

MODEL ODR20A15 OFFSHORE DRILLING RIG WINCH

WARNING

***These Winches are not to be used
for lifting or lowering people***

Always operate and maintain this Winch in accordance with American National Standards Institute Safety Code (ANSI B30.7) and any other applicable safety codes and regulations.

FOR TOP PERFORMANCE AND MAXIMUM DURABILITY OF PARTS, OPERATE THIS WINCH AT 90 psig (6.2 bar/620 kPa) AIR PRESSURE WITH 1" (25 mm) DIAMETER HOSE.

OPERATING PRACTICES

The two most important aspects of Winch operation are: (1) Allow only qualified people to operate a Winch and (2) Subject each Winch to a regular inspection and maintenance procedure.

A qualified operator must be physically competent. He must have no health condition which might affect his ability to react, and he must have good hearing, vision and depth perception. The qualified Winch operator must be carefully instructed in his duties and must understand the operation of the Winch, including a study of the manufacturer's literature. He must thoroughly understand proper methods of hitching loads. He should have a good attitude regarding safety and should refuse to operate under unsafe conditions.

Regular inspection procedures should be set up, rigidly adhered to and recorded by or under direction of a qualified person. On Winches in continuous service, inspection should be made at the beginning of each shift. The items to be checked include, but are not limited to:

- a. LUBRICATION: See lubrication instructions on Page 10.
- b. BRAKES: Visually check for proper adjustment.
Lift a capacity or near capacity load a few inches off the floor and check ability of braking system to stop and hold the load without excessive drift.
- c. WIRE ROPE AND HOOKS: Visually inspect the wire rope. Replace it **AT ONCE** if there is indication of fraying, or if it is crushed, cut or otherwise damaged. Follow cable manufacturer's recommended practice for proper use and inspection of wire rope.
Hooks should be checked for wear, increase in throat opening, and bending.
- d. CONTROLS: See that controls function properly and return to neutral when released.
- e. GENERAL: Check to see that mounting fastenings are secure, unworn and undamaged. Be alert for unusual visual or audible signs which could indicate a defect. Do not operate the Winch until the defect has been determined and corrected. Periodically, depending on the severity of the service:
 - a. Inspect Brake and Locking Dog components for wear or damage.
 - b. Check all bolts or fasteners.
 - c. Inspect the Winch structure for damage.

Notice: The use of other than genuine Ingersoll-Rand replacement parts may result in decreased tool performance and increased maintenance, and may, at the Company's option, invalidate all warranties.

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INGERSOLL-RAND®
AIR HOISTS & WINCHES

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OPERATING INSTRUCTIONS

1. Read the manufacturer's instructions before operating the Winch.
2. Never lift a load greater than the rated capacity of the Winch.
3. Never use the Winch rope as a sling.
4. Always stand clear of the load.
5. Never use the Winch for lifting or lowering people, and never stand on a suspended load.
6. Never carry loads over people.
7. Before each shift, check the Winch for wear or damage. Check brakes, locking dog, etc.
8. Periodically inspect the Winch thoroughly and replace worn or damaged parts.
9. Follow the lubrication instructions.
10. Do not disengage clutch with a load on the Winch. Be sure clutch is fully engaged before operating Winch.
11. Do not "side pull" or "yard".
12. Always rig the Winch properly and carefully.
13. Never operate a Winch with twisted, kinked or damaged wire rope.
14. Be sure cable winds properly on drum.
15. Ease the slack out of the wire rope and sling when starting a lift. Do not jerk the load.
16. Be certain there are no objects in the way of a load or hook when operating the Winch.
17. Be certain the air supply is shut off before performing maintenance work on the Winch.
18. Shut off air supply while Winch is unattended.
19. Properly secure the Winch before leaving it unattended.
20. Be certain the load is properly seated in the saddle of the hook. Do not tiplod the hook as this leads to spreading and eventual failure of the hook.
21. Do not allow unqualified personnel to operate a Winch.
22. Do not swing a suspended load.
23. Do not operate a Winch if you are not physically fit to do so.
24. Do not do anything you believe may be unsafe.
25. Do not use the Winch rope as a ground for welding. Do not attach a welding electrode to a Winch or sling chain.
26. Do not divert your attention from the load while operating a Winch.
27. Engage locking dog before leaving load suspended.
28. Do not engage locking dog while drum is in operation.
29. Do not leave a load suspended for any extended period--never unattended.
30. Never splice a sling chain by inserting a bolt between links.
31. Do not force a chain or hook into place by hammering. Do not insert the point of the hook into a chain link.
32. Do not expose the sling chain to freezing temperatures, and do not apply sudden loads to a cold chain.

Warning: Lubricate the motor before putting the Winch in service. To prevent leakage during shipment, the oil was drained from the Motor Case (1). Sufficient oil for one filling is contained in the can packed with the Winch. Before operating the Winch, unscrew the Vent Cap (3) from the top of the Motor Case and pour the entire contents of the can into the motor.

LUBRICATION

Motor Lubricants

For temperatures 30° F to 80° F (-1° C to 26° C), use Ingersoll-Rand Medium Oil No. 50 or SAE 20 or 20W motor oil.

For temperatures above 80° F (26° C), use SAE 30 motor oil.

For temperatures below 30° F (-1° C), use SAE 10 or 10W motor oil.

Check the oil level daily as follows:

When the Winch is subjected to temperatures above freezing:

After the Winch has been idle for several hours or overnight, remove the Drain Plug (2) and allow the accumulated water to drain out. Replace the Drain Plug at the bottom and remove the one from the side of the Motor Case. Remove the Vent Cap (3) and pour a sufficient quantity of the recommended lubricant into the vent to bring the level of the oil up to the drain plug hole in the side of the Motor Case. Replace the Drain Plug and Vent Cap.

When the Winch is subjected to freezing temperatures:

Allow the Winch to remain idle long enough for the water to separate from the oil, but not long enough for it to freeze. Drain the water and replenish the oil as in the preceding paragraph. Should this procedure be impractical, drain the entire contents of the Motor Case immediately after operation ceases, and replace it before resuming operation. If the Motor Case is not drained, a sufficient quantity of water will eventually accumulate so that the Oil Splasher (34), which is attached to the Crank (29), will freeze fast.

Twice Weekly

Insert two or three strokes of Ingersoll-Rand Light Grease No. 28 or a good quality No. 2 cup grease into the Grease Fittings (5 and 12) on the Valve Chest (4), and six or eight strokes into the Grease Fitting on the Hub Bushing (100).

Gear Case Lubrication

Approximately every sixty or ninety days, remove the Grease Plug (94) and note if the visible portion of the gears is covered with a film of grease. If the gears appear to lack lubrication, add a small amount (about 1/2 pint, 237 mL) of Ingersoll-Rand Gear Grease No. 70, Ingersoll-Rand Light Grease No. 28 or a good quality gear grease to the Gear Case.

For extremely low temperatures, where lubrication difficulty might be experienced with the above grease, Ingersoll-Rand Medium Gear Grease No. 75, low temperature grease such as Texaco Marfak®* 0, or a good quality, heavy gear oil may be used as a substitute. **Note:** If gear oil is used, leakage will probably result when the Winch is again subjected to normal temperatures.

We recommend the use of an air line lubricator with all Winches.

OPERATION

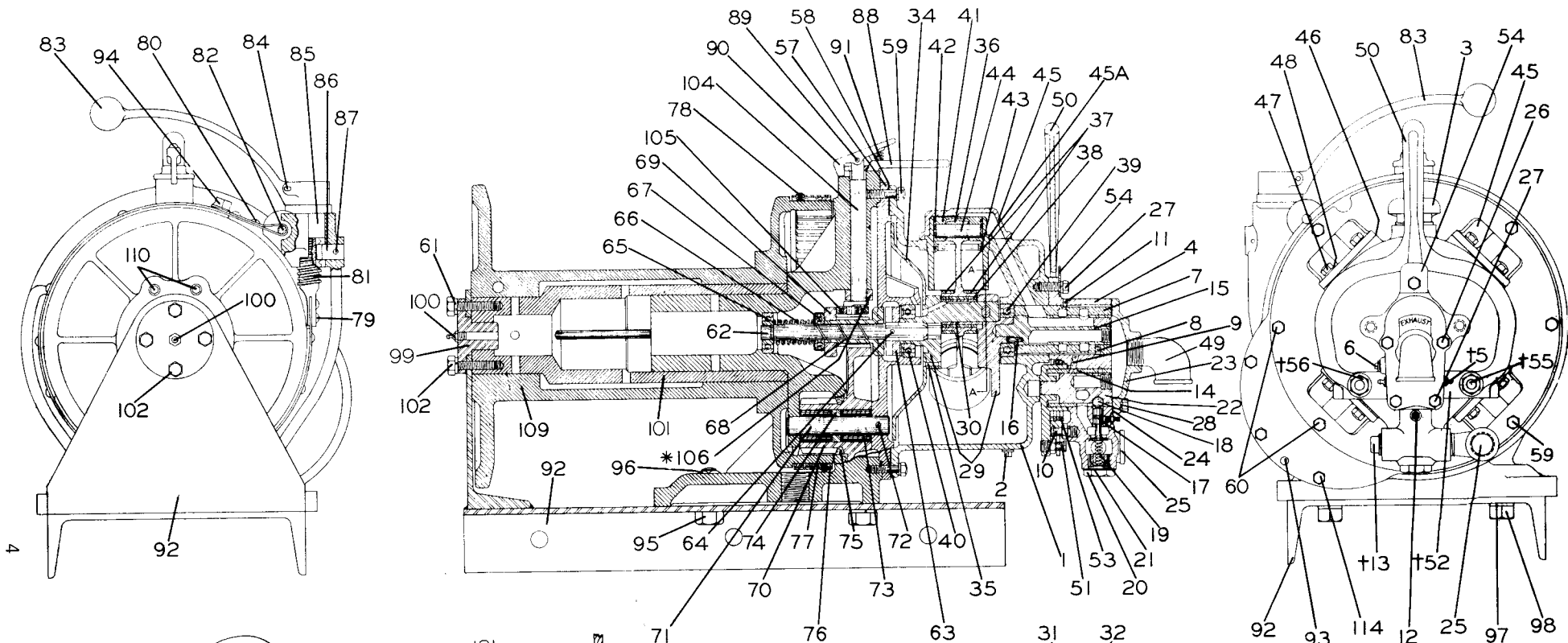
Whenever the Winch is mounted in any manner other than the normal upright position, remove the eight Motor Case Cap Screws (59 and 60) and rotate the motor on the Motor Case Cover (57) until the Vent Cap (3) is at the top; then replace the Cap Screws.

Be sure to apply the wire rope so that it winds on the Drum in the right direction as indicated by the instruction plate on the Winch.

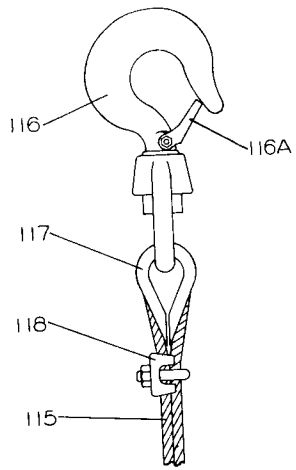
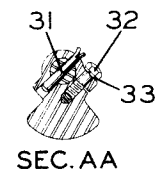
Never engage or disengage the clutch while either the motor or Rope Drum is in motion. Doing so may result in damage.

When lowering loads, keep the clutch engaged and operate the motor in the lowering direction. Disengaging the clutch and controlling the lowering speed of the load with the brake, taxes the brake beyond its intended capacity.

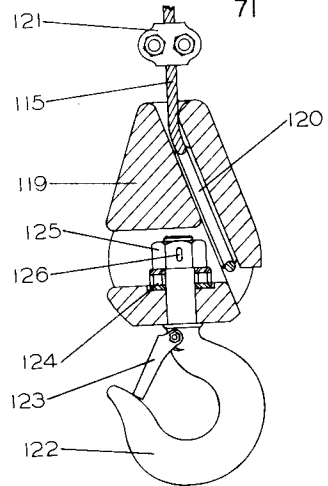
(continued on page 11)



(Dwg. TPA55-2)



Wire Rope Assembly



Hook Block Assembly

Model ODR20A15 Offshore Drilling Rig Winch

(Dwg. TPC452)

PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

	Motor Assembly	EU-A501	22	Reverse Valve	EU-944
1	Motor Case.	D10-501	23	Valve Chest Cover.	D10-546A
2	Drain Plug (3)	D02-402	24	Valve Chest Cover Gasket	D10-928
3	Vent Cap.	D02-303A	25	Inlet Elbow	DU-581
*	S-Hook	D02-421	26	Valve Chest Long Screw (2)	D10-548
*	Vent Cap Screen	D02-889	27	Valve Chest Short Screw (3)	D02-506
*	Vent Cap Chain	D02-891	28	Valve Chest Cap Screw Lock Washer (5)	D02-321
*	Screen Retainer	6CND-233-1/2		Crank Assembly.	EU-A516
*	Vent Cap Cotter.	D02-893	29	Crank, Bare (consists of 2 matched pieces which are not sold separately).	D10-516
4	Valve Chest Assembly	EU-A545A		Crank Pin Sleeve	D10-519
5	Valve Chest	D10-545A	● 30	Crank Taper Pin.	D10-520
6	Grease Fitting (2)	23-188	31	Crank Pinch Bolt	D10-521
7	Brake Inlet Plug	D02-402	32	Crank Pinch Bolt Lock Washer	D10-322
8	Rotary Valve Bushing	D10-525A	33	Oil Splasher	D10-540
10	Valve Oiler.	JA4-75	★ 34	Oil Splasher Rivet (4)	D06-541
11	Throttle Spring Stop Pin	D02-553	35	Connecting Rod (4)	D10-509
12	Valve Bushing Key (2)	B12-255	● 36	Connecting Rod Ring (2)	D10-510
13	Small Grease Fitting	R1-188	37	Connecting Rod Bushing.	D10-511
14	Valve Chest Plug	22SR-165	● 38	Crank Valve End Bearing.	D10-518
15	Reverse Valve Bushing	D10-945	● 39	Crank Splined End Bearing	D04-956
● 16	Rotary Valve	D10-526	● 40	Piston Assembly (4)	D10-A513B
17	Valve Drive Pin	D10-527	41	Piston Ring (1 for each Piston)	D10-337A
18	Poppet Throttle Valve	D02-940	● 42	Oil Regulating Piston Ring (1 for each Piston)	D10-338
● 19	Throttle Valve Ball (1/2" dia. steel ball)	D10-280	● 43	Piston Wrist Pin (4)	D10-514
20	Throttle Valve Spring.	B01-11	44	Motor Nameplate.	EU-301
21	Throttle Valve Cap	D02-943	*	Nameplate Screw (4)	R4K-302
	Throttle Valve Cap Gasket.	G601-411	*		

* Not illustrated.

★ When ordering an Oil Splasher also order Oil Splasher Rivets.

● To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (●) for every four tools in service.

PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

	Cylinder Assembly	D10-A505A	70	Intermediate Gear	EU-364
45	Cylinder Head	D10-H505A	71	Intermediate Gear Shaft.	DU-365
45A	Cylinder Sleeve	D10-L505A	72	Intermediate Gear Shaft Pin.	DU-368
● 46	Cylinder Gasket (4).	D10-507	73	Intermediate Gear Bearing (2) (Hyatt 95424 or its equivalent)	DU-366
47	Cylinder Cap Screw (16).	D10-506		Intermediate Gear Bearing Spacer	DU-593
48	Cylinder Cap Screw Washer (copper) (16).	D10-504	74	Intermediate Gear Packing	DU-600
49	Exhaust Elbow	DU-587	75	Brake Band Assembly	DU-A574
● 50	Throttle Lever.	EU-556	● 76	Brake Band	DU-574
51	Throttle Spring Stop Pin.	D02-553	77	Brake Lining.	DU-575
52	Throttle Control Arm	D10-555	78	Brake Lining Rivet (14)	215-156
51	Throttle Spring Stop Pin.	D02-553	79	Brake Band Long Rivet (4)	T06-66
● 53	Throttle Lever Spring.	D02-412B	80	Brake Band Short Rivet (4)	DU-578A
54	Throttle Lever Guide.	DU-596	81	Brake Screw	DU-572
55	Throttle Lever Bolt (2).	D02-411A	79	Brake Band Long Rivet (4)	T06-66
56	Throttle Lever Bolt Nut (2)	D02-418A	82	Brake Band Pin	DU-579
57	Motor Case Cover	EU-502	*	Brake Band Pin Cotter (1/8" x 1-1/4").	D02-330
● 58	Motor Case Gasket	D10-592	83	Brake Lever.	DU-570
59	Motor Case Long Screw (6).	D10-312	84	Brake Lever Cotter (3/16" x 2")	D02-438
60	Motor Case Short Screw (2).	D02-312	85	Brake Screw Nut	DU-573
61	3/8" Lock Washer	D02-321	86	Brake Screw Guide.	DU-594
62	Motor Shaft.	EU-316	87	Brake Screw Guide Cotter (3/16" x 2")	D02-438
63	Clutch Jaw.	EU-568		Clutch Lever Assembly	DU-A565
64	Clutch Jaw Pin	EU-569	88	Clutch Lever.	DU-565
● 65	Motor Shaft Bearing	DU-589	89	Clutch Latch Pin	DU-571
66	Clutch Spring.	DU-583	90	Clutch Latch.	DU-566
67	Clutch Thrust Bearing (Timken T-76 or its equivalent)	D01-379A	91	Clutch Latch Spring	DU-567
68	Motor Shaft Pinion.	EU-319			
69	Clutch Release Collar.	EU-584			

* Not illustrated.

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BASE AND ROPE DRUM PARTS

PART NUMBER FOR ORDERING

92	Base	EUL-A677B
93	Dowel Pin	D02-347
94	Grease Plug	22SR-165
95	Base Bolt (2)	EU-775
96	Base Bolt Nut (2)	DU-562
97	Base Bolt Lock Washer (4)	D01-692
98	Base Cap Screw	EU-778
99	Hub Bushing	EU-678
100	Grease Fitting	23-188
101	Extension Hub	EU-676
102	Hub Cap Screw (4)	23-717
*	Clutch Engagement Plate	EU-94
*	Engagement Plate Screw (3)	R4K-302
104	Clutch Eccentric	DU-585A
105	Clutch Eccentric Bearing	T03-33
106	Clutch Eccentric Spacer	EU-599
109	Rope Drum (capacity 900 ft. of 5/16" Wire Rope; 600 ft. of 3/8" Wire Rope)	EU-684
110	Rope Set Screw (2)	DU-381
114	Motor Case Cover Screw (3)	D02-312

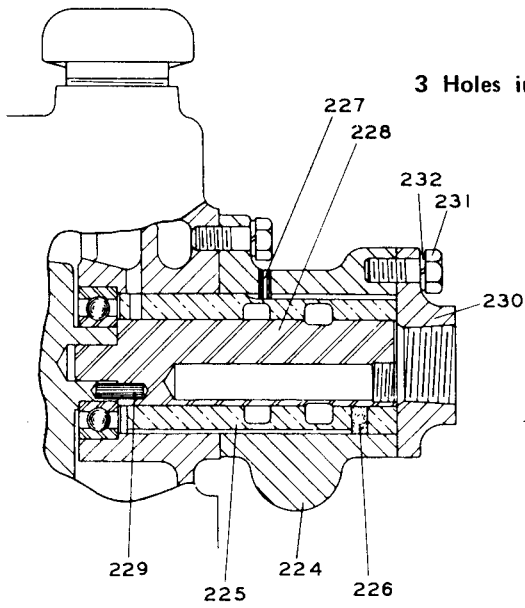
* Not illustrated.

ACCESSORIES

PART NUMBER FOR ORDERING

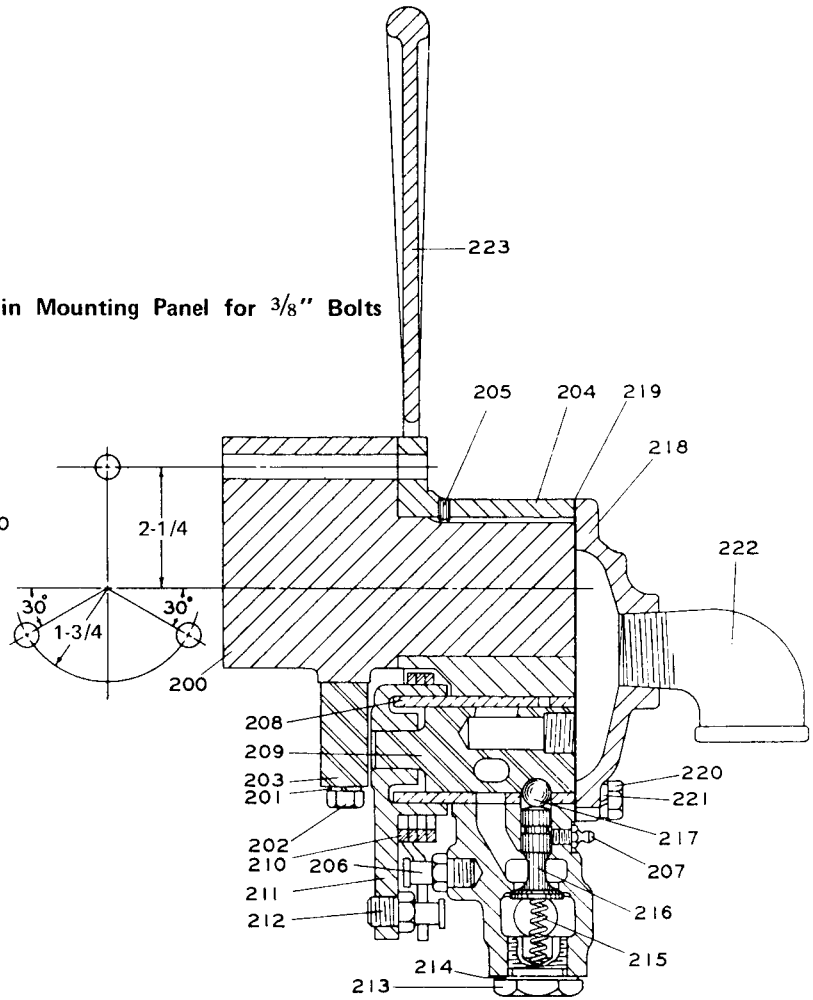
115	Wire Rope (specify length) 5/16" dia. 3/8" dia.	DU-372 EU-372
	Swivel Hook and Fittings Assembly for 5/16" dia. Wire Rope for 3/8" dia. Wire Rope	DU-AS601 EU-AS601
116	Swivel Hook	D01C-S377
116A	Hook Latch Kit (individual parts not sold separately)	D01-S4055
117	Rope Thimble for 5/16" dia. Wire Rope for 3/8" dia. Wire Rope	DU-602 D10-721
118	Rope Clamp (3) for 5/16" dia. Wire Rope for 3/8" dia. Wire Rope	DU-375 D04-464 DU-AS463A
119	Hook Block	D02-463A
120	Wire Rope Wedge	D02-373
121	Wire Rope Clamp	D04-464
122	Hook	D02-S377
123	Hook Latch Kit (individual parts not sold separately)	D02-S123
124	Hook Bearing (Timken T-76 or its equivalent)	D02-379A
125	Hook Nut	D02-305B
126	Roll Pin	20QDM-330
*	Exhaust Muffler	D02-674A
*	Muffler Nipple	P35-286
*	Muffler Chain	D02-673
*	S-Hook	D02-421
*	Winch Nameplate	EU-301
*	Nameplate Screw	R4K-302
*	Caution Tag	TA-147A
*	Caution Tag Screw (4)	R4K-302
*	Valve Chest Jack Bolt (2 required)	D02-932
*	Piston Ring Compressor	D10-933
*	Throttle Valve Seat Reamer	23468
*	Throttle Valve Stem Reamer	23470

* Not illustrated.



Remote Control Valve Chest

3 Holes in Mounting Panel for 3/8" Bolts



Remote Control Block

(Dwg. TPB43)

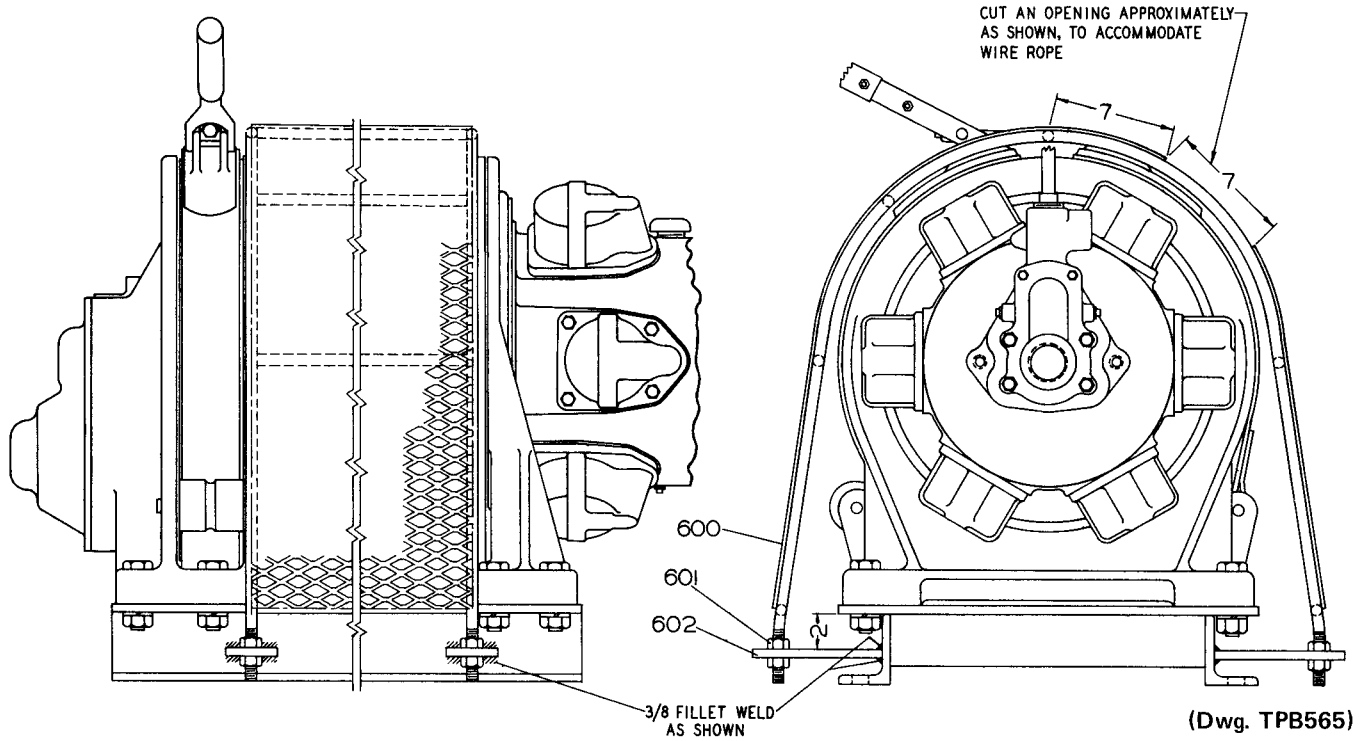
REMOTE CONTROL

PART NUMBER FOR ORDERING

	Remote Control Block Assembly	
	for Winch without Automatic Brake	EU-A685
	for Winch with Automatic Brake	D10-A685
200	Remote Control Block	D10-685
201	5/16" Lock Washer (2)	T11-58
202	Control Arm Retainer Screw (2)	G7-7A
203	Control Arm Retainer	D02-687
204	Control Block Valve Chest.	D10-876A
*	Grease Fitting (2)	23-188
*	Brake Inlet Plug (not used on Winches with Automatic Brake)	D02-402
205	Bushing Key (2)	B12-255
*	Valve Oiler.	JA4-75
206	Throttle Spring Stop Pin.	D02-553
207	Valve Chest Grease Fitting.	R1-188
208	Control Block Reverse Valve Bushing	D10-945
*	Air Inlet Plug	22SR-165
209	Control Block Reverse Valve	
	for Winch without Automatic Brake	EU-944
	for Winch with Automatic Brake	D10-944
210	Control Block Throttle Lever Spring	D02-412B
211	Control Block Throttle Arm.	D10-555
212	Throttle Spring Stop Pin.	D02-553
213	Control Block Throttle Valve Cap	D02-943
214	Control Block Throttle Valve Cap Gasket	G601-411
215	Control Block Throttle Valve Spring.	B01-11
216	Control Block Poppet Throttle Valve.	D02-940
217	Control Block Throttle Valve Ball	D10-280
218	Control Block Valve Chest Cover	D10-546A
219	Control Block Valve Chest Cover Gasket.	D10-928
220	Control Block Valve Chest Cover Screw (2)	D02-506
221	Valve Chest Screw Lock Washer (2)	D02-321
222	Exhaust Elbow	DU-587
223	Control Block Throttle Lever	EU-556
*	Throttle Lever Bolt (2)	D02-411A
*	Throttle Lever Bolt Nut (2)	D02-418A
	Remote Control Valve Chest Assembly	D10-A686
224	Remote Control Valve Chest	C10-545
225	Rotary Valve Bushing	D10-525A
226	Valve Oiler.	JA4-75
227	Bushing Key	B12-255
228	Rotary Valve	D10-526
229	Valve Drive Pin	D10-527
230	Remote Control Valve Chest Cover.	C10-546
*	Valve Chest Long Screw (2)	D10-548
231	Valve Chest Short Screw (2).	D02-506
232	3/8" Lock Washer (4)	D02-321
	Remote Control Conversion Unit (for converting Winch from standard Throttle to Remote Control) (includes illustrated parts 200, 201 (2), 202 (2), 203, 220 (2), 221 (2), 224, 225, 226, 227, 228, 229, 230, 231 (2) and 232 (4); also includes non-illustrated parts C10-284 (2), D02-548 (2) and (2) D10-548)	EU-C685

* Not illustrated.

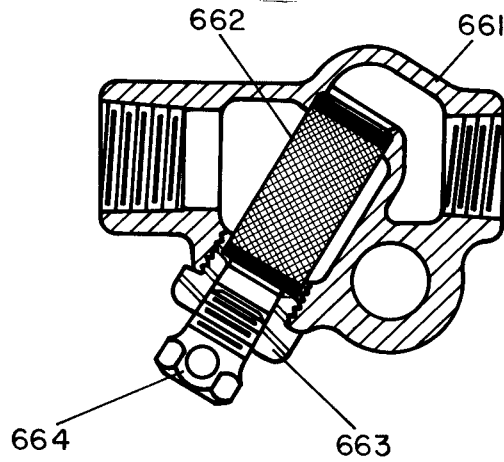
DRUM GUARD



PART NUMBER FOR ORDERING

600	Drum Guard	EUL-298
601	5/8"-11 thd. Nut (8)	K6U-8
602	Plate (4)	K6U-299

AIR STRAINER



(Dwg. TPD36)

PART NUMBER FOR ORDERING

661	Air Strainer Assembly	EU-A267
662	Air Strainer Screen	P25-61A
663	Air Strainer Cap	P25-268
664	Air Strainer Plug	P25-536
*	Air Strainer Nipple (required for attaching Strainer to Winch)	D02-456

* Not illustrated.

MAINTENANCE

Remove the Throttle Valve Spring (19), Poppet Throttle Valve (17) and Throttle Valve Ball (18) from the Valve Chest (4) before attempting to withdraw the Reverse Valve (22) from the Reverse Valve Bushing (14).

The following procedure is recommended when replacement of the Rotary Valve Bushing (7) or Reverse Valve Bushing (14) is necessary.

1. Unscrew the Valve Chest Screws (26 and 27) and remove the Valve Chest Cover (23).
2. Screw a No. D02-932 Jack Bolt into each tapped lug on the Valve Chest (4) until the Jack Bolts contact the Motor Case (1). Turn each Jack Bolt a little at a time to jack the Valve Chest from the Motor Case.
3. Unscrew the Throttle Valve Cap (20) and remove the Spring (19), Poppet Throttle Valve (17) and Ball (18) from the Valve Chest (4).
4. Withdraw the Rotary Valve (15), Reverse Valve (22) and remove the Throttle Lever Spring (53).
5. Support the face of the Valve Chest (4) that contacts the Motor Case (1) and press out the old Bushings with an arbor **that will clear the Bushing Keys (11)**. **Caution:** Failure to use an arbor that will clear the Bushing Keys (11), or ejecting the Bushings from the cover side of the Valve Chest will destroy the Keys.
6. Support the face of the Valve Chest (4) that contacts the Valve Chest Cover (23). Align the keyslot in the new Reverse Valve Bushing with the Bushing Key (11), and press the Bushing into the Chest until the leading face of the Bushing is flush with the supported face of the Chest. Align the keyslot in the new Rotary Valve Bushing with the Bushing Key, and press the Bushing into the Chest until the bushing shoulder is flush with the supported face of the Chest.
7. Insert the No. 23470 Throttle Valve Stem Reamer or a .505" hand reamer through the throttle valve chamber in the Valve Chest and ream the hole through the wall of the new Reverse Valve Bushing.
8. Check the fit of the Rotary Valve (15) in the new Rotary Valve Bushing. If the Valve is tighter than a good running fit in the Bushing, lap in the Valve using a fine grain lapping compound whose abrasive agent will break up rapidly. Remove all trace of the compound with kerosene after obtaining the desired fit.
9. Check the fit of the Reverse Valve (22) in the new Reverse Valve Bushing. If the fit is too tight, ream the Bushing 1.625" diameter. **Caution:** The Reverse Valve is chrome-plated; do not lap.
10. Rotate the Reverse Valve in the Reverse Valve Bushing until the arrows on the two parts are aligned, and install the Throttle Valve Ball, Poppet Throttle Valve, Spring and Cap.
11. Install the Throttle Lever Spring (53) and Throttle Control Arm (52).
12. Align the holes through the Valve Chest (4) with those in the face of the Motor Case (1) and squarely start the protruding end of the Rotary Valve Bushing into the Case. Place a hardwood block on the chest face and press or drive in the Bushing until the Valve Chest contacts the Motor Case.

The two sections of the Crank (29) are matched before final machining, and the web of each section is stamped with an identification mark as AA17, CC21, XX19, etc. Only sections bearing identical markings can be used together. If more than one Crank is disassembled at one time, be sure only matched parts are assembled together.

Slide the Crank Pin Sleeve (30), plain end first, onto the crank pin.

Install the Connecting Rod Rings (37) so that the internally beveled ends are toward the Connecting Rods (36).

PARTS WITH PROTECTIVE COATING

All exposed parts originally furnished on your ODR Winch were given a special protective coating to help prevent rust and corrosion. If you are replacing a part that originally had this protective coating, and want the new part to be specially coated, **it must be so specified on the order. Unless so specified on the order, parts furnished as repair items will not have the special protective coating.**

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