

Pierce Arrow Inc.

Recovery Winch Owner's Manual



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The PS series winch is a powerful tool and must be used with extreme care. Deviating from the manual's instructions may cause personal injury. You may lose your warranty if you do not follow the precautions and guidelines outlined in this manual. Keep this manual in a safe place to reference safety and installation instructions, maintenance guidelines and operating recommendations. The owner, operator and installer must read the entire owner manual before operating the winch.

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Shipment Contents

- 1 – Winch
- 1 – P040N Three Prong Remote Control
- 4 – Winch Mounting Bolts
- 4 – Lock Washers
- 1 – Snatch Block
- 1 – Solenoid Assembly
- 1 – Roller Guide
- 2 – Bolts
- 2 – Nuts
- 2 – Washers
- 1 – 7 x 19 Wire Rope
- 1 – Slip Eye Safety Hook
- 1 – Owner's Manual

Recommended Tools

- 9/16" Wrench or Socket
- 17" Wrench
- Crowbar
- Gloves
- Safety Glasses
- Tree Saver Strap
- Safety Cut Off Switch
- First Aid Kit
- Bow Shackles
- Chains or Straps
- Wheel Blocks or Choks
- Heavy Blanket

Safety Precautions

DRESS PROPERLY

- DO NOT wear loose fitting clothing or jewelry.
- Tie back long hair.
- Wear leather gloves when handling the wire rope.
- Wear non-skid footwear during winch operation.
- Wear eye and ear protection during operation.

KEEP A SAFE DISTANCE

- DO NOT step over or under the wire rope.
- All onlookers must keep away from the work area.
- Never work on or around the winch drum when the winch is operating.
- DO NOT alter your winch in any way. Alterations may weaken the structural integrity of the winch and void your warranty.
- Operate your winch with an unobstructed view.
- Read the following safety information carefully before attempting to operate your winch. Keep this manual for future reference.

General Safety Information

DO NOT MISUSE YOUR WINCH

- DO NOT lift items vertically. The winch was designed for horizontal use only.
- DO NOT operate the winch with less than eight wraps on the drum. The set screw on the drum is not designed to hold pull force of cable.
- Avoid continuous pulls from extreme angles. This will cause the wire rope to jam as it piles up on one side.
- Use a nylon sling when winching. Hooking the wire rope to itself will cause considerable damage to the wire rope.
- DO NOT move your vehicle to assist the winch in pulling the load. The combination of the winch and vehicle pulling could overload the wire rope and winch.
- Never release the free spool clutch when a load is connected to the winch.
- DO NOT exceed the pulling limitations of this winch.
- DO NOT shock loads when winching. A shock load occurs when increased force is suddenly applied to the wire rope.
- DO NOT use your winch as a hoist.
- DO NOT use your winch to lift, support or transport people.
- DO NOT alter the warning instruction labels.
- DO NOT overheat your winch. Use your winch intermittently.
- Only use your winch for direct winching. Do not use your winch for jerking loads, towing or securing a load. Any damage incurred as a result of such action will void the warranty.
- DO NOT winch near electrical power lines.

DO NOT ABUSE THE WIRE ROPE

- Never carry your winch by the wire rope.
- Never yank the wire rope from the winch.
- Keep the wire rope from heat or sharp edges.
- **The cable must be spooled from the bottom of the drum.**

DO NOT OVERWORK YOUR WINCH

- DO NOT maintain power if the motor stalls.
- DO NOT exceed maximum line pull ratings.

- DO NOT overload your winch's pulling capacity. We recommend the use of a pulley block to double line the wire rope on heavy loads.
- DO NOT prolong pulls. The electric winch is designed for intermittent use only. If the motor becomes very hot stop the winch and let it cool down for several minutes.

AVOID UNINTENTIONAL STARTING

- The winch clutch must be disengaged when not in use and fully engaged when in use.
- Power must be disconnected when not in use.

MAINTAIN YOUR WINCH

- Before use, you must check your winch carefully.
- Damaged equipment must be properly repaired or replaced by the manufacturer or an authorized service center.
- Inspect and maintain the wire rope and winch frequently.
- Replace frayed rope strands immediately.
- Use only factory approved switches, remote controls and accessories.
- Check the tightness of the mounting bolts and electrical connections periodically.

RE-SPOOL THE WIRE ROPE

- Wear leather gloves while re-spooling.
- ATTENTION: DO NOT allow the wire rope thread through your hand.
- Keep a slight load on the wire rope while re-spooling. Hold the wire rope with one gloved hand and the remote control in the other.

Installation

MOUNTING

- Before installation ensure the mounting frame in use is capable of withstanding the winch's rated capacity.
- Ensure the motor, wire rope, drum and gear housing is properly aligned.
- Mount to a flat surface using 3/8" UNC x 1 1/4" stainless steel bolts and spring washers (PS15000 and PS20000 required grade 10.9 bolts). Your mounting plate must be six millimeters or 1/4 inches thick. If your mounting plate is thicker than 1/4 inches, lengthen bolts accordingly.
- Mount the roller guide in front of the winch. Do not attach the roller guide to the winch
- **The cable must be spooled from the bottom of the drum**

ELECTRICAL CONNECTIONS

- Connect the black wire to the ground post (1) on the motor. See diagram on page 5.
- Connect the red wire to any terminal on the safety cutoff switch (PS025). Use the other terminal to connect to the vehicle's battery.
- Your solenoid comes pre-wired. See page 5 for diagram information.

WIRE ROPE PREPARATION

NOTE: The first use of your winch must be a test run during a non-recovery situation. During this trial run begin to recognize the sound of a steady pull, a heavy pull, load jerking or shifting.

- Spool the wire rope
- Wear leather gloves while spooling. ATTENTION: DO NOT allow the wire rope thread through your hand.
- Unwind the wire rope carefully along the floor to avoid kinking.
- Place the end of the wire rope in to the hole on the side of the drum. The wire rope will protrude 1/2" - 1". Tighten the set screw.
- Keep a slight load on the wire rope while spooling.
- Using the remote control, wrap the wire rope on to the drum until the load is recovered. During operation, make sure the wire rope lays smoothly on to the drum without spacing or overlapping.
- Spool the wire rope until the red mark appears at five wraps.

- Under a load of 500 lbs (230 kg) re-spool the wire rope.
- This will stretch the new wore rope and create a tight wrap around the drum.

OPERATION

- Apply the parking brake or lock the wheels.
- While the clutch is in the OUT position spool the winch cable and connect to an anchor point.
- Check cable rigging before proceeding.
- Plug in the winch remote control.
- Engage the clutch by shifting it into the IN position. NOTE: When the clutch is engaged your load may begin to drift until the remote is used to recover your load. To ensure safe operation, it is recommended that winch operation take place from the driver's position.
- Start vehicle engine, select neutral or park and maintain idle engine speed.
- Using the remote control, press IN or OUT until the vehicle has been retrieved. Regularly check the winch to ensure the cable is winding onto the drum evenly. It is recommended you secure the load using chains or straps at this point.
- Detach the load.
- Re-spool the wire rope after the winch operation is completed.

Maintenance

It is highly recommended that you regularly use your winch. Simply power the cable out 15 feet, free spool five feet and power in. This will keep all components in good condition so that the winch can be ready when needed. Contact the manufacturer or authorized outlet for technical assistance and repairs.

LUBRICATION

1. The gearbox has been lubricated using high temperature lithium grease at the factory. No internal lubrication is required.
2. Lubricate cable periodically using light penetrating oil. Inspect for broken or worn strands and replace if necessary.

BATTERY

1. Be sure the battery is in working condition.
2. Avoid contact with battery acid.
3. Wear eye protection when working around the battery.
4. Avoid depleting the battery by running the engine when using the winch.
5. Check terminals for corrosion and clean or replace as needed.

ROPE

1. Use aircraft grade cable or approved and rated synthetic rope.
1. The life of the rope is directly related to the use and care it receives.
2. Replace damaged or frayed rope with manufacturer's identical replacement part.
3. Be sure the rope is in good condition and is properly attached.
4. DO NOT use the winch if the rope is frayed.
5. DO NOT replace the cable with a cable of lesser strength.
6. When the rope is replaced, apply Loctite 7471 primer or 222 Threadlocker to the wire rope clamp to prevent the loosening of the screw.

WINCH ELECTRICAL CONNECTIONS

1. Remove dirt or grease that may have accumulated on the electrical connections.
2. Dielectric grease is recommended on terminals and plugs.

SPARE PARTS

1. A comprehensive range of spare parts is available. Please contact the manufacturer, Pierce Arrow at 940-538-5643 for more information.
2. DO NOT attempt to disassemble the gearbox. Disassembly may void the warranty. Call Pierce Arrow at 940-538-5643 before repairs are made.

Specifications

Model	Capacity	Volts	Control	Dimensions	Speed	Weight	Motor	Ratio	Min. Wire Gauge	Gear Train	Clutch	Brake
PS6000	6,000 lbs	12 V	Remote with 12' lead	Cable capacity: 9/32" x 65' Unit: 16.9" x 6.3" x 8.6" Drum: 2.52" x 5.26"	13 fpm	55 lbs	5.5 hp	218:1	4 gauge	Three Stage Planetary	Sliding Ring Gear	Automatic in the drum
PS9000	9,000 lbs	12 V	Remote with 12' lead	Cable capacity: 5/16" x 94' Unit: 22" x 6.3" x 8.6" Drum: 2.5" x 8.8"	28.2 fpm	84 lbs	5.5 hp	265:1	4 gauge	Three Stage Planetary	Sliding Ring Gear	Automatic in the drum
PS12000	12,000 lbs	12 V	Remote with 12' lead	Cable capacity: 3/8" x 94' Unit: 21.3" x 6.3" x 8.6" Drum: 2.52" x 8.82"	21.3 fpm	88 lbs	5.5 hp	265:1	2 gauge	Three Stage Planetary	Sliding Ring Gear	Automatic in the drum
PS15000	15,000 lbs	12 V	Remote with 12' lead	Cable capacity: 7/16" x 85' Unit: 21.85" x 7.71" x 9.8" Drum: 3.5" x 8.7"	23.9 fpm	115 lbs	6 hp	358:1	2 gauge	Three Stage Planetary	Sliding Ring Gear	Automatic in the drum
PS20000	20,000 lbs	12 V	Remote with 12' lead	Cable capacity: 1/2" x 72' Unit: 23" x 7.7" x 10.6" Drum: 3.5" x 8.7"	20.4 fpm	119 lbs	6.8 hp	420 : 1	2 gauge	Three Stage Planetary	Sliding Ring Gear	Automatic in the drum

PS6000

LINE PULL (lb.)	LINE SPEED (FPM)	AMPS
0	28.2	70
2,000	15.4	160
4,000	11.5	240
6,000	9.2	310

LAYER	RATED LINE PULL (LBS.)	ROPE LENGTH ON DRUM (FT.)
1	9,000	16.2
2	7,320	39.3
3	5,500	68.9
4	4,750	91.8

PS9000

LINE PULL (lb.)	LINE SPEED (FPM)	AMPS
0	28.2	80
2,000	14.4	180
4,000	10.6	240
6,000	8.5	280
8,000	7.0	330
9,000	6.5	360

LAYER	RATED LINE PULL (LBS.)	ROPE LENGTH ON DRUM (FT.)
1	9,000	16.2
2	7,320	39.3
3	5,500	68.9
4	4,750	91.8

PS12000

LINE PULL (lb.)	LINE SPEED (FPM)	AMPS
0	21.3	65
2,000	11.5	175
6,000	7.9	230
8,000	6.5	280
10,000	5.8	355
12,000	4.4	390

LAYER	RATED LINE PULL (LBS.)	ROPE LENGTH ON DRUM (FT.)
1	12,000	17
2	9,210	41
3	8,030	71
4	6,894	85

PS15000

LINE PULL (lb.)	LINE SPEED (FPM)	AMPS
0	23.9	68
2,000	12.2	100
6,000	7.4	185
10,000	5.1	275
12,000	4.4	330
15,000	3.3	435

LAYER	RATED LINE PULL (LBS.)	ROPE LENGTH ON DRUM (FT.)
1	15,000	20.4
2	13,780	42.44
3	11,200	66.74
4	9,390	85.28

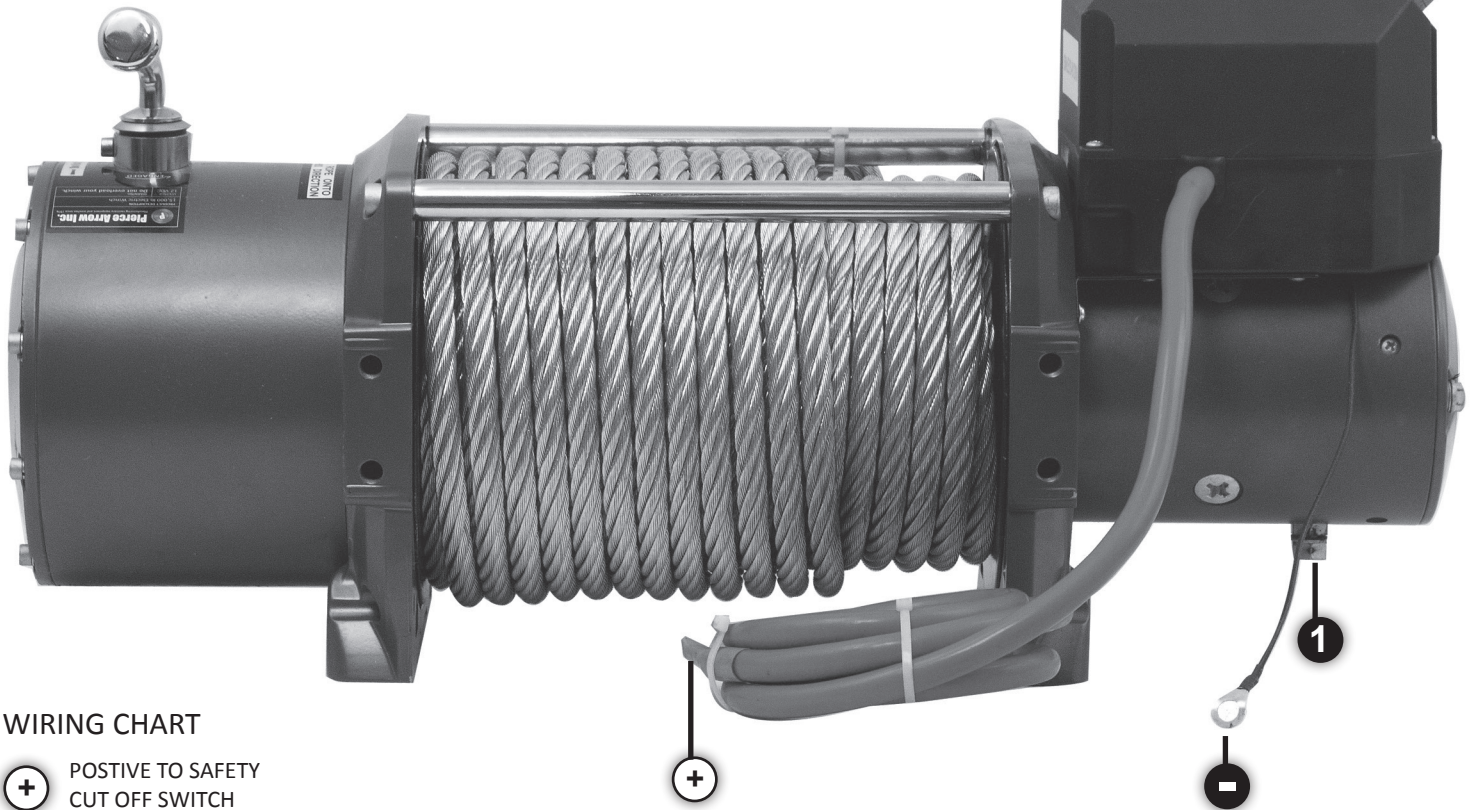
PS20000

LINE PULL (lb.)	LINE SPEED (FPM)	AMPS
0	23.9	68
2,000	12.2	100
6,000	7.4	185
10,000	5.1	275
15,000	3.3	425
20,000	2.62	530

LAYER	RATED LINE PULL (LBS.)	ROPE LENGTH ON DRUM (FT.)
1	20,000	20.4
2	15,482	42.44
3	12,584	60.18
4	10,550	72.16

Electrical Diagram

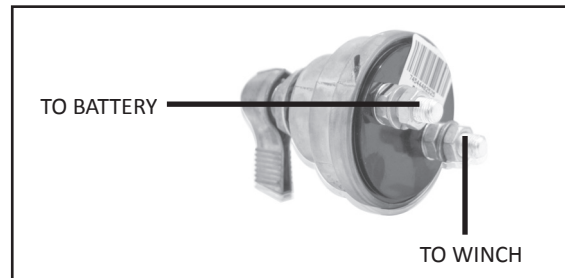
Use the diagram below to set up your winch wiring.



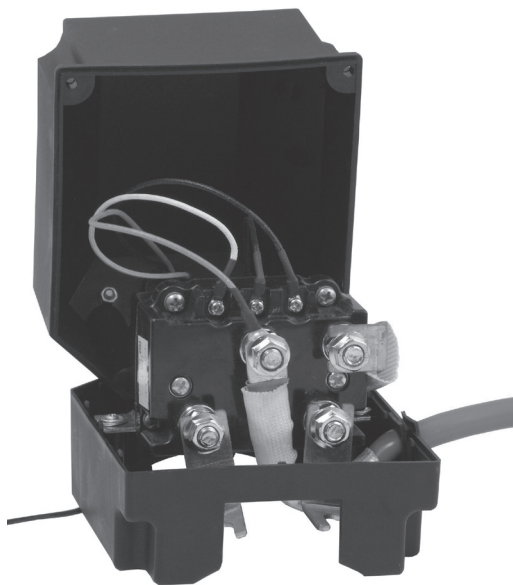
WIRING CHART

- +** POSTIVE TO SAFETY CUT OFF SWITCH
- GROUND
- 1** WINCH POST GROUND

PS025 SAFETY CUT OFF SWITCH



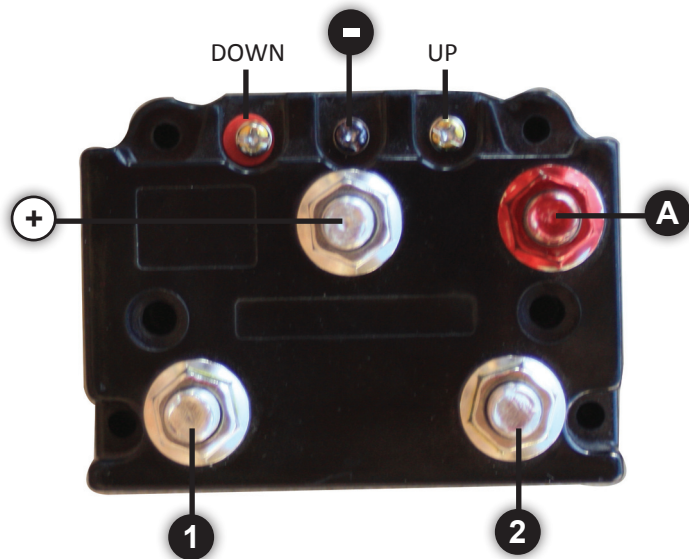
Use the diagram below to customize your wired or wireless remote control connections.



WIRING CHART

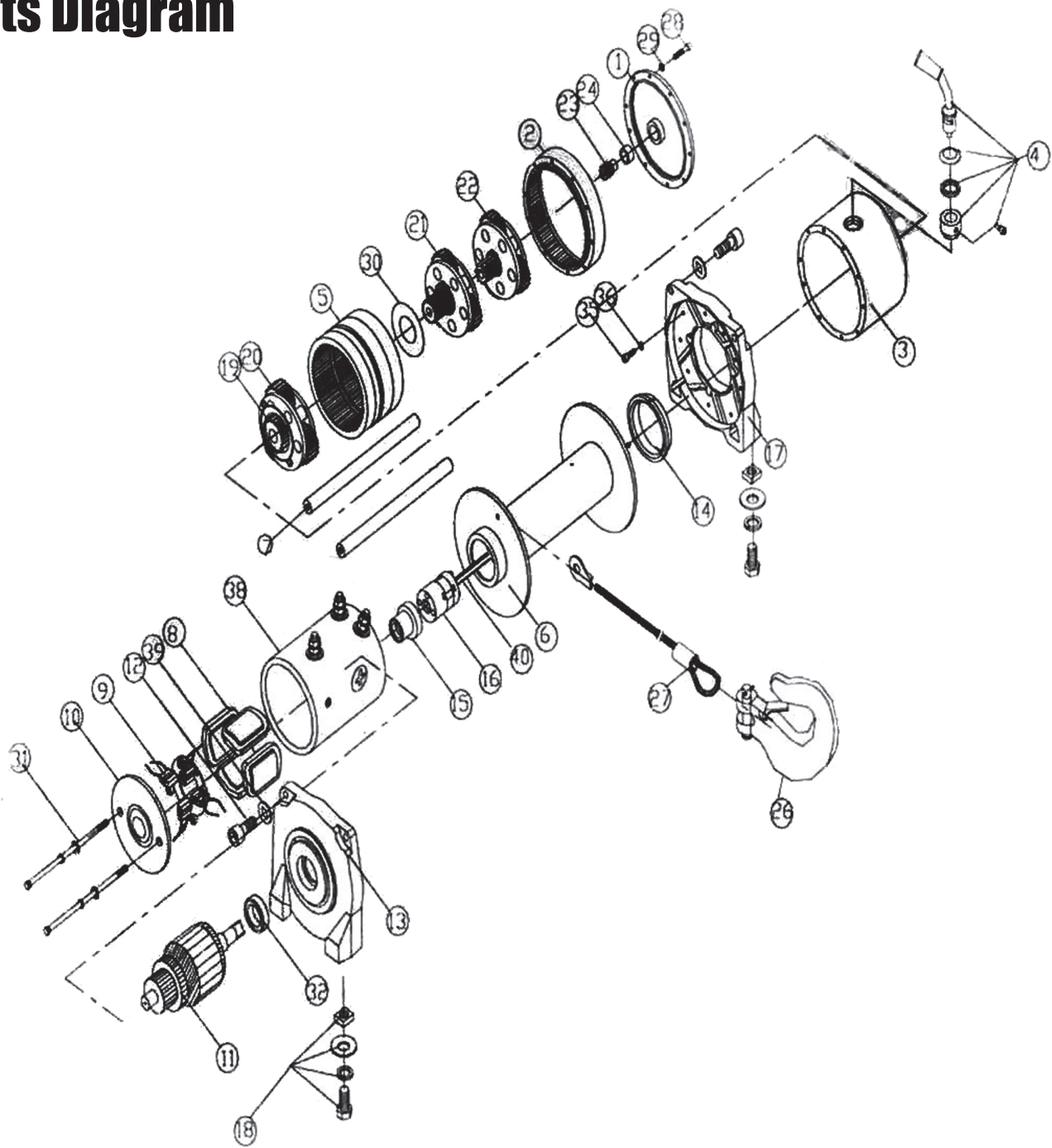
Connect the wires to the corresponding signs.

- A** Armature Post
- 1** Field 1
- 2** Field 2
- +** 12V
- Ground
- DOWN** To remote down
- UP** To remote up



Parts Diagram

PS4000
PS6000
PS9000
PS12000
PS15000
PS20000



1. Gear box end cover	1	15. Coupling joint	1	29. Lock washer	10
2. Inner gear	1	16. Brake	1	30. Washer	1
3. Gear box tube	1	17. Gear box base	1	31. Mounting bolt M6x150	2
4. Clutch handle assembly	1	18. Mounting bolt assembly	4	32. Bearing 6203zR	1
5. Clutch gear	1	19. Outer spline	1	33. -	-
6. Drum assembly	1	20. Gear carrier assembly - output	1	34. -	-
7. Tie bar	2	21. Gear carrier assembly - intermediate	1	35. Link screw M4x15	10
8. 12V stator	1	22. Gear carrier assembly - input	1	36. Lock washer	10
9. Carbon brush assembly	1	23. Sun gear - input	1	37. -	-
10. Motor end gear	1	24. Bearing	1	38. Motor box tube	1
11. 12V rotor	1	25. -	-	39. Lock washer	4
12. Link screw M6x25	4	26. Hook	1	40. Shaft	1
13. Motor base	1	27. Wire rope	1	41. -	-
14. Nylon bearing	2	28. Link screw M4x35	10		

Pierce Arrow Product Limited Warranty

Pierce Arrow, Inc. warrants to the original purchaser only (whether a wholesale, OEM or retail customer) that the goods, equipment, and merchandise manufactured by Pierce Arrow are free from defects in material and workmanship. The Pierce Arrow limited warranty on parts covers such items for a period of one year on mechanical and electrical from the date of shipment by Pierce Arrow. All warranties cover only the product or product parts, and are nontransferable.

OBTAINING WARRANTY SERVICE

Pierce Arrow must be notified promptly in writing, about the defect before any means of repair have been made. The merchandise must be delivered by the purchaser to Pierce Arrow in Henrietta, Texas at the purchaser's expense. Pierce Arrow reserves the right to repair or replace the merchandise proved to be defective. The purchaser is responsible for the cost of repairs made by Pierce Arrow if the repairs are not covered by the Pierce Arrow warranty.

EXCLUSIONS

The Pierce Arrow warranty is not intended to cover normal maintenance parts, including but not limited to: wire rope, oil leakage and remote holdings. Nor is the warranty intended to cover any change or defect due to accident; misuse; improper, inadequate or unauthorized repair; failure to provide maintenance or uses for which the equipment was not intended; and normal deterioration due to weather or road conditions. Reference the owner's manual for safety, installation, operation and maintenance guidelines.

The warranty does not bear the cost of labor, transportation, shipping damages, claimed down time, loss of profit or goodwill, or any other special, incidental, indirect, or consequential damages, concerning or related to any product or part, whether based upon negligence, strict liability, breach of contract, breach of warranty, misrepresentation, or any other legal theory.

Merchandise sold by Pierce Arrow, but not manufactured by it, is not warranted by Pierce Arrow and is subject to the manufacturer's warranty only. The manufacturer's warranty is available upon request.

Pierce Arrow makes no warranty, expressed or implied, to finished products manufactured or supplied by other manufacturers, and supplied from Pierce Arrow to the purchaser, including but not limited to, any vehicle to which our products is affixed to, and any accessories.

Merchandise manufactured by Pierce Arrow is not designed or intended for the movement of people and are not to be used in the operation of elevators or other improper uses. Any improper use of the product may void the warranty.

Please contact Pierce Arrow with any questions:

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