	Hardware failure In-/Output	Digital output 7	Varying, incomplete or wrong data
<b>63</b>	Hardware failure In-/Output	Over Current OD3	Current over the normal range or ground fault
<b>67</b>	Hardware failure In-/Output	Error Hardware Setup 1	Error mode unknowable
<b>68</b>	Hardware failure In-/Output	Error CAN Setup 1	Varying, incomplete or wrong data
<b>70</b>	Communication failure	CAN-Controller	Incorrect equipment or element
<b>71</b>	Communication failure	CAN-communication SAE J1939	Update rate outside of the normal range
<b>76</b>	Storage failure	Parameter programming	Incorrect equipment or element
<b>77</b>	Storage failure	Cyclic flash-test	Incorrect equipment or element
<b>78</b>	Storage failure	Cyclic RAM-test	Varying, incomplete or wrong data
<b>80</b>	Internal Hardware failure	Current measurement (actuator)	Varying, incomplete or wrong data
<b>83</b>	Internal Hardware failure	Reference 1	Varying, incomplete or wrong data
<b>84</b>	Internal Hardware failure	Reference 2	Varying, incomplete or wrong data
<b>85</b>	Internal Hardware failure	Reference 4	varying, incomplete or wrong data

## Troubleshooting

### Engine Error Codes (cont.):

<b>Code</b>	<b>Error</b>	<b>Identification</b>	<b>Description</b>
<b>86</b>	Internal Hardware failure	Internal temperature	Incorrect equipment or element
<b>87</b>	Internal Hardware failure	Ambient Pressure	Incorrect equipment or element
<b>90</b>	Program logic	Parameter failure	Varying, incomplete or wrong data (EEPROM vintages and/or check sum incorrectly)
<b>93</b>	Program logic	Stack overflow	Varying, incomplete or wrong data
<b>94</b>	Program logic	Internal failure	Varying, incomplete or wrong data
<b>95</b>	General engine failure		With EMR3 not all possible errors are evaluated, these result individually into this general failure

### Machine Control Error Codes:

<b>Code</b>	<b>Error</b>	<b>Identification</b>	<b>Description</b>
<b>100</b>	CAN communication error	No communication to EMR2/EMR3	No communication with EMR2 / EMR3, is only evaluated when ignition is on.
<b>101</b>	CAN communication error	No communication with display	No communication with display
<b>102</b>	CAN communication error	No communication with module CR2012 NodeID 32	No communication with module CR2012 NodeID 32
<b>103</b>	CAN communication error	No communication with module CR2012 NodeID 31	No communication with module CR2012 NodeID 31
<b>104</b>	CAN communication error	No communication with module CR2031 NodeID 30	No communication with module CR2031 NodeID 30
<b>107</b>	CAN communication error	No communication with remote control	No communication with remote control
<b>108</b>	Program PLC	Radio impact machine side 1	Radio impact machine side 1
<b>109</b>	Program PLC	Radio impact machine side 2	Radio impact machine side 2
<b>120</b>	CR0232 / CR0032	Pressure sensor system 1	Broken wire
<b>121</b>	CR0232 / CR0032	Pressure sensor system 1	Short cut
<b>122</b>	CR0232 / CR0032	Pressure sensor system 2	Broken wire
<b>123</b>	CR0232 / CR0032	Pressure sensor system 2	Short cut
<b>124</b>	CR0232 / CR0032	Pressure sensor rope in 1	Broken wire
<b>125</b>	CR0232 / CR0032	Pressure sensor rope in 1	Short cut
<b>126</b>	CR0232 / CR0032	Pressure sensor rope in 2	Broken wire
<b>127</b>	CR0232 / CR0032	Pressure sensor rope in 2	Short cut
<b>128</b>	CR0232 / CR0032	Pressure sensor rope out 1	Broken wire
<b>129</b>	CR0232 / CR0032	Pressure sensor rope out 1	Short cut
<b>130</b>	CR0232 / CR0032	Pressure sensor rope out 2	Broken wire
<b>131</b>	CR0232 / CR0032	Pressure sensor rope out 2	Short cut

## Troubleshooting

### Machine Control Error Codes (cont.):

<b>Code</b>	<b>Group of failure</b>	<b>Description</b>	<b>Description</b>
<b>132</b>	CR0232 / CR0032	Sensor oil temperature	Broken wire
<b>133</b>	CR0232 / CR0032	Sensor oil temperature	Short cut
<b>134</b>	CR0232 / CR0032	Sensor fuel level	Broken wire
<b>135</b>	CR0232 / CR0032	Sensor fuel level	Short cut
<b>136</b>	CR0232 / CR0032	Pressure sensor supply pressure 1	Broken wire
<b>137</b>	CR0232 / CR0032	Pressure sensor supply pressure 1	Short cut
<b>138</b>	CR0232 / CR0032	Pressure sensor supply pressure 2	Broken wire
<b>139</b>	CR0232 / CR0032	Pressure sensor supply pressure 2	Short cut
<b>140</b>	CR0232 / CR0032	Pressure sensor brake released 1	Broken wire
<b>141</b>	CR0232 / CR0032	Pressure sensor brake released 1	Short cut
<b>142</b>	CR0232 / CR0032	Pressure sensor brake released 2	Broken wire
<b>143</b>	CR0232 / CR0032	Pressure sensor brake released 2	Short cut
<b>150</b>	Program PLC	Hydraulic temperature above operational limit	Temperature too high
<b>151</b>	Program PLC	Error during the active connection in synchro mode Couple	Communication canceled, engine off at master or slave machine.
<b>152</b>	Program SPS	Error tension automatic supply pressure side 1	Supply pressure too low
<b>153</b>	Program SPS	Error tension automatic supply pressure side 2	Supply pressure too low
<b>170</b>	Program display	Typographical errors while creating a logging file	Memory full, delete login data in backup menu.





## Maintenance



**Safety and Reliability Disclaimer:** The reliability and working life of the machine depends on the regular inspection and preventive maintenance of the machine. Further, all inspections and preventive maintenance described in this section are deemed as critical to the safe operation of the machine, and should be regarded as such.

The indicated intervals for maintenance work apply to normal operating conditions and stress. The manufacturer is not responsible for damages caused through faulty maintenance or inappropriate handling/operation of the machine.

## Maintenance

### Safety

Prior to work being performed, ensure the machine is locked/tagged out in accordance with OSHA safety requirements and all applicable safety regulations.

Take all fire prevention safety measures before using a welder or cutting device, including grinders. This should include having a fully charged fire extinguisher near the location of the work.

To avoid injury, make sure that all precautions are taken to support components before loosening or removing bolts.

Be sure everyone involved in the maintenance, service, or repair process understands what is being done and all of the safety precautions which need to be taken during the procedure.

Make sure all lifting devices, chains, slings, and hooks are in good condition and have the rated capacity to do the job. Use guide lines when necessary for control during the lifting process.

Always wear proper protective clothing and equipment when performing service: gloves, safety glasses, etc.

**Warning Terms:** Are signal words in this manual that call the operator's attention to safety concerns.

The word **DANGER** indicates the information relates to a specific immediate hazard which, if disregarded, will result in severe personal injury or death.

The word **CAUTION** indicates the information pertains to a potential hazard or unsafe practice which, if disregarded, may result in minor personal injury or equipment damage.

The word **WARNING** indicates the information relates to a specific immediate hazard or unsafe practice which, if disregarded, could result in personal injury or death.

The word **NOTE** indicates the information is important to the correct operation or maintenance of the machine.

## Maintenance

# General Care and Inspections Instructions

### **Cleaning**

Metal parts and canvas must be cleaned with a soft cloth and a neutral cleaning solution without solvents. Aggressive solvents like acetone or nitro thinners should not be used.

Clean petroleum ether is suitable to degrease the machine parts. No water should get on or around the bearings. If a steam blower is used

to clean the machine, water may penetrate the machine causing damage to the bearings!

Make sure that no dirt gets into the bearings when vacuum cleaning the machine. If necessary, cover those parts beforehand. Bare metal parts can be cleaned and at the same time protected by using a slightly oiled cloth.

### **Fault and Malfunction Detection**

Faults detected in supporting parts or parts which have an impact on safety must be corrected immediately. So long as the faults are not corrected, the machine must not be operated.

“Machines, including their support construction and rope blocks should be inspected by an expert before being put into operation for the first time as well as after having undergone substantial modification”.

“Machines, including their support construction and rope blocks should be inspected at least once a year by an expert. They should, however, if necessary, be inspected more often depending on the operating and working conditions”.

Essentially, the checking process consists of making sure that the *safety devices* are available, fitting properly and effective, as well as checking the state of the machine, the hitching gear, the rollers, the equipment, and the support construction.

Safety devices described are, e.g. brakes, rope reeling devices, devices against overcharging, etc.

Experts are persons who through their education and experience have sufficient knowledge in the field of pullers, lifters, and traction machines. Further, they are familiar with the valid regulations for protection at work, for the prevention of accidents, and with the regulations and rules generally accepted in technology. “Experts” referred to are also able to decide if the pullers, lifters and traction machines are in a safe working condition.

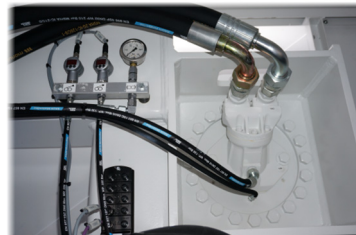
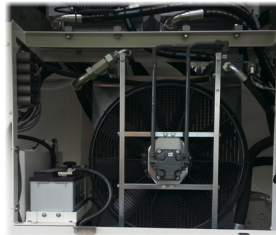
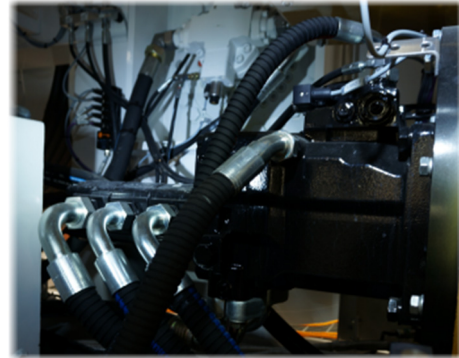
**Source: BGV D8.**

## Maintenance

# Hydraulic System

Absolute cleanliness of the hydraulic system is a must. The smallest amount of foreign material in the system can cause extensive damage to the pump, motor or valves.

Sherman+Reilly has taken every precaution to assure that each component and fitting was thoroughly cleaned and the system purged before this machine was delivered. Therefore, maintenance of the system should be carried out with extreme care.



### **Maintenance Notes:** (See Preventive Maintenance Schedule section for full details.)

- The hydraulic filters should be replaced as outlined in the Preventive Maintenance Schedule section.
- Only use recommended hydraulic fluids- see lubricant table for more information.
- When adding hydraulic fluid, be sure to wipe all dirt and grime from around reservoir filler cap before removing.
- Clean hoses, fittings, and other components thoroughly prior to replacing, and then assemble carefully.
- Always ensure that hydraulic fluid and system have cooled prior to attempting maintenance.
- ***Always follow all federal, state, local, and environmental laws and regulations, to include but not limited to OSHA, EPA, and Hazard Communication Act, with regard to the storage, maintenance, and disposal of hydraulic fluid and other chemicals used in the maintenance of described mechanical equipment.***



## Maintenance

# Hydraulic System

### When working on any hydraulic connections or parts:

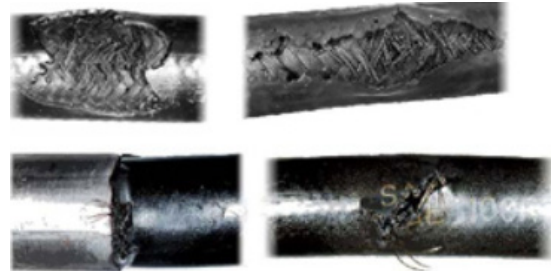
- Be sure there is no pressure on fluid at the location of the work.
- Make sure nothing will move or drop when loosening a connection.
- Collect all the hydraulic fluid which will drain from the loosened connection.
- Use oil-dry or some absorbent material to soak up any fluid spills to keep working surfaces from becoming slippery.
- Cover all open connections to prevent loss and contamination to the hydraulic system.

**When the hydraulic system has a problem or is opened at any point, filters and fluid should be replaced to prevent contamination or damage to the system.**

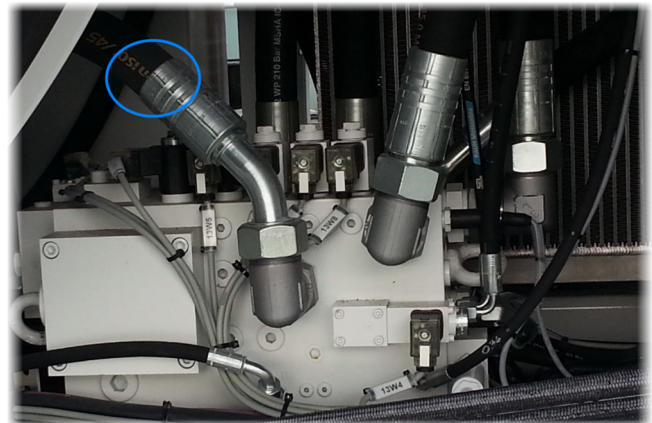
### Hydraulic System/Hose Inspection

- ✓ Check the outer surface of the hoses for damages, e.g. tears, bends, cuts, loosened parts, abrasions, brittle spots, etc.

**WARNING** Never check for hydraulic leaks with hands or body. When under pressure, leaks can puncture skin. Small or pinhole size leaks may be invisible during visual inspection. (Using a piece of cardboard or wood is recommended).



- ✓ Check the hoses for deformations (when pressure free as well as when under pressure).
- ✓ Special attention should be given to the connection between hose and fitting. If hose, fitting, or component damages are identified, they must be replaced immediately.
- ✓ All hydraulic hoses must be replaced after 2,500 working hours or, at the latest, every 10 years (starting from the year of the construction of the machine. (See *Preventive Maintenance Schedule Section*.)



## Maintenance

# Hydraulic System

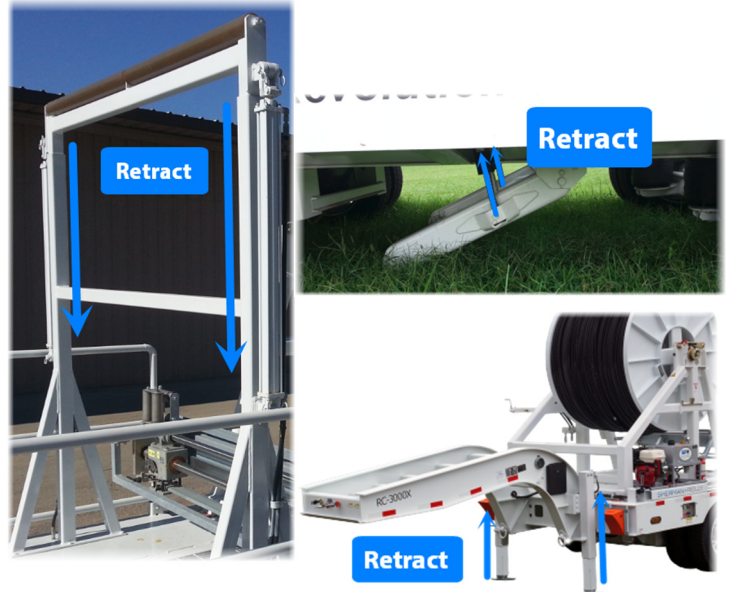
### Checking Hydraulic Fluid

- ✓ To check hydraulic fluid level, first ensure that all cylinders: (jacks, hoop, etc.) are retracted, as much as possible, and that the pump is off.
- ✓ View the hydraulic fluid level in the reservoir for the main unit through the sight gauge.

**NOTE:** The split model reel trailer power pack hydraulic fluid level can be viewed by opening the cap on the hydraulic reservoir and looking inside.

- ✓ Fluid should show within (High/Low) limits of the sight gauge.

**NOTE:** For split model reel trailer power packs, the hydraulic fluid level should be  $\frac{3}{4}$  full.



### Adding Hydraulic Fluid

- ✓ Clean around hydraulic fluid reservoir cap, and then remove reservoir cap.
- ✓ Carefully pour fluid into tank until it reaches within the (HIGH/LOW) limits of the sight gauge- about  $\frac{3}{4}$  of the way full just below the HIGH mark is recommended.

**NOTE:** For split model reel trailer power packs, the hydraulic fluid level should  $\frac{3}{4}$  full.

- ✓ Replace and tighten the fluid reservoir cap.





## Maintenance

# Hydraulic System

**CAUTION:** Make sure hydraulic fluid system has had at least 30 minutes to cool prior to maintenance.

### Replacing Hydraulic Fluid and Filter

Filter replacements are necessary if the indicator icon shows on the system control display. If the system indicates that a filter replacement is necessary, all filters must be replaced. The PTR-Series machines have one hydraulic supply filter at the pump, and two low pressure return filters located inside the hydraulic fluid tank/reservoir. For split models, the RC-3000X Reel Trailer has its own separate power pack hydraulic system. The steps described below apply to both systems, unless otherwise noted.



- ✓ First, ensure that all cylinders: (jacks, hoop, etc.) are retracted, as much as possible, and that the pump is off.

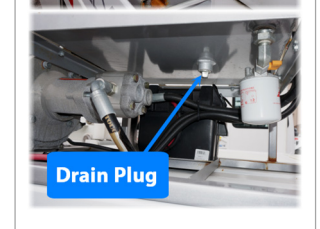
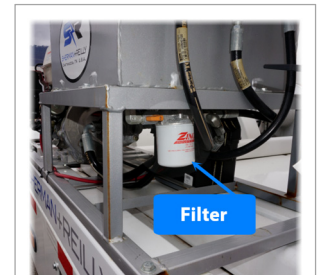
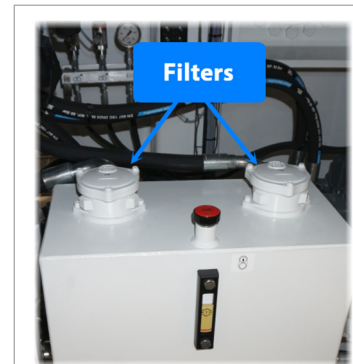
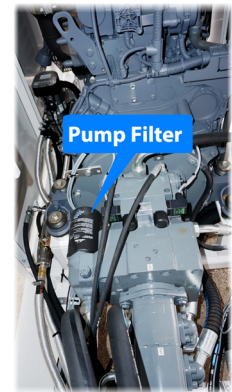
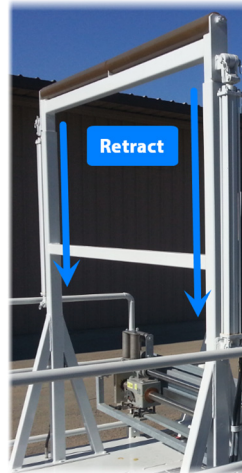
**\*\*For Filter Only Replacement skip next step:**

- ✓ **\*\*With proper reservoir in place to catch hydraulic fluid, loosen and remove plug at the bottom of the hydraulic tank.**

**\*Filter Only Replacement continue here:**

- ✓ **PTR-7230/7240:** Loosen and remove the three retaining screws at the top of each tank filter housing. Remove both filter housing caps, and then remove both tank filters. Loosen pump filters using filter wrench, then carefully unscrew filters from hydraulic pump.

**NOTE:** Once removed, filter(s) will still have fluid in it. Use care when removing filter so as not to spill remaining hydraulic fluid. A small collection reservoir may be needed.



PTR-7230/7240 Hydraulic Reservoir

RC-3000X Reel Trailer Hydraulic Reservoir

- ✓ **RC-3000X Power Pack:** Close the shut-off valve for by turning it CW. Next, using filter wrench, loosen filter by turning counter clockwise. Once loose turn by hand and remove filter.



## Maintenance

# Hydraulic System

**CAUTION:** Make sure hydraulic fluid system has had at least 30 minutes to cool prior to maintenance.

### Replacing Hydraulic Fluid and Filter (cont.)

- ✓ Install new filter(s) using the following steps:  
**PTR-7230/7240:** Insert tank filters into the housings, then replace housing caps and screws. Thread screws by hand, then tighten using wrench. Next, hand thread new pump filters to filter port on pump, then tighten filter with hand until snug.

**RC-3000X Power Pack:** Thread new filter by hand, then tighten with filter wrench. Once the filter is installed, re-open the filter shut-off valve.

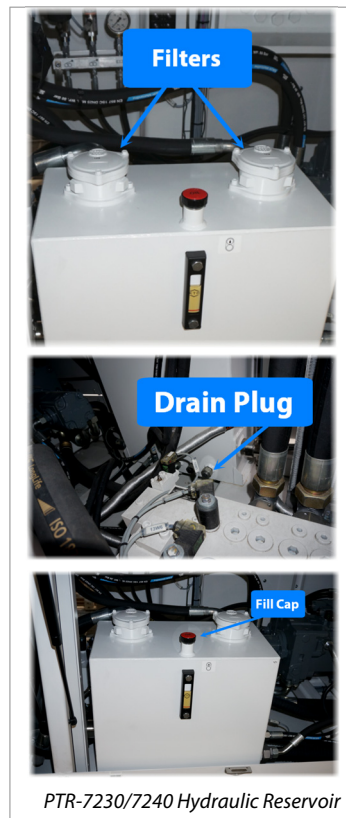
**NOTE:** 10 micron filters must be used when replacing the hydraulic system filters.

- ✓ Once fluid has finished draining from the tank, re-tighten tank plug and refill tank using sight gauge or line of sight for proper level. (See *Adding Hydraulic Fluid* section)
- ✓ After hydraulic filter change is completed, the engine must be run at idle for approximately 10 minutes- without engaging the bullwheels. This will ensure that air is purged from the system. After the air purge, check the fluid level and replace any needed fluid.

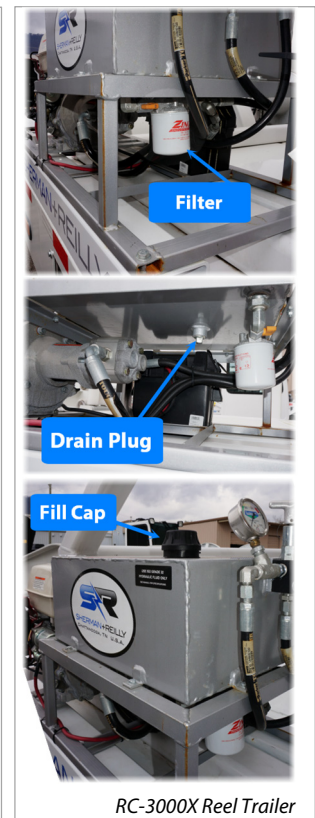
**NOTE:** Filters should be changed in accordance with the **Preventive Maintenance Schedule**. However, the filters can be changed sooner as needed. Operators should watch for maintenance indicators on the system display.



PTR-7230 Pump Filter



PTR-7230/7240 Hydraulic Reservoir



RC-3000X Reel Trailer Hydraulic Reservoir



## Maintenance

# Hydraulic System

**CAUTION:** Make sure hydraulic fluid system has had at least 30 minutes to cool prior to maintenance.

### Hydraulic Hose Replacement

- ✓ Ensure that all cylinders: (hoop, jacks, etc.) are retracted, and that the pump is off.

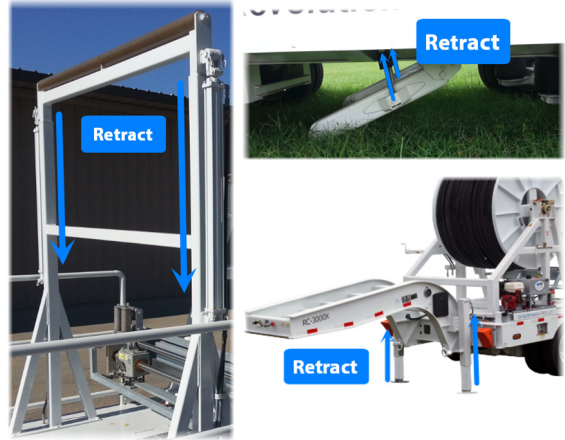
**NOTE:** Some hoses with fittings at the top of the tank may not require draining the hydraulic fluid prior to replacing hydraulic hoses.

- ✓ If tank drain is necessary, drain the tank and replace the plug- see *Replacing Hydraulic Fluid and Filter* section.
- ✓ With proper reservoir in place to catch hydraulic fluid, loosen hose connection for hose being replaced, and remove hose.
- ✓ Clean fitting using a non-scoring clean cloth, and ensure there is no damage to threads.
- ✓ Carefully thread new hose to fitting and tighten.

**NOTE:** The use of **thread sealant** may be required, dependent upon the type of fitting.



- ✓ Refill tank, run system at idle to purge air, and then replenish any lost hydraulic fluid, using sight gauge or line of sight for proper level. (See *Adding Hydraulic Fluid* section.)



## Maintenance

# Drum/Reel Drive Assembly

**WARNING: Loss of Limb/Death:** System must be off and tagged out prior to attempting any maintenance on the drive assembly.

The PTR-Series puller/tensioners both employ a fully hydraulic direct drive system. This drive system consists of hydraulic motors and bullwheels.

### Drive Motor(s)

The PTR-Series machines come equipped with two hydraulic motors- one for each bullwheel.

- ✓ The drive motor(s), should be inspected for obvious signs of damage prior to each operation- (See *Pre-Operation Checklist*).
- ✓ The drive motor(s) mounting bolts/nuts should be inspected for damage or signs of cracking.



- ✓ Inspect the sensor connection to ensure that there is no damage. Inspect the sensor wires for frayed or cut wires. Ensure that all sensor connections to the motor are secure.



- ✓ The hydraulic hose connections should also be inspected for damage and leaks prior to operation. If leaks are found,



replace the damaged hose/fitting. (See *Hydraulic Hose Replacement Section*.)

**WARNING** Never check for hydraulic leaks with hands or body. When under pressure, leaks can puncture skin. Small or pinhole size leaks may be invisible during visual inspection. (Using a piece of cardboard or wood is recommended).

## Maintenance

# Drive Assembly

**WARNING: Loss of Limb/Death:** System must be off and tagged out prior to attempting any maintenance on the drive assembly.

### Bullwheels

Bullwheels should be inspected as part of the Pre-Operation Checklist.

- ✓ The bullwheels must be inspected to ensure that they are free from debris, there is no damage.
- ✓ The bullwheel surfaces must also be inspected for excessive wear before each operating period- (See Pre-Operation Checklist).

**If excessive wear is found the part should be replaced prior to operation- contact Sherman+Reilly Service Department for service-** (See Service & Repair Section).



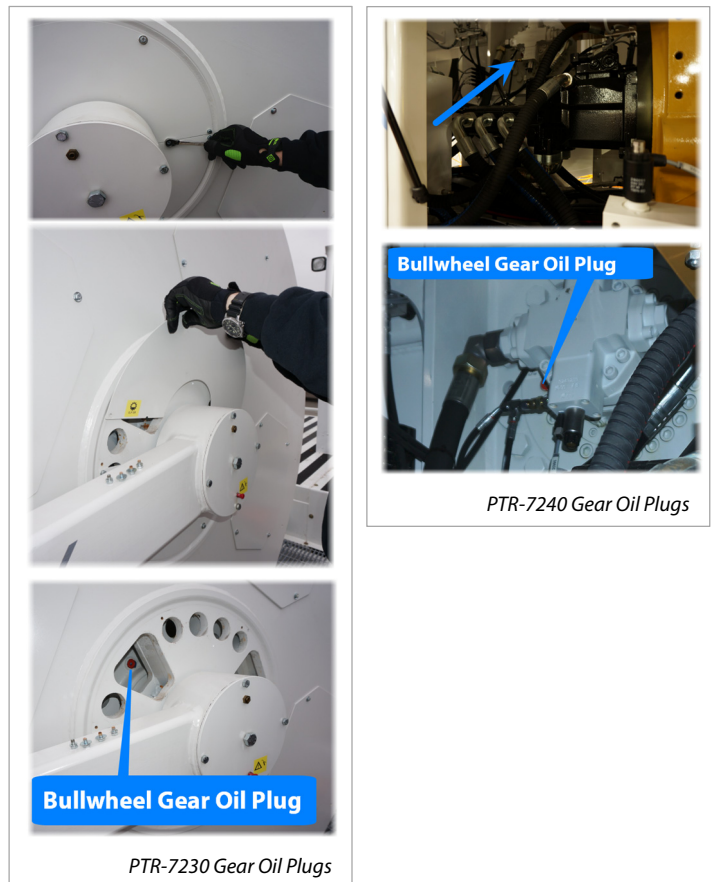
### Checking/Adding Bullwheel Gear Oil

Planetary gear oil level should be checked in accordance with the preventive maintenance schedule.

- ✓ When checking the gear oil for the PTR-7230/7230S bullwheel planetary gears, the outside bullwheel panels must first be removed in order to access the plugs.
- ✓ When checking the gear oil for the PTR-7240/7240S bullwheel planetary gears, the engine covers will need to be opened to access the plugs.

**NOTE:** The bullwheels will need to be rotated so that one oil plug is at the bottom with the other at the half full point.

- ✓ Once the plugs are accessible, using a hex head wrench with extension, loosen the plug at the half way point on the gear housing. If oil begins to pour out of the plug at the half point, then the oil level is at the appropriate half full level.



## Drive Assembly

**WARNING: Loss of Limb/Death:** System must be off and tagged out prior to attempting any maintenance on the drive assembly.

### Checking/Adding Bullwheel Gear Oil (cont.)

- ✓ If no oil drips out of the half-way point, oil level may be low. Add oil, as needed, until oil level fills half of the gear housing- (just under the half way plug).
- ✓ Once complete, reinstall and tighten plugs.
- ✓ **PTR-7230/7230S:** Replace outside covers using original screws.



- ✓ **PTR-7240/7240S:** Remove any used tools, rags, and other items from the engine compartment. Close and latch engine compartments.





## Maintenance

### Drive Assembly

**WARNING: Loss of Limb/Death:** System must be off and tagged out prior to attempting any maintenance on the drive assembly.

#### Changing Bullwheel Gear Oil

Bullwheel planetary gear oil level should be changed in accordance with the preventive maintenance schedule.

- ✓ When changing the gear oil for the PTR-7230/7230S bullwheel planetary gears, the outside bullwheel panels must first be removed in order to access the plugs.
- ✓ When changing the gear oil for the PTR-7240/7240S bullwheel planetary gears, the engine covers will need to be opened to access the plugs.

**NOTE:** The bullwheels will need to be rotated so that one oil plug is at the bottom with the other at the half full point. Turn off machine once they are rotated.

- ✓ Once the plugs are accessible, and with a proper reservoir in place to catch the gear oil, use a hex head wrench with extension to loosen and remove the lower plug on the gear housing. Oil will drain out of this plug.
- ✓ Once oil has drained completely, reinstall lower plug, and remove upper halfway point plug.
- ✓ Add new oil to the halfway point plug until fluid is just below the plug- (oil should fill half of the gear housing).
- ✓ Clean up any residual oil and replace plugs and panels and close compartments once complete.



PTR-7230 Gear Oil Plugs

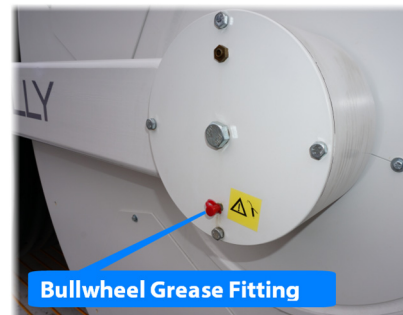


PTR-7240 Gear Oil Plugs

#### Greasing Bullwheel Bearings

Both bullwheels should be greased in accordance with the preventive maintenance schedule.

- ✓ Grease both bullwheel bearings using a grease gun to the two grease fittings located on the curbside of each bullwheel.



- ✓ Replace dust cap on fitting, once completed.



## Maintenance

# Integral Reel Stand/RC3000X

### Greasing Reel Shaft Bearings

The reel shaft bearing must be properly lubricated frequently with use and in accordance with the preventive maintenance schedule while using the proper lubricant. (See *Preventive Maintenance Schedule and Lubrication Chart*).

- ✓ Apply Grease to the bearing through the available grease fitting.

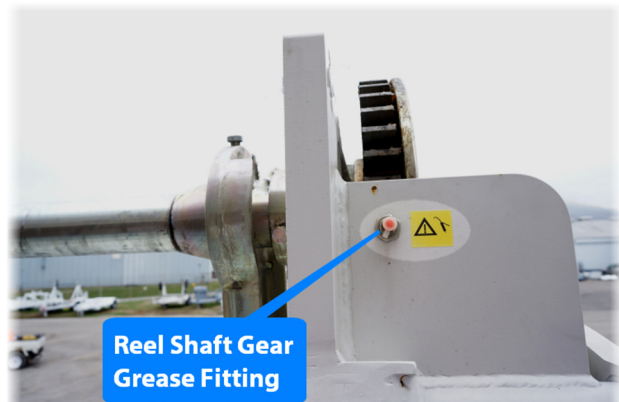
**NOTE:** The reel shaft coupler will need to be opened, and the shaft may need to be rotated, to access the bearing grease fitting.



### Greasing Reel Shaft Gear

The reel shaft gear must be properly lubricated in accordance with the preventive maintenance schedule while using the proper lubricant. (See *Preventive Maintenance Schedule and Lubrication Chart*).

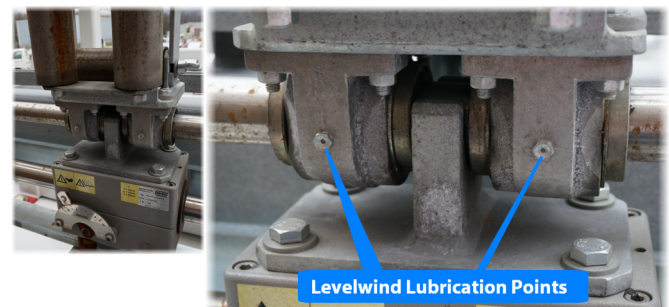
- ✓ Apply Grease to the bearing through the available grease fitting.



### Lubricating the Levelwind

The levelwind must be properly lubricated so that it slides on the lateral bar. The levelwind must be lubricated in accordance with the preventive maintenance schedule while using the proper lubricant. (See *Preventive Maintenance Schedule and Lubrication Chart*).

- ✓ Apply Grease to the both of the ports on the front of the levelwind.



## Maintenance

# Integral Reel Stand/RC3000X

### Checking/Adding Reel Stand Gear Oil

**NOTE:** The reel/drum may need to be removed to access the reel stand planetary gear box.

The reel stand gear oil must be checked in accordance with the preventive maintenance schedule while using the proper oil. (See *Preventive Maintenance Schedule and Lubrication Chart*).

- ✓ To check the oil, first rotate the gear so that the oil plug is at the half way point.
- ✓ Loosen the oil plug using a hex head wrench.
- ✓ If oil begins to seep out of the plug, then the oil is at the proper half full level.
- ✓ If no oil comes out, completely remove plug, and add oil through plug opening, until oil is at the half full level.
- ✓ Reinstall plug and clean up any residual oil.

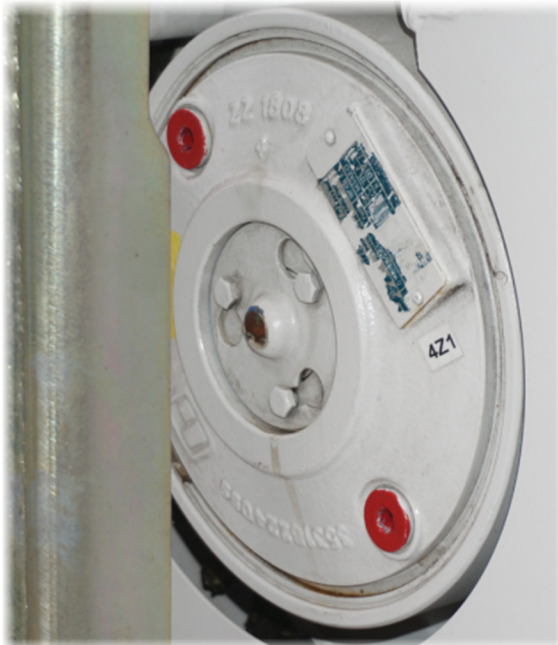


### Changing Reel Stand Gear Oil

**NOTE:** The reel/drum may need to be removed to access the reel stand planetary gear box.

The reel stand gear oil must be changed in accordance with the preventive maintenance schedule while using the proper oil. (See *Preventive Maintenance Schedule and Lubrication Chart*).

- ✓ To change the oil, first rotate the gear so that the oil plug is at the bottom.
- ✓ With a proper reservoir in place to catch oil, loosen and remove the bottom oil plug.
- ✓ Allow oil to drain completely.
- ✓ Reinstall bottom oil plug.
- ✓ Rotate gear slowly so that plug is at the half way point.
- ✓ Refill oil to the halfway point. (See adding oil section above for steps.)



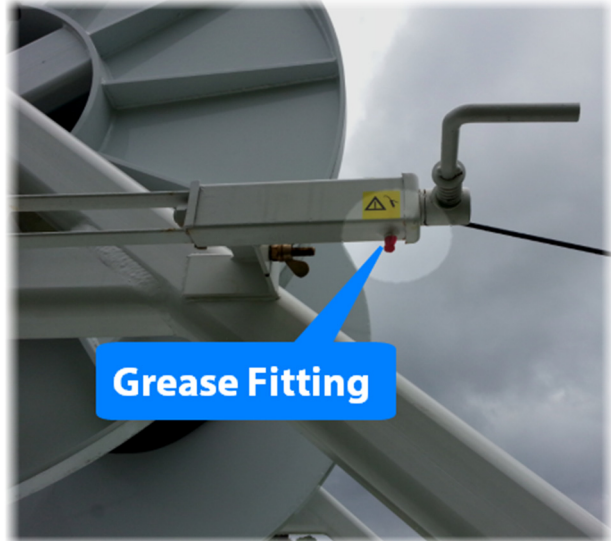


## Maintenance

# Integral Reel Stand/RC3000X

### Greasing Manual Reel Brake Crank Bearing

The manual reel brake bearing must be properly lubricated using the available grease fitting on the bottom side of the crank housing. It is very important to make sure this bearing is always lubricated, as the primary purpose for the manual crank type reel brake is to lock the reel during transit, and in the event of emergency situations.



### RC3000X Hydraulic Power Pack

The hydraulic power pack on the reel trailer does include a Honda Engine, as well as hydraulic components. All maintenance must be done in accordance with the manufacturer's maintenance schedule.

- For maintenance regarding the hydraulic components, see the Hydraulic System section.
- For maintenance information on the Honda engine and related components, see Appendix B.





## Maintenance

# Hydraulic Power Engine

**All maintenance to the engine should be done according to the instructions located in the engine manufacturer's manual.**

Keep all fluids at their proper level. *(See engine manufacturer's manual for minimum fluid levels.)*

**CAUTION:** Never add ETHER to fuel to start cold engine. Ether WILL damage diesel engines. Use available heater system as needed.

**CAUTION:** Do not exceed 50% of anti-freeze in the coolant. More anti-freeze will damage diesel engines.



### **Maintenance Notes:** *(See Preventive Maintenance Schedule section for full details.)*

- Engine coolants and oil should meet minimum manufacturer's specifications. *(For further details see engine manufacturer's manual- Appendix A.)*
- When replacing hoses, fittings or other components, clean thoroughly and then assemble carefully.
- ***Always follow all federal, state, local, and environmental laws and regulations, to include but not limited to OSHA, EPA, and Hazard Communication Act, with regard to the storage, maintenance, and disposal of engine oils, coolants, and other chemicals used in the maintenance of described mechanical equipment.***

## Maintenance

### Arctic Kit

All maintenance to the arctic kit and its components should be done according to the instructions located in the manufacturer's manual.



#### **Maintenance Notes:** (See Preventive Maintenance Schedule section for full details.)

- The arctic kit must be run with the system in winter mode, once per month for ten minutes, to ensure that the fuel in the lines and in the internal burner components does not solidify. Additionally, this ensures that all coolant in the system and attached lines have an opportunity to cycle through the system.
- ***Always follow all federal, state, local, and environmental laws and regulations, to include but not limited to OSHA, EPA, and Hazard Communication Act, with regard to the storage, maintenance, and disposal of engine coolants, fuel, and other chemicals used in the maintenance of described mechanical equipment.***

## Maintenance

### Safe-Zone Cab™

**CAUTION: Do not use ammonia-based cleaners.**

Use only non-ammonia-based cleaners to clean the front polycarbonate window.



### Inspection of Operators Chair

The operators chair should be inspected for damage and loose or missing parts. (For replacement parts, see Parts section.)



**CAUTION: For Turret Models:** The operator must be seated while rotating the turret to avoid being accidentally thrown from the machine.

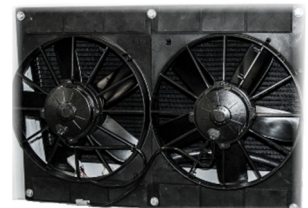
### Climate Control System

(Not installed on open cab platforms, and may not be available on all models. System types vary by model.)

The climate control systems are designed for both cooling and heating comfort functions.



- ✓ Routine visual inspections of the machine/unit should include the climate control system, (compressor, condenser, fans, hoses, etc.).
- ✓ Climate control system should be regularly inspected for damages and leaks.



#### NOTES:

- Any maintenance or modifications to the climate control system must be in accordance with US Federal EPA and State regulations.
- Only qualified HVACR technicians should perform work on Safe-Zone© climate control systems. For all maintenance concerns, contact the Sherman+Reilly Parts & Service Department at [repairs@sherman-reilly.com](mailto:repairs@sherman-reilly.com).



## Maintenance

# Trailer Assembly

**Disclaimer:** Any modifications to the Sherman+Reilly PTR-Series trailer assemblies or attached structures could result in damages to equipment, injury to operators, personnel, or others, and voiding of the manufacturer's warranty.

**(United States Only)** Any and all maintenance or modifications to the Sherman+Reilly PTR-Series trailer assemblies must be done in accordance with United States Federal and State Department of Transportation Standards, to include all applicable Federal Motor Vehicle Standards covered under Section 571.

### Brakes

The PTR-Series machines are equipped with a self-adjusting air brake systems.

- ✓ Brakes should be adjusted after the **first 200 miles**, and then every **3,000 miles thereafter**. (See self-adjusting instructions in manufacturer's manual).

**NOTE:** Replacement of linings is necessary when thickness is worn to **1/16inch or less**.

**For all additional inspection, cleaning, adjustment, and replacement instructions see the manufacturer's manual.**

**CAUTION:** Some older brake linings may contain asbestos dust which can cause serious health problems. Certain precautions should be taken when servicing brakes- see manufacturer's manual for instructions.

### Towing

Prior to towing, the trailer must be hooked up to a vehicle and hitch capable of supporting and towing a trailer/machine of this size and weight, while ensuring that the hitch is secure, and trailer lighting and air hoses are connected.

- ✓ Hitches and the trailer king pin(s) should be inspected prior to towing the vehicle.
- ✓ If air suspension system or brake system does not fully charge with air after connecting vehicle air supply system, or there is an obvious air leak, a full inspection must take place.
- ✓ If air leaks are identified, they must be fixed prior to attempting to tow the trailer.

**NOTE:** See specification sections for approximate trailer weights.



## Maintenance

# Trailer Assembly

### Tires

- The PTR's and the RC3000X all come standard with eight tires on each trailer.



- The required air pressure for these tires is posted on the tire sidewall.
- Tire pressure should be checked each time before towing/operation, and weekly thereafter to ensure proper inflation.
- Tires should be inspected for wear and damage at least every **3,000 miles or 3 months**.
- The specifications for the tires can be found on the tire sidewall.



**CAUTION:** Replacement tires must meet the same specifications as the originals. Tires for Sherman+Reilly machines meet specific duty requirements, as well as weight and roadway/speed ratings. Mismatched tires and rims may come apart with explosive force causing personal injury. Mismatched and underrated tires can also blow out causing vehicle and roadway accidents that can create serious injury or death for those involved.

### Wheels

- Wheel lug nuts should be torqued to manufacturer's specifications.
- Wheel lug nut torque should be checked in accordance with the maintenance schedule to ensure safe towing operations. (See *Preventive Maintenance Schedule*)



**CAUTION:** Wheel nuts or bolts must be tightened and maintained at the proper torque levels to prevent loose wheels, broken studs, and potential dangerous separation of the wheel from the axle, which can cause accidents, personal injuries, and death.

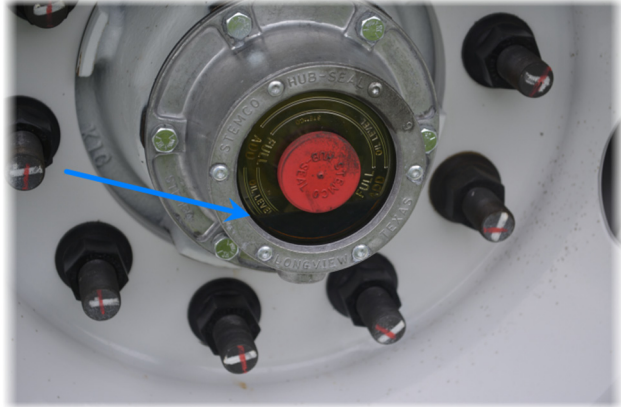
**For all additional inspection, cleaning, adjustment, and replacement instructions see the manufacturer's manual.**

## Maintenance

# Trailer Assembly

### Axle Drum Oil

- Axle drum oil should be checked each time prior to towing or moving the trailer.
- Axle drum oil should be just below the oil cap plug hole.
- If axle drum oil level is low, remove the axle drum oil cap plug, pour in fluid until the fluid level is just below the oil cap plug hole, and replace the plug. *(A funnel may be required to avoid spilling fluid.)*



## Maintenance

# Trailer Assembly

### Trailer Lighting

All trailer lights should be inspected to ensure they work prior to transport. (For replacement see Parts section.)

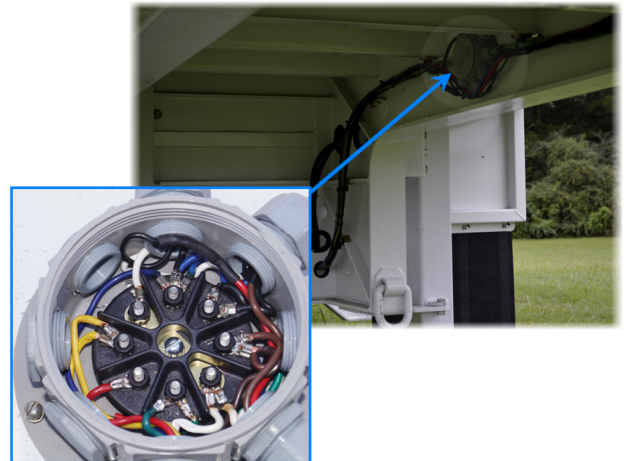
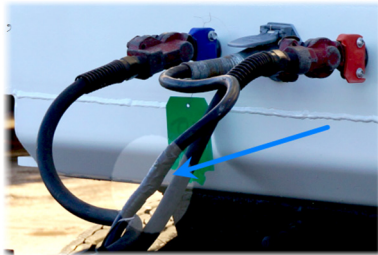


#### **If none of the lights work:**

- ✓ Check vehicle/trailer wire and wire connectors for damage or corrosion.

*The vehicle/trailer wire connectors can vary depending upon owner/customer requirements.*

- ✓ Also, check lighting junction box for damage. Open and inspect wires for loose or corroded connections.





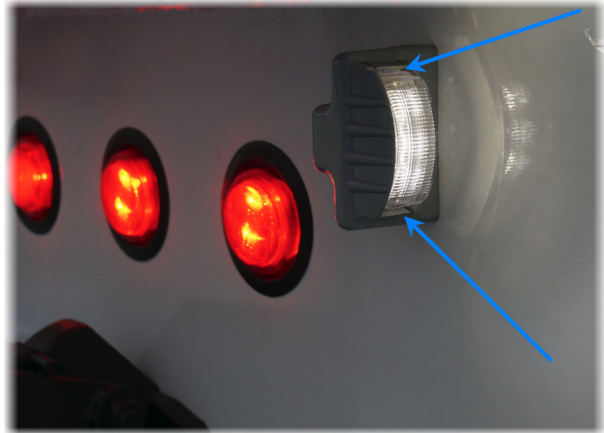
## Maintenance

### Trailer Assembly

#### **Lighting Replacement**

To replace trailer lighting, remove existing lighting by one of several methods, dependent upon the light:

- ✓ Pop out the lighting pod from its rubber grommet holder by pushing from the inside toward the outside, or pushing in from the outside and reaching into the hole to pull the pod back through to the outside of the trailer. Once out of the rubber, unplug the connection and replace with new pod.
  
- ✓ Pop Tabs: Some lighting may require the use of a screw driver to unsnap the light from its retaining tabs.





## Maintenance

# Electrical Equipment

**Only authorized and qualified personnel should be allowed to work on the electrical system.**



- ✓ If connectors, cables or other electrical parts show breaks, tears, cuts, are scoured out or show brittle spots, etc., they must immediately be replaced. During these operations, keep the covers of the electrical devices shut.



- ✓ Checking the electrical parts is limited to checking the correct connection of cables and connectors. Scoured cables must be fixed. Charred contacts must be replaced.



- ✓ The lighting system of the chassis must be checked. This check should be made while the traction vehicle is connected. The trailer lighting system must function in sync with the traction vehicle. Defective light bulbs must be replaced. *(See Towing and Road Safety Section.)*



- ✓ The electrical circuit diagrams of the machine describing the cable routes in detail can be made available upon request to S+R. The fuses and relays are located under the dash in the operators cab.



## Maintenance

# Pre-Operation Inspection Checklist (Page 1)

**NOTE:** Pre-operation checklist should be conducted in accordance with OSHA requirements, to include OSHA Standard- 29 CFR, Parts 1926.601, 1926.952, 1926.955, and 1926.150, as well as NFPA Standard No. 10-2013. It is recommended that pre-operation inspections be done before leaving the yard or garage.

- 1. Check fuel level and battery charge-** With key inserted in master power key switch, turn key to the On position to activate the display. The fuel level will show on the engine information screen.



- 2. Check windshield washer fluid level.** Reservoir is mounted inside the operators cab, on the left-hand side cab door.



- 3. Open all engine compartments,** while inspecting compartment latches.

**NOTE:** Be sure the engine covers are replaced and latched in position properly before transport or operating the machine.



- 4. Check inside engine compartment for debris.**



- 5. Check the engine radiator coolant level** by opening the radiator cap.

**CAUTION:** Ensure radiator cap is reinstalled and tightened prior to operations.

- 6. Inspect bullwheel surfaces for signs of damage or excessive wear.**



- 7. Check for proper engine oil level.** After checking oil level, wipe the dipstick clean of any debris prior to reinserting it into the spout.

- 8. Ensure proper hydraulic fluid level in reservoir for hydraulic system** by viewing the sight gauge on the side of the tank.



- 9. Inspect hydraulic pump, drive motors, and hoses for loose fittings, leaking fluid, and damaged hoses.**



## Maintenance

# Pre-Operation Inspection Checklist (Page 2)

**10. Inspect the battery, terminals, and wires for any signs of corrosion or damage.**



**11. Close all engine compartment panels and re-secure all latches.**

**CAUTION:** Unless operating in an extreme heat environment, ensure all engine compartment panels are re-secured and latched in position properly before operating or transporting the machine.



**12. [Split Models Only (PTR-7230S and PTR-7240S)]: Open tool box, and inspect tool box components.** Inspect all hoses for signs of damage or excessive wear. Ensure tool box is closed when complete.



**13. Inspect for structural damage, bent or broken parts, cracked or broken welds, missing pins and retainers.**



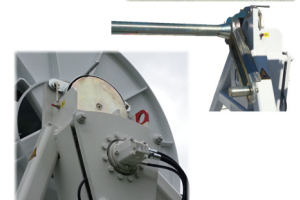
**14. Inspect all equipment grounds for any signs of damage.**



**15. Inspect all jacks for damage or leaking hydraulic components.**



**16. Inspect onboard reel, reel trailer, and/or reel stand drive motor(s), drive bar, drive pin, and reel shaft coupling(s)** to ensure they are secure and that there are no obvious signs of damage- if damaged do not operate, service may be required.



**17. Inspect levelwind and fairleads** for any obvious signs of damage, leaking hydraulic components or hoses, and ensure rollers move freely.



**18. [Reel Trailer Only]: Check reel trailer power pack fuel, oil, and hydraulic fluid levels.**



## Maintenance

# Pre-Operation Inspection Checklist (Page 3)

## 19. Inspect all Fire Extinguishers.

- a. Inspect fire extinguisher charge, and ensure that gauge shows within charge limits.

**NOTE:** If undercharged or overcharged, see instructions on label-replacement may be required. **(Additional minimum monthly/annual inspections required- see instruction label on extinguisher for details.)**



- b. Inspect the physical condition of the extinguisher- (cylinder, hose/cone assembly, etc.), for any signs of damage or corrosion.
- c. Ensure that hinge pin is in place to prevent accidental discharge.
- d. Ensure that the plastic safety seal is secured to hinge pin and that it has not been removed.



**NOTE:** If safety seal is missing or is broken; extinguisher may have been tampered with or have already been used, thereby indicating the need for re-inspection or replacement.

- e. Inspect mounting strap/bracket assembly to ensure extinguisher is secured to structure.



## 20. Conduct towing readiness inspection.

- a. Inspect all trailer hook ups, and ensure that hitch(es) are secured, and air supply hoses and trailer lighting are connected.
  - i. Inspect tail lights to ensure all lights work- replace bulbs as needed. If none of the lights work, inspect vehicle fuses, then trailer wiring for corrosion.
  - ii. Ensure that trailer brakes work and that wheel chocks are available.
- b. Check tire pressure- tire pressures are posted on the tire sidewall.
  - i. If tire pressure is low, inspect tire for damage or punctures. If damaged or punctured, have repaired or replaced.
- c. Ensure air suspension system controls are set correctly, and that air system is charged.
- d. Ensure that all jacks are raised and that trailer is clean and free from trash or debris.





## Maintenance

# Post-Operation Inspection Checklist (Page 1)

**NOTE:** Post-operation checklist should be conducted in accordance with OSHA requirements, to include OSHA Standard- 29 CFR, Part 1926.600.

1. Check engine oil, radiator coolant, and hydraulic fluid levels- to ensure no leakage after operations.



**NOTE:** It is necessary to open the engine covers to check the fluid levels. Be sure all covers are closed and latched in position properly before transport or operating the machine.

If machine is to be parked in a publically accessible area or area adjacent to a roadway or construction site, the engine compartments must be secured.



2. Close all windows on the Safe-Zone Cab, remove the master keys from the control panel, and shut and lock the door.



**NOTE:** It is important that the windows are closed, the door is locked, and that all keys are removed to prevent unauthorized access or tampering with the equipment, especially when the machine is parked in a publically accessible area or area adjacent to a roadway or construction site.

3. If leaving machine parked/unattended at night adjacent to a roadway or occupied construction area, caution should be taken to ensure that there is no obstruction of the reflectors- all reflectors must be visible.

4. When parking the machine, the wheels should be chocked and the air suspension should be dumped. When parking the machine/trailer on an incline, having the wheels chocked is extremely important.



5. On [Split Models], disconnect and store all hoses used during operations back into the tool box. Then close and lock tool box.



6. Set the manual reel brake, then secure all rope/conductor ends to the reel using a tie-off rope around the reel or an industrial zip tie. Also, ensure the levelwind is engaged to prevent the levelwind from sliding side to side during transit.



## Maintenance

# Post-Operation Inspection Checklist (Page 2)

7. Remove any trash, rags, or other loose material from the machine, to keep the machine clean and so as not to create a fire hazard.

### Storage:

- ✓ For periods of extended storage without use, the batteries will need to be periodically charged. A low amperage "trickle" charger can be used periodically to maintain proper battery charge during periods of extended storage.



- ✓ During extended storage, the trailer tire pressures should be periodically monitored, as heavy trailer weight on low tires can create permanent buckling of the tire sidewall resulting in the need for tire replacement.



Periodic refilling of the tire air pressure during seasonal temperature changes may be required- always see the specified air psi. ratings listed on the tire sidewall.

## Maintenance

# Preventive Maintenance Schedule (Page 1)

**NOTE:** All preventive maintenance steps detailed in this sections are in addition to the required pre/post-operation inspection steps. All Preventive Maintenance should be conducted in accordance with OSHA requirements, to include OSHA Standard- 29 CFR, Part 1910.147.

**WARNING:** System must be tagged/locked out prior to removing any machine guarding, removing any system component, or performing any maintenance outside of basic visual inspections.

### Reference Hydraulic Power Engine Manufacturer's (DEUTZ/Caterpillar) Manuals

For all hydraulic power engine models, please refer to manufacturer's manual for complete maintenance schedule and instructions- (See Appendix A).

### Reference Power Pack Honda Engine Manufacturer's Manual

For all Honda engines, please refer to manufacturer's manual for complete maintenance schedule and instructions- (See Appendix B).

### Reference Axle/Brake/Suspension Assembly Manufacturer's Manual

For all axle, brake, and trailer suspension assembly models, please refer to manufacturer's manual for complete maintenance schedule and instructions- (See Appendix B).

### Break-In Period

<b>First 20 hours</b>	Replace the Engine and Reduction Case Oil on the RC3000X power pack.
<b>First 25 hours</b>	Replace the Hydraulic Filter on RC3000X power pack.
<b>First 25 miles</b>	Check Trailer Wheel Lug Nut Torque- <i>See Trailer Wheels Section.</i>
<b>First 50 hours</b>	Replace the Engine Oils and Engine Oil Filters on the RC3000X Power Pack Engine- <i>See Integral Reel Stand/RC3000X Sections.</i>
	Check Battery for Proper Charge, Corrosion of Battery Terminals.
<b>First 50 miles</b>	Check Trailer Wheel Lug Nut Torque- <i>See Trailer Wheels Section.</i>
<b>First 100 miles</b>	Check Trailer Wheel Lug Nut Torque- <i>See Trailer Wheels Section.</i>
<b>First 200 miles</b>	Adjust Brakes- <i>See Brake Section.</i>

## Maintenance

# Preventive Maintenance Schedule (Page 2)

**NOTE:** All preventive maintenance steps detailed in this sections are in addition to the required pre/post-operation inspection steps. All Preventive Maintenance should be conducted in accordance with OSHA requirements, to include OSHA Standard- 29 CFR, Part 1910.147.

**WARNING:** System must be tagged/locked out prior to removing any machine guarding, removing any system component, or performing any maintenance outside of basic visual inspections.

<b>Trailer Safety</b>	
<b>Weekly/Routinely</b>	Inspect trailer axle assembly for alignment, broken or damaged spring leaves- where applicable.
<b>Weekly/Routinely</b>	Inspect axle drum oil level, and fill to just below drum plug.
<b>Weekly/Routinely</b>	Check tire air pressure- <i>See Tires Section.</i>
<b>3 Months/3,000 Miles</b>	Inspect tires for wear and damage- <i>See Tires Section.</i>
<b>3 Months/3,000 Miles</b>	Check trailer wheel lug nut torque- <i>See Trailer Wheels Section.</i>
<b>3 Months/3,000 Miles</b>	Adjust brakes- <i>See Brake Section.</i>
<b>6 Months/6,000 Miles</b>	Inspect trailer Brake Magnets and Brake Controller- <i>See Brake Section.</i>
<b>6 Months/6,000 Miles</b>	Inspect Trailer Air Brake System Components- <i>See Brake Section.</i>
<b>6 Months/6,000 Miles</b>	Inspect Trailer Suspension for bending, loose fasteners, and wear.
<b>6 Months/6,000 Miles</b>	Inspect wheels for damage, (i.e. cracks, dents, or distortions).



## Maintenance

# Preventive Maintenance Schedule (Page 3)

**NOTE:** All preventive maintenance steps detailed in this sections are in addition to the required pre/post-operation inspection steps. All Preventive Maintenance should be conducted in accordance with OSHA requirements, to include OSHA Standard- 29 CFR, Part 1910.147.

**WARNING:** System must be tagged/locked out prior to removing any machine guarding, removing any system component, or performing any maintenance outside of basic visual inspections.

The indicated intervals for basic preventive maintenance work apply to normal operating conditions and stress. The manufacturer is not responsible for damages caused through faulty and inappropriate handling of the machine. The below table represents basic preventive maintenance outline, all other maintenance and instructions can be found in OEM equipment manuals. In the table below, the following key letters are used:

PN CHECK, if necessary REFILL

PE CHECK, if necessary REGULATE and ADJUST

PW CHECK, if necessary CHANGE

R CLEAN

S LUBRICATE

W CHANGE

P CHECK

L CHARGE



Maintenance work to be performed	Before each use of the machine	Weekly or when necessary	Yearly or every 300 hours of service	Every 2 years or 600 hours of service
Cleaning and care	—	R	R	R
Mechanical system	PW	PW	PW	PW
Electrical equipment	PW	PW	PW	PW
Hydraulic system	—	PW	PW	PW
Hydraulic oil	PN	PN	W	—
Hydraulic oil return filter	—	PW	PW	W
Oil filter cartridge at the hydraulic pump	—	PW	PW	W
Transmission oil in the bull wheel gearing	—	—	PN	W
Motor oil	PN	PN	W	W
Coolant	PN	PN	PN	PN
Hydraulic and engine coolant		R	R	R
Battery	—	—	PW	PW
Fuel filter	—	—	—	W
Air filter	P	R	W	W
Lubrication	—	S	S	S
Groove tread			PW	PW

## Maintenance

# Torque Ratings for Machine Fasteners

Torque ratings for fasteners on this piece of equipment follow ANSI accredited guidelines for ASTM/ASME specifications on tightening torque. As a general rule, tightening torque should be set according to the below table, with a tolerance of approximately + / - 5%, unless other specific torque rating is noted in this manual. The below table is for advisory purposes only.

### General Recommended Torque for Fasteners by Size:

Nominal Dia. (in.)	 SAE J429 Grade 5			 SAE J429 Grade 8		
	Tightening Torque			Tightening Torque		
	K = 0.15	K = 0.17	K = 0.20	K = 0.15	K = 0.17	K = 0.20
Unified Coarse Thread Series						
1/4	76 in-lbs	86 in-lbs	101 in-lbs	107 in-lbs	122 in-lbs	143 in-lbs
5/16	157	178	209	221	251	295
3/8	23 ft-lbs	26 ft-lbs	31 ft-lbs	33 ft-lbs	37 ft-lbs	44 ft-lbs
7/16	37	42	49	52	59	70
1/2	57	64	75	80	90	106
9/16	82	92	109	115	130	154
5/8	113	128	150	159	180	212
3/4	200	227	267	282	320	376
7/8	322	365	429	455	515	606
1	483	547	644	681	772	909
1 1/4	840	952	1121	1363	1545	1817
1 1/2	1462	1657	1950	2371	2688	3162
Fine Thread Series						
1/4	87 in-lbs	99 in-lbs	116 in-lbs	123 in-lbs	139 in-lbs	164 in-lbs
5/16	174	197	231	245	278	327
3/8	26 ft-lbs	30 ft-lbs	35 ft-lbs	37 ft-lbs	42 ft-lbs	49 ft-lbs
7/16	41	47	55	58	66	78
1/2	64	72	85	90	102	120
9/16	91	103	121	128	146	171
5/8	127	144	170	180	204	240
3/4	223	253	297	315	357	420
7/8	355	403	474	502	568	669
1	542	614	722	765	867	1020
1 1/4	930	1055	1241	1509	1710	2012
1 1/2	1645	1865	2194	2668	3024	3557

Source: Fastenal

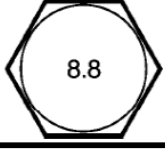
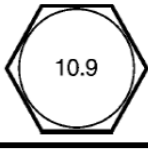
Torque ratings for 1/4" and 5/16" are listed in inch-pounds. All other torque ratings are listed in foot-pounds. (K = .15 for "lubricated" conditions) (K = .17 for Zinc plated and dry conditions) (K = .20 for plain and dry conditions).

## Maintenance

# Torque Ratings for Machine Fasteners

Torque ratings for fasteners on this piece of equipment follow ANSI accredited guidelines for ASTM/ASME specifications on tightening torque. As a general rule, tightening torque should be set according to the below table, with a tolerance of approximately + / - 5%, unless other specific torque rating is noted in this manual. The below table is for advisory purposes only.

### General Recommended Torque for Fasteners by Size:

Nominal Dia. (mm)	 Class 8.8			 Class 10.9		
	Tightening Torque			Tightening Torque		
	Lubricated (ft-lbs)	Zinc Plated (ft-lbs)	Plain&Dry (ft-lbs)	Lubricated (ft-lbs)	Zinc Plated (ft-lbs)	Plain&Dry (ft-lbs)
4	1.7	1.9	2.3	2.4	2.7	3.2
5	3.4	3.9	4.5	4.9	5.5	6.5
6	5.8	6.6	7.7	8.3	9.4	11.1
7	9.7	11.0	13.0	13.9	15.8	18.5
8	14.1	16.0	18.8	20.2	22.9	26.9
10	27.9	31.6	37.2	39.9	45.2	53.2
12	48.7	55.1	64.9	69.6	78.9	92.8
14	77.8	88.1	103.7	111.3	126.1	148.4
16	121	137	161	173	196	230
18	167	189	222	239	270	318
20	236	267	314	337	382	449
22	321	364	428	460	521	613
24	407	461	543	582	660	777
27	597	676	796	854	968	1139
30	809	917	1079	1158	1312	1544
33	1101	1248	1468	1576	1786	2101
36	1415	1603	1886	2024	2294	2699

Source: Fastenal

All torque ratings are listed in foot-pounds. Torque value formula  $T=KDF$  where; (K = .15 for "lubricated" conditions) (K= .17 for Zinc plated and dry conditions) (K= .20 for plain and dry conditions).

**CAUTION:** Under/Over tightening fasteners can result in costly equipment failure or personal injury.

## Maintenance

# Lubrication Chart

**CAUTION:** Do not mix transmission oils on polyalphaolefine base with oils on polyglycol base.

	Engine oil to -10°C	Engine oil to -25°C	Hydraulic oil to -10°C	Hydraulic oil to -25°C	Transmission oil	Multi-purpose grease
<b>Identification Qualification</b>	SAE 10W-40	SAE 5W-30	HLP 32 HEES 46	HVLP(D) 32 HEES 22	CLP 220 based onPAO	KP2K-30
	ACEA E4-99	ACEA E4-99	DIN 51524-T2	DIN 51524-T3	DIN 51517-T3	DIN 51502
	MB 228.5	MB 228.5	Bosch Rexroth RE 90 220-1			MB 267
	MAN 3277	MAN 3277				MAN 283 Li-P 2
<b>Oil company</b>		<b>Oil Type</b>				
<b>Agip</b>	Sigma TFE 10W-40	Agip SIGMA TRUCKSINT TFE	Agip OSO 32 Arnica S46	Autol HVI 32 Arnica S22	BLASIA 220	Agip GR MU / EP 2
<b>Aral</b>	Extra Turboral 10W-40	SuperTurboral 5W-30	Vitam GF 32 Vitam EHF 46	Vitam HF 32 Vitam EHF 22	Degol PAS 220	Aralub HLP 2
<b>AVIA</b>	AVIA TURBOSYNTH HT-E 10W-40	AVIA TURBOSYNTH HT-U 5W-30	AVIA FLUID RSL 32 AVIA SYNTOFLUID N 46	AVIA FLUID HVI 32 AVIA SYNTOFLUID N 22	AVIA GEAR RSX 220	AVIALITH 2 EP
<b>BP</b>	Vanellus E7 Plus 10W-40	Vanellus E8 Ultra 5W-30	Energol HLP HM 32	Energol EHPM 32	Energol HTX 220	Energol LS-EP 2
<b>Castrol</b>	Enduron 10W-40		Hyspin AWS 32 Biohyd SE46	Hyspin AWH-M 32 Biohyd SE22	Alphasyn T 220	Tribol 3020/1000-2
<b>Fuchs</b>	TITAN CARGO MC 10W-40	TITAN CARGO SL 5W-30	RENOLIN B 10 Plantosyn 3268 ECO	RENOLIN MR 520 Plantohyd 22S	Renolin Unisyn CLP 220	RENOLIT EP 2
<b>Klüber</b>			LAMORA LP 32		Klübersynth GEM 4-220 N	CENTOPLEX 2 EP
<b>Mobil</b>	Delvac XHP LE 10W-40	Delvac XHP Ultra 5W-30	Nuto H 32 EAL Hydraulic Oil 46	Univis N 32	Mobilgear SHC 220	Mobilgrease MB 2
<b>Shell</b>	Shell Rimula Signia 10W-40	Shell Rimula Ultra 5W-30	Tellus 32 Naturelle HF-E 46	Arctic 32	Omala HD 220	Shell Retinax EPL2
<b>Texaco</b>	URSA SUPER TDX 10W-40	URSA PREMIUM FE 5W-30	RANDO HD 32 Hydra 46	RANDO HDZ 32	PINNACLE EP 220	MULTIFAK EP 2
<b>TOTAL</b>	RUBIA TIR 8900 10W-40	RUBIA TIR 9200 FE 5W-30	AZOLLA AF 32 Biohydran SE 46	EQUIVIS ZS 32	Carter SH 220	MULTIS EP 2



## Service & Repair

**NOTE:** For service or repair please contact the Sherman+Reilly Parts & Service Department at [repairs@sherman-reilly.com](mailto:repairs@sherman-reilly.com) or call (423)756-5300.

EQUIPMENT INFORMATION	
Company Name:	_____
Date of Purchase:	_____
Date of Manufacture:	_____
Equipment/Unit Model Number:	_____
Equipment/Unit VIN Number:	_____
Engine Serial Number:	_____

***Major Fault:***

A “major fault” describes a system malfunction or other system degradation that, by equipment failure, operator error, or other environmental condition, renders that machine inoperable. A major fault can be identified when, through normal operations, the machine would create; an unsafe condition, further or permanent equipment damage, or other situations deemed outside of the operator’s ability to effectively and safely operate the machine.

**When to send for Service or Repair:**

If after troubleshooting an issue or fault that cannot be resolved, or a major fault has been identified, the operator should stop all operation attempts and contact the Sherman+Reilly Parts & Service Department. Further operation should not continue until the issue or fault is resolved- (See *Fault and Malfunction Detection Section*).

Scan with Smartphone to complete and email repair request form.





## Parts

**NOTE:** Parts or features may only apply to certain models or build configurations, for questions, parts ordering , and pricing inquiries please contact the Sherman+Reilly Parts & Service Department at [parts@sherman-reilly.com](mailto:parts@sherman-reilly.com) or call (423)756-5300.

### **Sherman + Reilly Accessories:**

Bundle Block 70 Series 36.5 in. UUU	701410
Helicopter Attachment for Bundle Block 70 Series 36.5 in. UUU	370141
Block Ground Steel Center for Bundle Block 70 Series 36.5 in. UUU	306019
Block Ground Aluminum Center for Bundle Block 70 Series 36.5 in. UUU	303009
Bundle Block Rack	305712
Running Board (1) D-300 / (2) D-160	602058
Running Board (1) D-300 / (2) C-100	602056
Reel Stand CRS-96/67-20K	601233
Transmission Unit Hydraulic Hose Kit	600298

### **Miscellaneous Replacement Parts:**

Fire Extinguisher	553858
Wheel Chocks, Rubber, (8"x5 ¼"x9"H)	552974
S+R Logo Mud Flap	550620





## **Appendix: Manufacturer Manuals**

Separate Contents: (6)

**DEUTZ TCD 2013 L06 2V Engine Manual**

**C9 Caterpillar Engine Manual**

**Webasto Arctic Kit Timer**

**Honda GX390 Engine Manual Trailer**

**Axle Manual**

**Ridewell Trailer Suspension Manual**

\*\*Appendixes are located separately in a CD and may not be included with this manual. If not included as a CD, contact Sherman+Reilly Parts & Service Department at [parts@sherman-reilly.com](mailto:parts@sherman-reilly.com) or call (423)756-5300 to request the additional appendix documentation.





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