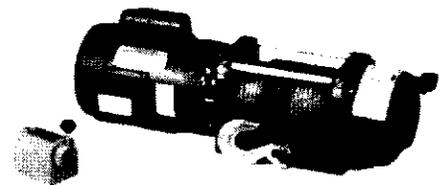


Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Dayton® Electric Winch

Description

This electric winch is designed for multipurpose hauling and pulling operations. Unit can be mounted to a support beam, wall, or other structurally suitable anchoring point in a horizontal or vertical position. Winch is equipped with a capacitor start induction run AC motor, permanently lubricated gearbox, drag brake, reversing switch, galvanized wire rope, and forged hook. Unit can be wired to operate on 115/208-230 VAC 60 Hz, single phase. This unit is not to be used as a hoist for lifting, supporting, or transporting people, or for handling loads over where people could be present.



Unpacking

Cartons should be handled with care to avoid damage from dropping, etc. After unpacking unit, inspect carefully for any damage that may have occurred during transit. Check for loose, damaged or missing parts.

Safety Precautions

The responsibility for safe installation and operation of this winch ultimately rests with you, the operator. Read and understand all safety precautions and operating instructions before installing and operating the winch. Careless winch operation can result in serious injury and/or property damage.

Throughout this manual, you will find notations with the following headings:



Read Owner's Manual



Always Use Handsaver



Keep clear of winch, wire rope and hook while operating



Never use winch to lift or move people



Never use winch to hold loads in place

Description	Quantity
Winch assembly with wire rope	1
Reversing Switch	1
Handsaver	1
Hex head cap screws, 3/8"-16 x 1 1/2"	
Hex nuts, 3/8"-16	
Lockwashers, 3/8"	4 ea.
Flat washers, 3/8"	
Pulley Block Assembly	1

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

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

▲ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. This notation is also used to alert against unsafe practices.

Specifications

Motor	.1 HP, 3450 RPM
Power Required	115/208-230V; 60Hz; 1-phase
Gear Ratio	253:1
Wire Rope	
Dia	5/16 in.
Length	100 ft.
Duty Cycle	
Pulling	20 mins on, 1/2 hr off; at working load
Against Brake	5 mins on, 1/2 hr off
Working Load	3000 lbs.

Performance*

Load	Speed		Current (amps)			
	lbs.	kg	FPM	MPM	115V	208V
0	0	10.5	3.2	7.5	3.2	3.8
500	227	10.5	3.2	7.8	3.3	3.9
1000	454	10.5	3.2	8.7	4.0	4.4
1500	680	10.5	3.2	10.0	4.8	5.0
2000	907	10.3	3.1	11.4	6.2	5.7
2500	1134	10.3	3.1	13.5	7.4	6.8
3000	1361	10.3	3.1	16.5	9.1	8.3

(*) Based on first wire rope layer closest to drum. Capacity decreases by approximately 10% for each successive layer of wire rope wrapped onto the drum.

Dayton® Electric Winch

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Dimensions

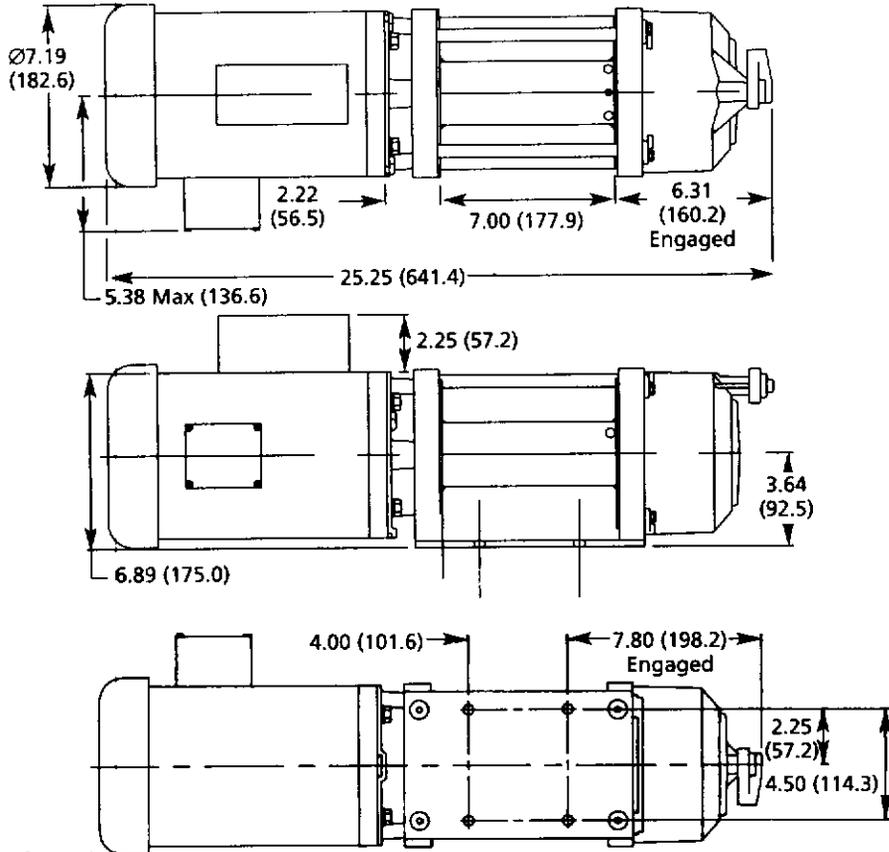


Figure 1 Dimensions in inches (mm)

General Safety Information

1. Winch is rated at 3,000 lbs. (1361 kg), single line capacity on layer of wire rope nearest drum. Each succeeding layer of rope added to drum will reduce maximum rated load approximately 10%.

⚠ WARNING Do not overload. Do not attempt prolonged pulls at heavy loads. Do not maintain power to winch if motor stalls. Overloads can damage winch and/or wire rope and create unsafe operating conditions.

2. FOR LARGER LOADS, USE PULLEY BLOCK AND HOOK ASSEMBLY TO DOUBLE LINE WIRE ROPE (See Figure 2). This reduces load on the

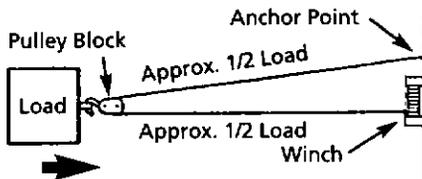


Figure 2

winch and strain on the wire rope by approximately 50%. Do not hook back to winch. Always secure hook back to a point that is strong enough to carry the load. Use only factory approved pulley block and hook assembly.

3. AFTER READING AND UNDERSTANDING THIS MANUAL, LEARN TO USE YOUR WINCH.



After installing winch, take time to practice using it so you will be comfortable with it when need arises. Periodically check winch installation to assure that all bolts are tight.

4. Avoid excessive inching and quick reversals of load. Motor must come to a stop before being started in the opposite direction. If this is not done, the motor may not reverse direction.

⚠ WARNING Keep winching area clear. Do not allow people to remain in the area during winching operations.

Always stand clear of wire rope, hook and winch. In the unlikely event of any component failure, it is best to be out of harm's way.

5. Do not allow people to remain in area during winching operations. Do not step over a taut wire rope or allow anyone else to do so. INSPECT EQUIPMENT FREQUENTLY. ANY FRAYED WIRE ROPE SHOULD BE REPLACED IMMEDIATELY. Always replace wire rope with manufacturers' identical replacement part (see "Repair Parts List").

⚠ WARNING Use heavy leather gloves when handling wire rope. Do not allow wire rope to slide through hands.

Model 4ZY95

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General Safety Information (Continued)

6. NEVER WINCH WITH LESS THAN 5 TURNS OF WIRE ROPE AROUND WINCH DRUM since wire rope fastening system may not withstand full load.

▲ WARNING *Keep clear of winch wire rope and hook when operating winch. Never put finger through hook. Use handsaver supplied with winch (Figure 3). If fingers should become trapped in hook, they can be lost.*

Never guide wire rope onto drum with hands!

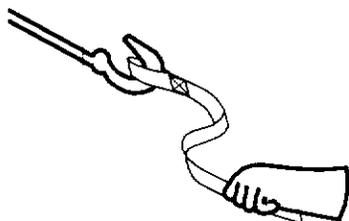


Figure 3

7. Never hook wire rope back onto itself. Use a nylon sling (See Figure 4). Hooking wire rope onto itself can damage rope. When using a sling, make sure that sling is properly seated in saddle of hook.

▲ WARNING *Equipment such as tackle, hooks, pulley blocks, straps, etc. should be sized to the winching task and should be periodically inspected for damage that could reduce their strength.*

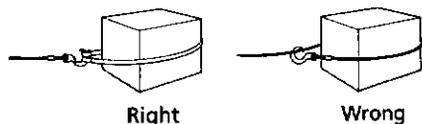


Figure 4

8. When pulling heavy loads, lay a heavy blanket or cloth over wire rope near hook end. If wire rope failure should occur, cloth will act as a damper and help prevent rope from whipping.

▲ WARNING *Do not use as a hoist for lifting, supporting or transporting people, or over areas where people are present.*



9. Winch is not designed to meet ANSI or HMI overhead hoist specifications.

10. Avoid continuous pulls from extreme angles as this will cause wire rope to pile up at one end of drum. This can jam wire rope in winch causing damage to rope or winch.

▲ WARNING *Never obscure warning and instruction labels.*

11. Always operate winch with unobstructed view of winching operation.

12. Do not use wire rope as a ground for welding.

13. Never touch welding electrode to wire rope.

▲ WARNING *Disconnect power before performing any maintenance or repair procedures or before working around winch drum (danger zone) so that the winch cannot be turned on accidentally.*

Do not operate winch when under influence of drugs, alcohol, or medication.

Never work on or around winch drum when winch is under load.

14. Electrical wiring should be performed by a qualified electrician. Install winch in accordance with all local building and electrical codes.

▲ WARNING *There are no user serviceable parts inside. Refer all repairs to qualified technicians.*

▲ DANGER *Make sure that the motor is configured for the proper operating voltage available (see Figure 7). Make sure that the electrical supply is grounded and is rated for the ampacity of the winch (refer to Specifications section). An improperly grounded winch can cause severe electrical shock or death.*

▲ WARNING *Do not use winch to hold loads in place. Use other means of securing loads such as chains and tie down straps. Use only factory approved wire rope, pulley blocks, switches, remote controls, and other accessories. Use of non-factory approved components may cause injury or property damage and could void your warranty.*



Do not machine or weld any part of winch. Such alterations may weaken structural integrity of winch and will void warranty.

15. Never allow shock loads to be applied to winch or wire rope.

16. Use caution when pulling or lowering a load down a ramp or incline. Keep people, pets, and property clear of the path of the load.

17. When moving a load, slowly take up wire rope slack until it becomes taut. Stop, recheck all winching connections. Be sure the hook is properly seated. If a nylon sling is used, check attachment to load.

Assembly

TOOLS NEEDED FOR MOUNTING

Flat blade or philips screwdriver (1-motor dependant), open end or socket wrenches - (2) 9/16", or adjustable wrenches, 35 Ft. lb. capacity torque wrench (1-recommended).

Dayton® Electric Winch

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Assembly (Continued)

HARDWARE REQUIRED

Suitable wiring and wire nuts (see "Electrical Installation" section), 1/2" conduit/cable fittings (3 each).

Installation

LOCATION

The mounting support for winch must be capable of handling loads in excess of those that winch is rated for. Suggested locations are on a support beam or wall. Determine proper mounting support based on application.

This winch may be mounted in either a horizontal or vertical position (See Figure 5). Horizontal mounting is preferred. If vertical, winch should be mounted in such a way that debris or contaminants will not enter vent slot openings. In all installations, winch must be mounted so that wire rope feeds perpendicular to drum axis and does not rub against drum supports or tie rods.

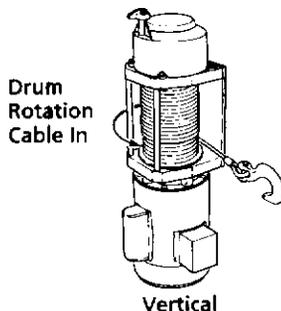
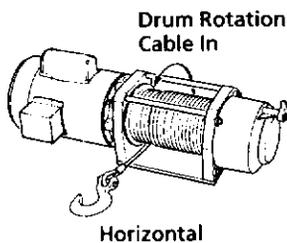


Figure 5

Drill four 7/16" (12mm) diameter holes as shown in Figure 6. Attach winch to support with 3/8" hardware provided. Recommended tightening torque is 35 Ft. lb.

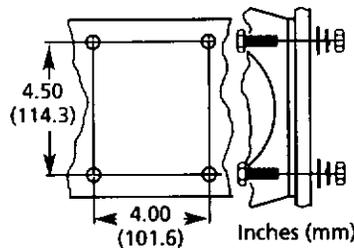


Figure 6

ELECTRICAL INSTALLATION

Electrical wiring should be performed by a qualified electrician. Wire winch in accordance with all local building and electrical codes.

Branch circuit should be equipped with a circuit breaker rated at 20 amperes, minimum. Winch and control may be either hard wired or connected to mains with suitable portable cordage. Refer to Figure 7 for wiring diagram. Be sure to connect the motor properly for the correct voltage.

WARNING Failure to ground this winch could result in fatal electrical shock.

Make sure that all wiring is positioned so that moving parts or load will not damage wiring.

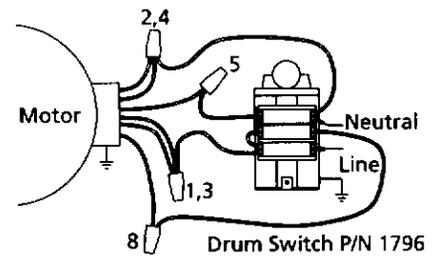
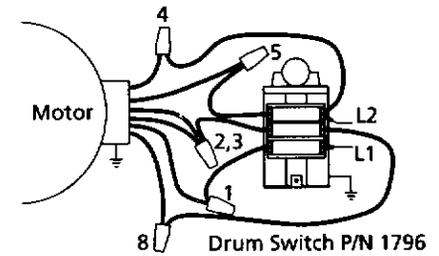
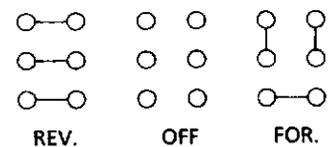


Figure 7 Wiring Diagram - 115V



Wiring Diagram - 208-230V



Drum Switch (P/N 1796) Internal Connections - Handle End

Wire Connection Chart

VOLTS	WIRE ROPE DIRECTION	LINE POWER LEADS				JOIN			
		L1		L2					
115	IN	1	3	5	2	4	8	---	
	OUT	1	3	8	2	4	5	---	
208 230	IN	1			4	8	2	3	5
	OUT	1			4	5	2	3	8

NOTE: Wire identification numbers are printed on motor lead wires. Lead wire markings may include the letter T.

Model 4ZY95

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Operation

When properly wired, placing the drum switch in the FORWARD position will wind wire rope onto drum and placing the switch in the REVERSE position will pay rope off of drum. Switch should be configured to be of the "dead man" variety (Refer to instructions provided with switch). When switch is released, it will return to the OFF position.

CAUTION Allow motor to stop before attempting to reverse direction.

Motor must come to a stop before it can be restarted in the opposite direction. Attempting reversal before motor stops may result in continued motion in same direction.

This winch has a drag brake that stops and holds the full working load on the first layer of wire rope closest to drum. Each additional layer of wire rope reduces brake capacity approximately 10%.

When powering the winch in, the brake is disengaged and does not activate until the motor is turned off and the load tries to pull the wire rope off the drum.

When the winch is powered out, as in releasing a load, the brake is engaged and the motor must over power the brake to rotate the drum. Powering against the brake will cause heat to build up in the drum and may transfer heat to the wire rope. Cable-Out operation should be limited to 5 minutes of continuous operation. Cool-down may take 30 minutes. Brake is disengaged during Cable-In operation so pulls may be performed immediately after reeling out rope.

WARNING The drum and wire rope may get very hot.

CAUTION Brake works in one direction only. Make sure drum rotates in direction shown in Figure 5 when running Cable-In.

WARNING The winch is not designed as a load securing device. Never leave loads unattended.

FREEWHEEL

Rotate the clutch lever to the "Free" position as shown in Figure 8. If there is a load on the wire rope, the clutch lever may not turn easily. Release tension on the wire rope by joggling out some of the rope then try releasing the clutch. Rope can now be pulled off drum. A drag mechanism prevents backlash to keep rope from snarling. To reengage drum, rotate the clutch lever to the "Engaged" position (Figure 8).

CAUTION Do not force freewheel lever.

Do not release clutch when winch is under load. Release tension on wire rope by joggling out some rope. Never engage clutch lever while drum is turning. This may damage winch or wire rope.

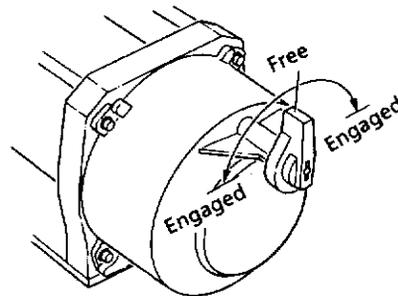


Figure 8

OPERATING HINTS

1. Do not put angular loads on winch. Whenever possible, pull should be perpendicular to winch.
2. Keep wire rope under tension when operating winch so it remains tight and even on drum.
3. Replace wire rope when frayed.

EXTENDING LIFE OF WINCH

1. KEEP A TIGHTLY WOUND WIRE ROPE DRUM. Do not allow wire rope to become loosely wound. A loosely wound spool allows wire rope under load to work its way down into layers of wire rope on drum. When this happens, wire rope may become wedged within body of windings, damaging wire rope. To prevent this problem, keep wire rope wound tightly and evenly at all times. A good practice is to rewind wire rope under tension after each use.
2. DO NOT ALLOW MOTOR TO OVERHEAT. During long or heavy pulls, motor and gearbox will get hot.
3. USE A PULLEY BLOCK FOR HEAVY LOADS. To maximize winch and wire rope life, use pulley block to double line heavier loads.
4. AVOID FREQUENT STOPPING AND STARTING A PULL. The pull required to start moving a load is greater than pull to keep it moving.
5. MINIMIZE AMOUNT OF TIME IN REVERSE (CABLE-OUT) DIRECTION. Drag brake is always in friction when powering wire rope off drum. Using freewheel operation and pulling rope off drum minimizes brake wear.

Dayton® Electric Winch

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Operation (Continued)

6. **TRY TO WINCH ON WIRE ROPE LAYER CLOSEST TO DRUM.** The more wire rope that is on drum, the harder winch has to work to move load. Plan winching tasks to minimize amount of rope on drum but do not winch with less than 5 turns of rope on drum.
7. **PREVENT KINKS BEFORE THEY OCCUR** (See Figure 9).

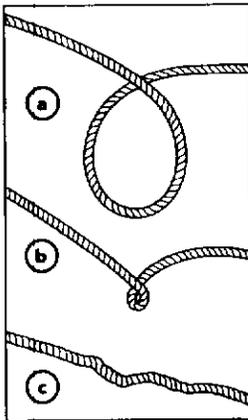


Figure 9

- This is the start of a kink. At this time, wire rope should be straightened.
- Wire rope was pulled and loop has tightened to a kink. Wire rope is now permanently damaged and must be replaced.

- The result of kinking is that each strand pulls a different amount causing strands under greatest tension to break and reduce load capacity of wire rope. Wire rope must be replaced.

Maintenance

Periodically check the tightness of all mounting bolts.

LUBRICATION

Winch is lubricated for life at factory. It is unnecessary to grease or oil any part of winch. If relubrication is necessary (after repair or disassembly) only use factory approved grease (See Repair Parts List).

REPLACING WIRE ROPE

A part of the winch that will require attention and eventual replacement is the wire rope. Frequently inspect the wire rope for wear. A frayed rope should be replaced immediately. Always replace damaged wire rope with the manufacturer's identical replacement part (see Repair Parts List). Never substitute a heavier or lighter weight rope. Never use rope made of any material other than wire. Because all wire ropes are subject to wear, they are excluded from the warranty.

- Place winch in freewheel and unwind the wire rope off the drum.
- Loosen the set screw that secures the wire rope to the drum.

- Feed the end of the new wire rope into the side-drilled hole and tighten the set screw. Make sure that the wire rope feeds from the underwind position. (See Figure 10).
- Make sure freewheel handle is in the engaged position. While watching the winch drum rotation, turn the winch on in the forward direction. Make sure that the rope is winding onto the drum from the bottom (underwind) as illustrated in Figure 10.

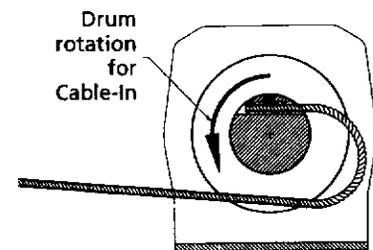


Figure 10

Once correct wind is obtained, continue winding remaining rope onto drum. To keep the rope spooling tightly and evenly, keep the rope under tension during the wind. One method is to attach a small load to end of wire rope and winch load in.

Model 4ZY95

Troubleshooting Chart

Symptom	Possible Cause(s)	Corrective Action
Winch will not operate	<ol style="list-style-type: none"> 1. No power 2. Bad wiring/connection 3. Damaged motor 	<ol style="list-style-type: none"> 1. Check branch circuit 2. Check wiring 3. Repair or replace motor
Winch runs backwards	Incorrect wiring	Check wiring
Motor runs but drum doesn't turn	Freewheel clutch disengaged	Engage clutch
Winch will not reverse	<ol style="list-style-type: none"> 1. Motor not stopped before reversing 2. Incorrect wiring 3. Damaged motor 	<ol style="list-style-type: none"> 1. Allow motor to stop before reversing 2. Check wiring 3. Repair or replace motor
Load creeps backwards	<ol style="list-style-type: none"> 1. Excessive load 2. Brake is worn 	<ol style="list-style-type: none"> 1. Use pulley block or reduce load 2. Replace brake
Branch circuit breaker continually trips	<ol style="list-style-type: none"> 1. Excessive load 2. Low voltage 3. Electrical short 4. Damaged motor 	<ol style="list-style-type: none"> 1. Use pulley block or reduce load 2. Check branch circuit 3. Check wiring 4. Repair or replace motor
Will not go into freewheel	Tension on wire rope	Remove tension
Wire rope spooling unevenly	<ol style="list-style-type: none"> 1. Insufficient tension on wire rope 2. Pulling at angle 	<ol style="list-style-type: none"> 1. Rewind rope under small load 2. Align winch for straighter pull
Winch does not pull rated load	<ol style="list-style-type: none"> 1. Too much wire rope on drum 2. Low voltage 3. Damaged motor 	<ol style="list-style-type: none"> 1. Reduce amount of rope on drum 2. Check branch circuit 3. Repair or replace motor
Drum doesn't turn, motor hums	<ol style="list-style-type: none"> 1. Excessive load 2. Incorrect wiring 3. Low voltage 4. Damaged motor 	<ol style="list-style-type: none"> 1. Use pulley block or reduce load 2. Check wiring 3. Check branch circuit 4. Repair or replace motor

For Repair Parts, call 1-800-323-0620

24 hours per day - 365 days per year

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:

Grainger Parts
 P.O. Box 3074
 1657 Shermer Road
 Northbrook, IL 60065-3074 U.S.A.

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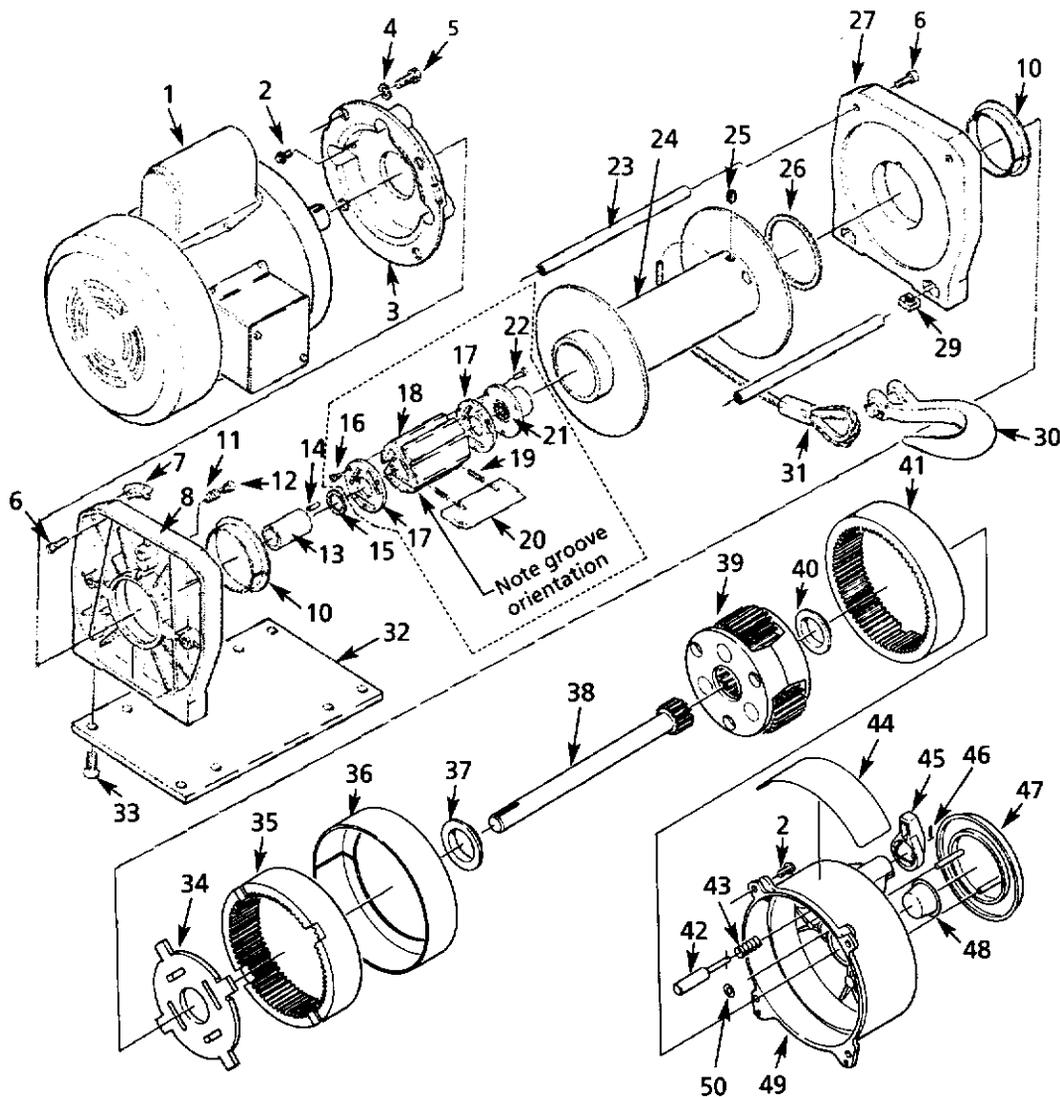


Figure 11 - Repair Parts Illustration for Model 4ZY95

Model 4ZY95**Repair Parts List for Model 4ZY95**

Reference Number	Description	Part Number	Quantity
1	1 HP, 3450 RPM, TEFC Motor	90-40288	1
2	1/4-20 X 5/8" Self-tapping hex washer head screw	90-23039-10	7
3	AC Motor adapter	90-32284	1
4	3/8" Lockwasher	92-23057-01	4
5	3/8-16 x 3/4" Hex head cap screw	92-23036-01	4
6	1/4-20 x 3/4" Socket head cap screw	90-23055-06	4
7	Wind direction label	92-10211	1
8	AC Outboard drum support	90-32282	1
10	Drum bearing	90-12575	2
11	Drag button spring	90-23152-08	1
12	Drag button	90-22612	1
13	AC Winch coupling assembly	90-22355	1
14	3/16 x 1" Square key	90-23042-05	1
15	.030 Oil finish thrust washer	90-23120-08	1
	Brake Assembly, Consisting of:	90-25036	1
16	6-32 x 3/8" Pan head tapping screw		3
17	Pad retainer		2
18	Brake adapter		1
19	Compression spring		6
20	Brake pad		3
21	Brake clutch assembly		1
22	6-32 x 5/8" Pan head tapping screw		3
23	7" Tie rod	90-20008-02	2
24	AC Winch drum assembly	90-31069-05	1
25	M8 x 10 Set screw	94-23164-09	1
26	Thrust washer	90-12574	1
27	Inboard drum support	90-32199	1
29	3/8-16 Square nut	90-23084-04	4
30	Clevis hook assembly	94-20116	1
31	5/16" x 100' Wire rope assembly	1580	1
32	AC Winch baseplate	90-32364	1
33	3/8-16 x 7/8" Hex socket flat head screw	90-23056-09	4
34	Drum driving plate	90-22183	1
35	66T, HT Rotating ring gear	90-32232-01	1
36	Ring gear bearing and separator	90-22607	1

(Continued on page 11)

For Repair Parts, call 1-800-323-0620

24 hours per day - 365 days per year

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:

Grainger Parts
 P.O. Box 3074
 1657 Shermer Road
 Northbrook, IL 60065-3074 U.S.A.

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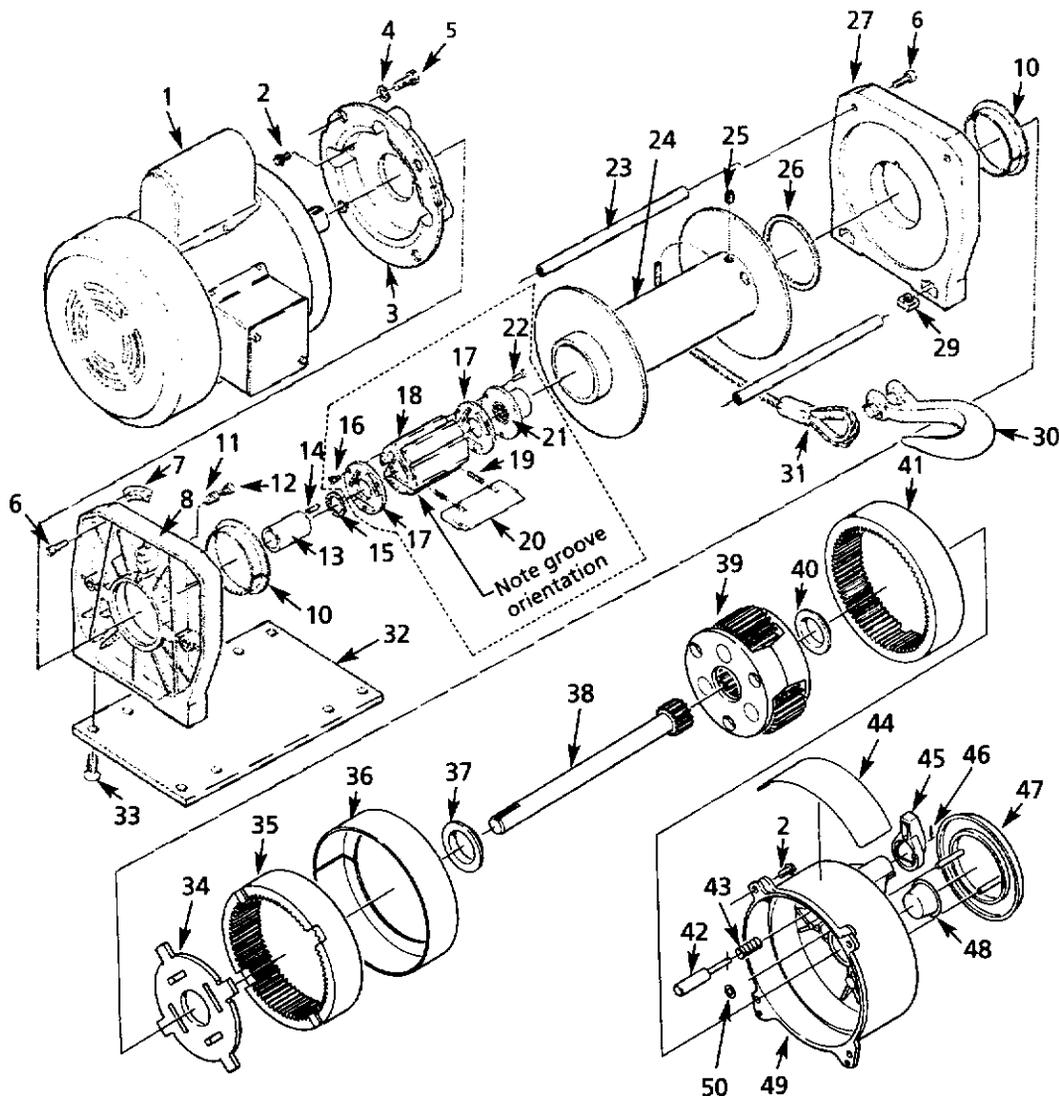


Figure 12 - Repair Parts Illustration for Model 4ZY95

Model 4ZY95**Repair Parts List for Model 4ZY95 (Continued)**

Reference Number	Description	Part Number	Quantity
37	Carrier bushing	90-10417	1
38	AC Drive shaft assembly	90-24498	1
39	253:1 Carrier assembly	90-32238	1
40	Gearbox bushing	90-10418	1
41	63T, HT Stationary ring gear	90-32233-01	1
42	• X9, Plated locking pin	90-22113	1
43	• Clutch spring	90-23152-07	1
44	Product/Warning label	90-24488	1
45	• Lever	90-31028	1
46	• 3/32 x 5/8" Spring pin	90-23017-09	1
47	• Dust cover	90-22103	1
48	• Cap plug	90-23171-07	1
49	• Machined gearbox casting	90-40054	1
50	• Push-on retaining ring	90-23213-05	2
Δ	Grease (for one relube)	90-15020	1
Δ	Drum switch	1796	1
Δ	Pully block assembly	2212A	1
Δ	Handsaver	87-31120-01	1
•	Available as: Gearbox Housing Assembly	90-20080	1

(Δ) Not Shown.

Dayton® Electric Winch

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Limited Warranty

Dayton One-Year Limited Warranty. Dayton® Electric Winch, Model covered in this manual, is warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at Dayton's option. For limited warranty claim procedures, see PROMPT DISPOSITION below. This limited warranty gives purchasers specific legal rights which vary from jurisdiction to jurisdiction.

Limitation of Liability. To the extent allowable under applicable law, Dayton's liability for consequential and incidental damages is expressly disclaimed. Dayton's liability in all events is limited to and shall not exceed the purchase price paid.

Warranty Disclaimer. Dayton has made a diligent effort to provide product information and illustrate the products in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions.

Except as provided below, no warranty or affirmation of fact, expressed or implied, other than as stated in the "LIMITED WARRANTY" above is made or authorized by Dayton.

Product Suitability. Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Dayton attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some jurisdictions do not allow a limitation on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this limited warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

Prompt Disposition. Dayton will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date, and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

Manufactured for Dayton Electric Mfg. Co., 5959 W. Howard St., Niles, Illinois 60714 U.S.A.