



The History of Balcrank

Balcrank began in 1906 in the heart of Cincinnati, Ohio's "Machine Tool Colony" as the Cincinnati Ball Crank Company. The first products produced by Balcrank were handwheels and cranks used by the machine tool industry. That same year Balcrank became the first mass producer of starting cranks for automobiles. In 1908 Balcrank entered the automotive industry with the manufacturing of steering drag links. The steering drag links were an immediate hit. Almost every car manufacturer adopted these Balcrank drag links and for the first time, steering a car became an easy task, instead of a laborious chore.

To follow its drag links were ball-sockets for spark and throttle control. Next came the famous Balcrank "bumpers". From that time on, Balcrank's place in the automotive picture was set.

Always looking forward, in 1922 Balcrank entered the lubrication field. The company secured both the patents and services of Clyde Butler, one of the nation's leading lubrication engineers. His inventions made Balcrank a pioneer in the field. He left behind scores of inventions which the world has adopted and still uses today.

During World War II, Balcrank was one of the very first to offer its plant services and facilities for government use, and at the end of the war, Balcrank had an "E" flag with four stars, which was indeed an honor. People always referred to the company as Ball Crank, so in 1943 the Board of Directors voted to change the name of the company to Balcrank, Inc.

Balcrank is one of the oldest manufacturers of automotive products. Many of the methods and devices used in lubrication service today stem from the basic patents of Balcrank and its engineers.

Balcrank now resides in the Blue Ridge Mountains of Weaverville, NC, continuing its rich history, and is still at the heart of the American automotive industry. Since its beginning, Balcrank has been providing its customers with the best products for the ever changing automotive and industrial markets that exist today. Balcrank and its employees want to thank you for your business, and look forward to the opportunities of tomorrow.





Balcrank's Achievements



Balcrank entered the lubrication equipment field in 1922 and since then has developed many "firsts" in the industry, thus attaining a recognized position of leadership in design and engineering progress. All Balcrank equipment is built to meet the highest standards of quality control and performance requirements.



- 1906 First in mass production of machine handles for the machine tool industry.
- 1908 First in the mass production of the ball-socket type of tie-rod and drag-link steering connections.
- 1909 First in mass production of starting cranks for automobiles
- 1920 First and only mass producer of tubular bumpers for automobiles
- 1923 First patents on hydraulic coupler and fittings now universally used
- 1923 First high pressure foot operated volume grease gun - Model D - known the world over
- 1924 First high pressure air operated volume grease gun
- 1926 First power driven lubricator dispensing from the original grease container
- 1927 First air operated, high pressure, single shot, 116 power gun, Model PC
- 1928 First multiple outlet super station grease systems with grease storage containers built in 100 and 500 lb. capacities, Model C and ML



- 1929 First consistent air primed high-pressure volume gun for viscous lubricants, Model ZZ
- 1933 First level gun for "in line" operation on push type fittings
- 1935 First drum shell covers with pumps mounted for housing and dispensing from original grease containers



- 1943 First complete pneumatic lubrication center housed underground.
- 1948 Engineered and released new Jet Power Pump
- 1952 First pressure-matic adapter for Hi and Lo pressure lubrication
- 1958 First large capacity reels offered in a deluxe cabinet
- 1963 First pre-set oil meters for large capacity crankcase fill
- 1979 First high pressure safety handle. Must be attached to fittings
- 1987 Introduced the Director Jr. simplified inventory control system
- 1996 Introduced the Roughneck self evacuating drain
- 1999 Introduced Panther 3:1 and 5:1 air operated pumps
- 2003 Introduced Tiger 5:1 pump
- 2006 Introduced inductor pumping systems for bulk grease dispensing
- 2007 Introduced Fusion Wireless Fluid Inventory Control Systems
- 2008 Introduced a full range of Diesel Exhaust Fluid (DEF) dispensing systems
- 2009 Balcrank acquired by the Moratiel Group, one of the largest and truly global enterprises focused on fluid transfer systems for the automotive and industrial markets.
- 2010 Introduced Lynx series of pumps and outfits. 1:1, 2:1, 3:1 & 5:1
- 2010 Introduced ILM (in-line metered) series handles in both analog and electronic display



Contents

PUMPS

Piston Pumps	
Lynx Selection Guide	6-7
Lynx Pumps, Outfits & Accessories	8-13
Pride Series Selection Guide	14-15
Panther® HP Pumps, Outfits & Accessories	16-19
Tiger® HP Pump, Outfits & Accessories	20-21
Lion™ HP Pumps, Outfits & Accessories	22-25
Pump Kit & Accessories	26-27
Portable Dispensers	28-29
Tank Packages & Complete Outfits	30-32
Grease Pumps	
Selection Guide	33
Jet Power 50:1 Pump, Outfits & Accessories	34-35
Panther® HP 50:1 Pump, Outfits & Accessories	36-37
Lion™ HP 50:1 Pump, Outfits & Accessories	38-39
Grease Inductors	40
Accessory Kits	41
Diaphragm Pumps & Accessories	42-45
Manual Pumps	46
Mobile Lube Equipment	47-48
Repair Kits	49
QUICK LUBE LAYOUT & EQUIPMENT LIST	50-51
PIPING SPECS	52

HOSE REELS

Signature Series Reels	54-55
Premium Series Reels	56-57
Premium EVX Reels	58-59
Enclosed Reels	60-61
Hose Reel Accessories	62
Island Lube Console	63
Replacement Hoses	64

CONTROL HANDLES

Pro Series Control Handles	66-68
Classic Series Control Handles	69-70
In-line Series	71-73
Control Handle Accessories	74
Grease Handles	75-76
Grease Accessories	77

OIL BAR

FLUID INVENTORY CONTROL

Fusion	80-81
Spectrum™ 1000	82-83
Spectrum™ 100	84-86
Director Jr.	87
Pump Sentinel	88

USED OIL EQUIPMENT

Drains & Accessories	90-91
Oil & Fuel Evacuators	92
Used Fluid Outfits	93
Truck Drains	94
Evacuation Systems	95
Evac	96

ACCESSORIES

Filter-Regulator-Lubricators	98-99
Hose End, Accessories, Couplers, Fittings, Adapters	100-102

BROOKINS

Hand Pumps	104
Hose Reels	105
Light Cord Reels	105
Grease Guns & Accessories	106
Accessories	107

INDEX	108-112
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Fluid Dispensing Systems

PUMPS



PISTON PUMPS | LYNX SERIES



LYNX 1:1



LYNX 2:1

SELECTION GUIDE	1110-010	1160-009
LINE LENGTH	100 ft	250 ft
FREE FLOW, GPM @150 PSI AIR	10.6	8.2
FLUID TYPES	Petroleum based oils Synthetic oils	Anti freeze Windshield fluids
TYPICAL APPLICATIONS	All Shops with Transfer fluid needs	Automotive Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining
REFERENCE DATA		
CATALOG PAGES	8-9	9-10
SERVICE BULLETIN	SB1102	SB1105

SELECTION GUIDE



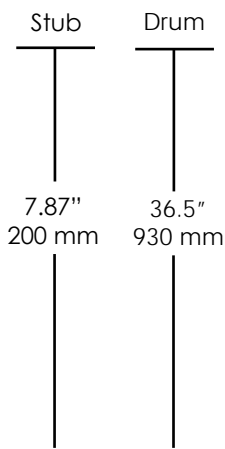
LYNX 3:1



LYNX 5:1

SELECTION GUIDE	1110-007	1110-011
LINE LENGTH	500 ft	700 ft
FREE FLOW, GPM @150 PSI AIR	6.6	5.3
FLUID TYPES	Petroleum based oils Synthetic oils	Petroleum based oils Synthetic oils
TYPICAL APPLICATIONS	Automotive Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining	Automotive Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining
REFERENCE DATA		
CATALOG PAGES	11-12	31-14
SERVICE BULLETIN	SB1101	SB1106

PISTON PUMPS | LYNX 1:1/ 2:1 PUMP



The Lynx 1:1 and 2:1 double action pumps are engineered for outstanding performance and reliability to transfer fluid from pails, drums, tanks, and totes. The Lynx pump provides fast delivery of cutting, synthetic, hydraulic, and mineral based lubricants.

The Lynx 2:1 multi-fluid pump is designed to provide the capabilities and versatility needed to transfer fluids to the point of application. Example of fluids: Detergents, cleaning fluids, synthetic hydraulic oil, antifreeze, windshield fluids, solvents, sealants or other corrosive fluids, etc, compatible with AISI 316, PTFE and Viton. NOTE: Warning! Do not use any Lynx series products with flammable fluids.

FEATURES:

- Double acting positive displacement pump – delivers fast uniform, constant flow.
- Patented air valve – designed to operate with low air consumption and moist air.
- Air valve design has fewer components - for reliable operation; easy and economical maintenance.
- Factory lubricated air motor - no need for air lubricator.
- Built in sintered brass air filter – assures clean & quiet operation
- Anodized aluminum air piston – corrosion resistant, less sensitive to moisture in air system.
- Height adjustable 2" bung adapter – to fit all types of drums, drum covers, tanks, etc
- Pump inlet easily accepts a variety of extensions - to fit all types and sizes of tanks and containers.

Technical data

Pump ratio: 1:1 or 2:1
 Operating air pressure range: 45 -150 PSI (3 -10 bar)
 Pump delivery with SAE 10-30 oil,
 68° F, 150 PSI air pressure and free flow:
 1:1 -10.6 GPM (40L/min)
 2:1 - 8.2 GPM (30L/min)
 Air inlet: 1/4" NPT (F)
 Pump outlet: 1:1 - 3/4" NPT (F)
 2:1 - 3/4" NPT (M)
 Pump inlet: (stub only) 1" NPT (F)
 Pump tube diameter: 2" / 51 mm
 Wetted materials:
 1:1 pumps..... steel, brass, aluminum, NBR and polyurethane
 2:1 drum 316SS, Viton, & PTFE

MODELS AVAILABLE

- | | |
|----------|--|
| 1110-010 | 1:1 Bare stub pump with bung adapter |
| 1110-009 | 1:1 Bare drum pump with bung adapter |
| 1160-009 | 2:1 Bare stainless steel drum pump with bung adapter |

PISTON PUMPS | LYNX 1:1 / 2:1 OUTFITS

Stationary Outfit:



	1111 - 010	1111 - 011	1111 - 009	1161 - 003
Description	Pump & Hose Outfit (Stub)	Pump & Hose Outfit (Drum)	Pump & Spigot Outfit (Drum)	2:1 SS Pump & Hose Outfit (Drum)
Outfit Includes:				
Bare Pump	1110-010	1110-009	1110-009	1160-009
Bung Adapter	4411-021	4411-021	4411-021	4411-021
Air Hose (5' x 3/8")	8132-005	8132-005	-	8132-005
Fluid Hose (5' x 3/4")	8261-005	8261-005	-	8261-005
Spigot	-	-	4200-013	-

Portable Outfit:



	1111 - 012	1111 - 013	1111 - 014
Description	55 Gal. Drum Outfit (Dolly)	16 Gal. Drum Outfit (Dolly)	55 Gal. Drum Outfit (Cart)
Outfit Includes:			
Bare Pump	1110-009	1110-010	1110-009
Bung Adapter	4411-021	4411-021	4411-021
Filter Regulator (1/4")	3260-033	3260-033	3260-033
Fluid Hose (10' x 3/4")	8263-010	8263-010	8263-010
High Flow Handle	3320-019	3320-019	3320-019
Suction Tube or Kit	-	832967	-
Dolly / Cart	4310-004	4310-003	4320-008

PISTON PUMPS | LYNX 3:1 PUMP



The Lynx 3:1 ratio double action pump is engineered for outstanding performance and reliability to dispense lubricating oils and similar products up to SAE 90 in piped systems

FEATURES:

- Double acting positive displacement pump – delivers fast uniform, constant flow.
- Patented air valve – designed to operate with low air consumption and moist air.
- Air valve design has fewer components - for reliable operation; easy and economical maintenance.
- Factory lubricated air motor - no need for air lubricator.
- Built in sintered brass air filter – assures clean & quiet operation
- Anodized aluminum air piston – corrosion resistant, less sensitive to moisture in air system.
- Height adjustable 2" bung adapter – to fit all types of drums, drum covers, tanks, etc
- Pump inlet easily accepts a variety of extensions - to fit all types and sizes of tanks and containers.

Technical data

Pump ratio: 3:1
 Operating air pressure range: 45 -150 PSI (3 -10 bar)
 Pump delivery with SAE 10-30 oil, 68° F, 150 PSI air pressure and free flow: 6.6 GPM (25L/min)
 Air inlet: 1/4" NPT (F)
 Pump outlet: 3/4" NPT (F)
 Pump inlet: 3/4" NPT (F)
 Pump tube diameter: 1 1/4" / 32 mm
 Wetted materials:
 steel, brass, aluminum, NBR and polyurethane

Note: Thermal expansion of the fluid in a distribution system can cause an increase in system pressure that can damage fluid distribution system components. Pressure relief valve, 3120-019 is recommended.

MODELS AVAILABLE

1110-007 Bare stub pump with bung adapter

PISTON PUMPS | LYNX 3:1 OUTFITS

Stationary Outfits:



*Drum Not Included

	1111- 015	1111-016
Description	Pump & Hose Outfit	Pump & Wall Mount Outfit
Outfit Includes		
Bare Pump	1110-007	1110-007
Bung Adapter	4411-022	4411-022
Air Hose (5' x 3/8")	8132-005	8132-005
Fluid Hose (5' x 3/4")	8261-005	8261-005
Wall Mount Bracket	-	4411-008
Suction Side Bung Adapter	-	4411-011

Portable Outfits:



*Drum Not Included

*Drum Not Included

*Drum Not Included

*Drum Not Included

*Hose Reel Optional

	1111- 005	1111- 007	1111- 006	1111- 008	1111- 021
Description	16 Gal. Drum Outfit	55 Gal. Drum Outfit	16 Gal. Drum Outfit	55 Gal. Drum Outfit	24 Gal Mini Bulk Outfit
Includes	(Dolly)	(Dolly)	(Cart)	(Cart)	
Bare Pump	1110-007	1110-007	1110-007	1110-007	1110-007
Bung Adapter	4411-022	4411-022	4411-022	4411-022	4411-022
Filter Regulator (1/4")	3260-033	3260-033	3260-033	3260-033	3260-033
Fluid Hose (10' x 1/2")	8249-010	8249-010	8249-010	8249-010	8249-010
Analog Control Handle	3330-146	3330-146	3330-146	3330-146	3330-146
Suction Tube or Kit	832884	832916	832844	832916	832959
Dolly / Cart	4310-003	4310-004	4320-009	4320-008	-

PISTON PUMPS | LYNX 5:1 PUMP



The Lynx 5:1 ratio double action pump is engineered for outstanding performance and reliability. The Lynx 5:1 pump is designed to dispense lubricating oils and similar products up to SAE 140 in piped systems

FEATURES:

- Double acting positive displacement pump – delivers fast uniform, constant flow.
- Patented air valve – designed to operate with low air consumption and moist air.
- Air valve design has fewer components - for reliable operation; easy and economical maintenance.
- Factory lubricated air motor - no need for air lubricator.
- Built in sintered brass air filter – assures clean & quiet operation
- Anodized aluminum air piston – corrosion resistant, less sensitive to moisture in air system.
- Height adjustable 2" bung adapter – to fit all types of drums, drum covers, tanks, etc
- Pump inlet easily accepts a variety of extensions - to fit all types and sizes of tanks and containers.

Technical data

Pump ratio:	5:1
Maximum air pressure:.....	150 PSI (10 bar)
Minimum air pressure:	45 PSI (3 bar)
Pump delivery with SAE 10-30 oil, 68°F, 150 PSI air pressure and free flow:	5.3 GPM (20L/min)
Air inlet:.....	1/4"NPT (F)
Pump outlet:	3/4"NPT (F)
Pump inlet:.....	3/4"NPT (F)
Pump tube diameter:.....	1 1/4" / 32mm
Wetted materials: steel, brass, aluminum, NBR and polyurethane

Note: Thermal expansion of the fluid in a distribution system can cause an increase in system pressure that can damage fluid distribution system components. Pressure relief valve, 3120-019 is recommended.

MODELS AVAILABLE

1110-011 Bare stub pump with bung adapter

PISTON PUMPS | LYNX 5:1 OUTFITS

Stationary Outfits:



*Drum Not Included

	1111-017	1111-018
Description	Pump & Hose Outfit (Stub)	Pump & Wall Mount Outfit
Outfit Includes:		
Bare Pump	1110-011	1110-011
Bung Adapter	4411-022	4411-022
Air Hose (5' x 3/8")	8132-005	8132-005
Fluid Hose (5' x 3/4")	8261-005	8261-005
Wall Mount Kit	-	4411-008
Suction Side Bung Adapter	-	4411-011

Portable Outfits:



*Drum Not Included *Drum Not Included *Drum Not Included *Drum Not Included *Hose Reel Optional

	1111-019	1111-020	1111-022	1111-023	1111-024
Description	16 Gal. Drum Outfit	55 Gal. Drum Outfit	16 Gal. Drum Outfit	55 Gal. Drum Outfit	24 Gal Mini Bulk Outfit
Includes	(Dolly)	(Dolly)	(Cart)	(Cart)	
Bare Pump	1110-011	1110-011	1110-011	1110-011	1110-011
Bung Adapter	4411-022	4411-022	4411-022	4411-022	4411-022
Filter Regulator (1/4")	3260-033	3260-033	3260-033	3260-033	3260-033
Fluid Hose (10' x 1/2")	8249-010	8249-010	8249-010	8249-010	8263-010
Analog Control Handle	3330-146	3330-146	3330-146	3330-146	3330-146
Suction Tube or Kit	832884	832916	832884	832916	832959
Dolly / Cart	4310-003	4310-004	4320-009	4320-008	-

PISTON PUMPS | PRIDE SERIES



PANTHER® HP 3:1

PANTHER® HP 5:1

SELECTION GUIDE	1130-015	1130-016
LINE LENGTH	500 ft	700 ft
DISPENSE POINTS (SIMULTANEOUS)	3	2
FREE FLOW, GPM @ 100 PSI AIR	7.5	5.5
FLUID TYPES	Petroleum based oils Synthetic oils	Petroleum based oils Synthetic oils
TYPICAL APPLICATIONS	Automotive Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining	Automotive Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining
REFERENCE DATA		
CATALOG PAGES	16-17	18-19
SERVICE BULLETIN	SB 1064	SB 1064

SELECTION GUIDE



TIGER® HP 6:1



LION™ HP 5:1



LION™ HP 10:1

SELECTION GUIDE	1130-019	1130-027	1130-024
LINE LENGTH	700 ft	700 ft	1,000 ft
DISPENSE POINTS (SIMULTANEOUS)	6	10	6
FREE FLOW, GPM @ 100 PSI AIR	20.0	27.0	16.5
FLUID TYPES	Petroleum based oils Synthetic oils Antifreeze (Stainless Model)	Petroleum based oils Synthetic oils	Petroleum based oils Synthetic oils
TYPICAL APPLICATIONS	Automotive Dealerships Fleet Service Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining	Automotive Dealerships Fleet Service Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining	Large Automotive Dealerships Large Fleet Service Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining
REFERENCE DATA			
CATALOG PAGES	20-21	22-23	24-25
SERVICE BULLETIN	SB1065	SB 1073	SB 1073

PISTON PUMPS | PANTHER® HP 3:1 PUMPS



FEATURES:

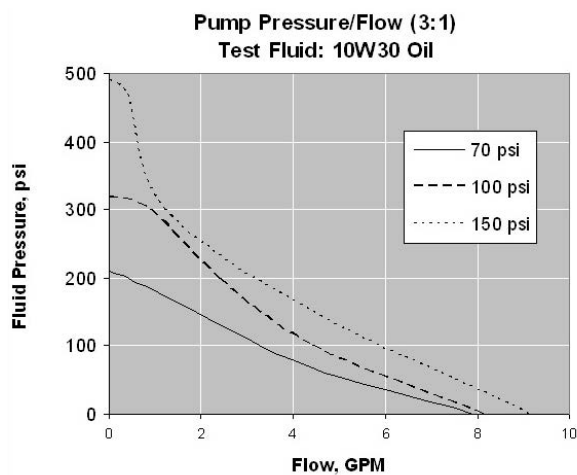
- Pressure relief on carbon steel models - Built in safety feature reduces premature wear of hoses and seals
- Mechanical air valve - More reliable, no stalling and no icing
- Designed for lower air consumption - Extends compressor life
- Built in muffler - Results in quiet operation and eliminates icing
- Stainless steel pump rod - Reduces corrosion and extends seal life
- Double acting pump lower - Delivers consistent fluid flow with greater dispensing accuracy

SPECIFICATIONS

Eff. diameter	2.50"
Operating air pressure range	10 -150 PSI
Air consumption (@100 PSI & 4 GPM)	19.70 SCFM
Max fluid stall pressure @150 PSI air	490 PSI
Air inlet	1/4" NPT (F)
Fluid inlet	1" NPT(F) 1-1/2" NPT (M)
Fluid outlet	3/4" NPT (F)
Cycles per gallon	34
Wetted materials	Carbon Steel, Buna, SS, Nickel Plated Steel, Nylon, Ultrathane Zinc Plated Steel
Service bulletin	SB1064

MODELS AVAILABLE

- 1130-015 Carbon Steel Stub
- 1130-017 Carbon Steel Stub, Flange Mount
- 1130-020 Carbon Steel Stub with Bung Adapter





*Drum not included



*Drum not included

OUTFIT	1131-007	1131-009	1131-013
DESCRIPTION	Wall Mount Outfit	Pump and Hose Outfit	16 Gallon Portable Outfit
BARE PUMP	1130-015	1130-015	1130-015
BUNG ADAPTER	4411-009	4411-009	4411-009
AIR HOSE	8132-005	8132-005	-
FLUID HOSE	8249-005	8249-005	8249-010
SUCTION TUBE OR KIT	4410-034	-	4412-006
WALL MOUNT BRACKET	4411-008	-	-
CONTROL HANDLE	-	-	3330-143
DRUM COVER	-	-	4420-005
DOLLY	-	-	4310-001

ACCESSORIES (Pg. 26)

SUCTION TUBES:

- 4412-006 1" NPT(M) x 20" for 16 gallon drum
- 4412-008 1" NPT(M) x 26-1/2" for 55 gallon drum
- 4412-012 1" NPT(M) Telescoping - 22 1/2"-42 1/2"

LOW LEVEL CUT-OFF:

- 4411-010 3/4" and/or 1" thread

PUMP OVER-RUN CONTROL:

- 3241-002 1/4" NPT(F)

FILTER REGULATOR LUBRICATOR:

- 3260-049 1/4" NPT(F)

EXTERNAL PRESSURE RELIEF:

- 3120-019

SUCTION CHECK VALVES AND KIT:

- 4411-015 1" NPT(F)
- 4411-019 1" NPT(F), Vented

DOLLY BASES:

- 4310-001 16 gallon
- 4310-003 16 gallon wide track
- 4310-004 55 gallon heavy duty

DRUM COVERS:

- 4420-005 16 gallon
- 4420-007 55 gallon

DRUM CARTS:

- 4320-004 16 gallon
- 4320-006 30 gallon
- 4320-008 16 -55 gallon

BUNG ADAPTERS:

- 4411-009 Aluminum
- 4411-018 Double tapped bushing

WALL MOUNT BRACKET:

- 4411-008

PISTON PUMPS | PANTHER[®] HP 5:1 PUMPS



FEATURES:

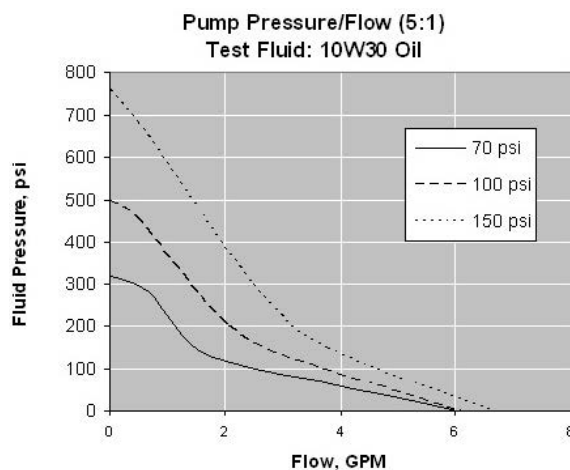
- Pressure relief on carbon steel models - Built in safety feature reduces premature wear of hoses and seals
- Mechanical air valve - More reliable, no stalling and no icing
- Designed for lower air consumption - Extends compressor life
- Built in muffler - Results in quiet operation and eliminates icing
- Stainless steel pump rod - Reduces corrosion and extends seal life
- Double acting pump lower - Delivers consistent fluid flow with greater dispensing accuracy

SPECIFICATIONS

Eff. diameter	2.50"
Operating air pressure range	10-150 PSI
Air consumption (@100 PSI & 3 GPM)	24.8 SCFM
Max fluid stall pressure @150 PSI air	760 PSI
Air inlet	1/4" NPT (F)
Fluid inlet	1"NPT (F) 1-1/2"NPT (M)
Fluid outlet	1/2" NPT (F)
Cycles per gallon	.57
Wetted materials	Carbon Steel, Buna, SS, Nickel Plated Steel, Nylon, Ultrathane Zinc Plated Steel
Service bulletin	SB1064

MODELS AVAILABLE

- 1130-016 Carbon Steel Stub
- 1130-018 Carbon Steel Stub, Flange Mount
- 1130-021 Carbon Steel Stub with Bung Adapter



PISTON PUMPS | PANTHER® HP 5:1 OUTFITS



*Drum not included



*Drum not included

OUTFIT	1131-008	1131-010	1131-014
DESCRIPTION	Wall Mount Outfit	Pump and Hose Outfit	16 Gallon Portable Outfit
BARE PUMP	1130-016	1130-016	1130-016
BUNG ADAPTER	4411-009	4411-009	4411-009
AIR HOSE	8132-005	8132-005	
FLUID HOSE	8249-005	8249-005	8249-010
SUCTION TUBE OR KIT	4410-034	-	4412-006
WALL MOUNT BRACKET	4411-008	-	-
CONTROL HANDLE	-	-	3330-143
DRUM COVER	-	-	4420-005
DOLLY	-	-	4310-001

ACCESSORIES (Pg. 26)

SUCTION TUBES:

- 4412-006 1" NPT(M) x 20" for 16 gallon drum
- 4412-008 1" NPT(M) x 26-1/2" for 55 gallon drum
- 4412-012 1" NPT(M) Telescoping - 22 1/2"-42 1/2"

LOW LEVEL CUT-OFF:

- 4411-010 3/4" and/or 1" thread

PUMP OVER-RUN CONTROL:

- 3241-002 1/4" NPT(F)

FILTER REGULATOR LUBRICATOR:

- 3260-049 1/4" NPT(F)

EXTERNAL PRESSURE RELIEF:

- 3120-020

SUCTION CHECK VALVES AND KIT:

- 4411-015 1" NPT(F)
- 4411-019 1" NPT(F), Vented

DOLLY BASES:

- 4310-001 16 gallon
- 4310-003 16 gallon wide track
- 4310-004 55 gallon heavy duty

DRUM COVERS:

- 4420-005 16 gallon
- 4420-007 55 gallon

DRUM CARTS:

- 4320-004 16 gallon
- 4320-006 30 gallon
- 4320-008 16 -55 gallon

BUNG ADAPTERS:

- 4411-009 Aluminum
- 4411-018 Double Tapped Bushing

WALL MOUNT BRACKET:

- 4411-008

PISTON PUMPS | TIGER® HP 6:1 PUMPS



FEATURES:

- Pressure relief on carbon steel models - Built in safety feature reduces premature wear of hoses and seals
- Mechanical air valve - More reliable, no stalling and no icing
- Designed for lower air consumption - Extends compressor life
- Built in muffler - Results in quiet operation and eliminates icing
- Stainless steel pump rod - Reduces corrosion and extends seal life
- Double acting pump lower - Delivers consistent fluid flow with greater dispensing accuracy

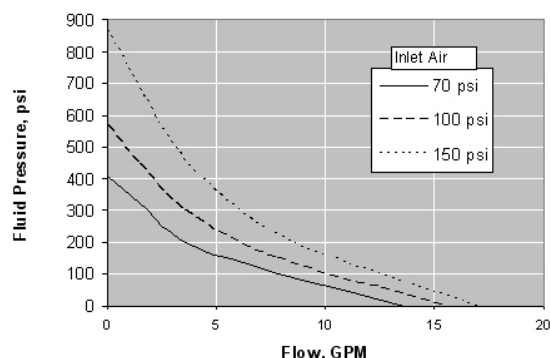
SPECIFICATIONS

Eff. diameter	3.20"
Operating air pressure range	40-150 PSI
Air consumption (@100 PSI & 8 GPM)	59 SCFM
Max fluid stall pressure @150 PSI air	870 PSI
Air inlet	3/8" NPT(F)
Fluid inlet	1" NPT(F) 1-1/2" NPT(M)
Fluid outlet	3/4" NPT(F)
Cycles per gallon	31
Wetted materials	Carbon Steel, Buna, SS, Nickel Plated Steel, Ultrathane Viton, Nylon
Service bulletin	SB1065

MODELS AVAILABLE

1130-019	Carbon Steel Stub
1130-025	Carbon Steel Stub, Flange Mount
1130-026	Carbon Steel Stub with Bung Adapter
1160-007	Stainless Steel Stub (Pressure relief not built-in)

Pump Pressure/Flow (6:1) Test
Fluid: 10W30 Oil





*Drum not included

OUTFIT	1131-054	1131-005
DESCRIPTION	Wall Mount Outfit	Pump and Hose Outfit
BARE PUMP	1130-019	1130-019
BUNG ADAPTER	4411-009	4411-009
AIR HOSE	8134-005	8134-005
FLUID HOSE	8264-005	8264-005
SUCTION TUBE OR KIT	4410-034	-
WALL MOUNT BRACKET	4411-008	-

ACCESSORIES (Pg. 26)

SUCTION TUBES:

- 4412-007 1" NPT (M) X 26-½" S/S for 55 gallon drum
- 4412-008 1" NPT(M) x 26-½" for 55 gallon drum
- 4412-012 1" NPT(M) Telescoping - 22 ½"-42 ½"

LOW LEVEL CUT-OFF:

- 4411-010 ¾" and/or 1" thread

PUMP OVER-RUN CONTROL:

- 3241-001 ½" NPT(F)

FILTER REGULATOR LUBRICATOR:

- 3260-050 ⅜" NPT(F)

EXTERNAL PRESSURE RELIEF:

- 3120-019

SUCTION CHECK VALVES AND KIT:

- 4411-015 1" NPT(F)
- 4411-019 1" NPT(F), Vented

DOLLY BASES:

- 4310-001 16 gallon
- 4310-003 16 gallon wide track
- 4310-004 55 gallon heavy duty

DRUM COVERS:

- 4420-005 16 gallon
- 4420-007 55 gallon

DRUM CARTS:

- 4320-004 16 gallon
- 4320-006 30 gallon
- 4320-008 16 -55 gallon

BUNG ADAPTERS:

- 4411-009 Aluminum
- 4411-017 Nickel Plated

WALL MOUNT BRACKET:

- 4411-008

PISTON PUMPS | LION™ HP 5:1 PUMP



FEATURES:

- Mechanical air valve - More reliable, no stalling and no icing
- Designed for lower air consumption - Extends compressor life
- Built in muffler - Results in quiet operation and eliminates icing
- Stainless steel pump rod - Reduces corrosion and extends seal life
- Double acting pump lower - Delivers consistent fluid flow with greater dispensing accuracy

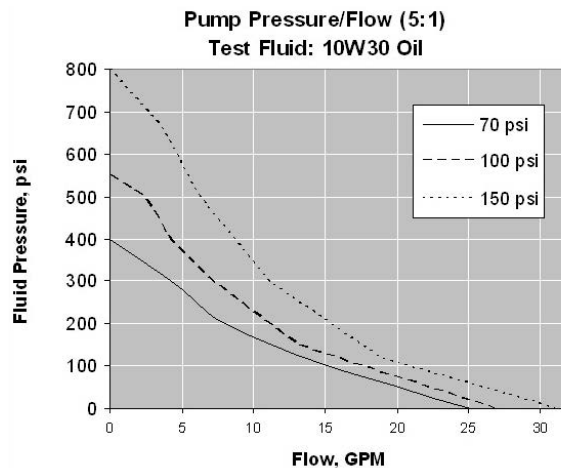
SPECIFICATIONS

Eff. diameter	4.25"
Operating air pressure range	30-150 PSI
Air consumption (@100 PSI air & 8 GPM)	47 SCFM
Max fluid stall pressure @150 PSI air	800 PSI
Air inlet	1/2" NPT(F)
Fluid inlet	1-1/2" NPT(F)
Fluid outlet	3/4" NPT(F)
Cycles per gallon	14
Wetted materials	Carbon Steel, Buna, Brass, Nickel Plated Steel, Aluminum Polyurethane
Service bulletin	SB1073

10 1/2"

MODELS AVAILABLE

1130-027 Carbon Steel Stub





OUTFIT	1131-025	1131-056
DESCRIPTION	Wall Mount Outfit	Pump and Hose Outfit
BARE PUMP	1130-027	1130-027
AIR HOSE	8144-005	8144-005
FLUID HOSE	8264-005	8264-005
SUCTION TUBE OR KIT	4412-016	-
WALL MOUNT BRACKET	4411-001	-

ACCESSORIES (Pg. 26)

LOW LEVEL CUT-OFF:

4411-005 1-1/2" thread

PUMP OVER-RUN CONTROL:

3241-001 1/2" NPT(F)

FILTER REGULATOR LUBRICATOR:

3260-051 1/2" NPT(F)

EXTERNAL PRESSURE RELIEF:

3120-019

SUCTION CHECK VALVE:

4411-015 1" NPT(F)

DOLLY BASE:

4310-004 55 gallon heavy duty

DRUM COVER:

4420-007

DRUM CARTS:

4320-006 30 gallon
4320-008 16 -55 gallon

WALL MOUNT BRACKET:

4411-001

PISTON PUMPS | LION™ HP 10:1 PUMP



FEATURES:

- Pressure relief on carbon steel models - Built in safety feature reduces premature wear of hoses and seals
- Mechanical air valve - More reliable, no stalling, and no icing
- Designed for lower air consumption - Extends compressor life
- Built in muffler - Results in quiet operation and eliminates icing
- Stainless steel pump rod - Reduces corrosion and extends seal life
- Double acting pump lower - Delivers consistent fluid flow with greater dispensing accuracy

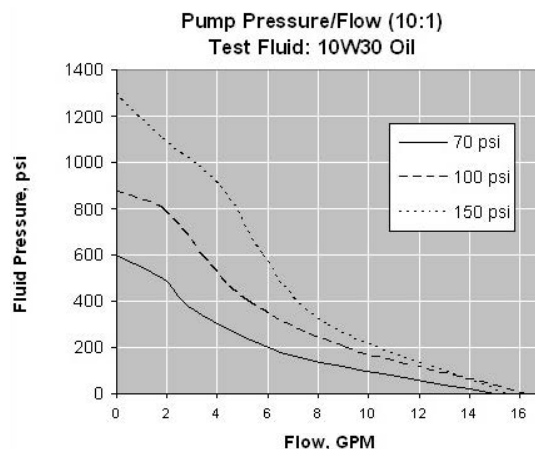
SPECIFICATIONS

Eff. diameter	4.25"
Operating air pressure range	30-150 PSI
Air consumption (@100 PSI air & 4 GPM)	46 SCFM
Max fluid stall pressure @150 PSI air	1,300 PSI
Air inlet	1/2" NPT(F)
Fluid inlet	1" NPT (F)
Fluid outlet	3/4" NPT(F)
Cycles per gallon	28
Wetted materials.	Carbon Steel, Buna, Brass, Nickel Plated Steel, Aluminum Nylon, Ultrathane, Viton, SS
Service bulletin	.SB1073

6 1/4"

MODELS AVAILABLE

1130-024 Carbon Steel Stub





OUTFIT	1131-026	1131-004
DESCRIPTION	Wall Mount Outfit	Pump and Hose Outfit
BARE PUMP	1130-024	1130-024
BUNG ADAPTER	-	-
AIR HOSE	8144-005	8144-005
FLUID HOSE	8264-005	8264-005
SUCTION TUBE OR KIT	4412-015	-
WALL MOUNT BRACKET	4411-001	-

ACCESSORIES (Pg. 26)

SUCTION TUBES:

- 4412-008 1" NPT(M) x 26-1/2" for 55 gallon drum
- 4412-012 1" NPT(M) Telescoping - 22 1/2"-42 1/2"

LOW LEVEL CUT-OFF:

- 4411-010 3/4" and/or 1" thread

PUMP OVER-RUN CONTROL:

- 3241-001 1/2" NPT(F)

FILTER REGULATOR LUBRICATOR:

- 3260-051 1/2" NPT(F)

EXTERNAL PRESSURE RELIEF:

- 3120-025

SUCTION CHECK VALVES AND KIT:

- 4411-015 1" NPT(F)
- 4411-019 1" NPT(F), Vented

DOLLY BASE:

- 4310-004 55 gallon heavy duty

DRUM COVER:

- 4420-007 55 gallon

DRUM CARTS:

- 4320-006 30 gallon
- 4320-008 16 -55 gallon

WALL MOUNT BRACKET:

- 4411-001

PISTON PUMPS | PUMP ACCESSORIES

DOLLY BASES:

4310-001	16 gallon
4310-003	16 gallon wide track
4310-004	55 gallon heavy duty



4310-001



4310-003



4310-004

DRUM COVERS:

4420-005	16 gallon
4420-007	55 gallon



4420-005



4420-007

DRUM CARTS:

4320-008	55 gallon
4320-009	16 gallon



4320-009



4320-008

BUNG ADAPTERS:

4411-007	Steel - Lion 5:1
4411-009	Aluminum - Panther, Tiger
4411-009Q	10 pack Aluminum - Panther, Tiger
4411-012	Poly - Drum
4411-017	Nickel Plated - Bobcat, Tiger
4411-018	Double Tapped Bushing
4411-021	Lynx 1:1, 2:1
4411-023	Lynx, 3:1, 5:1



4411-007

4411-021
4411-0234411-017
4411-009

4411-018

WALL MOUNT BRACKET:

4411-001	Lion
4411-008	Lynx, Panther, Tiger



4411-008



4411-001

SUCTION TUBES:

4412-006	1" NPT(M) x 20" for 16 gallon drum
4412-007	1" NPT(M) x 26-1/2" S/S for 55 gallon drum
4412-008	1" NPT(M) x 26-1/2" for 55 gallon drum
4412-012	1" NPT(M) Telescoping - 22 1/2" - 42 1/2"



4412-006

LOW LEVEL CUT-OFF:

Prevents air intake when fluid runs out

4411-005	1-1/2" thread
4411-010	3/4" thread and/or 1" thread



4411-010

PUMP OVER-RUN CONTROL:

3241-001	1/2" NPT(F)
3241-002	1/4" NPT(F)



3241-001



3241-002

SUCTION CHECK VALVES AND KIT:

4411-015	1" NPT(F)
4411-019	1" NPT(F), Vented
4411-020	3/4" NPT(F)



4411-019

LYNX KITS

4410-058	Wall Mount Kit	4410-057	1:1 Hose & Suction Kit (16 gal)	4410-054	Hose Kit
8132-005	3/8" x 5' Air Hose	8263-010	3/4" x 10' Fluid Hose	8132-005	3/8" x 5' Air Hose
8261-005	3/4" x 5' Fluid Hose	832967	1" Suction Tube	8261-005	3/4" x 5' Fluid Hose
832968	3/4" Suction tube			3270-003	Coupler
8171-006	3/4" x 6" Suction hose			3270-039	Nipple
4411-011	Bung Adapter	4410-059	3:1 / 5:1 Hose & Suction Kit (16 gal)		
4411-008	Wall Mount Bracket	8263-010	3/4" x 10' Fluid Hose		
		832884	3/4" Suction Tube		
		4410-060	3:1 / 5:1 Hose & Suction Kit (55 gal)		
		8263-010	3/4" x 10' Fluid Hose		
		832916	3/4" Suction Tube		

PANTHER® HP KITS

4410-022	Wall Mount Kit	4410-027	Hose & Suction Kit	4410-055	Hose Kit
8132-005	3/8" x 5' Air Hose	8132-005	3/8" x 5' Air Hose	8132-005	3/8" x 5' Air Hose
8249-005	1/2" x 5' Fluid Hose	8249-005	1/2" x 5' Fluid Hose	8249-005	1/2" x 5' Fluid Hose
3270-003	Coupler	3270-003	Coupler	3270-003	Coupler
3270-039	Nipple	3270-039	Nipple	3270-039	Nipple
4410-034	Suction Kit	4412-008	1" Suction Tube		
4411-009	Bung Adapter	4411-009	Bung Adapter		
4411-008	Wall Mount Bracket				

TIGER® HP KITS

4410-045	Wall Mount Kit	4410-017	Hose & Suction Kit	4410-056	Hose Kit
8134-005	3/8" x 5' Air Hose	8134-005	3/8" x 5' Air Hose	8134-005	3/8" x 5' Air Hose
8264-005	3/4" x 5' Fluid Hose	8264-005	3/4" x 5' Fluid Hose	8264-005	3/4" x 5' Fluid Hose
3270-002	Coupler	3270-001	3/8" Air Coupler	3270-001	3/8" Air Coupler
3270-001	Nipple	3270-002	3/8" NPT(M) Nipple	3270-002	3/8" NPT(M) Nipple
4410-034	Suction Kit	4412-008	1" Suction Tube		
4411-009	Bung Adapter	4411-009	Bung Adapter		
4411-008	Wall Mount Bracket				

LION™ HP KITS

4410-037	5:1 Wall Mount Kit	4410-004	10:1 Wall Mount Kit	4410-014	Hose Kit (5:1 & 10:1)
8144-005	1/2" x 5' Air Hose	8144-005	1/2" x 5' Air Hose	8144-005	1/2" x 5' Air Hose
8264-005	3/4" x 5' Fluid Hose	8264-005	Fluid Hose 3/4" x 5'	8264-005	3/4" x 5' Fluid Hose
3270-002	3/8" Air Coupler	3270-002	3/8" Air Coupler	3270-002	3/8" Air Coupler
3270-001	Air Nipple	3270-001	Air Nipple	3270-001	Air Nipple
4412-016	1/2" x 5' Suction Tube	8181-006	1" x 6' Suction Hose		
831157	1-1/2" x 5' Suction Hose	4412-015	1" x 5' Suction Tube		
4411-007	Bung Adapter	4411-012	Bung Adapter		
4411-001	Wall Mount Bracket	4411-001	Wall Mount Bracket		

PISTON PUMPS | PORTABLE DISPENSERS



*hose reel optional



*drum not included



*drum not included

OUTFIT	1131- 031	1131- 029	1131- 030
DESCRIPTION	Mini Bulk 24 Gallon	Portable Outfit	Deluxe Portable Outfit with option for hose reel mounting
BARE PUMP	1130-015	1130-015	1130-015
ACCESSORIES			
BUNG ADAPTER	4411-009	4411-009	4411-009
FLUID HOSE	8249-010	8249-010	8249-010
SUCTION TUBE OR KIT	831519	4412-008	4412-008
MECHANICAL HANDLE	3330-143	3330-143	3330-143
FR	3260-033	3260-033	3260-033

Note: 5:1 Ratio pump should be substituted in colder climate and where pumping SAE 90 or higher viscosity fluid

LUBE CADDY

FEATURES:

- Completely portable, operates independent of air supply
- Tank holds up to 16 gallons of lubricant
- Fill cap and sight gauge
- 6' fluid hose
- Heavy duty wheels and caster
- Recommended option: air filter 3260-038 (use nipple 806826)
- Service bulletin SB1052



MODELS AVAILABLE

- 1200-001 With Analog Handle
- 1200-002 With Electronic Handle
- 1200-003 With Non-metered Handle

PISTON PUMPS | TANK PACKAGES

FEATURES

- UL 142 Tanks (Single and Double Wall)*
- Includes 50" x 1/2" Signature Series Hose Reel
- Includes Mechanical Meter with flex extension
- 3:1 Pump (Panther or Lynx)
- Fully assembled with everything you need for immediate use
- Filter Regulator
- 2" lockable Fill Cap and Gauge
- Tailgate delivery and advance notification available

* Check local codes for venting and installation requirements




Tank Package selection made easy


Step 1: Choose your tank style (Workbench, Vertical Obround or Horizontal Obround)


Step 2: Choose Single or Double wall construction

Step 3: Choose your pump: Heavy-duty Panther pump or the standard-duty Lynx pump for low volume installations

Step 4: Place your order using the model number listed next to your selection

Workbench Tank Packages	Size	Single/ Double wall	Pump	Tank Package Model Number	
<p>Workbench style tanks are the best choice when work space is at a premium. The flat top and 30-33" height make workbench style tanks the perfect choice for crowded shops needing additional workspace</p> 	165 Gallon 33H x33Wx36L	Single Wall	Lynx 3:1	1134-003	
			Panther 3:1	1134-001	
	Tank Only		832332		
			Double Wall	Lynx 3:1	1134-004
				Panther 3:1	1134-002
	Tank Only	832337			
250 Gallon 30H x32W x60L		Single Wall	Lynx 3:1	1134-007	
			Panther 3:1	1134-005	
Tank Only	832333				
		Double Wall	Lynx 3:1	1134-008	
			Panther 3:1	1134-006	
Tank Only	832338				
280 Gallon 33H x33W x60L		Single Wall	Lynx 3:1	1134-015	
			Panther 3:1	1134-013	
Tank Only	832334				
		Double Wall	Lynx 3:1	1134-016	
			Panther 3:1	1134-014	
Tank Only	832339				

Vertical Obround Tank Packages	Size	Single/ Double wall	Pump	Tank Package Model Number
<p>Choose vertical Obround tanks when floor space is limited. Vertical Obround tanks have the smallest footprint per gallon of oil</p> 	275 Gallon 60H x44W x27D	Single Wall	Lynx 3:1	1134-019
			Panther 3:1	1134-017
			Tank Only	832841
	330 Gallon 72H x44W x27D	Double Wall	Lynx 3:1	1134-020
			Panther 3:1	1134-018
			Tank Only	832776
330 Gallon 72H x44W x27D	Single Wall	Lynx 3:1	1134-027	
		Panther 3:1	1134-025	
		Tank Only	832344	
330 Gallon 72H x44W x27D	Double Wall	Lynx 3:1	1134-028	
		Panther 3:1	1134-026	
		Tank Only	832836	

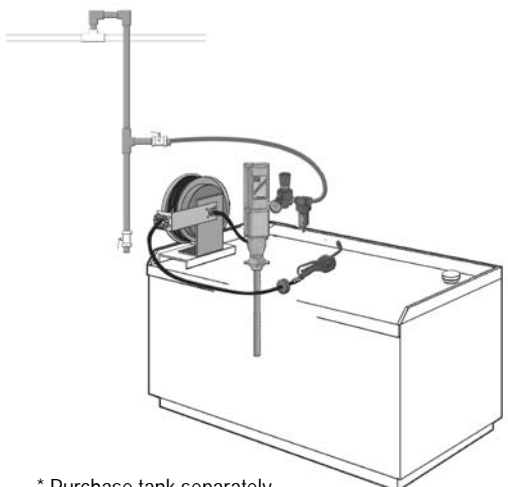
Horizontal Obround Tank Packages	Size	Single/ Double wall	Pump	Tank Package Model Number
<p>Horizontal Obround tanks combine the small foot print of a vertical tank with the easy access of a work bench tank. The fill cap and hose reel are located a convenient 44" from the floor</p> 	275 Gallon 44H x27W x60L	Single Wall	Lynx 3:1	1134-011
			Panther 3:1	1134-009
			Tank Only	832335
	330 Gallon 44H x27W x72L	Double Wall	Lynx 3:1	1134-012
			Panther 3:1	1134-010
			Tank Only	832336
330 Gallon 44H x27W x72L	Single Wall	Lynx 3:1	1134-023	
		Panther 3:1	1134-021	
		Tank Only	832846	
330 Gallon 44H x27W x72L	Double Wall	Lynx 3:1	1134-024	
		Panther 3:1	1134-022	
		Tank Only	832845	

PISTON PUMPS | TANK PACKAGES

FEATURES

- 3:1 or 5:1 Panther lube pump
- 30 or 50 foot hose reel
- Filter regulator
- Bung adapter included with pump
- Inlet hose for hose reel
- lockable fill cap and gauge order separately
- Down tube supplied by customer

Equipment Packages for Tanks

	Pump	Hose Reel	Tank Package Model Number
	Panther 3:1	30' Hose Reel	1132-006
		50' Hose Reel	1132-009
	Panther 5:1	30' Hose Reel	1132-007
		50' Hose Reel	1132-010

* Purchase tank separately.

ACCESSORIES

FILTER, REGULATORS & LUBRICATOR

- 3260-039 Filter
- 3260-029 Regulator
- 3260-044 Lubricator
- 3260-034 Filter/regulator combination
- 3260-049 Filter/regulator & lubricator (2-pc combo)
- 3260-054 Filter, regulator & lubricator (3-pc combo)

AIR SUPPLY HOSE (2FT)

- 8144-002 1/2" x 2' w/ 1/2" x 3/8 NPT (M)

FLUID OUTLET HOSE (5FT)

- 8249-005 1/2" x 5' NPT (M) 5000 PSI

FLUID/PUMP CONTROL

- 3110-009 Pump Sentinel
- 3120-011 Air Solenoid Valve - 3/8" NPT(F)
- 3120-033 Air Solenoid Valve - 3/8" NPT(F)

TANK GUARDIAN / TANK LEVEL MONITOR

- 4520-010 Tank probe for monitoring fluid level
- 4520-011 Tank Guardian software for 4 Tanks
- 4520-012 Tank Guardian software for 8 Tanks
- 4520-013 Tank Guardian software for 12 Tanks
- Bung Adapters for Pride Series Pumps
- 4411-009 Panther/Tiger
- 4411-018 Double tap bushings (allows easy install and removal of pump)

MISC

- 832778 2" Vented fill cap
- 832706 4" Emergency Vent
- 4520-014 Black Knight Gauge (for tanks up to 90" tall)
- 4520-006 Tank Saddle (Converts standard fuel oil tank to accept a Balcrank hose reel.
- No welding required; it is securely fastened using vent tube and vent cap)
- 4520-007 Vent cap mounting kit (for attaching 4520-006 to vent outlet of obround tanks)



JET POWER™ 50:1

PANTHER® HP 50:1

LION™ 50:1

SELECTION GUIDE	1150-012	1150-010	1150-015
LINE LENGTH	100 ft	300 ft	500 ft
DISPENSE POINTS (SIMULTANEOUS)	2	3	8
FREE FLOW, lb./min @ 100 PSI AIR	1.5	3.5	16.0
TYPICAL APPLICATIONS	Quick Lubes Fleet / Commercial Dealerships Transmission Centers Tire Centers Industrial Plants Portable Dispenser Mobile Lube Portable Dispenser	Automotive Dealerships Fleet / Commercial Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mobile Lube Mining	Automotive Dealerships Fleet / Commercial Dealerships Transmission Centers Tire Centers Quick Lubes Industrial Plants Mining
REFERENCE DATA			
CATALOG PAGES	34-35	36-37	38-39
SERVICE BULLETIN	SB 1075	SB 1063	SB 1074



1150-012

FEATURES:

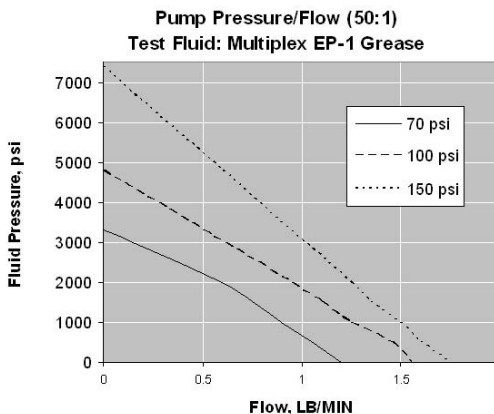
- Simple design - Few moving parts, detachable external air valve
- Mechanical air valve - More reliable, no stalling and no icing
- Low air consumption - Less wear and tear on compressor
- Precise machined finishes and hardened lower piston assembly
- For reliable performance and long life
- Heavy duty pump lower - Produces 50:1 output pressure and accepts a 40-mesh inlet screen to remove foreign contaminants from entry system

SPECIFICATIONS

Pressure ratio	50:1
Eff. diameter	2.62"
Stroke	2.12"
Operating air pressure range	30-150 PSI
Air consumption (100 PSI air & 0.75 lb. /min.)	6.6 SCFM
Max delivery (free flow @ 100 PSI)	1.5 lb./min
Air inlet	1/4" NPT(F)
Fluid outlet	1/4" NPT(F)
Service bulletin	SB1075
Wetted materials	Carbon Steel, Buna-N, Brass, Ultrathane

MODELS AVAILABLE

- 1150-004 Bare Pump - 25-35 lb.
- 1150-012 Bare Pump - 120 lb.
- 1150-013 Bare Pump - 400 lb.





*Drum not included

*Drum not included

*Drum not included

OUTFIT	1151-014	1151-015	1151-016	1151-017
DESCRIPTION	25-35 lb. Portable	120 lb. Stationary	120 lb. Portable	400 Lb. Stationary
BARE PUMP	1150-004	1150-012	1150-012	1150-013
AIR HOSE	-	8132-005	8132-005	8132-005
FLUID HOSE	8331-010	8331-010	8331-010	8331-010
GREASE HANDLE	3310-026	-	3310-026	-
DRUM COVER	4420-006	4420-002	4420-002	4420-004
FOLLOWER PLATE*	-	4440-010	4440-010	4440-011
DOLLY	-	-	4310-001	-

ACCESSORIES

DOLLY BASES:

- 4310-001 120 lb.
- 4310-003 120 lb. wide track
- 4310-004 400 lb. heavy duty
- 4310-005 25-35 lb.

DRUM COVERS:

- 4420-002 120 lb.
- 4420-004 400 lb.
- 4420-006 25-35 lb.

DRUM CART:

- 4320-004 120 lb.
- 4320-008 120 - 400 lb.

PUMP OVER-RUN CONTROL:

- 3241-002 1/4" NPT(F)

FOLLOWER PLATES:*

- 4440-006 25-35 lb. tapered pail
- 4440-010 120 lb.
- 4440-011 400 lb.

***Balcrank uses weighted follower plates to eliminate air pockets in grease, and ensure proper function of pump.**

INLET SCREEN:*

- 4430-001

***A must when not using an air lift. Inlet Screen keeps dirt and debris from getting into system.**

AIR OPERATED PUMP LIFT

- 4450-001 Lift
- 4451-001 Valve

GREASE PUMPS | PANTHER HP® 50:1 PUMPS



FEATURES:

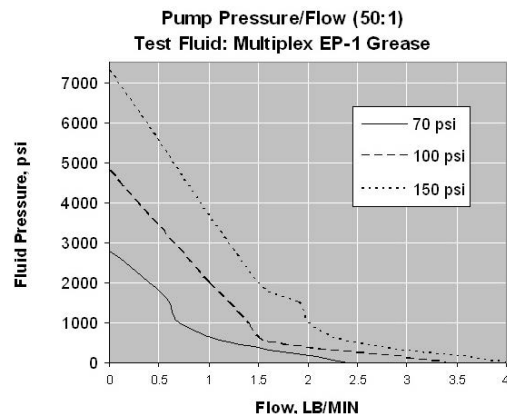
- Mechanical air valve - More reliable, no stalling, and no icing
- Designed for lower air consumption - Less wear and tear on the compressor
- Built in muffler - Promotes quiet operation, eliminates icing
- Precise machined finishes and hardened lower piston assembly - For reliable performance and long life
- Double acting pump lower - Produces 50:1 output pressure and accepts a 40-mesh inlet screen to remove foreign contaminants from entry system

SPECIFICATIONS

Pressure ratio50:1
Eff. diameter	2.44"
Stroke	3.25"
Operating air pressure range	40-150 PSI
Air consumption (@100 PSI & 1.5 lb./min.)	14.5 SCFM
Max delivery (free flow @ 100 PSI)	3.4 lb./min
Air inlet	1/4" NPT(F)
Fluid outlet	1/4" NPT(F)
Service bulletin	SB1063
Wetted materials	Stainless Steel, Carbon Steel, Brass, Aluminium, Delrin, Ultrathane, Buna-N

MODELS AVAILABLE

- 1150-009 Bare Pump - 25-35 lb.
- 1150-010 Bare Pump - 120 lb.
- 1150-011 Bare Pump - 400 lb.
- 1150-017 Bare Pump - Tote



GREASE PUMPS | PANTHER HP® 50:1 OUTFITS



*Drum not included *Drum not included *Drum not included *Drum not included

OUTFIT	1151-003	1151-004	1151-005	1151-026	1151-006	1151-020
DESCRIPTION	25-35 lb. Portable	120 lb. Stationary	120 lb. Portable	120 lb. Portable	400 lb. Stationary	Tote
BARE PUMP	1150-009	1150-010	1150-010	1150-010	1150-011	1150-017
AIR HOSE	-	8132-005	-	-	8132-005	-
FLUID HOSE	8331-010	8331-010	8331-010	8331-010	8331-010	-
GREASE HANDLE	3310-026	-	3310-026	3310-028	-	-
DRUM COVER	4420-008	4420-009	4420-009	4420-009	4420-004	-
FOLLOWER PLATE	4440-007	4440-008	4440-008	4440-008	4440-009	-
DOLLY	-	-	4310-001	4310-001	-	-
FR	-	-	-	-	-	3260-034

ACCESSORIES

DOLLY BASES:

- 4310-005 25-35 lb.
- 4310-001 120 lb.
- 4310-003 120 lb. wide track
- 4310-004 400 lb. heavy duty

DRUM COVERS:

- 4420-008 25-35 lb.
- 4420-009 120 lb.
- 4420-004 400 lb.

DRUM CART:

- 4320-008 120 - 400 lb.

PUMP OVER-RUN CONTROL:

- 3241-002 ¼" NPT(F)

FOLLOWER PLATES:*

- 4440-007 25-35 lb.
- 4440-008 120 lb.
- 4440-009 400 lb.

***Balcrank uses weighted follower plates to eliminate air pockets in grease, and ensure proper function of pump.**

INLET SCREEN:*

- 4430-004

***A must when not using an air lift. Inlet Screen keeps dirt and debris from getting into system.**

AIR OPERATED PUMP LIFT:

- 4450-001 Lift
- 4451-001 Valve



1150-015

FEATURES:

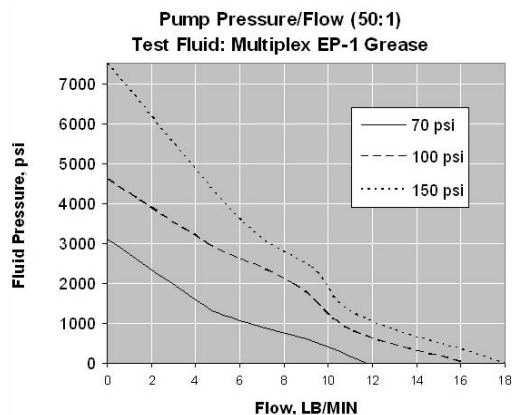
- Mechanical air valve - More reliable, no stalling, and no icing
- Designed for lower air consumption - Less wear and tear on the compressor
- Built in muffler - Promotes quite operation, eliminates icing
- Precise machined finishes and hardened lower piston assembly
 - For reliable performance and long life
- Double acting pump lower - Produces 50:1 output pressure and accepts a 40-mesh inlet screen to remove foreign contaminants from entry system

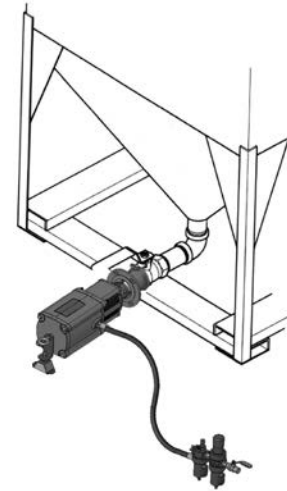
SPECIFICATIONS

Pressure ratio	.50:1
Eff. diameter	4.25"
Stroke	3.25"
Operating air pressure range	10-150 PSI
Air consumption (@ 100 PSI air & 8.0 lb./min)	.72 SCFM
Max delivery (free flow @ 100 PSI)	.16 lb./min
Air inlet	½" NPT(F)
Fluid outlet	¾" NPT(F)
Service bulletin	SB1074
Wetted materials	Stainless Steel, Carbon Steel, Brass, Ultrathane

MODELS AVAILABLE

- 1150-015 Bare Pump - 400 lb.
- 1150-018 Bare Pump - Tote





*Drum not included

OUTFIT	1151-018	1151-022
DESCRIPTION	400 lb. Stationary	Tote
BARE PUMP	1150-015	1150-018
AIR HOSE	8144-005	-
FLUID HOSE	8333-010	-
DRUM COVER	4420-003	-
FOLLOWER PLATE	4440-012	-
FRL	-	3260-051

ACCESSORIES

DOLLY BASE:
4310-004 400 lb. heavy duty

DRUM COVER:
4420-003 400 lb.

DRUM CART:
4320-008 120 - 400 lb.

PUMP OVER-RUN CONTROL:
3241-001 ½" NPT(F)

FOLLOWER PLATE:*
4440-012 400 lb.

***Balcrank uses weighted follower plates to eliminate air pockets in grease, and ensure proper function of pump.**

INLET SCREEN:*
4430-003

***A must when not using an air lift.**
Inlet Screen keeps dirt and debris from getting into system.

AIR OPERATED PUMP LIFT:
4450-001 Lift
4451-001 Valve

FEATURES:

- Handles thicker #3 and #4 greases more easily than follower plate models
- Conical shaped inductor allows for better flow to pump inlet
- Inductor mounted pump applies weight to allow for better grease flow to pump inlet
- Eliminates contamination of pump and inductor plate when changing drum

1151-009 Panther HP Inductor 1151-011 Panther HP Inductor with Low Level Shutoff

1151-010 Lion HP Inductor 1151-012 Lion HP Inductor with Low Level Shutoff

4520-008 Low Level Shutoff For Grease Inductor

NOTE: Low level shutoff models recommended for remote pump room applications



1151-011



1151-012

JET POWER™ KITS

4410-031 Hose Kit

8132-005	3/8" x 5' Air Hose
8331-010	3/8" x 10' Fluid Hose

PANTHER® HP KITS

4410-035 Hose Kit

8132-005	3/8" x 5' Air Hose
8331-010	3/8" x 10' Fluid Hose
3270-003	1/4" Air Coupler
3270-004	Nipple
3310-026	Grease Handle

4410-036 Hose Kit

8132-005	3/8" x 5' Air Hose
8331-010	3/8" x 10' Fluid Hose
3270-003	1/4" Air Coupler
3270-004	Nipple

LION™ HP KITS

4410-030 Hose Kit 400 lb.

8144-005	1/2" x 5' Air Hose
8333-010	3/8" x 10' Fluid Hose
3270-002	3/8" Air Coupler
3270-001	Nipple

DIAPHRAGM PUMPS | SELECTION GUIDE



SPECIFICATIONS	1120-011S	1120-019	1120-013S
SIZE	1/2"	3/4"	1"
PRESSURE RATIO	1:1	1:1	1:1
PERFORMANCE			
MAX OPERATING AIR PRESSURE	100 PSI	100 PSI	125 PSI
AIR CONSUMPTION	16 SCFM	16 SCFM	40 SCFM
FREE FLOW	14 GPM	14 GPM	45 GPM
MAX SUSPENDED SOLIDS	1/8"	1/16"	1/4"
SUCTION LIFT (FT. WET)	20	25	25
KEY DIMENSIONS			
AIR INLET NPT(F)	1/4"	3/8"	1/2"
FLUID INLET NPT(F)	1/2"	3/4"	1"
FLUID OUTLET NPT(F)	1/2"	3/4"	1"
MATERIALS			
CONSTRUCTION	Polypropylene	Aluminum	Aluminum
DIAPHRAGMS	Buna	Buna	Buna
BALL CHECKS	Acetal	Acetal	Acetal
SEATS	Polypropylene	Aluminum	Aluminum
REFERENCE DATA			
	SB 1095	SB 1051	SB 1096



SPECIFICATIONS	1120-014S	1120-015	1120-017
SIZE	1" Mixing	1" UL	1-1/2"
PRESSURE RATIO	1:1	1:1	1:1
PERFORMANCE			
MAX OPERATING AIR PRESSURE	125 PSI	50 PSI	125 PSI
AIR CONSUMPTION	50 SCFM	20 SCFM	50 SCFM
FREE FLOW	42 GPM	35 GPM	70 GPM
MAX SUSPENDED SOLIDS	1/4"	1/8"	1/8"
SUCTION LIFT (FT. WET)	25	25	25
KEY DIMENSIONS			
AIR INLET NPT(F)	1/2"	3/8"	1/2"
FLUID INLET NPT(F)	1"+1"	1"	1-1/2"
FLUID OUTLET NPT(F)	1"	1"	1-1/2"
MATERIALS			
CONSTRUCTION	Aluminum	Aluminum	Aluminum
DIAPHRAGMS	Buna	Buna	Buna
BALL CHECKS	Acetal	Acetal	Acetal
SEATS	Aluminum	Aluminum	Aluminum
REFERENCE DATA	SB 1097	SB 1059	SB 1069

DIAPHRAGM PUMPS | OUTFITS



OUTFIT	1121-001	1121-002	1121-013
DESCRIPTION	Evacuation Outfit	Poly Drum Outfit	Aluminum Drum Outfit
BARE PUMP	1120-011S	1120-011S	1120-019
BUNG ADAPTER	-	Included	Included
MOUNTING BRACKET	829131	-	-
AIR HOSE	-	-	-
FLUID HOSE	832094	-	-
SUCTION TUBE	-	4412-018	4412-017
FR	3260-036	-	-



OUTFIT	1121-014	1121-006	1121-009	4140-002
DESCRIPTION	3/4" Drum Dispense Outfit	1/2" Wash Outfit	1" Wall Mount Outfit	Manifold Evac Outfit
BARE PUMP	1120-019	1120-011S	1120-013S	-
BUNG ADAPTER	Included	-	-	-
MOUNTING BRACKET	-	4411-016	4411-016	-
AIR HOSE	-	8149-005	8149-005	8134-005
FLUID HOSE	-	831116	831820	827600
SUCTION TUBE	4412-017	831179	831821	-
FR	-	3260-036	3260-036	-
SPIGOT	4200-013	-	-	-
SUCTION WAND	-	-	-	824249
MANIFOLD	-	-	-	824252

DIAPHRAGM PUMPS | ACCESSORIES

ACCESSORY KITS

4410-019	1" Wall Mount Kit	4140-015	1" Evacuation Kit
4411-016	Wall Mount Bracket	4411-016	Wall Mount Bracket
8134-005	3/8" x 5' Air Hose	8134-005	3/8" x 5' Air Hose
8264-005	3/4" x 5' Fluid Hose (2)	8261-005	3/4" x 5' Fluid Hose (2)
3230-004	1/2" Air Ball Valve	3230-004	1/2" Ball Valve
		8261-003	1" Suction Hose

4410-020	1/2" Wall Mount Kit	4140-026	3/4" Evacuation Kit
4411-016	Wall Mount Bracket	4411-016	Wall Mount Bracket
8134-005	3/8" x 5' Air Hose	8134-005	3/8" x 5' Air Hose
8249-005	1/2" x 5' Fluid Hose	8261-005	3/4" x 5' Fluid Hose (2)
3230-003	1/4" Air Ball Valve	3230-004	1/2" Ball Valve
		8264-003	3/4" Suction Hose

ACCESSORIES

SUCTION TUBES:

- 4412-013 55 gallon drum assembly with bung adapter for poly pumps
- 4412-014 55 gallon drum assembly with bung adapter for metallic 1/2" pumps
- 4412-017 55 gallon drum assembly with bung adapter for metallic 3/4" pumps
- 4410-018 55 gallon drum assembly w/ bung adapter for 1120-011S

PRESSURE RELIEF KITS:

- 3120-023 1/2" NPT, 125 PSI
- 3120-024 1" NPT, 125 PSI

WALL MOUNT BRACKET:

- 4411-016

OVERFILL PUMP CONTROL



OUTFIT	4520-001	4520-002
DESCRIPTION	Overfill Pump Control	Overfill Pump Control
FEATURES	Auto-shutoff Non-electric Sensing Tube Pump Controller	Auto-shutoff Non-electric Sensing Tube Pump Controller Audible Alarm
	SB 4222	SB 4222

MANUAL PUMPS

STATIONARY PUMPS



OUTFIT	1300-010	1300-011	1300-009
DESCRIPTION	Non Metered Lube Package	Metered Lube Package	Grease Package
MAX PSI	600	600	10,000
NOZZLE	Auto-lock	Auto-lock	Grease Coupler
FLUID HOSE	6'	6'	6'
METER	-	3120-042	-
DRUM / KEG SIZE	16 Gallon	16 Gallon	25-35 Lb.
SERVICE BULLETIN	SB 1016	SB 1016	SB 1018

PORTABLE PUMPS



OUTFIT	1300-017	1300-018
DESCRIPTION	Non Metered Lube Package	Metered Lube Package
MAX PSI	600	600
NOZZLE	Auto-lock	Auto-lock
FLUID HOSE	6'	6'
METER	-	3120-042
DRUM / KEG SIZE	16 Gallon	16 Gallon
DOLLY	4310-001	4310-001
SERVICE BULLETIN	SB 1016	SB 1016



MOBILE OIL OUTFITS	7120-018	7120-017
DESCRIPTION	Panther® HP 3:1 Outfit	Tiger® HP 6:1 Outfit
DRUM SIZE	55 gallon	55 gallon
BARE PUMP	1130-017	1130-025
ACCESSORIES		
AIR HOSE	8132-005	8144-005
FLUID HOSE	8262-010	8261-010
SUCTION TUBE	4412-008	4412-008
DRUM COVER	7120-012	7120-012
HOLD DOWN RODS	7120-004	7120-004

MOBILE GREASE OUTFITS	7120-015	7120-016	7120-014
DESCRIPTION	Panther® HP 50:1 Outfit	Panther® HP 50:1 Outfit	Lion™ HP 50:1 Outfit
KEG SIZE	120 lb.	400 lb.	400 lb.
BARE PUMP	1150-010	1150-011	1150-015
ACCESSORIES			
AIR HOSE	8132-005	8132-005	8141-005
FLUID HOSE	8331-010	8331-010	8333-010
DRUM COVER	7120-020	7120-013	7120-013
HOLD DOWN RODS	7120-005	7120-004	7120-004

MOBILE LUBE EQUIPMENT

MOBILE DRUM COVERS	7120-012	7120-020	7120-013
PUMP SERIES	Panther, Tiger®	Panther®	Panther, Lion™
DRUM SIZE	55 gallon	120 lb.	400 lb.
LUBRICANT	Oil	Grease	Grease
PUMP OPENING	Offset	Center	Center

HOLD DOWN RODS	7120-004	7120-005
DRUM SIZE	400 lb.	120 lb.



For a complete listing of Balcrank repair kits see Service Bulletin(SB0001) at www.balcrank.com

BOBCAT™ PUMPS	TIGER® & TIGER® HP PUMPS
<p>827711 - Air valve and seals kit for all Bobcat™ 130 & 300 pumps. 827712 - Fluid seals kit for Bobcat™ 300 pumps. 828069 - Fluid seals kit for Bobcat™ series pumps 1110-001, 1110-003, 1110-004. 828070 - Fluid seals kit for 1160-002 & 1160-003 Bobcat™ series stainless pumps. 900020 - Fluid seals kit for 1110-005 & 1110-006 Bobcat™ 130 pumps.</p>	<p>826280 - Air seals kit for Tiger® pumps. 826290 - Fluid seals kit for Tiger® pumps. 829298 - Fluid seals kit for Tiger® Stainless Steel pumps. 900020 - Fluid seals kit for Tiger® HP pumps. 900027 - Air Motor kit for Tiger® HP pumps. 900028 - Soft Parts kit for Tiger® HP pumps.</p>
JET POWER™ PUMPS	LION™ HP PUMPS
<p>811305 - For Jet Power™ 45:1 grease pumps, converts 45:1 to 50:1 pumps below serial #267561. 816348 - For Jet Power™ 45:1 grease pumps, converts 45:1 to 50:1 pumps serial #267561 and above 822862 - For 1130-002, 42101, 42104, Jet Power™ 4:1 Fluid Pumps. 810071 - Air Valve Kit for Jet Power™ 4:1 Fluid Pumps and 50:1 Grease Pumps.</p>	<p>900020 - Fluid seals kit for Lion® HP@10:1 pumps. 900027 - Air Motor kit for Lion® HP pumps. 900028 - Soft Parts kit for Lion® HP pumps. 900029 - Fluid seals kit for Lion® HP 50:1 pumps. 900030 - Fluid seals kit for Lion® HP 5:1 pumps.</p>
PANTHER® & PANTHER® HP PUMPS	DIAPHRAGM PUMPS
<p>831014 - Complete air motor for Panther® Series pumps 1130-010 & 1130-011. 831614 - Complete air motor for Panther® HP Series pumps. 900014 - Air motor repair kit for 1130-010 & 1130-011 Panther® pumps without Delrin inserts. 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.</p>	<p>828863 - Fluid kit for 1120-006 & 1120-010 pumps. 828864 - Fluid kit for 1120-007, 1120-008, and 1120-009 pumps. 828866 - Air kit for 1120-006 & 1120-010 pumps. 828867 - Air kit for 1120-007, 1120-008, 1120-009 pumps. 831589 - Air kit for 1120-011 and 1120-012 pumps. 831590 - Air kit for 1120-013, and 1120-014 pumps. 831591 - Fluid kit for 1120-011 and 1120-012 pumps. 831592 - Fluid kit for 1120-013, and 1120-014 pumps. 831621 - Fluid kit for 1120-015 831622 - Air kit for 1120-015 832907 - Air kit, for 1120-014s 832906 - Fluid kit, for 1120-014s 832905 - Air kit, for 1120-013s 832904 - Fluid kit, for 1120-013s 832903 - Air kit, for 1120-011s 832902 - Fluid kit, for 1120-011s</p>
GIANT JET™ PUMPS	
<p>828045 - Air and fluid seals kit for 1130-009 Giant Jet™ 5:1 pumps. 829604 - Air motor seals kit for 1150-002 Giant Jet™ grease pumps above serial #262403. 829605 - Fluid seals kit for 1150-002, 963, 1063, & 1064 Giant Jet™ pumps. 900001 - Air motor seals kit for 5:1 and 10:1 Giant Jet™ pumps. 900002 - Fluid seals kit for 1130-008 10:1 Giant Jet™ pumps.</p>	
LYNX PUMPS	
<p>832928 - Fluid seals kit for 1110-009 & 1110-010 832865 - Air motor seals kit for 1110-007, 1110-009, & 1110-010 832953 - Fluid seals kit for 1160-009 832954 - Air motor seals kit for 1160-009 & 1110-010 832864 - Fluid seals kit for 1110-007 832960 - Fluid seals kit for 1110-011</p>	

TYPICAL 2-BAY QUICK LUBE LIST

OIL PUMP SYSTEMS

Item	Model	Description	Qty.
10	1130-015	Panther HP® 3:1 Pump	2
11	4410-027	Hose & Tube Kit	2
12	3260-034	¼" FR	2
13	3230-002	½" Fluid Shut-off Valve	2
14	3270-003	¼" Air Coupler	2
15	3270-039	¼" Air Nipple	2
16	3230-003	¼" Air Shut-off Valve	2

HOSE CONSOLE DISPENSING¹

Item	Model	Description	Qty.
60	2600-001	Hose Console	1
61	8134-030	¾" Air/Water Hose	2
62	8241-030	½" Oil Hose	5
63	2230-010	Hose Stop	2
64	3330-037	PGM-40 Control Handle	5
65	3340-007	WW/Antifreeze Bibb	1
66	3340-006	Air Chuck	1
67	3230-003	¼" Air Shut-off Valve	1
68	3230-002	½" Fluid Shut-off Valve	6

GEAR OIL PUMP SYSTEMS

Item	Model	Description	Qty.
20	1130-016	Panther HP® 5:1 Pump	1
21	3260-034	¼" FR	1
22	3230-002	½" Fluid Shut-off Valve	3
23	3320-002	Non-metered Handle	2
24	3230-003	¼" Air Shut-off Valve	1

HOSE REEL DISPENSING¹

Item	Model	Description	Qty.
70	2230-001	End Panel Set	1
71	2230-008	Channel for 6 Reels	1
72	2230-002	Mounting Bracket	3
73	2220-008	Sig. Oil Reel 30' x ½"	5
74	2220-010	Sig. Air/W Reel 30' x ¾"	1
75	3330-054	PGE-55 Control Handle	3
76	3340-007	WW/Antifreeze Bibb	2
77	3340-006	Air Chuck	1
78	3230-003	¼" Air Shut-off Valve	1
79	3230-002	½" Fluid Shut-off Valve	5

ATF PUMP SYSTEMS

Item	Model	Description	Qty.
30	1130-015	Panther HP® 3:1 Pump	1
31	3260-034	¼" FR	1
32	3230-002	½" Fluid Shut-off Valve	1
33	3230-003	¼" Air Shut-off Valve	1

GREASE PUMP SYSTEMS

Item	Model	Description	Qty.
80	1151-004	Panther HP® 50:1 Pump	1
81	3260-034	¼" Filter-Regulator	1
82	3230-001	½" HP Shut-off Valve	3
83	3310-026	Grease Handle	2
84	3230-003	¼" Air Shut-off Valve	1

USED OIL SYSTEMS

Item	Model	Description	Qty.
40	4140-011	Rolling Pit Drain	2
41	1121-001	Used Oil Evac Kit	1
42	3260-034	¼" Filter-Regulator	1
43	3230-003	¼" Air Shut-off Valve	1
44	4140-013	Evacuation Hose	2

WW & COOLANT SYSTEMS

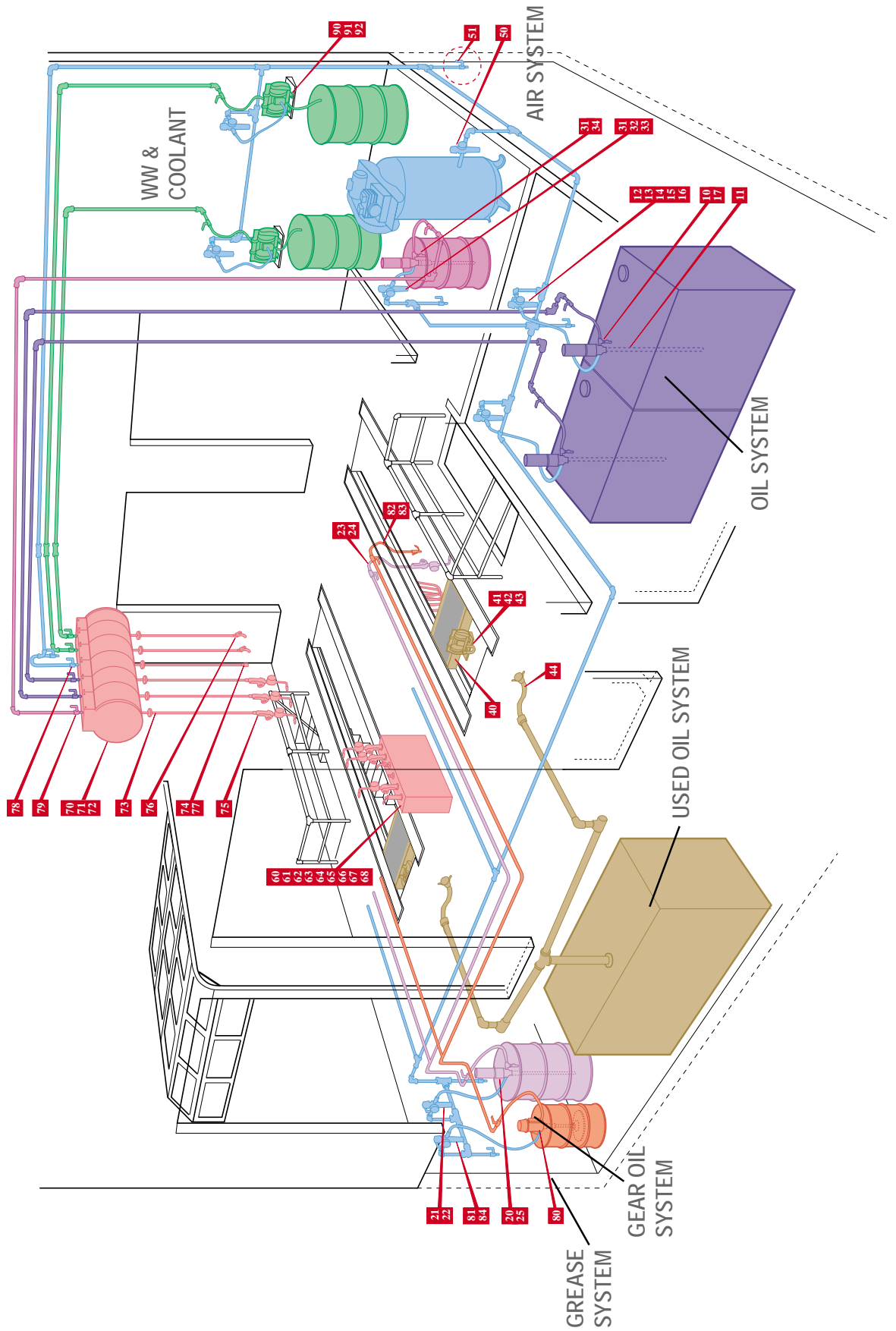
Item	Model	Description	Qty.
90	1121-006	½" Diaphragm Pump Outfit	2

COMPRESSED AIR SYSTEMS

Item	Model	Description	Qty.
50	3260-037	¾" Filter-Regulator	1
51	3230-003	LP Air Bleed Valves	1

Note 1: Select hose console or hose reel dispensing based on facility needs and/or user preference

TYPICAL 2-BAY QUICK LUBE LAYOUT



PIPING SPECIFICATIONS

Use these guidelines for selecting line sizes (recommended minimum diameters are given), tubing wall thickness and piping schedules for lubrication distribution systems. Air and water recommendations are for supply of air/water hose reels or for supply of air to pumps. Except as noted, maximum pressures shown represent the fluid pressure at the pump outlets when connected to their highest rated air supply pressure. Grease pump maximum pressures are reduced because they are pressure-limited by tubing strength and hose working pressure, as described in the footnotes.

Air & Water 0-200 ft.

Maximum Pressure	Tubing		Pipe	
	OD. ⁽³⁾	Wall ⁽²⁾	Size ⁽³⁾	Type
150 PSI	5/8"	0.025"	1/2"	Sch. 40
250 PSI	5/8"	0.025"	1/2"	Sch. 40

Grease 0-200 ft.

Pump	Ratio	Max Pressure ^{(1) (4)}	Tubing		Pipe	
			OD.	Wall ⁽²⁾	Size	Type
Jet Power™	50:1	6000 PSI	5/8"	0.083"	Not Recommended	
Panther®	50:1	6000 PSI	5/8"	0.083"	Not Recommended	
Lion™	50:1	5000 PSI	3/4"	0.125"	Not Recommended	

Air & Water over 200 ft.

Maximum Pressure	Tubing		Pipe	
	OD. ⁽³⁾	Wall ⁽²⁾	Size ⁽³⁾	Type
150 PSI	3/4"	0.025"	3/4"	Sch. 40
250 PSI	3/4"	0.025"	3/4"	Sch. 40

Grease over 200 ft.

Pump	Ratio	Max Pressure ^{(1) (4)}	Tubing		Pipe	
			OD.	Wall ⁽²⁾	Size	Type
Jet Power™	50:1	5000 PSI	3/4"	0.125"	Not Recommended	
Panther®	50:1	5000 PSI	3/4"	0.125"	Not Recommended	
Lion™	50:1	5000 PSI	3/4"	0.125"	Not Recommended	

Motor Oil, Gear Oil, & ATF 0-200 ft.

Pump	Ratio	Max Pressure ⁽⁴⁾⁽⁵⁾	Tubing		Pipe	
			OD.	Wall ⁽²⁾	Size	Type
Diaphragm	1:1	120 PSI	3/4"	0.025"	3/4"	Sch. 40
Lynx	1:1	180 PSI	3/4"	0.025"	3/4"	Sch. 40
Panther®	3:1	490 PSI	3/4"	0.025"	3/4"	Sch. 40
Panther®	5:1	760 PSI	3/4"	0.025"	3/4"	Sch. 40
Tiger®	6:1	870 PSI	1"	0.025"	1"	Sch. 40
Lion™	5:1	800 PSI	1-1/4"	0.025"	1-1/2"	Sch. 40
Lion™	10:1	1300 PSI	3/4"	0.042"	3/4"	Sch. 40

Motor Oil, Gear Oil, & ATF over 200 ft.

Pump	Ratio	Max Pressure ⁽⁴⁾⁽⁵⁾	Tubing		Pipe	
			OD.	Wall ⁽²⁾	Size	Type
Panther®	3:1	490 PSI	1"	0.035"	1"	Sch. 40
Panther®	5:1	760 PSI	1"	0.035"	1"	Sch. 40
Tiger®	6:1	870 PSI	1-1/4"	0.035"	1-1/4"	Sch. 40
Lion™	5:1	800 PSI	1-1/2"	0.035"	1-1/2"	Sch. 40
Lion™	10:1	1300 PSI	1"	0.049"	3/4"	Sch. 40



(1)....Line pressures for grease pumps are limited by the strength of steel tubing and grease hose working pressure ratings. Regulate air supply pressure for grease pumps to ("max pressure"/50) PSI to avoid line pressure limits.

(2)....Based on use of fully annealed steel tubing, 15,000 PSI yield strength.

(3)....Multiple air-operated pumps supplied by a common air line may require larger line sizes. Consult your Balcraan distributor for efficient size recommendations.

(4)....Minimize the number of Elbows in grease line to reduce pressure drop. Use radius bends in preference to Elbows where installation permits.

(5)....When thermal expansion of oil may be present, use a pump pressure relief valve.