03523867

INSTRUCTIONS AND REPAIR PART LIST
for
SIZES HU40 AND HUL40 SINGLE DRUM UTILITY WINCHES

Form 5874
Sixth Edition
February, 1977

WARNING

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

LUBRICATION

Warning: Lubricate the motor before using the Winch. To avoid leakage during shipment, the oil was drained from the motor. A quantity of oil sufficient for one filling is contained in the can packed with the Winch. Before using the Winch, make sure the three Plugs (2 and 3) are screwed securely into place, then unscrew the Vent Cap (4) and pour the entire contents of the can into the opening in the top of the Motor Case (1).

Motor Lubrication

Check oil daily and maintain level with opening in the side of the Motor Case.

When the Winch is not subjected to freezing temperatures: After the Winch has been idle for several hours or overnight, loosen the Drain Plug (2) located at the bottom of the Motor Case (1) and allow the accumulated water to drain out. After draining the water, tighten the Plug in the bottom and remove the Plug (2) on the side of the Motor Case. Unscrew the Vent Cap (4) and pour a sufficient quantity of the recommended oil through this opening to bring the oil level up to the side opening. Replace the Plug and Vent Cap.

When the Winch is subjected to freezing temperatures: Allow the Winch to remain idle long enough for the water content in the Motor Case (1) to separate from the oil, but not long enough for it to freeze. Drain the water and replenish the oil as above. Should this procedure be impractical, drain the entire contents of the Motor Case immediately after operation ceases and pour the oil back into the Motor Case before resuming operation. If not drained, a sufficient quantity of water will eventually accumulate so that the Oil Splasher (41), which is attached to the Crank (36), will freeze fast.

For Temperatures 30° to 80° F (-1.1° C to 26.6° C) use Ingersoll-Rand Pneu-Lube® Medium Oil No. 50 or SAE 20 or 20W motor oil.

For Temperatures below 30° F (-1.1° C) use SAE 10 or 10W motor oil.

For Temperatures above 80° F (26.6° C) use SAE 30 motor oil.

Throttle Valve Lubrication

Weekly insert a small quantity of Ingersoll-Rand Light Grease No. 28 or a good quality No. 2 cup grease into the Grease Fittings (15) located in the Valve Chest (10). Two or three strokes from the No. P25-228 Grease Gun is an ample amount for each Fitting.

Gearing Lubrication

Every sixty to ninety days, remove the Grease Plug (93) from the Gear Case (88) and note if the visible portion of the gears is coated with grease. If the gears appear to lack lubrication, add enough of the recommended grease to bring the grease level up to the Grease Plug (93) in the Gear Case Cover (90). When assembling a Winch, two pounds of grease are required.

Use Ingersoll-Rand Heavy Gear Grease No. 70. As a substitute, Ingersoll-Rand Light Grease No. 28 or a good quality No. 2 cup grease may be used.

For extremely low temperatures, Ingersoll-Rand Medium Gear Grease No. 75, low temperature grease or a heavy gear oil may be used. **Note:** Leakage will probably be experienced if heavy gear oil is used for normal temperatures. *(Continued on Page 6)*

HOW TO ORDER

Order all repair parts for your Ingersoll-Rand Tool by the **NAME** and **NUMBER** shown in the Repair Part List section. **Never** use the illustration numbers which appear in the first column.

For prompt service and genuine Ingersoll-Rand parts, place orders with the nearest Ingersoll-Rand Branch Office or Authorized Distributor.

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.

Refer All Communications to the Nearest Ingersoll-Rand Branch Office or Distributor.

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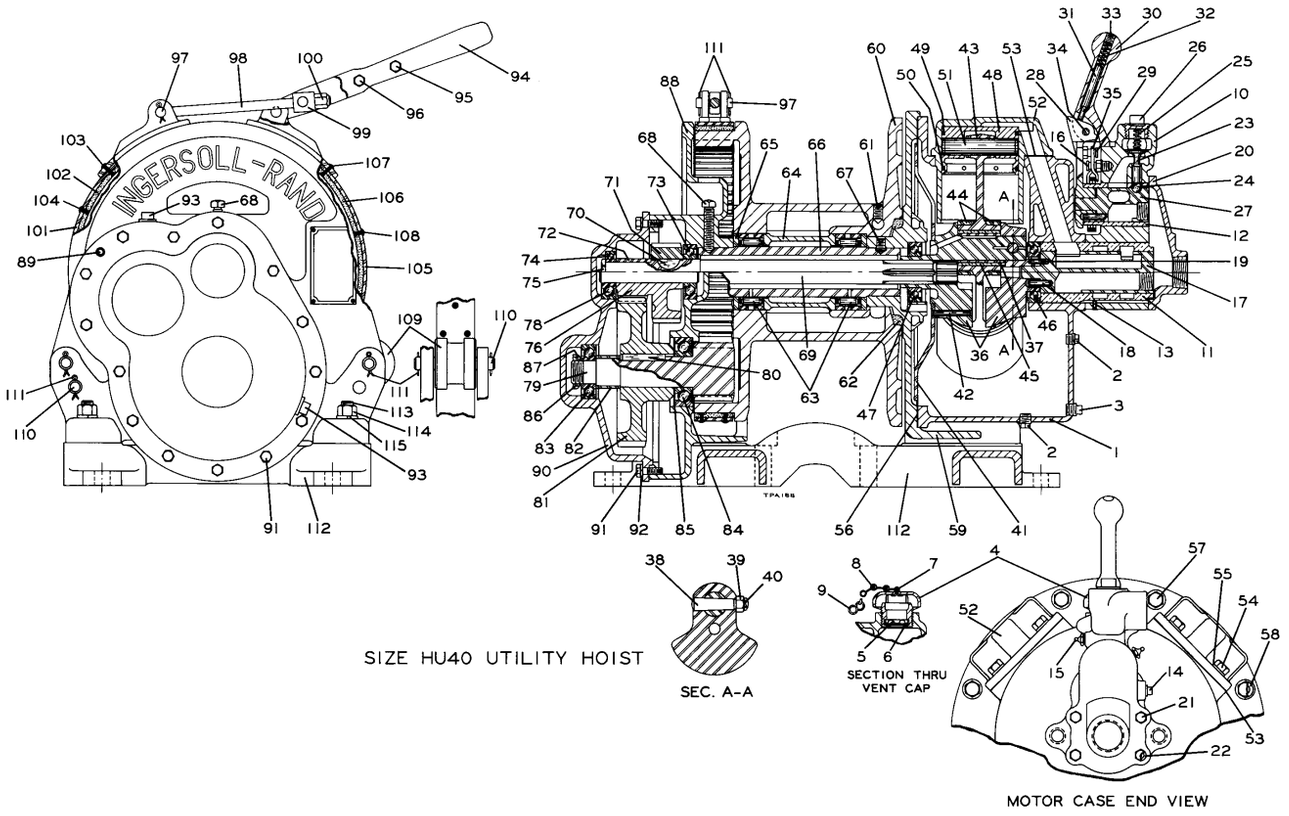
Ingersoll-Rand



Size HU40 Utility Winch

REPAIR PART LIST

ILLUS. NUMBER (Do not use for ordering)	PART NAME FOR ORDERING (Parts indented after an item are included with that item)	PART NUMBER FOR ORDERING
†	Motor Assembly	HU40-A501
† 1	Motor Case	HU-501
2	Drain Plug (2)	D02-402
3	3/8" Pipe Plug	T1SE-368
4	Vent Cap	D02-303A
5	Vent Cap Screen	D02-889
6	Vent Cap Screen Retainer	6CND-233-1/2
7	Vent Cap Cotter	D02-893
8	Vent Cap Chain	D02-891
9	S-Hook	D02-421
	Valve Chest Assembly	HU40-A545
10	Valve Chest	HU-545A
11	Rotary Valve Bushing	HU-525
12	Reverse Valve Bushing	HU-945
13	Bushing Key (2)	HU-538
14	1/4" Pipe Plug	D02-402
15	Grease Fitting (2)	23-188
16	Throttle Lever Spring Stop Pin	D02-553
17	Rotary Valve	
	for Overwinding Winch	HU-526RA
	for Underwinding Winch	HU-526A
18	Large Valve Drive Pin	HU-527
19	Small Valve Drive Pin (2)	HU-627
20	Valve Chest Cover	HU-546A
21	Valve Chest Screw (4)	HU-548
22	3/8" Lock Washer (4)	D02-321
23	Poppet Throttle Valve	HU-940
24	Throttle Valve Ball	D10-280
25	Throttle Valve Spring	HU-942
26	Throttle Valve Cap	HU-943
27	Reverse Valve	HU-944
28	Throttle Control Arm	HU-555A
29	Throttle Lever Spring Stop Pin	D02-553
30	Throttle Lever	HU-556
31	Throttle Lever Latch	HU-869
32	Throttle Lever Latch Spring	HU-567
33	Throttle Lever Set Screw	HU-842
34	Throttle Lever Pin	HU-870
*	Throttle Lever Pin Cotter (2)	D02-524
35	Throttle Lever Spring	HU-412
	Crank Assembly	HU-A516
36	Crank, Bare (consists of two matched pieces which are not sold separately)	HU-516
37	Crank Pin Sleeve	HU-519
38	Crank Lock Pin	HU-520
39	Crank Lock Pin Nut	D02-394
40	Crank Lock Pin Cotter	D02-524
41	Oil Splasher	HU-540
42	Oil Splasher Long Rivet (2)	HU-541
*	Oil Splasher Short Rivet (2)	HU-542
43	Connecting Rod (4)	HU-509
44	Connecting Rod Ring (2)	HU-510
45	Connecting Rod Bushing	HU-511
46	Crank Valve End Bearing (AFBMA No. 40BL02)	HU-518
47	Crank Pin End Bearing (AFBMA No. 40BL02JPP)	HUD-895
48	Piston (4)	HU-513A
49	Piston Ring (one for each Piston)	HU-337
50	Oil Regulating Piston Ring (one for each Piston)	HU-338
51	Piston Wrist Pin (includes caps) (4)	HU-514
52	Cylinder (4)	HU-505
● 53	Cylinder Gasket (4)	HU-507
54	Cylinder Cap Screw (16)	D10-354
55	Cylinder Cap Screw Washer (16) (copper)	HU-504
*	Motor Nameplate	C04-301
*	Nameplate Screw (4)	R4K-302
● 56	Motor Case Gasket	HU-592
57	Motor Case Screw (8)	215-148
58	1/2" Lock Washer (8)	D10-322
59	Motor Mounting Bracket	H5U-502
*	Rope Instruction Plate	DU-32
*	Instruction Plate Screw (4)	R4K-302
60	Rope Drum	
	for Size HU40	HU40-324
	for Size HUL40	HUL40-324
61	Wire Rope Set Screw (2)	HU-381
62	Drum Packing	HU-866
63	Drum Bearing (2) (Hyatt C99211 or its equivalent)	HU-466
64	Drum Bearing Spacer	
	for Size HU40	HU-467
	for Size HUL40	HUL-467
65	Drum Bearing Plate (2)	HU-469
66	Drum Shaft	
	for Size HU40	HU-459
	for Size HUL40	HUL-459
67	Drum Shaft Short Set Screw	HU-867
68	Drum Shaft Long Set Screw	HU-868
69	Motor Shaft	
	for Size HU40	HU40-316
	for Size HUL40	HUL40-316
70	Motor Pinion Key	D04-320

* Not illustrated.

† **Important:** The complete size symbol of the Winch must be stated when ordering a Motor Assembly, Motor Case (1) or Gear Case (88).

REPAIR PART LIST (Continued)

ILLUS. NUMBER (Do not use for ordering)	PART NAME FOR ORDERING (Parts indented after an item are included with that item)	PART NUMBER FOR ORDERING
71	Motor Shaft Pinion	HU-319A
72	Motor Shaft Pinion Spacer	HU40-397
73	Motor Shaft Inner Bearing (AFBMA No. 35BC02)	D10-518
74	Motor Shaft Outer Bearing (AFBMA No. 25BC02)	G7-24
75	Motor Shaft Bearing Screw	D02-361
76	Intermediate Gear	HU40-364
78	Intermediate Gear Bearing (2) (AFBMA No. 30BC03)	215-55
79	Drive Shaft	HU40-358
80	Drive Gear Key	23-70
81	Drive Gear	HU40-357
82	Drive Gear Spacer	HU40-356
83	Drive Shaft Outer Bearing (AFBMA No. 30BC03)	215-55
84	Drive Shaft Inner Bearing (AFBMA No. 40BL03JP)	HU-359
85	Fiber Washer	HU-871
86	Drive Shaft Nut	215-65
87	Drive Shaft Nut Lock	215-66
† 88	Gear Case	HU40-353
89	Gear Case Cover Dowel	D02-347
90	Gear Case Cover	HU40-352
91	Gear Case Cover Screw (14)	D10-312A
92	3/8" Lock Washer (18)	D02-321
93	Grease Plug (2)	22SR-165
94	Brake Lever	23-715
95	Brake Lever Short Bolt (2)	23-717
*	Brake Lever Bolt Nut (2)	D02-418
97	Brake Bracket Pin	107-147
98	Brake Adjusting Screw	23-719
99	Brake Trunnion	HU40-721
100	Brake Adjusting Nut	D02-904
● 101	Short Brake Band	HU40-152
102	Short Brake Lining	HU40-155
103	Brake Lining Long Rivet (6)	235-98
104	Brake Lining Short Rivet (7)	207-353
● 105	Long Brake Band	HU40-252
106	Long Brake Lining	HU40-255
107	Brake Lining Long Rivet (6)	235-98
108	Brake Lining Short Rivet (17)	207-353
109	Brake Support	HU40-161
110	Brake Support Pin or Brake Anchor (3)	HU40-206
111	Cotter (8)	D02-330
112	Base for Size HU40	HU-564A
	Base for Size HUL40	HUL-564A
113	Base Bolt (8)	HU40-775
114	Base Bolt Nut (8)	HU-776
115	Base Bolt Lock Washer (8)	A-67
*	Winch Nameplate	DU-301
*	Nameplate Screw (4)	R4K-302
*	Caution Tag	TA-147A
*	Caution Tag Screw (4)	R4K-302

* Not illustrated.

† **Important:** The complete size symbol of the Winch must be stated when ordering a Motor Assembly, Motor Case (1) or Gear Case (88).

MAINTENANCE TOOLS

TOOL NUMBER FOR ORDERING	TOOL NAME FOR ORDERING	OPERATION
P25-228	Grease Gun	Lubrication.
D02-426	Wire Rope Set Screw Wrench	Loosening or tightening the Wire Rope Set Screws (61) in the Rope Drum (60).
HU-932	Jack Bolt (2 required)	Removing the Valve Chest (10) from the Motor Case (1).
HU-933	Piston Ring Compressor	Compressing the Piston Rings (49 and 50) when installing the Cylinder (52).
23470	Throttle Valve Stem Reamer	Reaming the throttle valve stem hole in Reverse Valve Bushing (12) after installing a new Bushing.
25673	Throttle Valve Seat Reamer	Smoothing the seat in the Valve Chest (10) for the Poppet Throttle Valve (23).

DRUM GUARDS

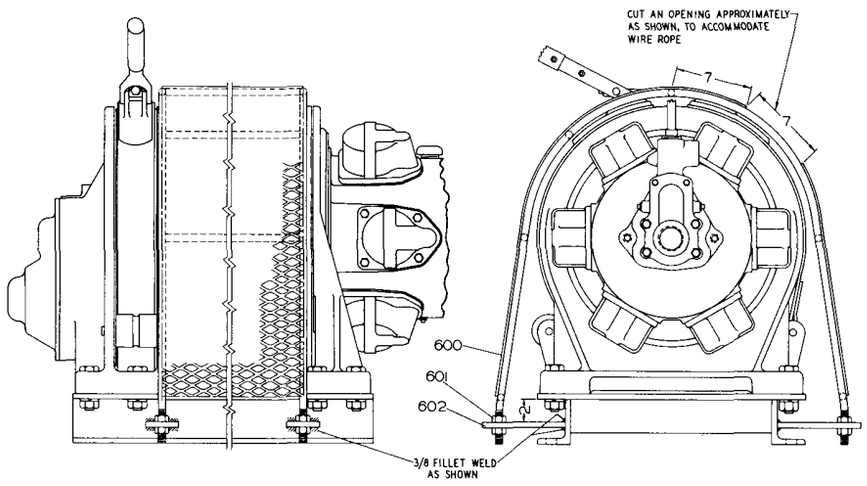
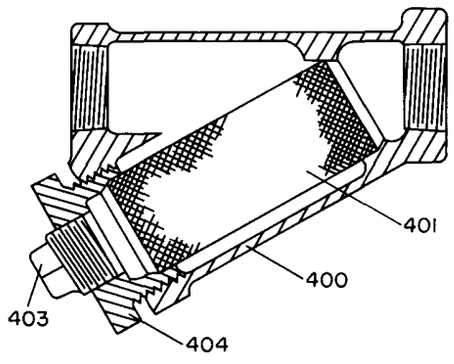


ILLUSTRATION NUMBER (Do not use for ordering)	PART NAME FOR ORDERING (Parts indented after an item are included with that item)	PART NUMBER FOR ORDERING
600	Drum Guard	
	for HU40	HU40-298
	for HUL40	HUL40-298
601	5/8"-11 thd. Nut (8)	K6U-8
602	Plate (4)	K6U-299

AIR STRAINER

ILLUS. NUMBER (Do not use for ordering)	PART NAME FOR ORDERING (Parts indented after an item are included with that item)	PART NUMBER FOR ORDERING
400	Air Strainer Assembly	HU-A267AT
401	Air Strainer Screen	HU-61AT
403	Air Strainer Plug	D02-351
404	Air Strainer Cap	HU-268AT
*	Air Strainer Nipple (1" x 2") (required for attaching Air Strainer to Winch)	HHM-286

* Not illustrated.



MUFFLER AND MUFFLER FITTINGS (not illustrated)

PART NAME FOR ORDERING	PART NUMBER FOR ORDERING
Muffler	KU-674
Muffler Nipple (1-1/4" x 2") (required for attaching Muffler to Winch)	KKM-286
Reducing Coupling (1-1/2" x 1-1/4") (required for attaching Muffler to Winch)	HU-677

WIRE ROPE AND FITTINGS

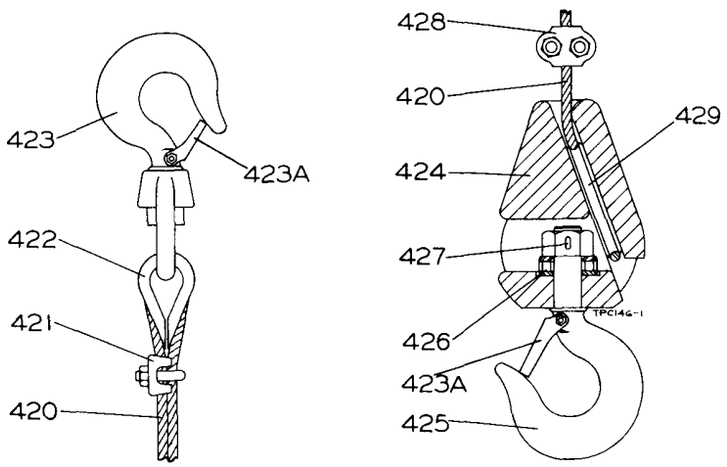


ILLUSTRATION NUMBER (Do not use for ordering)	PART NAME FOR ORDERING (Parts indented after an item are included with that item)	PART NUMBER FOR ORDERING
420	Wire Rope (1/2" dia. Wire Rope; specify length)	215-372
	Wire Rope Fitting Assembly (with closed Hook)	K4U-AS601-1/2
421	Wire Rope Clamp (3)	D20-375
422	Rope Thimble	215-602
423	Swivel Hook (closed type)	K4U-S601
423A	Hook Latch Kit (individual parts not sold separately) (for closed Hook)	D02-S4055
	Hook Block Assembly	HU-A463-1/2
424	Hook Block	D04-463A
425	Hook and Nut	D04-304B
426	Hook Bearing (Timken T-126 or its equivalent)	D04-379A
427	Hook Cotter	D02-438
428	Wire Rope Clamp	D20-375
429	Wire Rope Wedge	D02-373

* Not illustrated.

Lubricate the Drum Gear occasionally by pushing a piece of hard stick or block grease 3/4" to 1" long through the hole above the Drum Shaft Long Set Screw (68).

Air Line Lubricators are recommended for use with Utility Winches. Their use will improve the efficiency and prolong the life of the motor.

HOSE AND HOSE CONNECTIONS

Use 1 1/4" (31.7 mm) hose with a suitable hose fitting (1 1/4" hose to 1" male pipe) for attaching it to the inlet. Use of smaller hose and fittings will reduce the efficiency of the Winch.

MOUNTING

Mount the Winch so that the axis of the Rope Drum (60) is horizontal. Operation of the Winch with the axis of the Drum more than 10° from horizontal will result in lubrication difficulties and the Wire Rope will tend to pile up on the low side of the Drum.

Whenever a Winch is mounted in such a way that the Vent Cap (4) is more than 25° off top vertical center, change the position of the Motor Case (1) on the Motor Mounting Bracket (59) as follows:

1. Drain the oil.
2. Unscrew the eight Motor Case Screws (57).
3. Rotate the Motor Case to bring the Vent Cap as near top vertical center as possible.
4. Replace the Screws.
5. Replenish the Motor Case with oil.

MAINTENANCE INSTRUCTIONS

Apply the Wire Rope to wind on the Rope Drum in the direction indicated by the instruction plate on the Winch.

Rotate the Brake Adjusting Nut (100) to adjust the brake.

Remove the Throttle Valve Spring (25), Poppet Throttle Valve (23) and Throttle Valve Ball (24) from the Valve Chest (10) before attempting to withdraw the Reverse Valve (27) from the Reverse Valve Bushing (12).

The following procedure is recommended when replacement of the Rotary Valve Bushing (11) or Reverse Valve Bushing (12) is necessary:

1. Unscrew the Valve Chest Screws (21) and remove the Valve Chest Cover (20).
2. Screw a No. HU-932 Jack Bolt into each tapped lug on the Valve Chest (10) until the Jack Bolts contact the Motor Case (1), then turn each one a little at a time to jack the Chest with assembled parts from the Motor Case.
3. Unscrew the Throttle Valve Cap (26) and remove the Spring (25), Poppet Throttle Valve (23) and Ball (24) from the Valve Chest (10).
4. Withdraw the Rotary Valve (17), Reverse Valve (27) and remove the Throttle Lever Spring (35).
5. Support the face of the Valve Chest (10) that contacts the Motor Case (1) and press out the old Bushings with an arbor **that will clear the Bushing Keys (13). Caution**: Failure to use an arbor that will clear the Bushing Keys (13), or pressing the Bushings in the opposite direction than instructed will destroy the Keys.
6. Support the face of the Valve Chest (10) that contacts the Valve Chest Cover (20), align the keyslot in the new Reverse Valve Bushing with the Bushing Key (13) 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" (12.8 mm) 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 (17) 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 (27) in the new Reverse Valve Bushing. If the fit is too tight, ream the Bushing 1.750". **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 align, and install the Throttle Valve Ball, Poppet Throttle Valve, Spring and Cap.
11. Install the Throttle Lever Spring (35) and Throttle Control Arm (28).
12. Align the holes through the Valve Chest (10) with those in the face of 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 (36) 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 (37), plain end first, onto the crank pin when assembling the Crank (36).

Install the Connecting Rod Rings (44) so that the internally beveled ends are toward the Connecting Rods (43) when assembling the Crank (36).

REPAIR PARTS

To keep costly downtime to a minimum, it is desirable to have on hand certain repair parts. To guide you in the stocking of repair parts, certain Illustration Numbers of the Repair Part List are marked with a bullet (•). We recommend that with parts so indicated, you stock one (pair or set) repair part for every four tools in service.

If the tools are being used in remote geographical areas, or are subject to unusually severe service, the items and quantities should be increased. Contact the nearest Ingersoll-Rand Company Branch for recommendations.