BARTON TOOLS

Instruction and Repair Parts Sheet

BHP Puller Sets and Attachments

1.0 IMPORTANT RECEIVING INSTRUCTIONS Visually inspect all components for shipping damage. Shipping damage is not covered by warranty. If shipping damage is found notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY FIRST

Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. We cannot be responsible for damage or injury resulting from unsafe use of product, lack of maintenance or incorrect product and/or system operation. Contact us when in doubt as to the safety precautions and applications.

2.1 PRODUCT DESCRIPTION

Our BHP-series puller sets consist basically of a hand pump, single-acting cylinder, gauge, gauge adaptor, hose, couplers and specific tools and attachments. The pullers are designed for installing and removing all press fitted and heat fitted parts such as gears, pulleys, wheels, bearings, sleeves, sprockets, pins and other stubborn parts.

The BHP-series puller sets are available as: Grip Puller Sets (see paragraph 2.1), Cross-Bearing Puller Sets (see paragraph 2.2) and Multi- Purpose Puller Sets (see paragraph 2.3).

Puller set attachments are additional parts to increase on-the-job flexibility further with the use of grip pullers and cross-bearing pullers. See tables D and E on the pages 11 and 12 for the individual components of puller set attachments.

2.2Grip Puller Sets

The grip puller sets BHP-152, BHP-251G, BHP-351G and BHP-551G can be used to remove and install gears, bearings, pulleys and similar parts. See illustration 1 on page 3: grip pullers can be used with a double crosshead (2 grip arms) or a triple cross- head (3 grip arms). For individual parts see table A on page 7.

2.3Cross Bearing Puller Sets

The cross bearing puller sets BHP-162, BHP-261G, BHP-361G and BHP-561G can be used to remove and install gears, pulleys, sleeves and bushings. These pullers can also be used as bearing cup pullers (internal grip pullers) as shown in illustr. 2 on page 3 or as bearing pullers as shown in illustration 3 on page 3.

In situations where clearance prevents a direct application of grip puller arms, it is possible to use the puller in combination with bearing puller attachment as shown in illustration 4 on page 4. Bearing puller attachments have wedge shaped edges to place the puller behind the hard to reach the gear or bearing. See table B on page 9 for individual components.

2.4Multi-Purpose Puller Sets

BHP-1752, BHP-2751G, BHP-3751G and BHP-5751G

multi-purpose puller sets are a combination of the above mentioned grip puller sets and cross bearing puller sets to provide maximum application flexibility in pulling and pushing applications in maintenance and repair. See table C (page 10) for individual components.

3.0 GENERAL SAFETY ISSUES

Failure to comply with the following cautions and warnings could cause equipment damage or personal injury.

WARNING: DO NOT exceed 50% of the rated puller capacity when using a double crosshead (2 grip arms): do not exceed 350 bar (5,000 psi) when using a hydraulic puller in this application.

WARNING: DO NOT exceed 50% of the rated puller capacity when using the puller legs in combination with bearing puller attachment: do not exceed 350 bar (5,000 psi)

when using a hydraulic puller in this application.

IMPORTANT: It is recommended to use the triple crosshead (3 grip arms) which gives a more secure grip, a more even pulling force and is more stable than the double crosshead (2 grip arms).

WARNING: To avoid personal injury and equipment damage, make sure all hydraulic components withstand the max. hydraulic pressure of 700 bar (10,000 psi).

IMPORTANT: Use hydraulic gauges in each hydraulic system to indicate safe operating loads.

WARNING: Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.

CAUTION: Avoid sharp bends and kinks that which will cause severe back-up pressure in hoses. Bends and kinks lead to premature hose failure.

WARNING: DO NOT handle pressurized hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin see a doctor immediately.

WARNING: The operator must take precaution against injury due to flying debris caused by failure of the tool or workpiece.

WARNING: DO NOT use this equipment in circumstances where a sudden release of pressure can result in loss of balance causing damage or injury.

WARNING: DO NOT overload equip- ment. Use the right size puller. When you have applied maximum force, but the part will not move, go to a larger capacity puller. Resist sledging.

IMPORTANT: It is impossible to predict the exact force needed for every pulling situation. The amount of press fit and force of removal can vary greatly between jobs. Set-up requirements along with the size, shape and condition of the parts being pulled are variables which must be considered. Study each pulling application before you select your puller.

IMPORTANT: Apply force gradually. Align puller legs and grip arms. Be sure the setup is rigid and puller is square with the work.

WARNING: Immediately replace worn or damaged parts with our spare parts. our parts are designed to fit properly and withstand rated loads.

4.1INSTALLATION

4.2Grip pullers

Illustration 5 on page 6 shows how to build-up your grip puller. The numbers in illustration 5 correspond with the parts numbered in table A on page 7.

4.3Cross bearing pullers

Illustration 6 on page 8 shows how to build-up your cross bearing puller. The numbers in illustration 6 correspond with the parts numbered in table B on page 9.

4.4Internal pullers

Illustration 7 on page 8 shows how to build-up your internal puller. The numbers in illustr. 7 correspond with the parts numbered in table B on page 9.

5.1OPERATION

IMPORTANT: It is mandatory that the operator has a full understanding of all instructions, safety regulations, cautions and warnings, before starting to operate any of this high force tool equipment. When in doubt, contact us.

5.2Advancing and retracting the cylinder

All BHP Puller Sets are equipped with a single- acting, spring return cylinder and a handpump. For complete operating instructions refer to the instruc- tion sheet included with each pump and cylinder.

Handpumps to operate single-acting cylinders are equipped with a release valve to release pressure. Close the release valve, raise and lower the pump handle to advance the cylinder. To retract the cylinder, open the release valve.

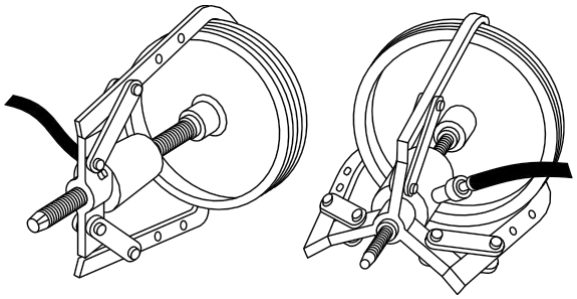
5.3Air removal

Advance and retract the cylinder several times avoiding pressure build-up. Air removal is complete when the cylinder motion is smooth.

5.4Using grip pullers

Build up your application as shown in illustr. 1 below and illustration 5 on page 6. Remember that the triple grip puller provides a more stable and secure grip, with a more even pulling force than the double grip puller. Do not exceed 50% of the rated puller capacity with a double grip puller. Start pumping and apply hydraulic pressure gradually to remove the part.

illustration 1 - Grip Pullers



Removing pulley with 2-jaw grip puller (double crosshead)

Removing pulley with 3-jaw grip puller (triple crosshead)

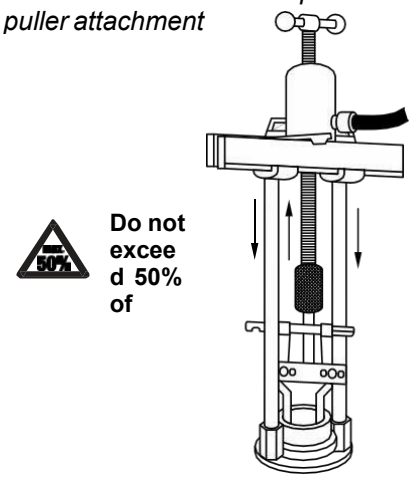
Do not exceed 50% of rated

5.5

Using bearing cup puller

Build up your application as shown in illustration 2 with the internal grip puller. See also illustr. 7 page 8. Align puller legs and arms and apply hydraulic pressure gradually to remove the part.

illustration 2 - Crosshead puller with bearing cup puller attachment

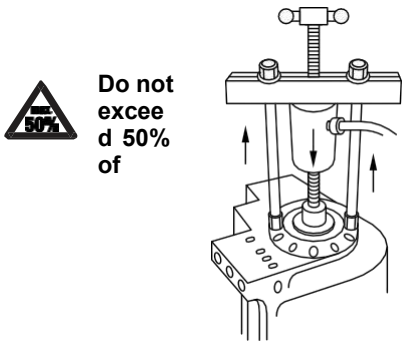


5.6Using cross bearing pullers

To pull: The cylinder must be positioned above the slotted crosshead. Align puller legs and adjusting screw and apply hydraulic pressure gradually to remove the part.

To push: Build up the application as shown in illustration 3. Notice that the cylinder must be positioned under the slotted crosshead. Align puller legs and adjusting screw and apply hydraulic pressure gradually to remove the part.

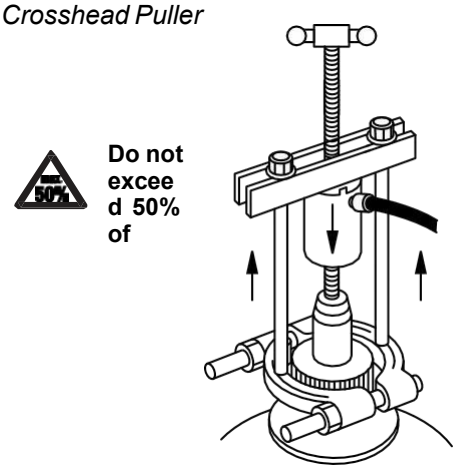
illustration 3 - Pushing with cross bearing puller



5.7Using bearing puller attachment

The bearing puller attachment can be used in combination with the crosshead puller shown in the illustration 4 below and illustration 6 on page 8.

illustration 4 - Bearing puller attachment with Crosshead Puller



6.0 MAINTENANCE AND SERVICE

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem requiring service and maintenance.

We offers ready-to-use spare parts kits for repair and/or replacements. Contact us.

IMPORTANT: Hydraulic equipment must be serviced by a qualified hydraulic technician. For repair service, contact the Authorized Service Center in your area.

•Periodically inspect all components to detect any problem requiring maintenance and service. Replace damaged parts immediately.

•Do not exceed oil temperature of 60˚C [140˚F].

•Keep all hydraulic components clean.

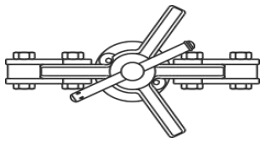
•Keep your pulling equipment in shape. Clean and lubricate the puller's adjusting screw and puller legs frequently, from thread to tip, to ensure good operation and long life.

•Periodically check the hydraulic system for loose connections and leaks.

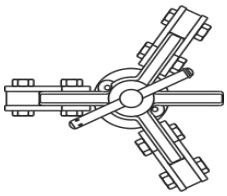
•Change hydraulic oil in your system as recom- mended in the pump instruction sheet.

Note: See pages 6 through 12 for repair parts lists and diagrams.

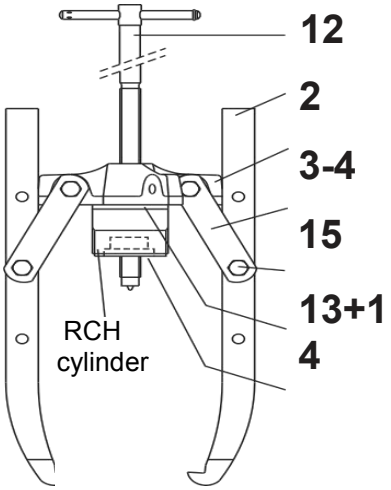
illustration 5 - How to set up a Grip Puller. Numbers correspond with table A on page 7.



2 grip



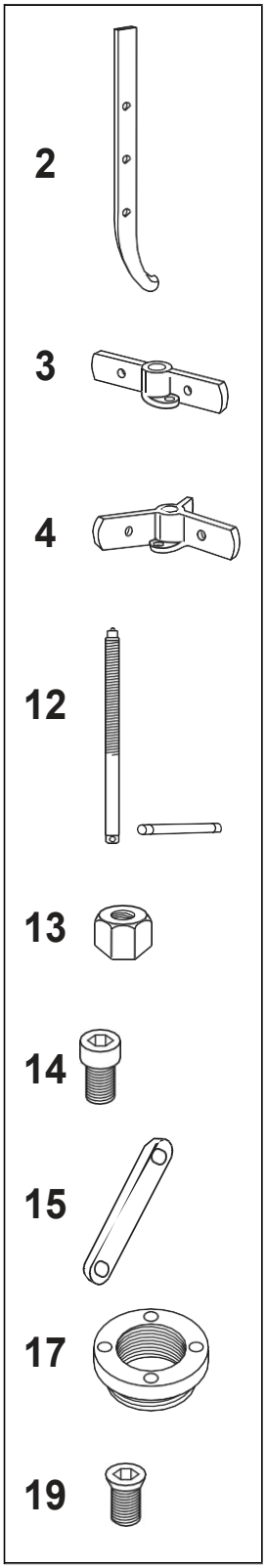
3 grip



Note: Refer to Illustration 5 (page 6)

TABLE A - INDIVIDUAL COMPONENTS OF GRIP PULLER SETS

Model Number - Grip Puller Sets		**BHP-152**	**BHP-251G**	**BHP-351G**	**BHP-551G**
Maximum Capacity		8 ton	20 ton	30 ton	50 ton
Hydraulic Components	Pump	P-392	P-392	P-392	P-80
	Cylinder	RCH-121	RCH-202	RCH-302	RCH-603
	Gauge	GF-120P + GA-3 **1)**	GF-813P + GA-3 **1)**	GF-813P + GA-3 **1)**	GF-813P + GA-3 **1)**
	Hose	HB-7206QB	HC-7206	HC-7206	HC-7206
Weight / Poids		22 kg 48 lbs	56 kg 123 lbs	91 kg 200 lbs	160 kg 353 lbs
1 Cyl. Adapter		--	--	--	--
2 Grip Arms		HP-1125 (3x)	HP-2125 (3x)	HP-3125 (3x)	HP-5125 (3x)
3 Double Crosshead		--	HP-2120	HP-3120	HP-5120
4 Triple Crosshead		HP-1130	HP-2130	HP-3130	HP-5130
12 Adjusting Rod		HP-1111	HP-2111	HP-3111	HP-5111
13 Strap Nut Kit (Includes 6 nuts)		HP-1123	HP-2023	HP-3123	HP-5023
14 Strap Screw Kit (includes 6 screws)		HP-1122	HP-2122	HP-3122	HP-5122
15 Straps		HP-1121 (6x)	HP-2121 (6x)	HP-3121 (6x)	HP-5121 (6x)
17 Threaded Saddle		--	HP-2015	HP-3015	HP-5016
19 Mounting Screw Kit (includes 2 screws)		HP-1120	HP-2213	HP-2013	HP-5013



1) GA = Gauge Adaptor

illustration 6 - How to set up a Cross Bearing Puller.
Numbers correspond with table B on page 9

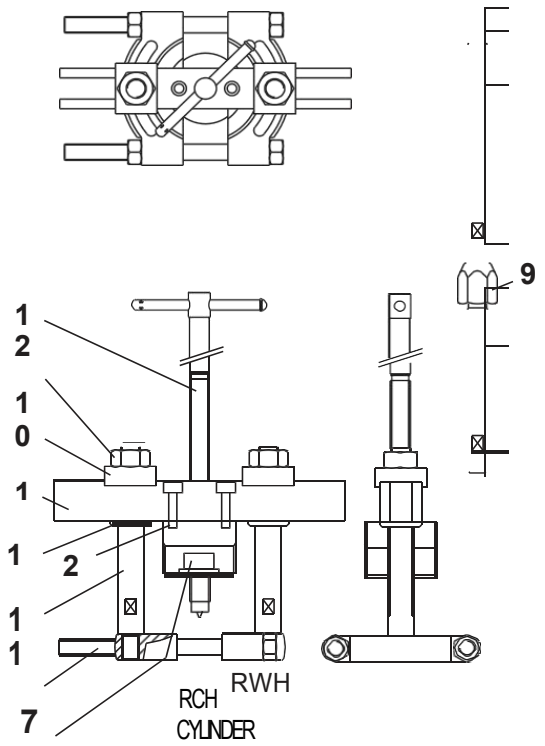
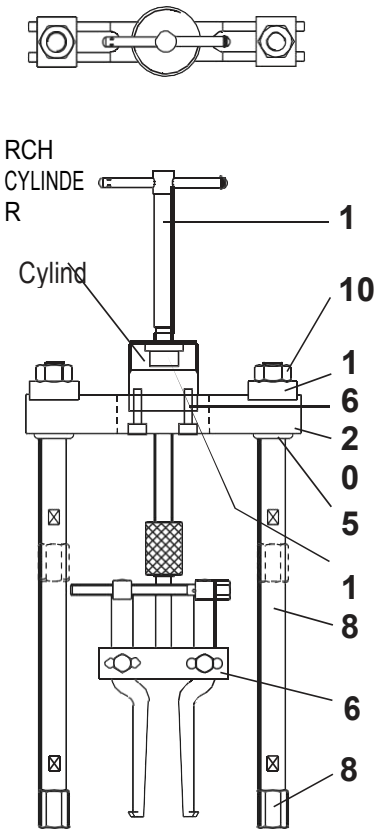


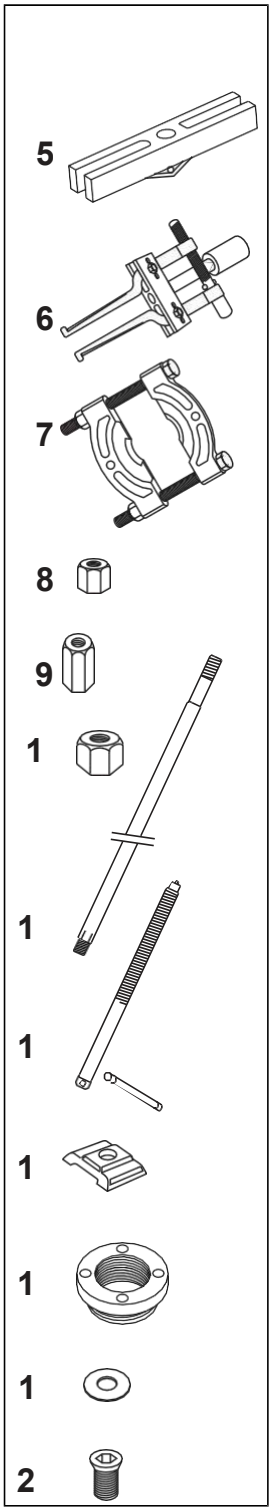
illustration 7 - How to set up a Internal Puller.
Numbers correspond with table B on page 9



Note: Refer to Illustration 6 or 7 (page 8)

TABLE B - INDIVIDUAL COMPONENTS OF CROSS-BEARING PULLER SETS

Cross-Bearing Puller Sets		**BHP-162**	**BHP-261G**	**BHP-361G**	**BHP-561G**
Max. Capacity		8 ton	20 ton	30 ton	50 ton
Hydraulic Components	Pump	P-392	P-392	P-392	P-80
	Cylinder	RCH-121	RCH-202	RCH-302	RCH-603
	Gauge	GF-120P) + GA-3 **1)**	GF-813P + GA-3 **1)**	GF-813P + GA-3 **1)**	GF-813P + GA-3 **1)**
	Hose	HB-7206QB	HC-7206	HC-7206	HC-7206
Weight		26 kg 57 lbs	62 kg 164 lbs	121 kg 267 lbs	185 kg 408 lbs
5 Slotted Crosshead		HP-1103	HP-2103	HP-3104	HP-5103
6 Bearing Cup Pull.		BHP-180	BHP-280	BHP-380	BHP-580
7 Bearing Puller		BHP-181	BHP-282	BHP-382	BHP-582
8 Leg End Kit (includes 2 leg ends)		HP-2009	HP-2009	HP-3039	--
9 Leg Reducer Kit (includes 4 reducers)		HP-2031	HP-2031	HP-3041	--
10 Leg Nut Kit (includes 2 nuts)		HP-2001	HP-2001	HP-3031	HP-5001
11 Leg **2)**		HP-1136 (2x) HP-1137 (2x)	HP-2006 (2x) HP-2007 (2x) HP-2008 (2x) HP-2012 (2x)	HP-3036 (2x) HP-3037 (2x) HP-3038 (2x)	HP-5007 (2x) HP-5008 (2x)
12 Adjusting Rod		HP-1111	HP-2111	HP-3111	HP-5111
16 Slide Plate		HP-1105 (2x)	HP-2105 (2x)	HP-3135 (2x)	HP-5102 (2x)
17 Threaded Saddle		--	HP-2015	HP-3015	HP-5016
18 Washer Kit (includes 2 washers)		HP-1102	HP-2002	HP-3032	HP-5132
20 Mounting Screw Kit (includes 2 screws)		HP-1213	HP-2213	HP-3113	HP-5113



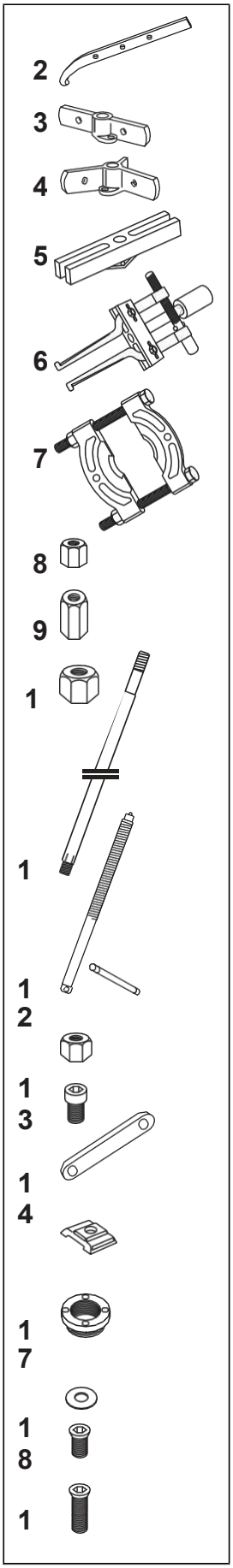
1) GA = Gauge Adaptor **2)** See Leg Lengths table on page 11 for additional information.

Note: Refer to Illustration 5 (page 6) or illustrations 6 & 7 (page 8)

TABLE C - INDIVIDUAL COMPONENTS OF MULTI-PURPOSE PULLER SETS

Multi-Purpose Puller Sets		**BHP-1752**	**BHP-2751G**	**BHP-3751G**	**BHP-5751G**
Capacity		8 ton	20 ton	30 ton	50 ton
Hydraulic Components	Pump	P-392	P-392	P-392	P-80
	Cylinder	RCH-121	RCH-202	RCH-302	RCH-603
	Gauge	GF-120P) + GA-3 **1)**	GF-813P + GA-3 **1)**	GF-813P + GA-3 **1)**	GF-813P + GA-3 **1)**
	Hose	HC-7206	HC-7206	HC-7206	HC-7206
2 Grip Arms		HP-1125 (3x)	HP-2125 (3x)	HP-3125 (3x)	HP-5125 (3x)
3 Double Crosshead		--	HP-2120	HP-3120	HP-5120
4 Triple Crosshead		HP-1130	HP-2130	HP-3130	HP-5130
5 Slotted Crosshead		HP-1103	HP-2103	HP-3104	HP-5103
6 Bearing Cup Pull.		BHP-180	BHP-280	BHP-380	BHP-580
7 Bearing Puller		BHP-181	BHP-282	BHP-382	BHP-582
8 Leg End Kit (includes 2 leg ends)		HP-2009	HP-2009	HP-3039	--
9 Leg Reducer Kit (includes 4 reducers)		HP-2031	HP-2031	HP-3041	--
10 Leg Nut Kit (includes 2 nuts)		HP-2001	HP-2001	HP-3031	HP-5001
11 Leg **2)**		HP-1136 (2x) HP-1137 (2x)	HP-2006 (2x) HP-2007 (2x) HP-2008 (2x) HP-2012 (2x)	HP-3036 (2x) HP-3037 (2x) HP-3038 (2x)	HP-5007 (2x) HP-5008 (2x)
12 Adjusting Rod		HP-1111	HP-2111	HP-3111	HP-5111
13 Strap Nut Kit (includes 6 nuts)		HP-1123	HP-2023	HP-3123	HP-5023
14 Strap Screw Kit (includes 6 screws)		HP-1122	HP-2122	HP-3122	HP-5122
15 Straps		HP-1121 (6x)	HP-2121 (6x)	HP-3121 (6x)	HP-5121 (6x)
16 Slide Plate		HP-1105 (2x)	HP-2105 (2x)	HP-3135 (2x)	HP-5102 (2x)
17 Threaded Saddle		--	HP-2015	HP-3015	HP-5016
18 Washer Kit (includes 2 washers)		HP-1102	HP-2002	HP-3032	--
19 Short Mounting Screw Kit (includes 2 screws)		HP-1120	HP-2113	HP-2013	HP-5013
20 Long Mounting Screw Kit (includes 2 screws)		HP-1213	HP-2213	HP-3113	HP-5113

1) GA = Gauge Adaptor **2)** See Leg Lengths table on page 11 for additional information.



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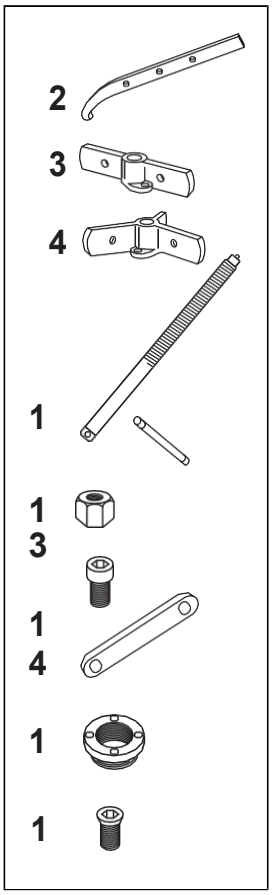
Note: Refer to Illustration 5 (page 6)

TABLE D - INDIVIDUAL COMPONENTS OF GRIP PULLER ATTACHMENTS

Grip Puller Attachments	**BHP-1762**	**BHP-252**	**BHP-352**	**BHP-552**
Capacity	8 ton	20 ton	30 ton	50 ton
2 Grip Arms	HP-1125 (3x)	HP-2125 (3x)	HP-3125 (3x)	HP-5125 (3x)
3 Double Crosshead	--	HP-2120	HP-3120	HP-5120
4 Triple Crosshead	HP-1130	HP-2130	HP-3130	HP-5130
12 Adjusting Rod	HP-1111	HP-2111	HP-3111	HP-5111
13 Strap Nut Kit (includes 6 nuts)	HP-1123	HP-2023	HP-3123	HP-5023
14 Strap Screw Kit (includes 6 screws)	HP-1122	HP-2122	HP-3122	HP-5122
15 Straps	HP-1121 (6x)	HP-2121 (6x)	HP-3121 (6x)	HP-5121 (6x)
17 Threaded Saddle	--	HP-2015	HP-3015	HP-5016
19 Mounting Screw Kit (includes 2 screws)	HP-1120	HP-2213	HP-2013	HP-5013



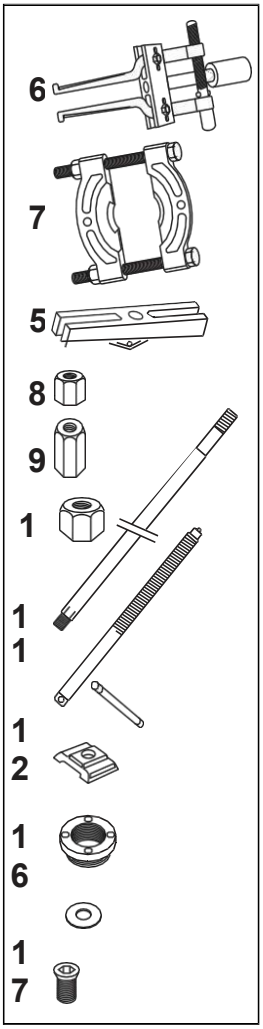
LEG LENGTHS (See item #11, tables B, C and E)

Leg Part Number	Leg Length inch [mm]	Used on Puller Models:
HP-1136	4.2 [106]	BHP162, BHP-1752, BHP-1772
HP-1137	14.1 [357]	
HP-2006	9.4 [240]	BHP-261G, BHP-2751G, BHP-262
HP-2007	16.5 [420]	
HP-2008	22.4 [570]	
HP-2012	4.5 [115]	
HP-3036	8.0 [204]	BHP-361G, BHP-3751G, BHP-362
HP-3037	18.1 [18.1]	
HP-3038	28.0 [710]	
HP-5007	24.0 [608.5]	BHP-561G, BHP-5751G, BHP-362
HP-5008	34.0 [863.5]	

TABLE E - INDIVIDUAL COMPONENTS OF PULLER SETS ATTACHMENTS

Refer to Illustration 6 or 7 (page 8)

Puller Set Attachments	**BHP-1772**	**BHP-262**	**BHP-362**	**BHP-562**
Capacity	8 ton	20 ton	30 ton	50 ton
5 Slotted Crosshead	HP-1103	HP-2103	HP-3104	HP-5103
6 Bearing Cup Pull.	BHP-180	BHP-280	BHP-380	BHP-580
7 Bearing Puller.	BHP-181	BHP-282	BHP-382	BHP-582
8 Leg End Kit (includes 2 leg ends)	HP-2009	HP-2009	HP-3039	--
9 Leg Reducer Kit (includes 4 leg ends)	HP-2031	HP-2031	HP-3041	--
10 Leg Nut Kit (includes 2 nuts)	HP-2001	HP-2001	HP-3031	HP-5001
11 Leg **1)**	HP-1136 (2x) HP-1137 (2x)	HP-2006 (2x) HP-2007 (2x) HP-2008 (2x) HP-2012 (2x)	HP-3036 (2x) HP-3037 (2x) HP-3038 (2x)	HP-5007 (2x) HP-5008 (2x)
12 Adjusting Rod	HP-1111	HP-2111	HP-3111	HP-5111
16 Slide Plate	HP-1105 (2x)	HP-2105 (2x)	HP-3135 (2x)	HP-5102 (2x)
17 Threaded Saddle	--	HP-2015	HP-3015	HP-5016
18 Washer Kit (includes 2 washers)	HP-1102	HP-2002	HP-3032	--
20 Mounting Screw Kit (includes 2 screws)	HP-1213	HP-2113	HP-3113	HP-5113



1) See Leg Lengths table on page 11 for additional information.

TABLE F - INDIVIDUAL COMPONENTS OF BEARING PULLER

Bearing Puller	**BHP-181**	**BHP-282**	**BHP-382**	**BHP-582**
Capacity	8 ton	20 ton	30 ton	50 ton
Rod	BHP181K	BHP282K	BHP582K	
Rod Nut