SERVICE BULLETIN SB1037
Rev J 1/11

Balcrank®

PANTHER® SERIES PUMPS

5:1 RATIO, MODEL 1130-011
3:1 RATIO, MODEL 1130-010

Thoroughly read and understand this manual before installing, operating or servicing this equipment.

OPERATION, INSTALLATION, MAINTENANCE AND REPAIR GUIDE

General Safety

Thoroughly read and understand this manual before installing, operating or servicing the described products.

⚠ IMPORTANT

Because this pump can be incorporated into a pressurized systems, the following safety precautions should be observed.

Check equipment regularly and repair or replace worn and damaged parts.

Never alter or modify any parts of this pump, doing so may cause damage to pump and/or personal injury.

Under no circumstances should the dispensing valve be aimed at any person at any time. Personal injury may result.

Release pressures built up in the system before any service or repair is begun. See the pressure relief procedure below.

Do not operate this pump above 150 PSI (10.3 BAR) air inlet pressure or 200 cycles per minute.

Always read and follow the fluid manufacturer's recommendations regarding the use of protective eye wear, clothing and respirators.

⚠ WARNING

Pressure Relief Procedure:

Follow this procedure whenever you shut off the pump, when checking or servicing any part of the system and when installing, cleaning or changing any part of the system.

1) Disconnect the air to the pump.
2) Point dispensing valve away from yourself and others.
3) Open dispensing valve until pressure is relieved.

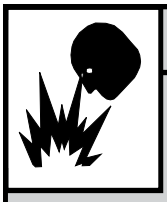
⚠ WARNING

WARNING: The Panther® 5:1 pump (1130-011) develops 625 psi (43.1 Bar) maximum working pressure and the Panther® 3:1 pump (1130-010) develops 375 psi (26 Bar) maximum working pressure at 125 psi (8.6 Bar) maximum inlet air pressure and stall conditions. Be sure that any components or accessories used in the system are rated to withstand this pressure. To determine fluid output pressure at stall conditions, multiply the ratio of the pump by the air pressure being used.

EXAMPLE: 5:1 Pump Ratio x 100 psi air pressure = 500 psi fluid pressure at stall.

⚠ WARNING

THIS PUMP CONTAINS ALUMINUM AND ZINC PARTS. DO NOT use 1-1-1 Trichloroethane, methylene chloride or other halogenated hydrocarbon solvents or fluids containing such solvents in this pump. Use of these solvents/fluids may result in a violent chemical reaction, causing serious bodily injury, property damage or death. All fluids used in this pump must be chemically compatible with the wetted parts materials shown on page two (2) of this manual. Consult your chemical supplier to ensure compatibility.



⚠ WARNING

DANGER: Not for use with fluids that have a flash point below 100°F (38°C). Examples: gasoline, alcohol. Sparking could result in an explosion which could result in death.

⚠ WARNING

In the presence of explosive vapors, take action to prevent static sparking. Failure to ground the pump, piping, valves, containers, or other miscellaneous equipment can result in fire or explosion. A green grounding lug is provided on the pump.

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Product Description

The 5:1 ratio Panther® pump is suitable for simultaneous fluid distribution of up to four dispense points, or for pumping to distances of up to 750 feet. The 3:1 ratio Panther® can service as many as five dispense points at up to 500 feet.

The Panther's air motor features a precision air reversing valve mechanism with dual valve ports for improved high speed breathing. It also contains a positive trip detent spool mechanism that eliminates stalling (blowing air) when the pump is caught between strokes. It has a simple yet durable construction with all internal parts lubricated at the factory using a life-tested synthetic grease (Balcrank® P/N 826733). This grease coats all internal parts and repels air line moisture to inhibit corrosion.

The Panther® pumping assembly features a nitrided steel pump rod and foot valve for superior wear and corrosion resistance. The pump's exterior is constructed from aircraft grade extruded aluminum for an outstanding strength-to weight ratio. The pump also has high quality Buna-N seals and is packaged in a pump that has proven reliable yet easy to service and maintain.

Technical Data

	Model 1130-010	**Model 1130-011**
Pressure Ratio	3:1	5:1
Air Motor, Effective Dia.	2.44"	2.44"
Stroke	3.0"	3.0"
Air Motor Displacement	28.86 in^3	28.86 in^3
Cycles per Gallon	28	44
Maximum Flow Rate	8.5 GPM	7.0 GPM
Operating Air Pressure Range	10-125 psi (.69-8.6 Bar)	10-125 psi (.69-8.6 Bar)
Recommend Operating Range	**40-125 psi (2.8-8.6 Bar)**	**40-125 psi (2.8-8.6 Bar)**
Air Consumption, @ 100 psi Air[1]	38 SCFM	45.6 SCFM
Fluid Suction Lift	20 In. Hg.	20 In. Hg.

Common Specifications:

Port Sizes: Fluid Inlet 1" NPTF/1-1/2" NPTM, Fluid outlet 1/2" NPT, Air inlet 1/4" NPT
Wetted Parts: Nickel Plated Steel, Nitrided Steel, Brass, Aluminum, Buna-N™
Compatible Fluids: Petroleum and synthetic motor oils, gear oil, ATF, hydraulic oil

1. Air consumption varies with pump speed.

Pump Installation

After removing the pump from its shipping carton, attach a suitable suction tube or hose to the pump fluid entry port.

WARNING: Attach a proper ground wire to the Panther's grounding lug (item 11, pg. 8) before starting the pump.

CAUTION: Performance will be affected by a suction path seal that is not air tight.

If mounting to a reservoir bung port, thread the pump bung adapter into the bung thread on the fluid reservoir, lower the pump into the mounted bung adapter, then tighten. The suction tube should be submerged in the tank liquid and should reach to within 1 to 2 inches from the bottom of the reservoir.

If mounting onto a wall bracket, place the pump in the bung-mount adapter provided on the bracket, then tighten the adapter clamping threads. Attach a wall mount Suction Assembly Kit to the pump, then lower the suction tube into the reservoir, adjusting height to set the end of the tube 1 to 2 inches above the bottom of the reservoir.

CAUTION: Always tighten pump down securely to avoid damage to the fluid reservoir, the pump, and nearby equipment. Be sure to use only the specified bung adapter.

Provide a drop-tee fitting, 1/4" size or larger, in the nearby air supply pipeline. From that tee, install the following pump air line assembly:

- pipe bushing or adapter (to bring the line drop size to 1/4" male)
- 1/4" pipe drop to pump level
- 1/4" pipe elbow
- 1/4"-1/2" shutoff ball valve (having an air relief vent when closed)
- 1/4"-1/2" F-R-L
- 1/4" x 3 ft. air hose
- 1/4" air line coupler and nipple.

Attach the air nipple to the air inlet port of the Panther pump. During assembly of the air supply line, be sure to blow out all foreign materials before making connection to the pump.

Balcrank recommends that an air line lubricator be used with turbine oil (viscosity 150-170 SSU @ 100 ^{0} F) and set at a maximum oil feed rate of 2 drops per minute of pump operation.

The pump air motor has been coated with a special synthetic grease at initial assembly (available as Balcrank P/N 826733) and does not require additional greasing except during reassembly after a repair.

WARNING: Attach a proper ground wire to the Panther's grounding lug (item 11, pg. 8) before starting the pump.

Preventive Maintenance

The Panther® Pump has been designed to operate dependably with little required maintenance. However, to ensure pump longevity, the following should be observed:

- Keep the fluid free of trash and debris. Periodically check the pump inlet for foreign matter and clean when necessary.
- Run the pump at the minimum pressure required to achieve the desired flow rate *(less than 125 psi and 200 cyc/min recommended).*
- Ensure the pump receives clean, moisture free air. Check and maintain the system's air filter on a regular basis.
- Although the air motor is coated with synthetic grease upon factory assembly and can run without lubricated air, Balcrank recommends an in-line F.R.L. be installed in the pumping system.
- Never let the pump run dry of the fluid being pumped.

Pump Operation

CAUTION: Always read and follow fluid manufacturers' recommendations regarding proper use of protective eye wear, clothing and respirators.

CAUTION: Read all limitations which apply to selection of fluids which may be pumped by this product. Do not pump a fluid which is not specified to be compatible.

To Start Pump:

1. Immerse the pump's suction tube or fluid inlet into the fluid to be pumped.

2. Connect the air coupler to the pump and turn the air regulator to the minimum setting.

3. Direct pump outlet hose into an approved waste oil container.

4. Slowly adjust the air regulator until the pump is primed and running smoothly. Be sure all air has been purged from the system. The pump should prime in less than 30 seconds.

5. Use the air regulator to control the pump's speed and cycle rate. Always use the lowest pressure required to obtain the desired flow rate. This will increase pump and seal life.

6. Never allow a pump to be run dry of the fluid being pumped. A dry pump quickly speeds up, which could damage the air motor and fluid seals. If the pump suddenly speeds up, cut off the air supply as soon as possible and refill the reservoir with fluid and reprime the system.

7. Read and follow the instructions for each component in your system.

8. If the pump will be unattended for any period of time, or to shut off the system at the end of a work shift, *always* follow the **Pressure Relief Procedure** on page 2 of this manual.

Pump Repair/Servicing

It is *imperative* to maintain pump concentricity when reassembling the Panther pump. This can be achieved by reassembling the pump ONLY in a vertical position; preferably cap-down on a work bench.

WARNING: Before beginning pump repair, all internal pressure must be relieved. To reduce risk of personal injury, follow the **Pressure Relief Procedure** shown on page 2 and page 6.

Pump Disassembly / Reassembly: Using a soft jaw vise or a suitable fixture, clamp the pump vertically on the upper body (4). If a vise is unavailable, simply place the pump cap-down on a work bench. Refer to illustrations on pages 8 thru 13 to aid in servicing the pump.

Removing the Air Motor: With a pipe or strap wrench, remove tube (13) from adapter (9). Remove nuts (10) from the adapter (9). Pull adapter (9) down approx. 2 inches from lower body (7). Unhook the tee head in rod (18) from tee slot in piston (45). Remove 4 carriage bolts (1) from pump. While holding cap (2), pull air motor assembly from upper body (4). Reassemble in reverse order, *using grease (p/n 826733) on all seals and o-rings.*

Replacing the Air Motor Seals: Place air motor on clean work surface with the air valve mechanism up. With a straight screwdriver, remove the ball detent retainers (36) from piston (ensure the balls (38) are removed). With a 7/16" wrench, remove the two nuts (25) from the top of the intake valve assembly. Now, hold center rod (22) and pull valve bar assembly from piston (40). Check for wear on all seals (34), balls (35), and springs (26,27,37) and replace as required. Reassemble in reverse order, using the diagram as a guide. *Use grease (p/n 826733) on all seals and o-rings.*

Pump Repair/Servicing

It is *imperative* to maintain pump concentricity when reassembling the Panther pump. This can be achieved by reassembling the pump ONLY in a vertical position; preferably cap-down on a work bench.

Replacing the Pump Rod Seals: Remove foot valve (16) from fluid tube (13). Remove fluid tube (13) from adapter (9) and slide off. With a 7/16" wrench, remove the 4 nuts (10). Slide the adapter down about 2 inches and unhook the rod (18) from the piston (37). Remove the fluid rod (18) from the adapter (9). Now seals (8, 12,15, and 21) are accessible. Inspect balls (14 and 19) ; change as required. Reassemble in reverse order. Apply grease (P/N 826733) to seals (8 and 21) to ease assembly.

Footvalve: With a pipe wrench, clamp to the tube (13). Now remove foot valve (16). Remove and inspect pin (17) for wear, straightness, etc. Replace if required. Remove foot valve ball (14) and seal (15), inspect, and replace if required. Reassemble in reverse order.

CAUTION: Before servicing, reduce fluid pressure to zero. For safe handling, use the recommended **Pressure Relief Procedure.**

Pressure Relief Procedure:
To reduce the risk of serious bodily injury, including fluid injection or splashing into the eyes and/or onto the skin, follow the procedure below before maintaining or repairing the pump, the solenoid, or any part of the system.

1. Disconnect the air supply from the pump.

2. Open the dispensing valve into an approved waste container to relieve pressure on the system.

3. Leave any bleed-type drain valves open until you are ready to use the system again.

NOTE: The air motor is lubricated with a life-tested synthetic grease (P/N 826733) at the factory. This grease coats all parts and repels air line moisture to inhibit corrosion. It is imperative that any grease removed during maintenance be replaced afterwards. Contact your local Balcrank distributor, using the above part number, for replacement grease.

Troubleshooting Guide

NOTE: Check all other possible causes before disassembling pump.

⚠ **CAUTION:** Before servicing, reduce fluid supply pressure to zero.

Trouble	Probable Cause	Corrective Action
Pump does not operate	Inadequate air supply pressure or restricted air line	Increase or clear air supply (1) Assure air is on and valves are open
	Clogged lines, hoses, valves, etc.	Open; clear (1)
	Damaged air motor	Service / replace air motor
Air motor is not tripping over	Air motor seals are worn/damaged	Service / replace air motor
Air is leaking from exhaust and or seal damage, etc.	Air motor seals are worn/damaged	Service / replace air motor
Fluid is leaking from the exhaust	Fluid seal (8) is worn/damaged	Replace
Erratic pump operation	Air entering suction line	Check for loose connections
	Fluid level too low	Refill, reprime or flush
	Air motor icing	Run pump at lower pressure; run at lower cycles per minute; clean muffler (38)
Pump runs continuously	Empty fluid supply	Refill, reprime or flush
	Blockage in pump tube or foot valve (16)	Remove pump tube, clear blockage
	Lower ball (14) is stuck in foot valve (16)	Replace ball and reseat foot valve
	Lower seal (21) is worn or damaged	Replace
Fluid output on one stroke only or continues to operate when dispensing valve is closed	Upper ball (19) is stuck in fluid piston (20) or one or both are damaged	Replace ball and reseat
Pump operates, but pump output on both strokes is low	Inadequate air supply pressure or restricted air line	Increase air supply; increase air supply size
	Closed or clogged solenoid valve, meter, dispensing valve, etc.	Clear(1)
	Air inlet strainer/filter clogged	Clear(1)

(1) Follow the **Pressure Relief Procedure** and disconnect the fluid line. If the pump starts when the air is turned on again, the line, etc. is clogged.

Parts List
Panther® 3:1 Ratio Pump
Model 1130-010

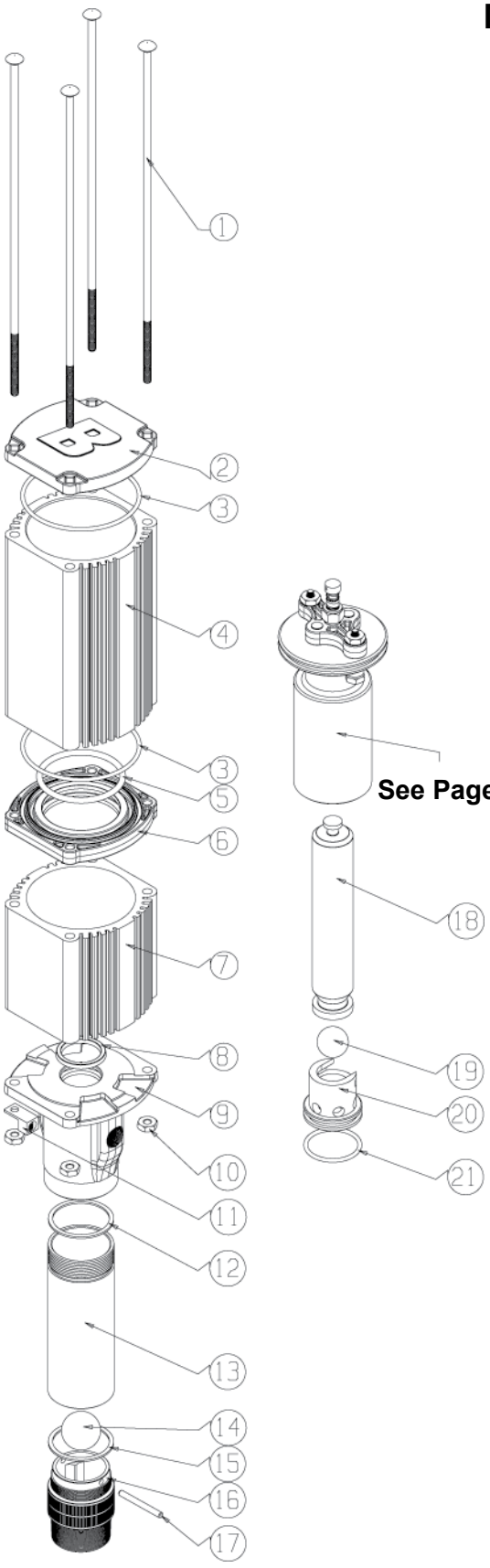
Item	Part Number	Description	Part Pak Model	Pump Qty	Service Kit Qty		Part Pak Qty
					900014	900009	
1	829452	Bolt, Carriage	90041Q04	4	0	0	4
2	829808	Cap, Air Motor		1	0	0	
3	829664	O-Ring, Buna N		2	2	0	
4	829448	Upper Body, Air Mtr		1	0	0	
5	831552	O-Ring, Buna N		1	1	0	
6	829809	Seal Insert, Motor		1	0	0	
7	829449	Lower Body, Air Mtr		1	0	0	
8	829670	Polypak, Buna N		1	0	1	
9	829464	Adapter, Fluid		1	0	0	
10	829658	Lock Nut	90043Q04	4	0	0	4
11	831489	Grounding Lug	90042Q05	1	0	0	5
12	826676	Seal, Adapter		1	0	1	
13	829457	Cylinder, Pump		1	0	0	
14	808691	Ball		1	0	1	
15	830306	Seal, Footvalve		1	0	1	
16	829458	Footvalve (prior to 4/2003)		1	0	0	
	826060	Footvalve (after 4/2003)		1	0	0	
17	829769	Pin, Stop		1	0	1	
18	829466	Rod, Displacement		1	0	0	
19	806962	Ball		1	0	1	
20	829465	Fluid Piston		1	0	0	
21	816853	O-Ring, Buna N		1	0	1	

Note: Replacement parts can be sold as individual parts (items listed with part number), as a set in Part Paks (90041Q04 for example), or in a service kit. Service kits available for the 3:1 Panther are listed below:

Service Kits:
*Air Motor Service Kit.....900014
3:1 Fluid Service Kit.....900009

***Air motor service kit is for both the 3:1 and 5:1 ratio pumps.**

Exploded View
Panther® 3:1 Ratio Pump
Model 1130-010



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Parts List
Panther® 5:1 Ratio Pump
Model 1130-011

Item	Part Number	Description	Part Pak Model	Pump QtyKit	Service Qty		Part Pak Qty
					900014	900010	
1	829452	Bolt, Carriage	90041Q04	4	0	0	4
2	829808	Cap, Air Motor		1	0	0	
3	829664	O-Ring, Buna N		2	2	0	
4	829448	Upper Body, Air Mtr		1	0	0	
5	831552	O-Ring, Buna N		1	1	0	
6	829809	Seal Insert, Motor		1	0	0	
7	829449	Lower Body, Air Mtr		1	0	0	
8	830269	Polypak, Buna N		1	0	1	
9	829453	Adapter, Fluid		1	0	0	
10	829658	Lock Nut	90043Q04	4	0	0	4
11	831489	Grounding Lug	90042Q05	1	0	0	5
12	800951	Seal, Adapter		1	0	1	
13	829459	Cylinder, Pump		1	0	0	
14	806962	Ball		1	0	1	
15	829893	Seal, Footvalve		1	0	1	
16	829460	Footvalve		1	0	0	
17	829662	Pin, Stop		1	0	1	
18	829454	Rod, Displacement		1	0	0	
19	827761	Ball		1	0	1	
20	829456	Fluid Piston		1	0	0	
21	800360	O-Ring, Buna N		1	0	1	

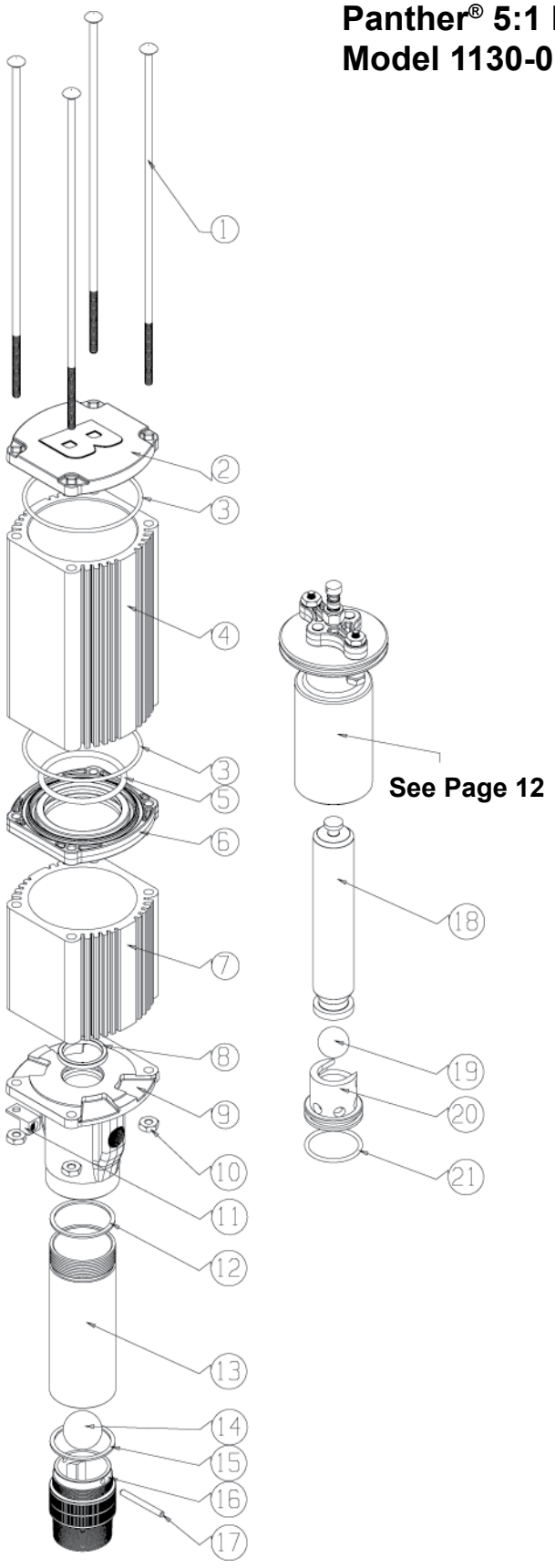
Note: Replacement parts can be sold as individual parts (items listed with part number), as a set in Part Paks (90041Q04 for example), or in a service kit. Service kits available for the 5:1 Panther are listed below:

Service Kits:
*Air Motor Service Kit.....900014
5:1 Fluid Service Kit.....900010

***Air motor service kit is for both the 3:1 and 5:1 ratio pumps.**

Exploded View

Panther® 5:1 Ratio Pump
Model 1130-011



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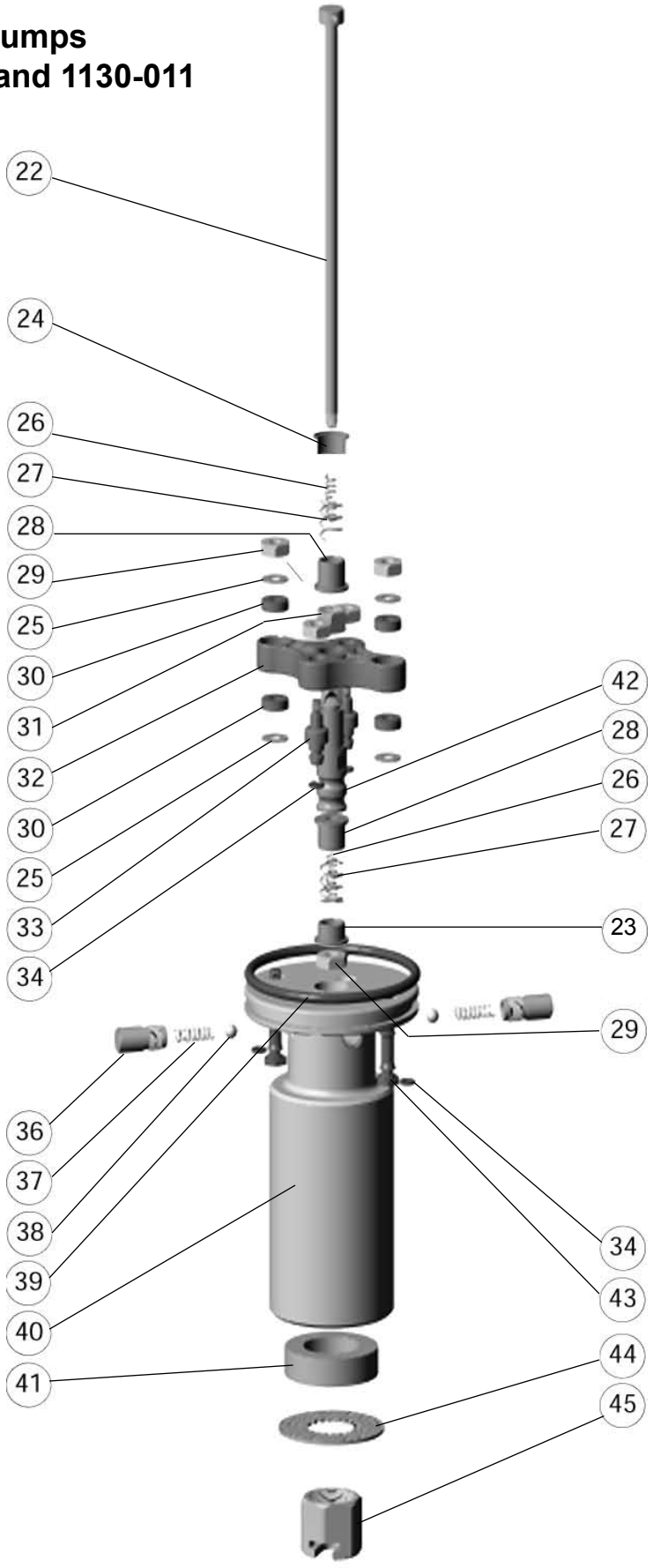
Air Motor

Panther® Series Pumps

Models 1130-010 and 1130-011



Parts List

Air Motor, Panther® Series Pumps

Models 1130-010 and 1130-011

Item	Part Number	Description	Part Pak Model	Pump Qty	Service Kit Qty	Part Pak Qty
					900014	
22	829447	Rod, Trip		1	1	
23	831777	Delrin, Thin		1	1	
24	831778	Delrin, Thick		1	1	
25	831532	Washer		4	4	
26	830240	Spring, Inner		2	2	
27	830236	Spring, Outer		2	2	
28	830611	Retnr.,Spring		2	2	
29	808693	Nut		5	5	
30	830612	Bushing		4	4	
31	830143	Nut		1	1	
32	829441	Valve Bar		1	1	
33	830792	Valve, Exhaust		2	2	
34	831551	O-Ring		4	4	
36	829461	Retnr., Detent		2	2	
37	829661	Spring, Detent		2	2	
38	805810	Ball, Detent		2	2	
39	831553	O-Ring		1	1	
40	830793	Piston, Air		1	0	
41	829659	Felt, Muffler	90036Q20	1	0	20
42	829999	Spool, Detent		1	1	
43	830791	Valve, Intake		2	2	
44	829445	Screen, Muff.	90035Q12	1	0	20
45	830723	Coupler, Rod		1	0	

Note: Replacement parts can be sold as individual parts (items listed with part number), as a set in Part Paks (90036Q20 for example), or in a service kit. All service kits are listed below:

Available Service Kits:

***** Air Motor Service Kit.....900014
3:1 Fluid Service Kit.....900009
5:1 Fluid Service Kit.....900010

*** Air motor service kit is for both the 3:1 and 5:1 ratio pumps.**

Panther® Repair Kits

831014 - Complete air motor for Panther® Series pumps 1130-010 & 1130-011.

831614 - Complete air motor for Panther® HP Series pumps.

900009 - Fluid seals kit for Panther® 1130-010 pumps.

900010 - Fluid seals kit for Panther® 1130-011 pumps.

900011 - Air motor repair kit for 1130-010 & 1130-011 Panther® pumps with Delrin inserts.

900014 - Air motor repair kit for 1130-010 & 1130-011 Panther® pumps without Delrin inserts.

900015 - Air motor repair kit for Panther® grease pumps 1150-006, 1150-007, & 1150-008. (Does not include piston.)

900016 - Repair kit for lower assembly for Panther® grease pumps 1150-006, 1150-007, & 1150-008.

900019 - Air motor repair kit for 1130-015 & 1130-016 Panther® pumps.

900020 - Fluid seals kit for Panther® 1130-015 pumps.

900021 - Fluid seals kit for Panther® 1130-016 pumps.

900022 - Repair kit for lower assembly for Panther® grease pumps 1150-009, 1150-010, & 1150-011.

Notes:

For Warranty Information Visit:
www.balcrank.com

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