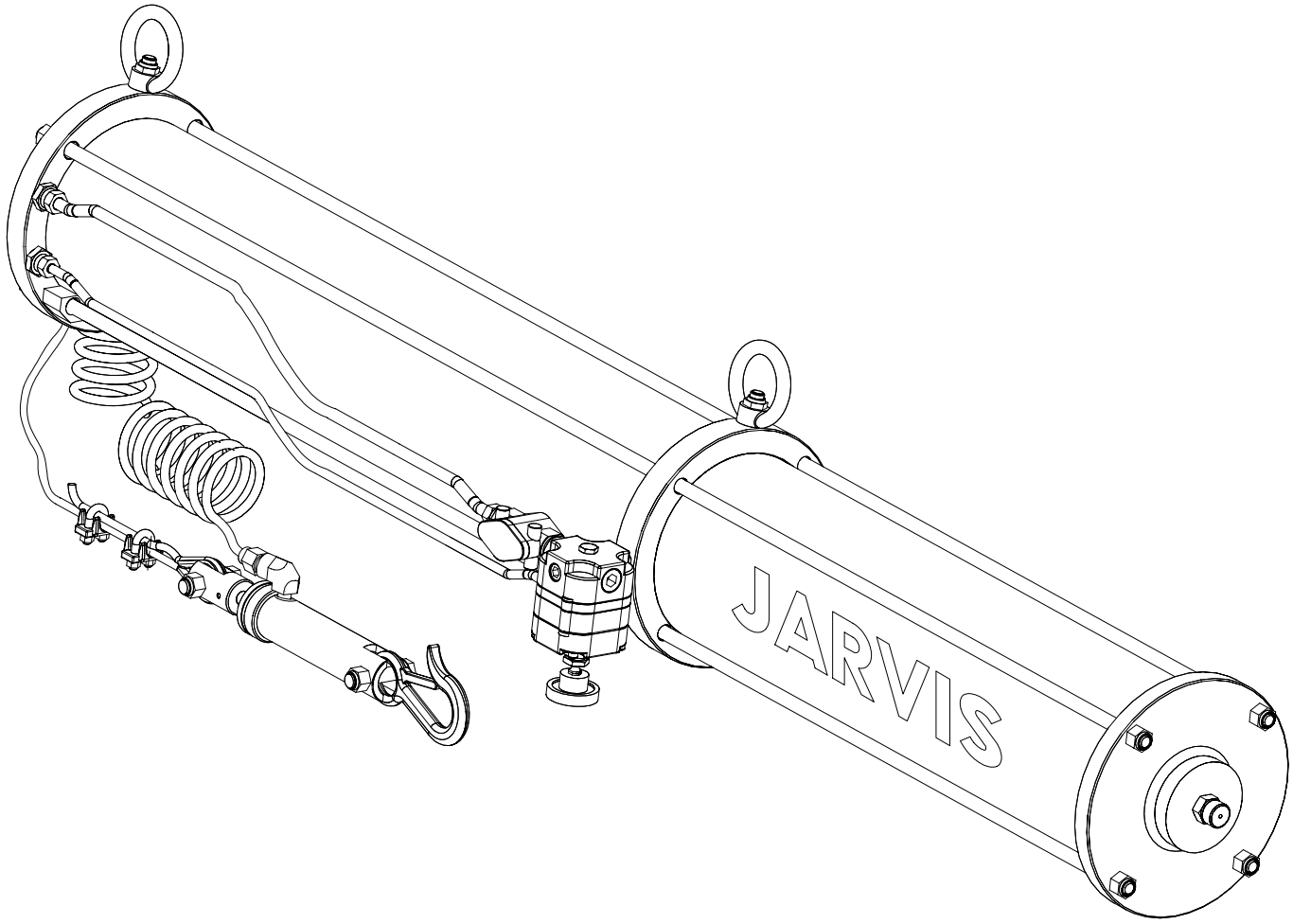
MODEL BN 003
PNEUMATIC BALANCER



EQUIPMENT SELECTION . . . . . Ordering No.

Balancer 4042016

Filter–Regulator 3022118

TABLE OF CONTENTS . . . . . Page

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NOTICE TO EMPLOYER AND SAFETY DIRECTOR

AVOID INJURY

1. **Remove** and **repair** any balancer that malfunctions. **All** personnel must be instructed to remove any malfunctioning equipment.
2. **Ensure** that all employees who use this balancer are aware of the dangers that may arise if they do not follow procedures outlined in this brochure.
3. **Enclosed** are four (4) copies of **"NOTICE TO OPERATORS, MAINTENANCE AND CLEANUP PERSONNEL."** Post one copy on the employees' bulletin board; give one copy to the operator(s); give one copy to the maintenance foreman; and give one copy to the sub-contract cleanup / internal cleanup foreman. *Additional copies will be provided upon request.*
4. **Never** make modifications or alterations to the balancer. *Replace any missing or illegible labels.*
5. **Never** operate the balancer outside of its rated load carrying capacity.
6. **Ensure** that proper procedures are established in accordance with OSHA's lockout/tagout procedures (29 CFR 1910.147) to prevent accidental startup or release of stored energy.
7. **Follow** our installation and maintenance instructions for proper installation and care of the balancer.
8. **Ensure** that secondary retention device (a chain or cable) is installed as described in "installation instructions" section of manual.
9. **Avoid** injury. Do not permit the balancer to be misused.
10. **If** you **resell** or **distribute** a Jarvis product, you must provide the purchaser with the appropriate safety sheets and tool brochure. *Additional copies of safety sheets and tool brochures will be provided upon request.*

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NOTICE TO OPERATORS, MAINTENANCE AND CLEANUP PERSONNEL

ANY MALFUNCTIONING TOOL MUST BE REMOVED FROM SERVICE
REPORT ANY PROBLEMS TO YOUR SUPERVISOR

1. **Disconnect** the power in accordance with OSHA's lockout/tagout procedures (29 CFR 1910.147) before performing any repair or maintenance.
2. **Disconnect** the power – or have the air hose disconnected – in accordance with OSHA's lockout/tagout procedures (29 CFR 1910.147) before performing any cleanup.
3. **Never** put fingers, hands or other parts of the body near the cable entry into the cable cover when the balancer is operating.
4. **Never** stand directly underneath the load when the balancer is operating.
5. **Never** make modifications or alterations to the tool. *Replace any missing or illegible labels.*

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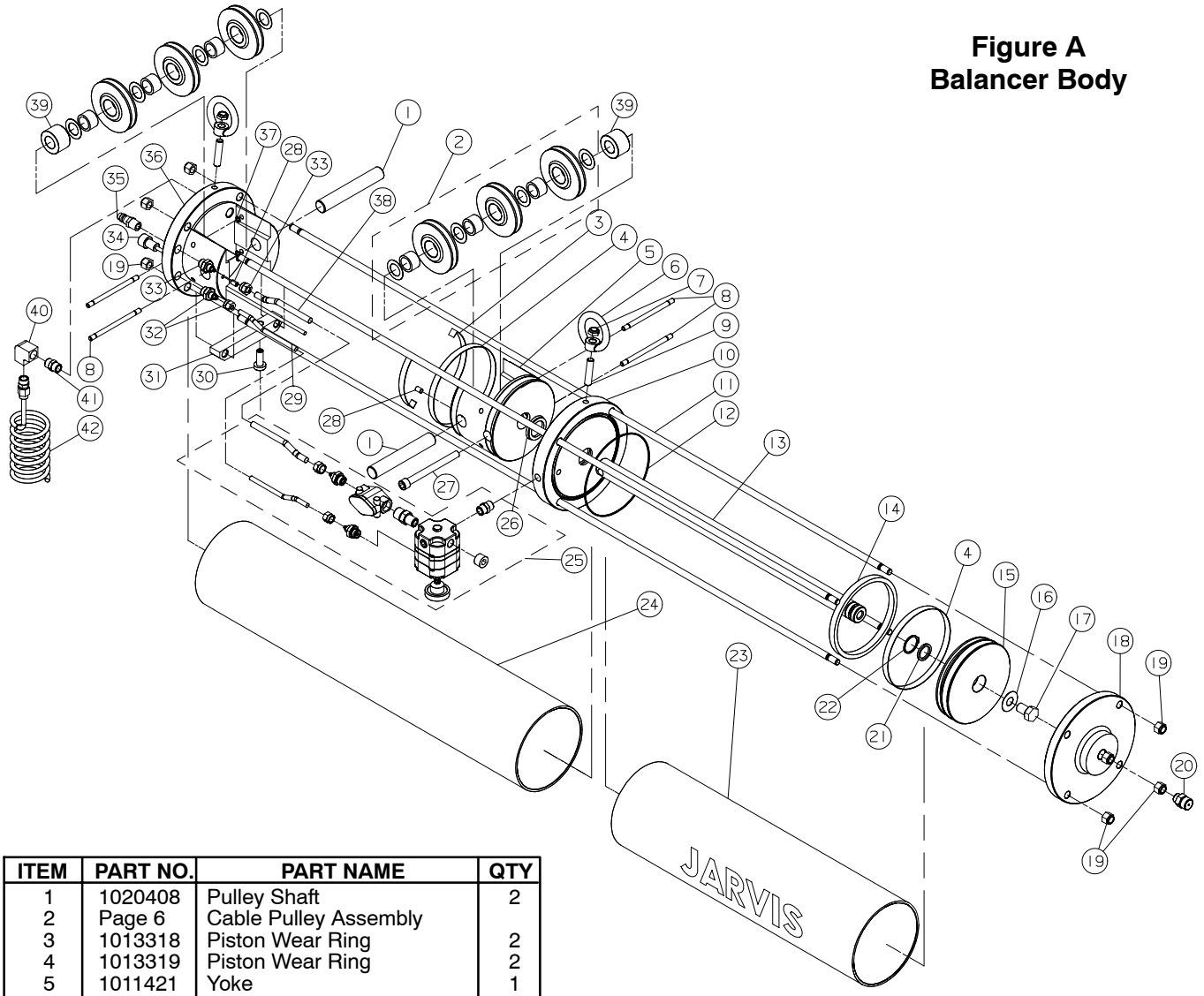
Figure A
Balancer Body



ITEM	PART NO.	PART NAME	QTY
1	1020408	Pulley Shaft	2
2	Page 6	Cable Pulley Assembly	
3	1013318	Piston Wear Ring	2
4	1013319	Piston Wear Ring	2
5	1011421	Yoke	1
6	1013322	Hanger Ring	2
7	1007022	Hex Lock Nut	2
8	1020407	Cable Guide Pins	4
9	1027089	Stud	2
10	1002572	Intermediate Cover	1
11	1027090	Tie Rod	4
12	1035041	O-ring	1
13	1020409	Piston Shaft	1
14	1035042	Seal	1
15	1065083	Piston	1
16	1004470	Washer	1
17	1073077	Hex Head Screw	1
18	1002571	Cylinder End Cover	1
19	1007023	Hex Lock Nut	10
20	1015001	Air Muffler	1
21	1035047	O-ring	1
22	1013321	Piston Wear Ring	1
23	1009183	Sleeve Cover	1
24	1009182	Sleeve Cover	1
25	Page 6	Air Regulator Assembly	

ITEM	PART NO.	PART NAME	QTY
26	1035707	Seal	1
27	1073076	Socket Head Cap Screw	1
28	1055026	Socket Set Screw, Cup Pt.	2
29	1071225	Plastic Tubing	2
30	1036360	Cable Guide Bushing	1
31	1042615	Cable Guide Bracket	1
32	1051281	Connector	1
33	1051280	Connector	1
34	1001120	Cable with Ferrule	1
35	1011185	Quick Connect Plug	1
36	1002570	Cable End Cover	1
37	1013320	External Retaining Ring	8
38	1071224	Plastic Tubing	1
39	1029463	Spacer	1
40	1050047	Elbow	1
41	1050045	Nipple	2
42	1071258	Coiled Air Hose with Fitting	1

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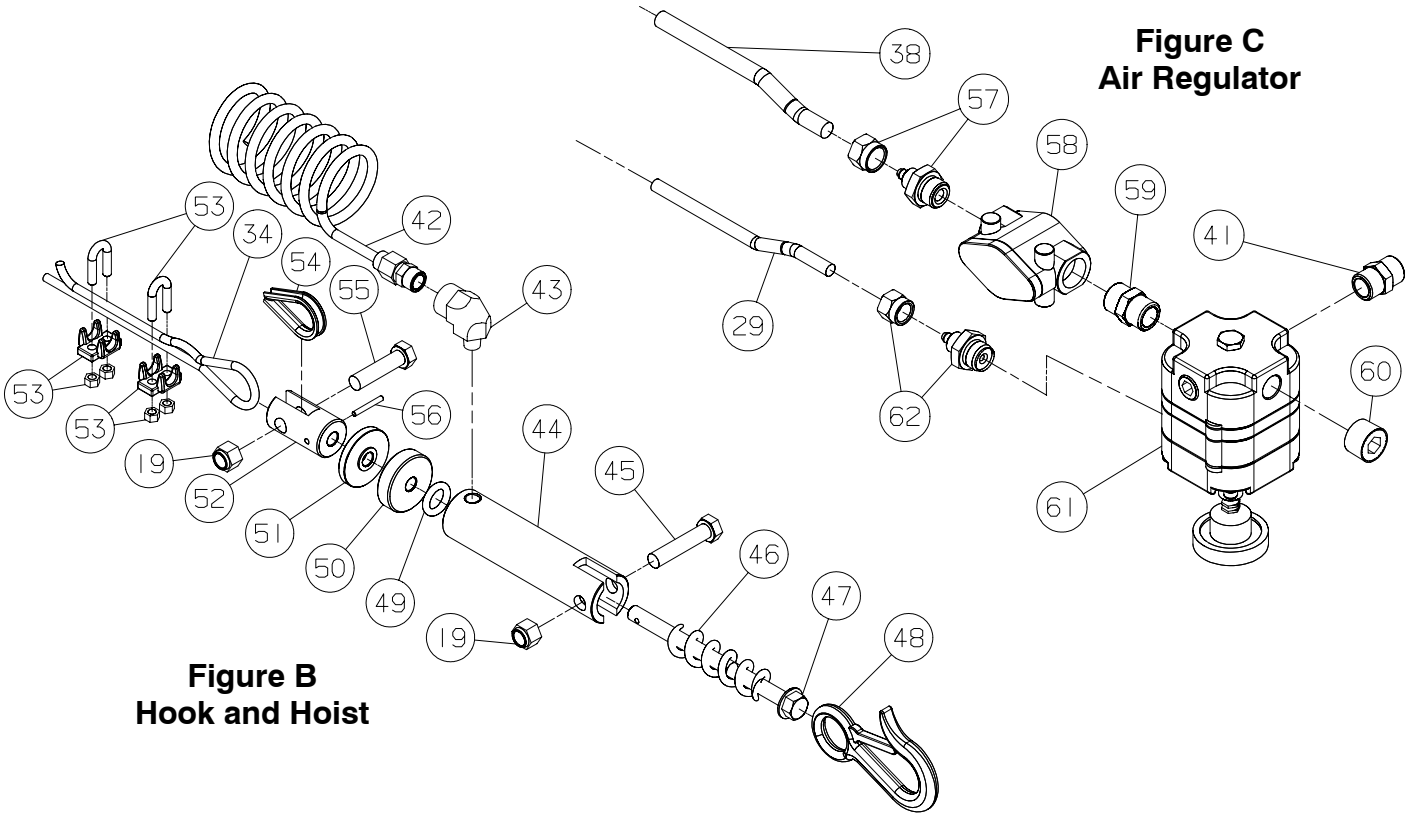
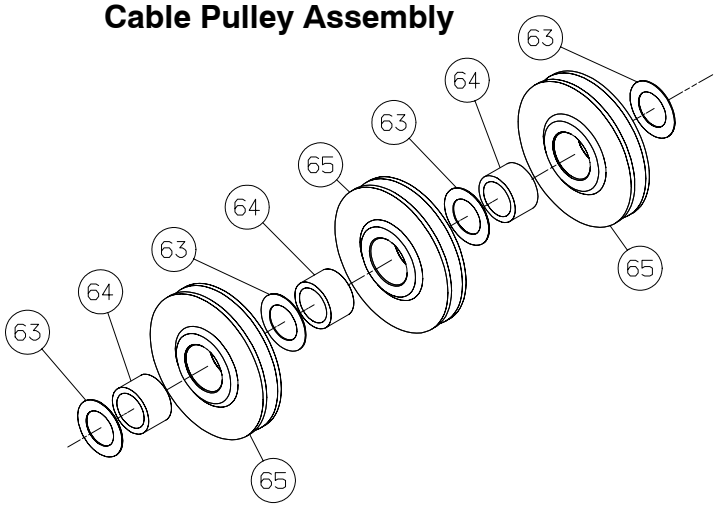


Figure C
Air Regulator

Figure B
Hook and Hoist

ITEM	PART NO.	PART NAME	QTY
43	1050380	Adapter Elbow	1
44	1016727	Hook Housing	1
45	1073075	Hex Head Screw	1
46	1014206	Compression Spring	1
47	1073095	Hex Head Screw	1
48	1071222	Hook with Catch	1
49	1035706	O-ring	1
50	1006067	Air Flow Adjusting Knob	1
51	1007419	Jam Knob	1
52	1071223	Hook Clevis	1
53	1012155	Cable Clamp	2
54	1071221	Cable Thimble	1
55	1073074	Hex Head Screw	1
56	1010546	Roll Pin	1
57	1051279	Connector	1
58	1022346	Check Valve	1
59	1050016	Nipple, 1/4 inch	1
	1050005	Nipple, 3/8 inch x 1/4 inch	
60	1050212	Plug, 1/4 inch	1
	1050771	Plug, 3/8 inch	
61	1022061	Air Regulator	1
62	1051284	Connector	1
63	1004465	Washer	8
64	1021507	Needle Bearing	6
65	1071229	Cable Pulley	6
	3035088	Seal Kit (items 3, 4, 12, 14, 21, 26 and 49)	
	3061405	Hook Assembly (items 19, 44-52 and 56)	
	1061602	Air Regulator Repair Kit	

Figure D
Cable Pulley Assembly



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SPECIFICATIONS

Air Pressure	90-100 psi	6.2-6.8 bar
Air Consumption	1.8 ft^3 / cycle	51 l / cycle
Capacity	33-220 lbs	15-100 kg
Vertical Travel	9.0 ft	2.7 m
Overall Dimensions (length x dia.)		49.2 x 7.87 in
		1250 x 200 mm
Weight	64 lbs	29 kg

INSTALLATION INSTRUCTIONS

IMPORTANT: ALWAYS DISCONNECT AIR HOSES IN ACCORDANCE WITH OSHA'S LOCKOUT/TAGOUT PROCEDURES (29 CFR 1910.147). ALWAYS DISCONNECT ALL AIR HOSES IN ACCORDANCE WITH OSHA'S LOCKOUT/TAGOUT PROCEDURES (29 CFR 1910.147) BEFORE PERFORMING ANY MAINTENANCE OR REPAIRS.

1 Mount the balancer.

Refer to Figures A-D on pages 4 and 5.

Note: Balancer weighs 64 lbs (29 kg) and is capable of lifting 220 lbs (100 kg). Attachment point must be capable of supporting this load with a safety factor of 5.

1.1 Attach hanger rings (item 6) to overhead rail connections. ***Ensure rings are securely attached.***

1.2 Use secondary retention device (a chain or cable) to support balancer if rail connections should fail. **The length of the free fall must not exceed 4 inches (100 mm).**

2 Make the necessary air connection.

2.1 An air filter/regulator must be installed in the air supply line. **Jarvis** part number 3022118 is available. *Do not use lubricated air.*

NOTE: BEFORE CONNECTING AIR SUPPLY, ENSURE THE FOLLOWING PRECAUTION IS TAKEN:

Make sure air flow adjusting knob (item 50) is rotated away from hook housing (item 44).

This will prevent cable from rapidly retracting when air is supplied to quick connect plug (item 35).

3 Connect regulated air supply to quick connect plug (item 35).

OPERATION INSTRUCTIONS

NOTE: BEFORE CONNECTING AIR SUPPLY, ENSURE THE FOLLOWING PRECAUTION IS TAKEN:

Make sure air flow adjusting knob (item 50) is rotated away from hook housing (item 44).

This will prevent cable from rapidly retracting when air is supplied to quick connect plug (item 35).

1 Set incoming air supply to 90-100 psi.

2 Extend hook and hoist assembly (items 43-52) from balancer and connect tool to hoist hook (item 48).

3 Tighten air flow adjusting knob (item 50) to raise the tool. When the desired operating point is reached, lock jam knob (item 51) against the air flow adjusting knob (item 50).

MAINTENANCE INSTRUCTIONS

IMPORTANT: ALWAYS DISCONNECT AIR HOSES IN ACCORDANCE WITH OSHA'S LOCKOUT/TAGOUT PROCEDURES (29 CFR 1910.147) BEFORE INSTALLING, REMOVING, OR PERFORMING ANY MAINTENANCE OR REPAIRS ON THE BALANCER.

Refer to Figures A through D on pages 4 and 5.

NOTE: BEFORE PERFORMING ANY MAINTENANCE ON THE BALANCER, ENSURE THE FOLLOWING PRECAUTIONS ARE TAKEN:

Lower and remove tool attached to balancer.

Tighten air flow adjustment knob (item 50) until cable is retracted fully into balancer.

Disconnect air supply quick connect fitting.

1 DAILY:

1.1 Inspect cable (item 34) and hoist hook (item 48) for wear or damage.

1.2 Check for smooth, uninterrupted operation of balancer.

1.3 Check coiled air hose (item 42) for kinks or abrasion.

1.4 Inspect for air leaks.

1.5 Inspect cable guide bushing (item 30) for snug fit.

2 AFTER 350,000 CYCLES:

2.1 Replace balancer cable.

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3 BALANCER CABLE REPLACEMENT:

3.1 Remove tool from hook. Retract cable into balancer housing. Disconnect air supply hose from quick connect plug (item 35).

3.2 Remove nut (item 19) and screw (item 55) securing cable (item 34) and cable thimble (item 54) to balancer hook clevis (item 52).

3.3 Remove cable clamp assemblies (item 53).

3.4 Back off connector nuts (items 32 and 33) on air lines from air regulator assembly (item 25).

3.5 Remove four hex lock nuts (item 19) from tie rods (item 11) at cable end side of balancer.

3.6 Remove cable end cover (item 36) and cable guide bracket (item 31).

3.7 Remove cover sleeve (item 24).

3.8 Remove screw (item 27) to release yoke (item 5) with pulley assembly (item 2).

3.9 Pull on ferrule end of cable (item 34, page 4) to slide cable through cable guide bushing (item 30) in cable guide bracket (item 31) and through cable pulley assemblies (item 2).

3.10 Remove four hex lock nuts (item 19) from tie rods (item 11) on piston side of balancer.

3.11 Remove cylinder end cover (item 18) and sleeve cover (item 23).

3.12 Remove hex head screw (item 17) and washer (item 16). Remove piston (item 15) from piston shaft (item 13).

3.13 Wash all part in solvent.

3.14 Remove cable. Inspect cable pulley assemblies (item 2), pulley shafts (item 1), cable guide pins (item 8), piston wear rings (items 3 and 4) and cable guide bushing (item 30) for wear and replace as necessary.

3.15 Examine seals (items 12, 14, 21 and 26) and wear rings (items 3, 4 and 22). Replace if necessary.

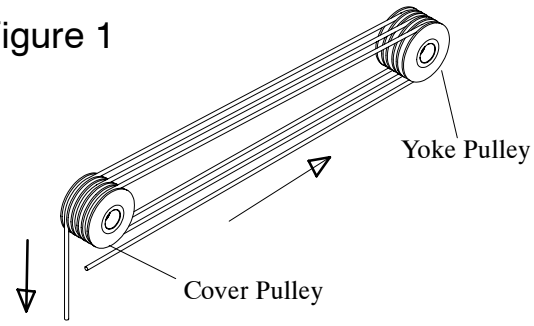
3.16 Reverse steps 3.1-3.11. *See special notes below:*

3.16.1 Lubricate all seals and o-rings with *Parker Super Lube*.

3.16.2 Grease needle bearings (item 64).

3.16.3 Ensure cable is properly threaded around cable pulley assemblies. *Refer to Figure 1.* Thread cable through cover and under first pulley on yoke, over first pulley on cover, under middle pulley on yoke, over middle pulley on cover, under third pulley in yoke and finally over third pulley on cover and down through cable guide bushing (item 30) already inserted into cable guide bracket (item 31).

Figure 1



3.16.4 Continue to pull on end of cable until cable ferrule is seated in cover.

3.16.5 Ensure all fittings are properly secured.

4 BALANCER HOOK/HOIST DISASSEMBLY:

4.1 Remove tool from hook. Retract cable into balancer housing. Disconnect air supply hose from quick connect plug (item 35).

4.2 Remove coiled air hose (item 42) from adapter elbow (item 43).

4.3 Remove nut (item 19) and screw (item 55) securing cable (item 34) and cable thimble (item 54) to balancer hook clevis (item 52).

4.4 Remove adapter elbow (item 43) from hook housing (item 44).

4.5 Remove nut (item 19), screw (item 45) and hook with catch (item 48) from hook housing (item 44).

4.6 Remove roll pin (item 56) securing screw (item 47) to hook clevis (item 52).

4.7 Remove jam knob (item 51), air flow adjusting knob (item 50), o-ring (item 49), spring (item 46) and screw (item 47) from hook housing (item 44).

5 BALANCER HOOK/HOIST ASSEMBLY:

5.1 Reverse steps and procedures outlined in section 4. *See special note below:*

5.1.1 Ensure nuts (item 19) are securely fastened to screws (items 45 and 55). Use *Loctite 261*.

6 AIR REGULATOR REMOVAL:

6.1 Remove tool from hook. Retract cable into balancer housing. Disconnect air supply hose from quick connect plug (item 35).

6.2 Remove connector nuts (item 57 and 62).

6.3 Unscrew air regulator from fitting (item 41).

6.4 Remove connectors (items 57 and 62), check valve (item 58) and fittings (item 41 and 59) from regulator.

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7 AIR REGULATOR INSTALLATION:

7.1 Reverse steps and procedures outlined in section 6. *See special notes below:*

7.1.1 Ensure check valve (item 58) is installed in proper direction. "A" port is away from regulator inlet port; "B" port is toward regulator inlet port.

7.1.2 Ensure all connectors, fittings and check valve connections are properly secured.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Balancer will not lift load	1. Insufficient line air pressure.	1. Increase air pressure to 100 psi.
	2. Air regulator (item 61) adjustment set low.	2. Turn air adjustment knob clockwise until load rises.
	3. Excessive leakage around piston, or worn piston and/or seals.	3. Check piston, o-rings or seals. Replace any damaged or worn parts.
	4. Check valve (item 58) is installed backwards, or is defective.	4. Re-install or replace check valve.
	5. Air line leakage.	5.Repair or replace parts as necessary.
	6. Cable (item 34) jammed.	6. Inspect cable, hook assembly, and pulley system. Replace any damaged or worn parts.
	7. Air tubing (items 29 or 38) plugged.	7. Clean or replace air tubes.
Load rises, but is difficult to pull, or can not be lowered	1. Air regulator (item 61) setting adjustment too high.	1. Turn air regulator knob counter-clockwise until load is balanced.
	2. Air muffler (item 20) clogged.	2. Clean or replace air muffler
	3. Air flow adjusting knob (item 50) improperly adjusted, or o-ring (item 49) defective.	3. Replace o-ring, or loosen knob until small amount of air flow is evident.
	4. Air hose (item 42) pinched, restricting air flow.	4. Ensure air hose is not obstructed, or replace hose.
Air continuously blowing from air regulator exhaust ports	1. Ruptured diaphragm in air regulator (item 61).	1. Replace diaphragm in regulator.
Erratic, jerky operation	1. Dirt clogging air tubing (items 29 or 38), check valve (item 58), regulator (item 61), tubing, air hose (item 42) or air muffler (item 20).	1. Clean parts and lubricate where indicated. Replace any worn or damaged parts.
	2. Fluctuating air supply pressure.	2. Check line air regulator or compressor.
	3.Contaminated air.	3. Install air line filter.
Unit will not balance or lift load	1. Air flow adjusting knob (item 50) too loose.	1. Adjust knob.
	2. Air muffler (item 20) plugged or damaged.	2. Clean or replace air muffler.
Excessive air bleeding from air flow adjusting knob	1. Worn/dirty o-ring (item 49) or spring (item 46).	1. Clean or replace o-ring or spring as necessary.

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