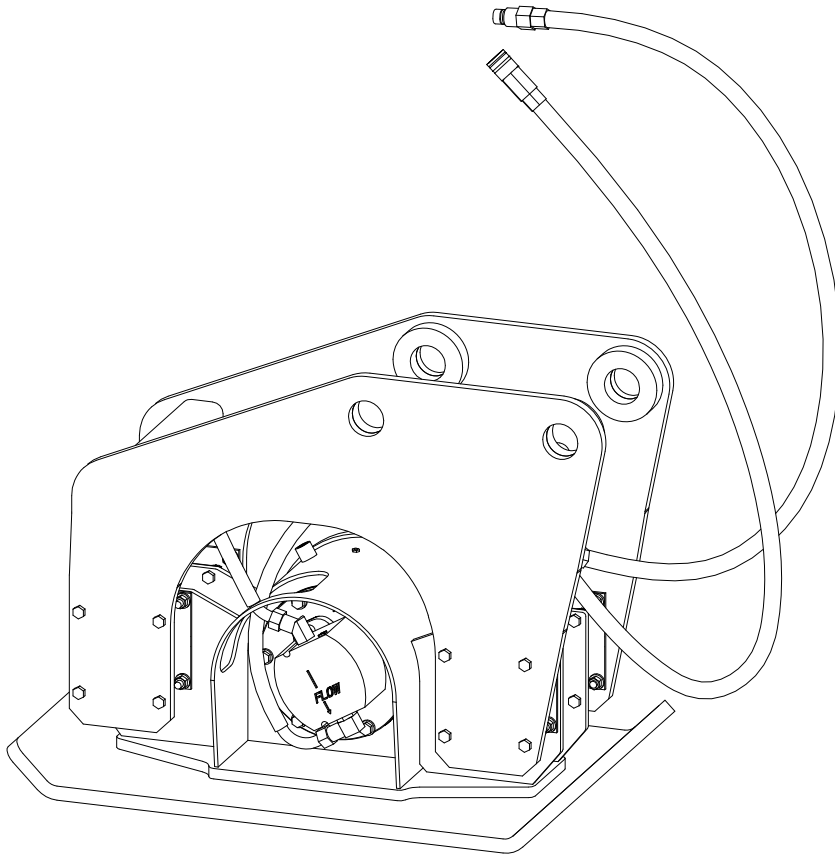




TECHNICAL MANUAL

Manual Part Number 103376



1000
SERIES
HO-PAC

**Allied Ho-Pac Model 1000 Series
Document Change Notice**

<u>Date</u>	<u>Page</u>	<u>Change</u>
Jul 21, 2004		Original Issue
Aug 12, 2004	34-41	Change valve mounting bolts
Aug 27, 2004	34-41	Revise hose adapter
Oct 06, 2005	33	Correct adapter plate P/N
Jan 16, 2006	31	Revise 18 gpm valve P/N
Sep 29, 2006	25	Revise oil capacity
Oct 24, 2006	34-35	Revise bearing housing
Mar 16, 2007	7, 8, 9, 12, 13, 36, 37, 40, 41, 42, 43, 44, 45,	New Eccentric, Eccentric Housing
May 01, 2008	36	Revise parts diagram

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SECTION 1.0 INTRODUCTION

Ho-Pac Technical Manual: Part Number 103376

This Technical Manual is applicable to Ho-Pac models: 1000 series

Serial Numbers: 1000 and Above

Years of Manufacture: 2004 and Above

Serial Number(s) _____ (Model and serial numbers are located on the ID Plate mounted on the Ho-Pac as shown in Section 4.4 Decal, Lifting and Lubrication Diagrams.)

This manual contains important information for the safe use and maintenance of the Allied Ho-Pac. Read this manual thoroughly before installing, operating or servicing the Ho-Pac. This manual must be easily accessible to operators, or service and transport personnel. Store this manual in a convenient location.

Pay careful attention to all instructions and follow all governing regulations. Operation or service other than in accordance with these instructions may subject the Ho-Pac to conditions beyond its design capability. Improper operation, service or the use of non-Allied parts may result in Ho-Pac failure or personnel injury.

1.1 Safety Information

When using the Ho-Pac, safety procedures must be followed. See Section 6.0 for further safety guidelines.

Pay particular attention to WARNINGS and CAUTIONS, identified with this symbol. (!!)

These instructions are important for personnel safety and full service life of the Ho-Pac. Follow them carefully.

1.2 Warranty Information

Warranty coverage of the Allied Ho-Pac is contingent upon proper maintenance and operation of the Ho-Pac as detailed in this manual. Improper maintenance or operation shall void Ho-Pac warranty coverage.

Immediately upon receipt of the Ho-Pac, read all Allied warranty documents delivered with the unit for a thorough understanding of warranty coverage.

Record the Ho-Pac Serial Number in the space provided above.

1.3 Allied Product Policies

Allied reserves the right to make modifications to the design or changes to the specifications without prior notice.

In this manual, Allied recommends Ho-Pac applications, maintenance and service

consistent with industry practices. Allied takes no responsibility for the results of action not recommended in this manual and specifically the results of:

- Operation in non-recommended applications
- Incorrect operation

- Improper maintenance
- Use of service parts not approved or supplied by Allied.

These exclusions apply to damage to the Ho-Pac, associated equipment, and injury to personnel.

SECTION 2.0 OVERVIEW

The Allied Ho-Pac is a boom-mounted, hydraulic powered, vibrating plate compactor and driver. It is used for soil compaction and sheet/pile installation. The Ho-Pac is typically mounted on either a rubber tired or track construction vehicle.

The Allied 1000 series Ho-Pac is effective in compacting materials up to 4 foot lifts. Compaction results are dependent on soil type, moisture content, compaction time and operational technique. Soils with 50% or more granular content are the most responsive to vibration compaction. Optimum moisture content is also critical to achieving maximum compacted densities of fill material. Fill materials may need conditioning prior to compaction.

The Allied Ho-Pac vibrating compactor consists of the following major subassemblies:

The DYNAMIC ASSEMBLY includes the hydraulic motor, bearings, eccentric mass, housing frame and base plate. This assembly generates and transfers the vibratory energy to the soil.

The SUSPENSION SYSTEM has spring mounts that suspend and isolate the Dynamic Assembly from the Mounting Frame.

The MOUNTING FRAME houses the Suspension System and mounts to the boom of the carrier.

The HYDRAULIC CONTROL VALVE is a multi-function, hydraulic control valve that regulates hydraulic flow and protects the Ho-Pac from excessive hydraulic pressures and flows. The specific valve functions are:

- Flow control: The valve limits the oil flow to optimize Ho-Pac operation and longevity. Excess flow results in excessive motor speed and shortens bearing and motor life.
- Pressure control: The valve limits the operating pressure to protect the Ho-Pac motor from damage caused by excessive pressure. The relief pressure is pre-set to match the motor's maximum operating pressure plus 200 psi (14 bar).
- Anti-cavitation circuit: The valve controls the Ho-Pac motor and eccentric deceleration. Without this circuit, abrupt changes in the return flow from the Ho-Pac to the carrier can cause damaging pressure spikes.
- Return line check valve: The valve prevents reverse flow to the hydraulic motor and provides a nominal back-pressure to insure the proper operation of carrier mounted, flow control valves.

SECTION 3.0 PRINCIPLES OF OPERATION

3.1 Ho-Pac

The Allied Ho-Pac is a high-energy compaction tool utilizing three compaction techniques:

- The **IMPULSE FORCE** generated by the rotating eccentric mass vibrates the soil near the base plate to eliminate voids between material particles.
- The **VIBRATION FREQUENCY** of 2000 r.p.m. provides maximum effectiveness for the consolidation and compaction of granular soil materials.
- The **DOWN FORCE** of the carrier provides a preload force to effectively transfer the vibrating energy and to compress the material.

Optimum compaction is usually obtained with two passes. The duration of the initial pass is dependent on depth and material. The second pass may require additional fill material and Ho-Pac repositioning to achieve a finished surface.

The Allied Ho-Pac can also be an effective sheet or pile driver. The Ho-Pac's vibration energy is transferred through the sheet or pile to the soil. Sandy soils and moist clays are "softened" by the vibration, which allows the sheet or pile to penetrate more easily.

3.2 Hydraulic Installation Definition

Efficient operation, production rates and service life of Allied attachments depend

on the correct hydraulic oil flow and pressures. Adjust the carrier's hydraulic system accordingly during installation and start-up. Among other important information, the Allied technical specifications include Hydraulic Flow, Operating Pressure, Dynamic Relief Pressure and Static Relief Pressure. These parameters are defined as:

- **HYDRAULIC FLOW** is the hydraulic oil flow range, minimum to maximum, necessary for proper attachment operation. Operating the attachment outside this range can result in inefficient operation, damage to the attachment, or injury to personnel.
- **HYDRAULIC OPERATING PRESSURE** is the average hydraulic oil pressure measured at the attachment during operation. The Hydraulic Operating Pressure range is the range of pressure required to operate the attachment throughout the Hydraulic Flow range. The Operating Pressure is not to be used as a relief valve pressure setting.
- **DYNAMIC RELIEF PRESSURE** is the hydraulic oil pressure when the relief valve starts to open and divert oil back to the carrier instead of the attachment. The carrier's hydraulic system shall be capable of providing the desired oil flow at a pressure equal to at least the dynamic relief pressure. Also it is very important not to control the oil flow with the relief valve. This may cause significant heat

generation and damage the attachment and/or carrier.

- **STATIC RELIEF PRESSURE** is the hydraulic oil pressure when all oil flow is diverted through the relief valve and away from the attachment. The attachment must never be subjected to pressures above the static relief pressure.

The difference between static relief pressure and dynamic relief pressure varies with relief valve design. In some instances, the relief valve may be inadequate to divert full oil flow at less than the Static Relief Pressure. If this is the case, contact your local Allied dealer for assistance.

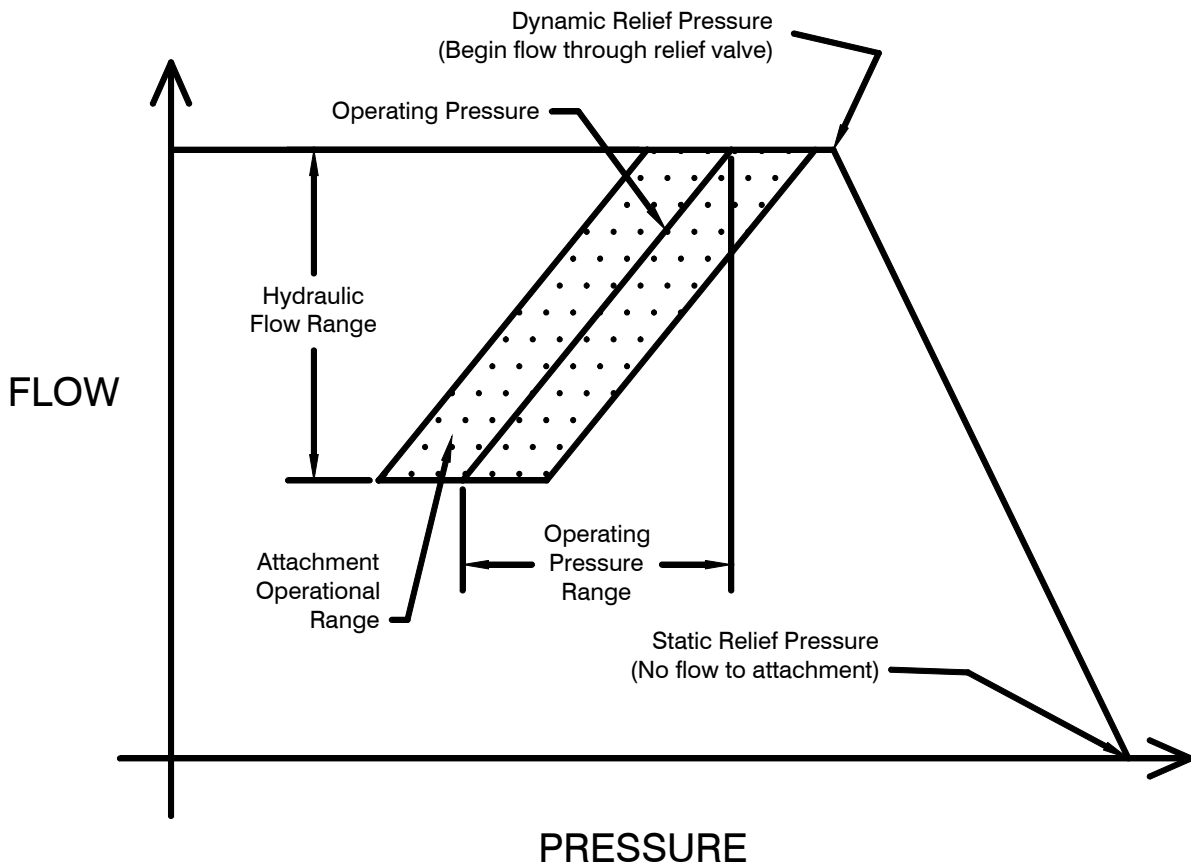


Figure 3.1: Flow-Pressure Diagram

SECTION 4.0 TECHNICAL INFORMATION

4.1 SPECIFICATIONS

Table 4.1 Ho-Pac General Specifications			
Impulse Force	Lbs (N)	8,000 (35,586)	
Cycles Per Minute	1/min	2000	
Sound Power Level	DBA (LWA)	105.6	
Hydraulic Flow	Motor Option 1	gpm (lpm)	12 (45)
	Motor Option 2		18 (68)
	Motor Option 3		21 (79)
Operating Pressure-No Load	psi (bar)	300-1000 (20-35)	
Max Operating Pressure	Motor Option 1	psi (bar)	2800 (193)
	Motor Option 2		2000 (138)
	Motor Option 3		2000 (138)
Carrier Dynamic Relief Pressure	psi (bar)	Max Operating + 400 (28)	
Carrier Static Relief Pressure	psi (bar)	Max Operating + 650 (45)	
Compaction Plate Dimensions (Std)	Inch (cm)	24 x 32.5 (61 x 83)	
Compaction Plate Dimensions (Option)		16 x 36.0 (41 x 91)	
Compaction Area (Std)	Ft ² (m ²)	5.4 (0.50)	
Compaction Area (Option)		4.0 (0.37)	
Pressure Hose Size	Inch (mm)	3/4 (16)	
Return Hose Size	Inch (mm)	3/4 (16)	
Recommended Carrier Weight			
Backhoe	Lbs (kg)	9,000-25,000 (4,000-11,000)	
Excavator		14,000-30,000 (6,000-14,000)	

Table 4.2 Ho-Pac Mounting Specifications					
	USF	BSF	BR / SR	V10	V12
Weight Lbs (kg)	1053 (478)	1053 (478)	1034 (469)	1018 (462)	1020 (463)
Mounting Pin Diameter Inch (mm)	1.18-2.25 (30-57)	1.75 & 1.50 (44.5 & 38)	Varies	1.18-2.56 (30-65)	1.18-2.56 (30-65)
Maximum Stick Width Inch (mm)	10.23 (260)	10.25 (260)	Varies	10.12 (257)	12.50 (317)

4.2 DIMENSION DIAGRAMS

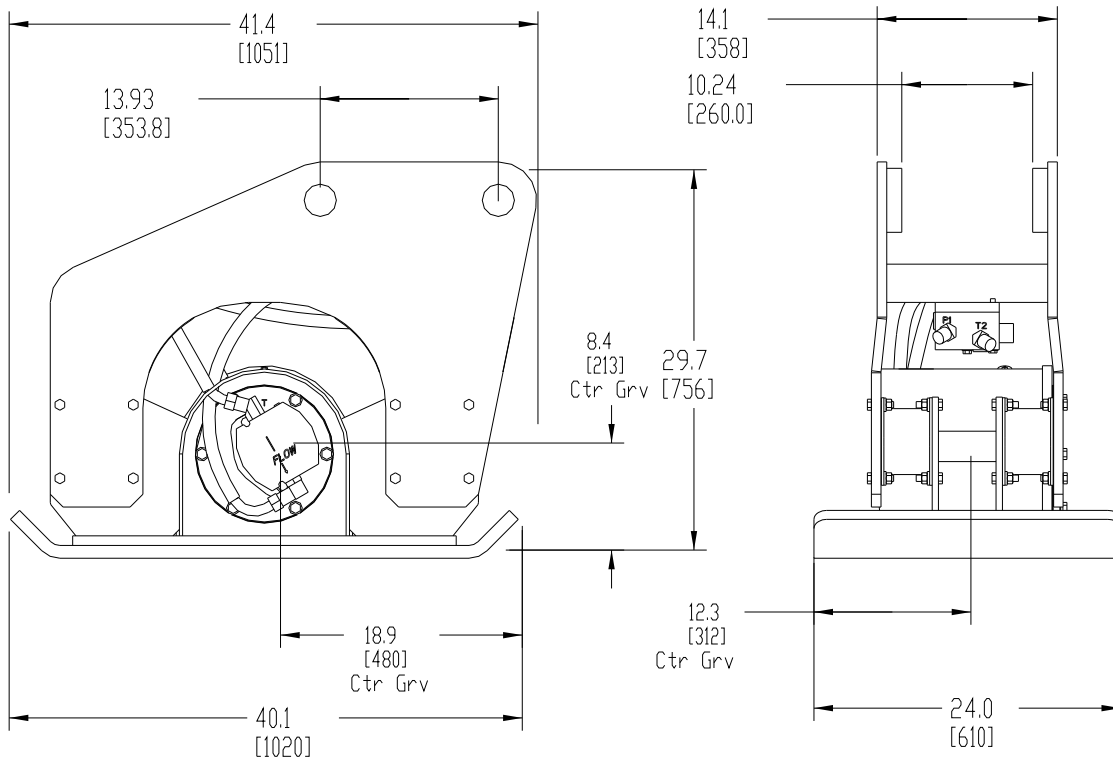


Figure 4.1: USF Ho-Pac Dimensions

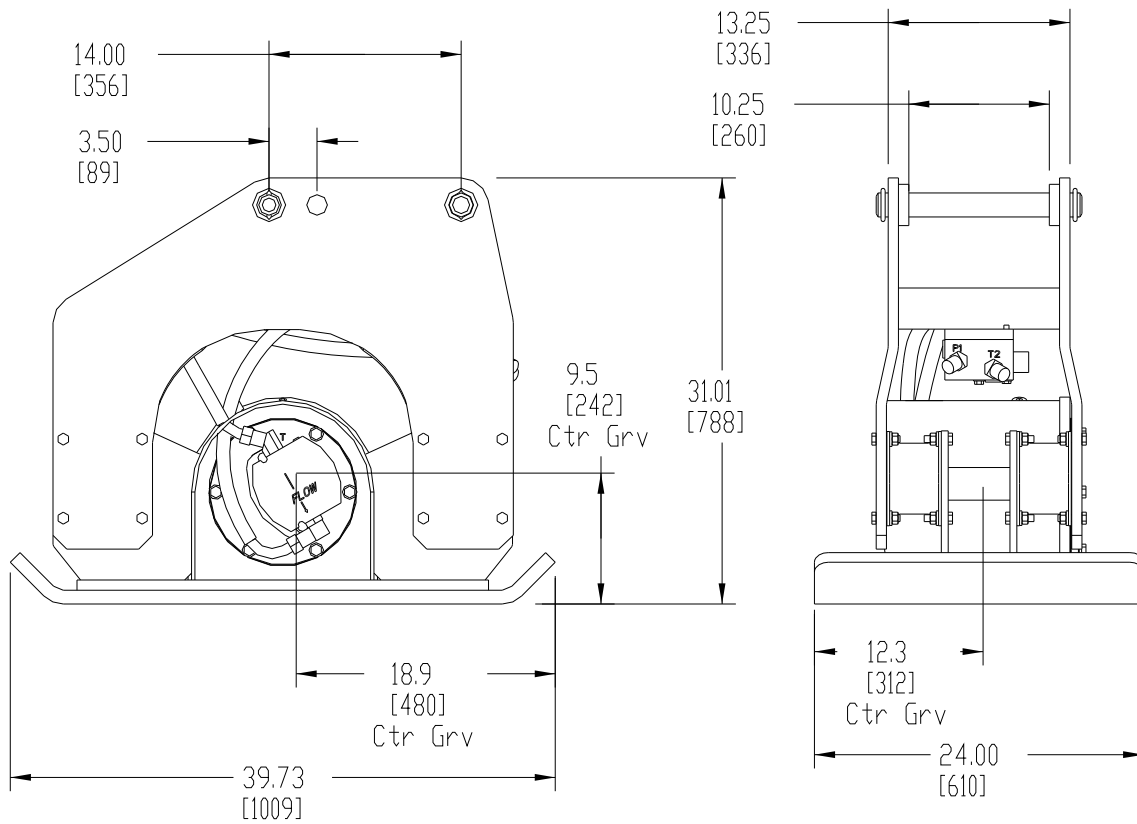


Figure 4.2: BSF Ho-Pac Dimensions

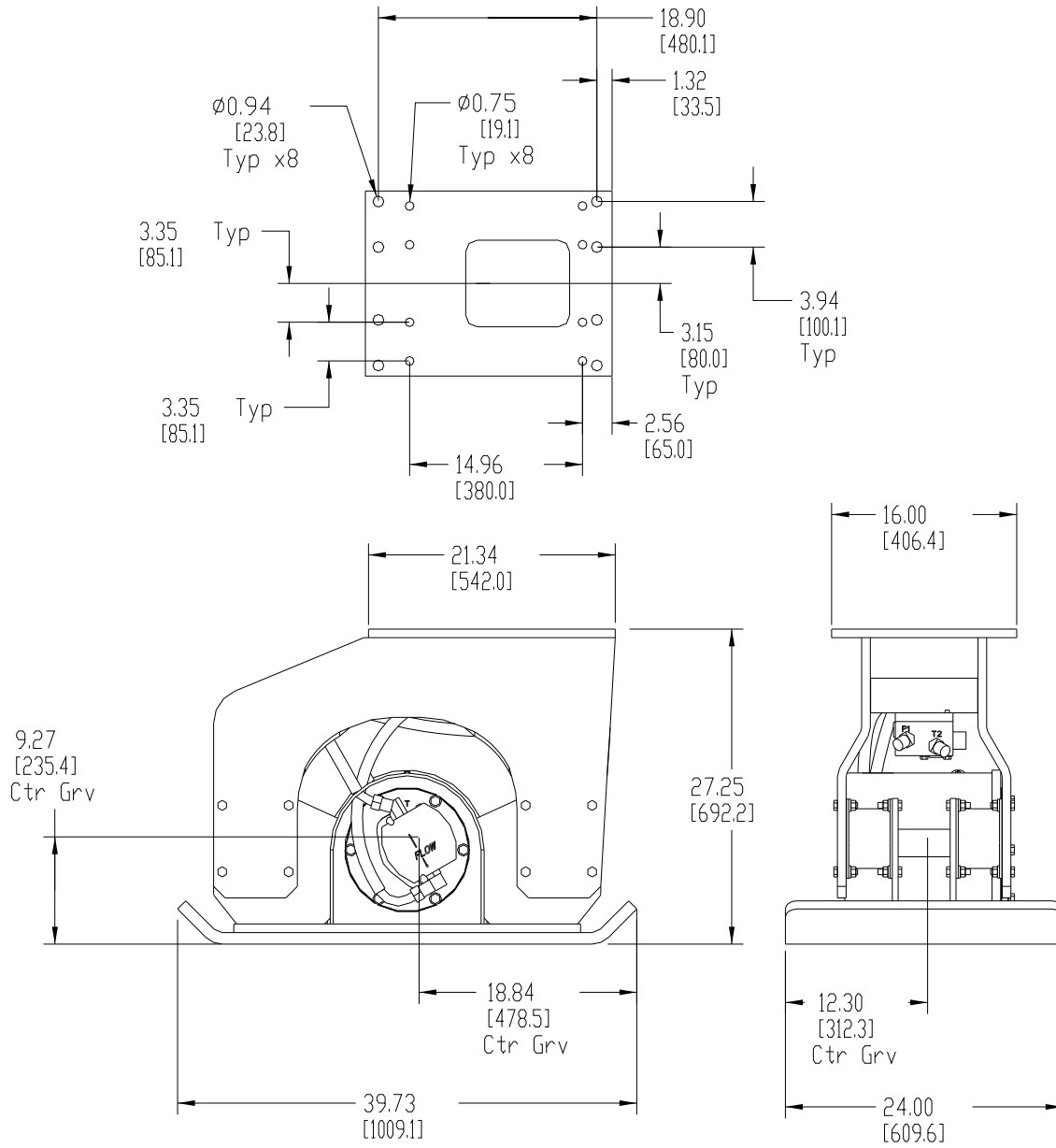


Figure 4.3: BR / SR Ho-Pac Dimensions

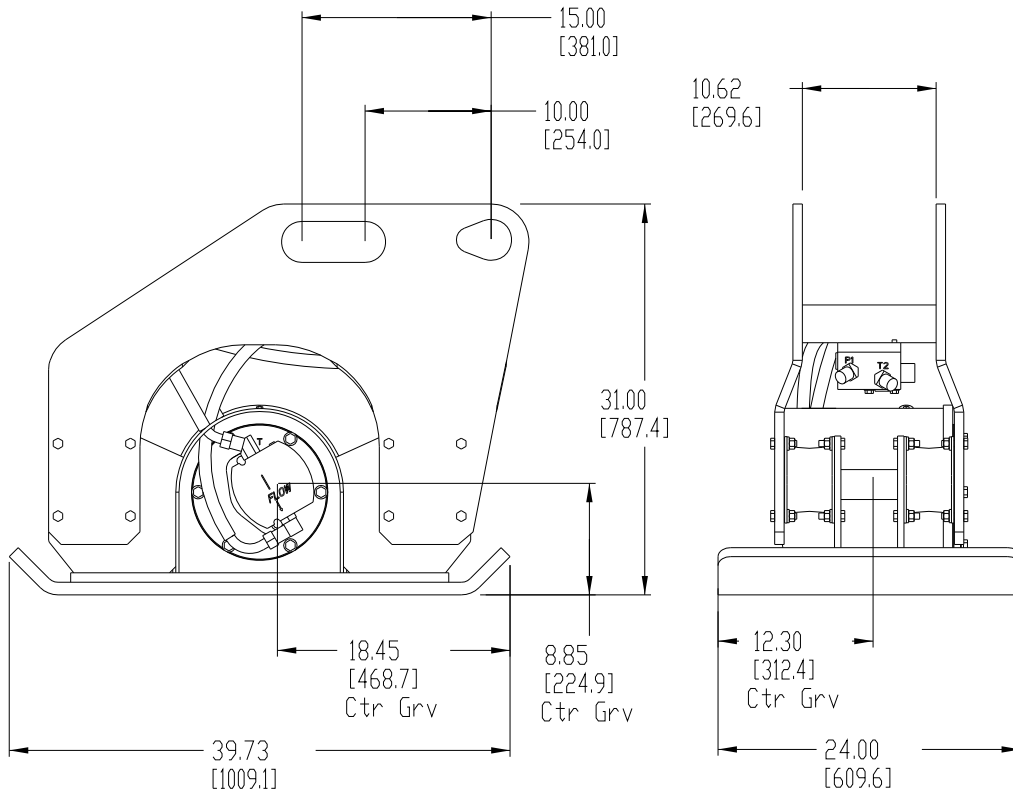


Figure 4.4: VMS V10 Ho-Pac Dimensions

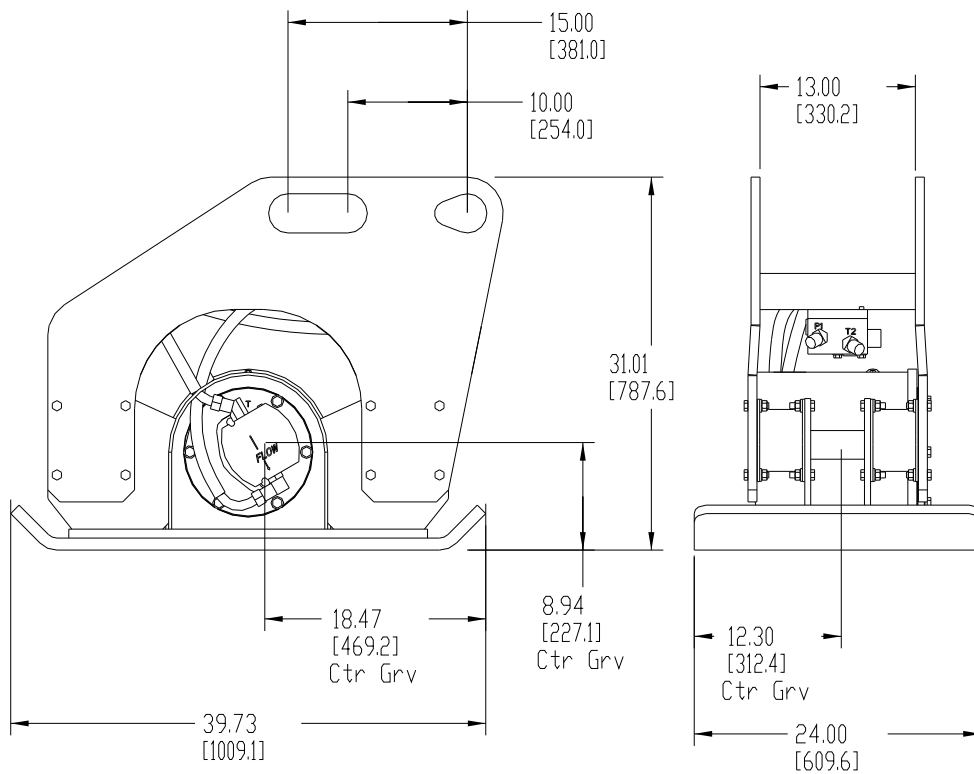
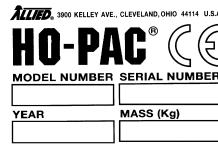


Figure 4.5: VMS V12 Ho-Pac Dimensions

4.3 DECAL IDENTIFICATION



The ID PLATE (Identification Plate) contains the following information: Manufacturer’s name and address, Product Name, CE compliance marking, Model Number, Serial Number, Year of Manufacture, and Mass.



The LIFT POINT decal identifies the location of the recommended lifting points of the Ho-Pac.



The STAY CLEAR decal indicates that personnel and by-standers are to maintain a safe distance from the Ho-Pac during operation.



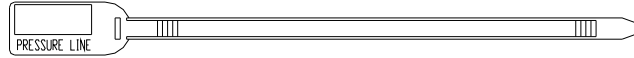
The READ INSTRUCTION decal indicates that it is important for the operator to read the manual prior to transporting, installing, operating, or servicing the Ho-Pac.



The HOT SURFACE decal indicates that the hydraulic components may be hot and that proper protective equipment is required. These components include the quick disconnect couplings, hoses, hose fittings, and hydraulic motor.



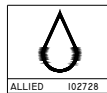
The ALLIED LOGO decal is the Allied brand identifier and is a registered trademark of Allied Construction Products, LLC.



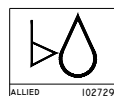
The PRESSURE I.D. tag is attached to the pressure hose for ease of identification between hoses.

1000

The MODEL NUMBER decal indicates the Ho-Pac model number.



The OIL FILL decal identifies the location to add oil to fill the oil reservoir. Refer to Section 11.5 for more information.



The OIL LEVEL decal identifies the location to check the oil level. Refer to Section 11.5 for more information.

4.4 DECAL, LIFTING and LUBRICATION DIAGRAMS

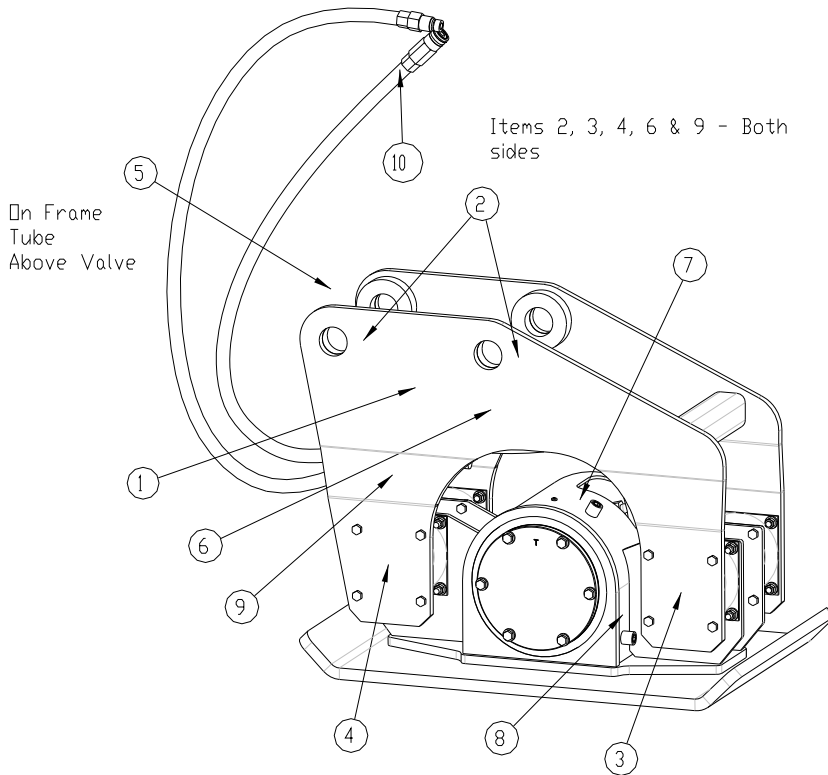


Figure 4.6: USF & BSF Ho-Pac Decal Locations

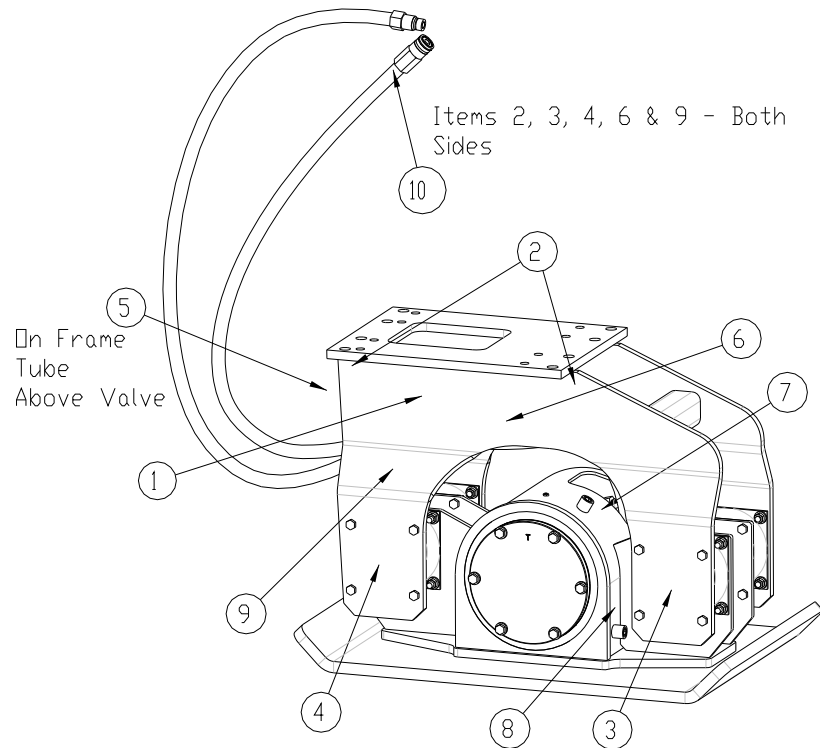


Figure 4.7: BR / SR Ho-Pac Decal Locations

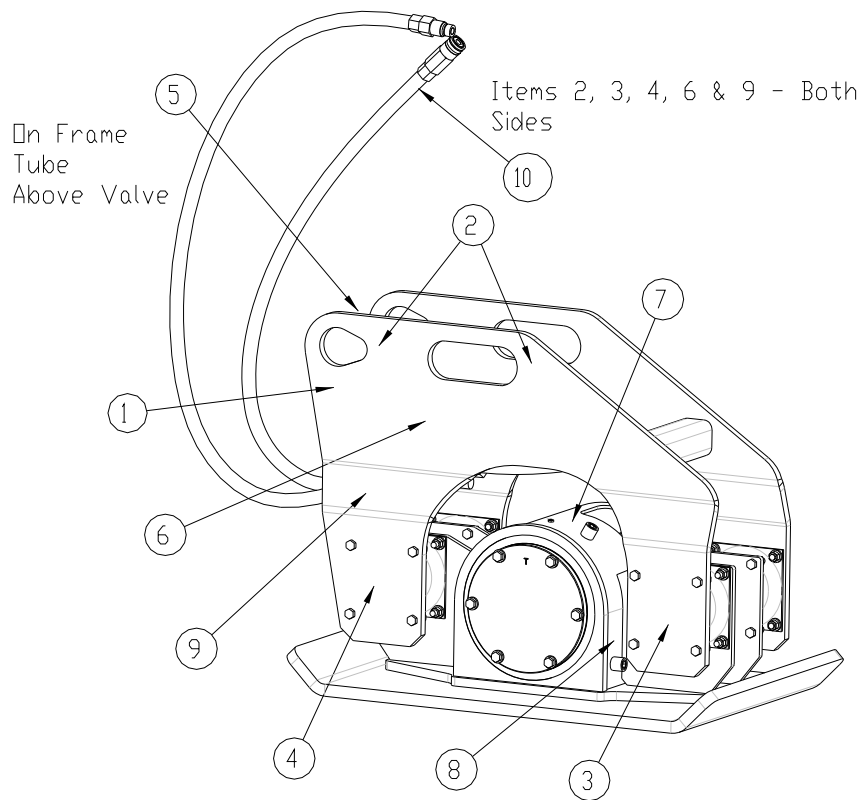


Figure 4.8: VMS V-10 & V-12 Ho-Pac Decal Locations

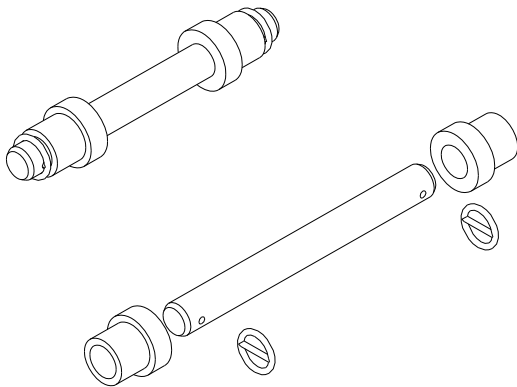
Table 4.3 Decal Parts List Part No. 103377			
ITEM	QTY	PART No.	DESCRIPTION
1	1	676980	ID Plate
2	4	676982	Lift Point
3	2	676981	Stay Clear
4	2	676984	Read Instructions
5	1	676983	Hot Surface
6	2	676653	Allied Logo
7	1	102728	Oil Fill
8	1	A102729	Oil Level
9	2	103378	Model 1000
10	1	818676	Pressure I.D. Tag (Located on Pressure Hose)

SECTION 5.0 MOUNTING INFORMATION

5.1 USF Mounting

Allied USF mounting kits include all the components necessary for the mechanical installation of the USF style Ho-Pac. A typical kit consists of two mounting pins, four flange bushings or collars, and pin retaining hardware. Mounting kits are purchased separately.

Since the pin center-to-center distance is fixed, quick couplers may not be possible when using the USF configuration. The following illustration shows the contents of a typical USF Mounting Kit.

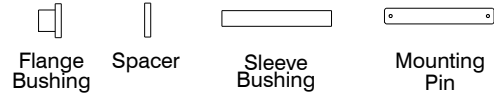


5.2 BSF Mounting

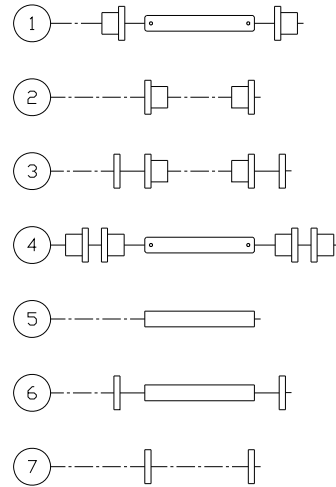
Allied BSF mounting kits include all the components necessary for the mechanical installation of the BSF style Ho-Pac. The kit is supplied in one of the configurations shown below.

In configurations #2, 3, 4, 5 & 6, the kit includes bushings that fit into the carrier stick and link. These bushings are necessary to adapt to the smaller diameter pins supplied in the kit.

These items may be included with Mounting Kit.

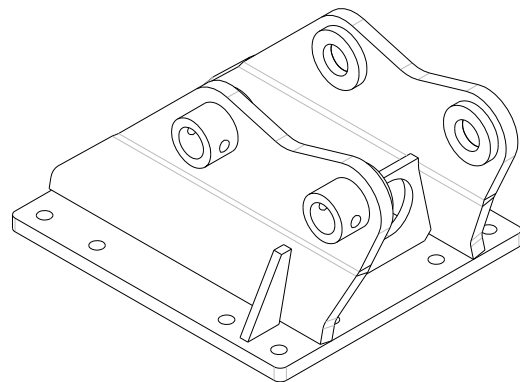


All components are installed inside the HoPac frame.
Possible Configurations.



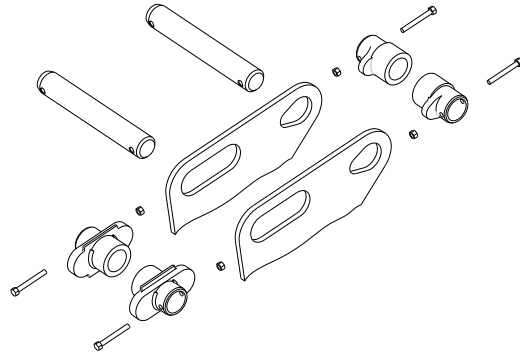
5.3 BR or SR Mounting

The flat top style Ho-Pac is mounted to a specific carrier by using an adapter bracket that is bolted to the Ho-Pac top plate. Brackets are available for either mounting type and are designed to match the carrier requirements. A typical bracket is shown below.



5.4 VMS Mounting

The combination of the VMS frame design and a VMS mounting kit provides unequalled versatility and ease in attaching the units to carriers, and in transferring a Ho-Pac from one carrier to another. The typical VMS mounting kit contains two collars, two plugs, and two pins as shown in the diagram below. The VMS Ho-Pac design is easily adapted to most quick couplers.



**SECTION 6.0
GENERAL CONSTRUCTION SAFETY**

6.1 Owner’s Responsibilities

The equipment owner shall:

- Provide this technical manual to the Ho-Pac operators.
- Train all operating personnel and enforce the procedures explained in this manual, especially regarding safety to personnel and equipment.
- Adapt these general instructions to specific applications.

6.2 General Construction Safety

Follow standard safety precautions expected and required of those working in construction, including but not limited to, locating existing underground service and utility lines, establishing pedestrian barriers and using personnel protection equipment, etc.

6.3 Federal, State, Local and OSHA Construction Guidelines and Regulations

Use the Ho-Pac in accordance with all federal, state and local regulations regarding construction practices and public safety. Identification of, and compliance to, governing regulations are the responsibility of the owner and operator.

In the United States, comply with the recommendations of the Occupational Safety and Health Administration standards of the U.S. Department of Labor. For OSHA construction guidelines contact your local federal government office or write:

U.S. Government Printing Office
Superintendent of Documents
P.O. Box 371954
Pittsburgh, Pa. 15250

Ask for Construction Industry OSHA Standards Stock #869-034-00107-6.

6.4 General Safety Summary

The safe and effective use of any heavy construction equipment depends upon proper installation, operation, maintenance and repair. Operational safety must encompass all of these factors. This Section includes minimum safety policies the Ho-Pac owner shall establish for all Ho-Pac installations. The Ho-Pac owner shall define safety procedures to meet site and application conditions. Such procedures result in increased equipment life and performance and reduced downtime. Most importantly, it will reduce the risk of equipment damage and personnel injuries.

6.4.1 Cautions and Warnings

Throughout this manual detailed CAUTIONS and WARNINGS are included with instructions and procedures. Even experienced service technicians are to review these CAUTIONS and WARNINGS prior to performing a procedure. CAUTIONS and WARNINGS are highlighted by the symbol shown here (!!) and explained as follows:

!! WARNING !!
Instructions preceded by this symbol identify hazards to personnel.

WARNING instructions must be followed to ensure safe handling and operation. These instructions shall be followed at all times. Improper operation or servicing can result in personal injury. Read this manual thoroughly before operating or maintaining the Ho-Pac.

!! CAUTION !!

Instructions identified with this symbol are important to prevent damage to equipment and to maintain full service life of the Ho-Pac. Follow them carefully. Operation or service not in

accordance with these instructions may subject the Ho-Pac to conditions beyond its design capability. Read this manual thoroughly before operating or maintaining the Ho-Pac.

6.4.2 Personnel Precautions

- Always wear safety glasses and protective clothing when operating or handling the Ho-Pac.
- All personnel in the immediate area must wear ear protection.

SECTION 7.0 CARRIER APPLICATION

The Allied 1000 Ho-Pac is designed for use and installation on backhoes and mini to small excavators. The carrier must have adequate lift and hydraulic capacities to properly and safely operate the Ho-Pac. Refer to Section 4.1 Specifications for carrier weights.

An Allied installation kit is recommended to properly install the Ho-Pac. Allied installation kits are specifically designed for each carrier. Each kit contains the proper mechanical and hydraulic components for optimum Ho-Pac performance.

Allied hydraulic kits utilize the Allied "AC" series valves. The "AC" series

solenoid-operated valve provides regulated, priority flow at a controlled pressure.

Always follow hydraulic kit installation instructions. Carrier hydraulic circuit designs differ, and damage to the Ho-Pac or carrier may result if the hydraulic kit is improperly installed. Contact Allied for installation recommendations.

While the Ho-Pac is designed to minimize the vibrations induced into the carrier, the operator must be isolated from excessive vibrations should they occur. Refer to the carrier's manual for specific information regarding vibration isolation of the operator's compartment or seat.

SECTION 8.0 INSTALLATION & REMOVAL

8.1 Installation

!! WARNING !!

Always wear gloves and eye protection when connecting hydraulic connections, and installing mounting pins and hardware.

!! CAUTION !!

Mount only on carriers with adequate lift and hydraulic capacity.

!! CAUTION !!

The oil pressure supplied to the Ho-Pac shall not exceed 3000 psi.

!! CAUTION !!

The return line pressure shall be limited to 150 psi (10 bar) maximum. Pressures in excess of 150 psi (10 bar) may cause operational problems or damage to hydraulic motor components.

1. Prior to installation, carefully inspect:
 - a. Spring mounts for cracks and other damage.
 - b. Hoses and fittings for damage.
 - c. Threaded fasteners, boom pins, and mounting hardware for damage.
2. Repair or replace any damaged components.
3. Follow hydraulic and mounting kit installation instructions.

!! WARNING !!

Keep hands and fingers clear of pin mounting holes, carrier linkage and other pinch points while equipment is being positioned.

!! CAUTION !!

During installation, instruct carrier operator to operate carrier controls only as instructed by Ho-Pac installer.

!! CAUTION !!

Never install hydraulic hoses inside the operator's cab.

4. After installation and prior to use, briefly operate the Ho-Pac, then stop the Ho-Pac and re-check the following:

- a. Hydraulics hoses and fittings for leaks.
- b. Mounting hardware for loose or missing parts.
- c. Bolt torques. See Section 11.6.

8.2 Removal

!! WARNING !!

Always wear gloves and eye protection when disconnecting hydraulic connections, and removing mounting pins and hardware.

!! CAUTION !!

Do not disconnect hydraulics if hoses are pressurized.

!! WARNING !!

Hoses, hydraulic motor and hydraulic fittings may be hot after operation.

!! WARNING !!

Keep hands and fingers clear of pin mounting holes, carrier linkage and other pinch points while equipment is positioned.

!! CAUTION !!

During removal, instruct carrier operator to operate carrier controls only as instructed by Ho-Pac installer.

1. Position Ho-Pac safely on the ground.
2. Remove hydraulic connections.
3. Be sure unit is stable prior to removing mounting hardware.
4. Remove mounting hardware.
5. Remove Ho-Pac from carrier.
6. Reinstall mounting hardware on Ho-Pac to avoid loss or damage.

**SECTION 9.0
OPERATION**

9.1 Preparation for Operation

1. Daily before operating, remove excess dirt and debris from Ho-Pac. Excessive dirt on the Ho-Pac can decrease performance.
2. Daily before operating, carefully inspect:
 - a. Spring mounts for cracks and other damage. Refer to Section 11.8.
 - b. Hoses and fittings for leaks and other damage.
 - c. Unit for oil leaks. If leaks are evident, check the oil level and fill as required, and check bolt torques at oil gasket locations. Refer to Sections 11.5 and 11.6.
 - d. Threaded fasteners, boom pins, and mounting hardware for damage. Refer to Section 11.6
3. Repair or replace any damaged components prior to operation.

!! WARNING !!

Wear ear protection as required by federal and local regulations.

!! CAUTION !!

At temperatures below 32°F (0°C), operate the Ho-Pac for a few minutes without down force to allow the spring mounts to warm.

!! CAUTION !!

Do not operate Ho-Pac with hydraulic oil temperature above 180°F (80°C) or

pressures above the values specified in Section 4.1.

!! CAUTION !!

Do not operate the Ho-Pac underwater. Bearing damage may result.

!! CAUTION !!

Do not use the Ho-Pac to move materials. Ho-Pac damage may result.

9.2 Operation

The Ho-Pac is designed to operate with the carrier over a wide range of temperatures. Refer to the carrier’s recommendations for operating temperature range.

1. Position carrier in-line with direction of work.

!! CAUTION !!

Do not operate the Ho-Pac without base plate. A dynamic imbalance and equipment damage may result.

2. Position the Ho-Pac base plate parallel to the work surface and within view of the operator. The base plate must be in full contact with the work surface for maximum effectiveness.

!! WARNING !!

Never activate the Ho-Pac unless the operator is seated in the operator’s seat and in full control of the machine. Refer to carrier’s instructions.

!! WARNING !!

Keep personnel away from the Ho-Pac while in operation. Never operate the Ho-Pac with workers in close proximity to the Ho-Pac.

3. Activate the Ho-Pac with the switch located in the operator's cab.

!! CAUTION !!

Do not allow mounting frame to contact base plate. Spring mount and frame damage may result.

4. Apply down force with the carrier boom to stretch spring mounts approximately two-thirds their width (2.75 inch/70mm).

!! WARNING !!

Ground vibrations may collapse trench walls. Stand clear.

5. As the material compacts, maintain a constant down force with the carrier. For larger areas, a repetitive, back and forth sweeping motion is effective. The initial pass is continued until compaction is no longer apparent, typically 10 to 15 seconds.

!! CAUTION !!

Do not use the Ho-Pac to drag or move dirt. Ho-Pac damage may result.

6. It may be necessary to try different lift heights to determine the most effective lift to achieve the desired level of compaction. Compacted densities are reduced at the bottom of excessively high lifts.

7. After compaction is complete, reposition the Ho-Pac and/or carrier to continue working. It is not necessary to stop the Ho-Pac for minor carrier boom repositioning.

8. Repeat compacted lifts as necessary to achieve finished grade.

SECTION 10.0 TROUBLESHOOTING

Listed below are several operating problems and their recommended corrective action.

1. Unit does not run:
 - a. Insufficient oil pressure or flow. Check hydraulic supply system. Correct as required.
 - b. Failed bearings. Inspect and replace bearings.
 - c. Broken motor shaft or worn splines. Inspect and replace worn parts.

2. Unit runs erratically:
 - a. Erratic oil pressure or flow. Check hydraulic supply system. Correct as required.
 - b. Failed spring mount. Inspect and replace failed mount.

3. Unit runs with excessive noise or vibration:
 - a. Failed bearing. Inspect and replace bearings.
 - b. Loose bolts or mounting hardware. Inspect and tighten bolts.
 - c. Check oil level.

4. Unit runs, but stalls under load:
 - a. Pressure relief too low. Check hydraulic supply system. Correct as required.
 - b. Failed bearing. Inspect and replace bearings.
 - c. Motor worn or motor seals failed. Inspect and replace motor.

5. Unit runs smoothly, but at reduced speed:
 - a. Flow too low. Check carrier output.
 - b. Flow too low. If motor or control valve was replaced, check that the motor and valve are properly matched.

For conditions other than these, contact the Allied Technical Service Department.

SECTION 11.0 SERVICE AND MAINTENANCE

11.1 General Guidelines

Use standard mechanic's techniques and tools to disassemble and assemble the Ho-Pac.

!! WARNING !!

Follow all safety practices and wear appropriate protective equipment.

Use only genuine Allied replacement parts. Failure to use approved replacement parts may subject the operator to injury and the Ho-Pac to premature failure. The use of unapproved replacement parts voids the warranty.

Do not make any alterations to the Ho-Pac without written authorization from the Allied Engineering Department.

!! WARNING !!

Ho-Pac components are heavy. Use proper lifting and support equipment.

!! WARNING !!

Service the Ho-Pac in safe work areas. Never service the Ho-Pac on the carrier or in the trench.

Maintain clean oil. Follow the carrier manufacturer's recommendations for hydraulic oil grade and hydraulic system maintenance.

Clean and properly dispose of any spilled oil as required by governing regulations.

Contact the Allied Technical Service Department with questions regarding maintenance, operation or replacement parts.

!! WARNING !!

Never service the Ho-Pac while it is operating.

11.2 Daily Maintenance

- Remove excess dirt and debris from Ho-Pac. Excessive dirt on the Ho-Pac can decrease performance.
- Visually check for oil leaks. If leaks are evident, check the oil level and fill as required. Refer to Section 11.5. Also check bolt torques at oil gasket locations. Refer to Section 11.6 for bolt torques.

11.3 Preventive Maintenance

After every 100 hours of operation, the Ho-Pac should be cleaned and inspected.

- Check all components for excessive wear.
- Check spring mounts for cracks and wear.
- Check all hardware for tightness. Refer to 11.6 for bolt torques.

After every 2000 hours of operation, or once per year, the Ho-Pac oil should be replaced.

The frequency of maintenance depends upon the operating environments and conditions of operation. Refer to 11.4 for additional maintenance considerations.

11.4 Conditional Maintenance

Clean and lubricate all Ho-Pac working surfaces under the following conditions:

- The Ho-Pac is operated in extremely humid weather conditions.
- The Ho-Pac is operated in muddy or extremely wet soils.
- If reduced performance is observed.

11.5 Lubrication

During operation, the Allied 1000 Ho-Pac bearings are continuously lubricated from an oil bath within the eccentric housing. The sealed eccentric housing contains and protects the oil from environmental debris. The oil fill and oil level locations are identified in Section 4.3.

- Under normal operating conditions, minimal maintenance is necessary. Refer to Sections 11.2 and 11.3.
- During extreme operating conditions or extended continuous use, check the oil level and quality more frequently.

A premium quality, 10W oil is recommended (minimum 30 cSt at 155° F). All hydraulic oils recommended for carrier use are suitable for Ho-Pac use.

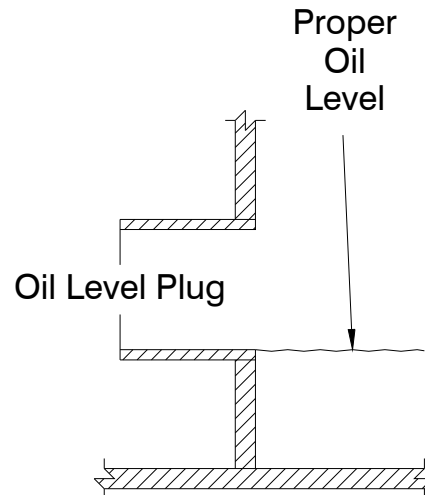
11.5.1 How To Drain Oil

1. Position Ho-Pac with the oil level plug pointed downward so that oil will drain.
2. Remove oil level plug and drain oil.
3. If the oil is contaminated with water or dirt, flush the eccentric housing with clean oil prior to oil replacement.
4. Add new oil. Refer to Section 11.5.2.

5. Properly dispose of used oil.

11.5.2 How To Check and Add Oil

1. Position Ho-Pac on a level surface with easy access to both the oil fill and oil level plugs.
2. Carefully clean and remove the oil level plug.
3. Check the oil level. When properly filled, the oil level shall be at the bottom of the oil level opening. Oil capacity is approximately 2.2 quarts (2.1 l). Do not overfill.



4. If oil is required:

- Carefully clean and remove the oil fill plug.
- Add oil until the level reaches the bottom of the oil level opening.

5. Replace and tighten both the oil fill and oil level plugs.

11.5.3 Oil Pressure Relief Valve

The eccentric housing is equipped with a pressure relief check valve. This check valve is located near the top of the eccentric housing and relieves pressure from the eccentric housing. A slight

amount of oil residue in this area is normal.

11.6 Bolts

Because the Ho-Pac is a vibratory tool, it is extremely important that threaded fasteners are properly tightened. Always follow the torque specifications in this section.

!! CAUTION !!

Replace any damaged fasteners prior to Ho-Pac operation. Use only Allied replacement parts.

1. Clean threaded fasteners and surfaces to be bolted.
2. Apply a light coat of grease to threads and washer faces (except for base plate bolts).
3. For base plate bolts only, apply a commercial grade, thread adhesive. Follow manufacturer’s recommendations. (Example: Loctite 271 Thread Adhesive-Sealant)
4. Initially tighten the bolts to 10 ft-lbs (14 N-m).
5. Tighten the fasteners according to the table below.

<u>Diameter</u>	<u>Final Torque - Lubricated</u>
3/8 inch	35 ft-lbs (47 N-m)
1/2 inch	80 ft-lbs (108 N-m)
5/8 inch	170 ft-lbs (230 N-m)
7/8 inch	400 ft-lbs (542 N-m)
1 inch	650 ft-lbs (880 N-m)

6. After bolt installation, operate the Ho-Pac for a few hours, then re-check bolt torques.

11.7 Bearing Failure & Replacement

Because of the high loads and rotational speeds, bearing failure is usually sudden. A scraping or rattling sound is an indication of imminent bearing failure. Visually inspect the bearings for broken or damaged components to determine if replacement is necessary. Bearing service shall be performed in a properly equipped workshop. Use of a manual arbor press is recommended. Do not attempt to replace bearings in the field.

!! CAUTION !!

Use only Allied replacement parts.

11.7.1 Bearing Removal

1. Remove hydraulic hoses from motor.
2. Remove the hydraulic motor, gasket, and spacer.
3. Remove both bearing housing assemblies from the main housing. It is not necessary to remove eccentric from main housing.

!! WARNING !!

Be careful that eccentric shaft does not fall and injure hands or fingers.

4. Remove the bearing from the bearing housing by pressing on the bearing inner race from the interior side of the bearing housing. Properly support the bearing housing in the press.
5. If the outer race remains in the housing, do not pry out. Carefully place a small bead of weld, 1/8 inch (3 mm) along the inside diameter of the outer race. Allow the weld to cool. The outer race can easily be removed.

11.7.2 Bearing Installation

1. Thoroughly clean the bearing housing and eccentric shaft.
2. Apply a light coating of oil to the bearings prior to assembly.
3. Slowly press the bearing into the bearing housing (interference press fit). Apply contact pressure to the outer race only.
4. Install one bearing and housing onto the eccentric shaft (close tolerance slip fit).
5. Align in main housing.
6. Repeat with other bearing and housing.
7. Install spacer and gasket.
8. Install hydraulic motor.

!! CAUTION !!

Follow bolt torque specifications. Refer to Section 11.6.

9. Install hydraulic hoses.
10. After completely assembled, follow lubrication procedures; refer to Section 11.5.

11.8 Spring Mounts

The spring mounts are subject to aging and require periodic replacement. While mount life depends primarily on use, extreme environmental conditions and other factors can shorten mount life.

If multiple mounts are to be replaced, it is recommended to completely replace one mount at a time.

1. Position Ho-Pac on flat, stable surface.

2. Adequately support or block the mounting frame to relax mounts.

!! WARNING !!

Do not place hands or fingers between mounting frame and base plate during removal of spring mounts or mount nuts.

3. Loosen all nuts prior to mount removal.
4. Remove mount bolts and nuts.
5. Remove mount.
6. Position new mounts and re-install bolts and nuts. See Section 11.6.

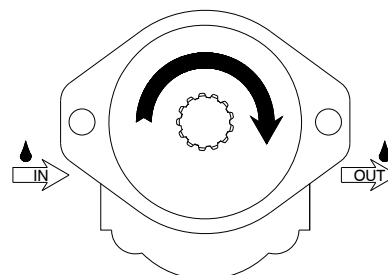
11.9 Hydraulic Motor

11.9.1 Hydraulic Motor Service

There are no user-serviceable parts in the hydraulic motor. Contact the Allied Technical Service Department for further information.

11.9.2 Motor Rotation

The hydraulic motor is designed to rotate in a single direction only. When viewing the motor shaft with the large portion of the motor downward, the correct rotation is clockwise. In this orientation, the oil input port is on the left side and output port is on the right side.

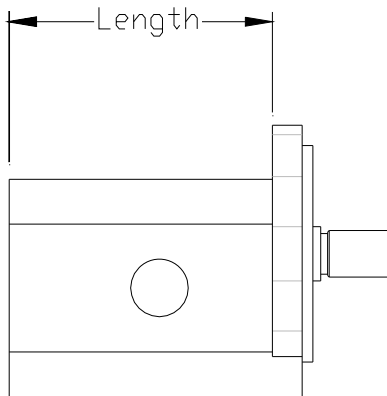


!! CAUTION !!

Pressurizing the incorrect side of the hydraulic motor will cause internal motor damage. Verify installation before pressurizing the hydraulic system.

11.9.3 Motor Identification

When the motor part number is not known, the motor body length is used to determine its identity. Measure the distance from the rear of the mounting flange to the rear of the motor body (not including bolts). Use the dimensions in Table 14.2 to correctly identify the part number.



11.10 Hydraulic Control Valve

Refer to Section 2.0 for functional overview.

11.10.1 Control Valve Service

There are no user serviceable parts in the hydraulic control valve. Contact the Allied Technical Service Department for further information.

11.10.2 Valve Port Identification

The control valve ports are identified as follows:

P1: Input from the carrier into the valve.

P2: Output from the valve into the motor.

T1: Input into the valve from the motor.

T2: Output from the valve and return to carrier.

11.11 Warranty Protection

Maintain written records of Ho-Pac maintenance, service and repair. These records will be helpful if warranty coverage is ever in question. Each record shall include:

- The date of service, maintenance or repair.
- A description of the service, maintenance or repair performed. Include part numbers if applicable.
- Copies of purchase order(s) and invoice(s) for repair parts and service.
- The name and signature of the person performing the service, maintenance or repair.

SECTION 12.0 LIFTING & TRANSPORT

! WARNING !

Do not lift Ho-Pac by the mounting pins. The Ho-Pac may shift and cause damage or personnel injury.

If the Ho-Pac is to be transported independently of the carrier;

1. Remove all loose debris from Ho-Pac.
2. If the swivel assembly is installed, lock swivel position with bolt.
3. Follow removal instructions in Section 8.2.
4. Secure hoses to unit to avoid accidental damage.
5. Lift Ho-Pac at approved lift points only with appropriate lifting equipment. See diagram in Section 4.4.

6. Adequately stabilize and secure Ho-Pac for transport.

If the Ho-Pac is transported while installed on the carrier:

1. Remove all loose debris from Ho-Pac.
2. If the swivel assembly is installed, lock swivel position with bolt.
3. Secure hoses to unit to avoid accidental damage.
4. Inspect the mounting pins and hardware for damage and integrity.
5. Transport carrier in accordance with carrier manufacturer's recommendations.

SECTION 13.0 STORAGE

Several simple precautions are necessary for storage of the Ho-Pac.

1. Protect hydraulic connections from damage and debris. Plug hoses if hydraulic quick disconnects are not used.
2. Secure hoses to unit to prevent accidental damage.
3. Protect spring mounts and hydraulic hoses from weather and direct sunlight to reduce aging effects.
4. Support the mounting frame with blocks to minimize permanent sag in spring mounts.
5. Keep the unit and motor full of oil to protect internal components.
6. Avoid wet or damp conditions to minimize rust.
7. Store in upright position.

**SECTION 14.0
PARTS INFORMATION**

NOTE

The following illustrations and parts lists are typical models of the 1000 Series Ho-Pac.
Specific assemblies and mounting configurations may vary.

Table 14.1 Motor & Valve Package 12, 18, or 21 gpm		
QTY	PART NO.	DESCRIPTION
	103006	Motor & Valve Package 12 gpm
1	101346	Hydraulic Motor 12 gpm (Length 3-13/16" [97mm])
1	102650	Flow Regulator Valve 12 gpm
	103007	Motor & Valve Package 18 gpm
1	A102668	Hydraulic Motor 18 gpm (Length 4-1/2" [114 mm])
1	102516	Flow Regulator Valve 18 gpm
	A103008	Motor & Valve Package 21 gpm
1	102867	Hydraulic Motor 21 gpm (Length 4-3/4" [121 mm])
1	102652	Flow Regulator Valve 21 gpm

Note: Incorrect combination of motor and valve will result in poor Ho-Pac performance or Ho-Pac damage.

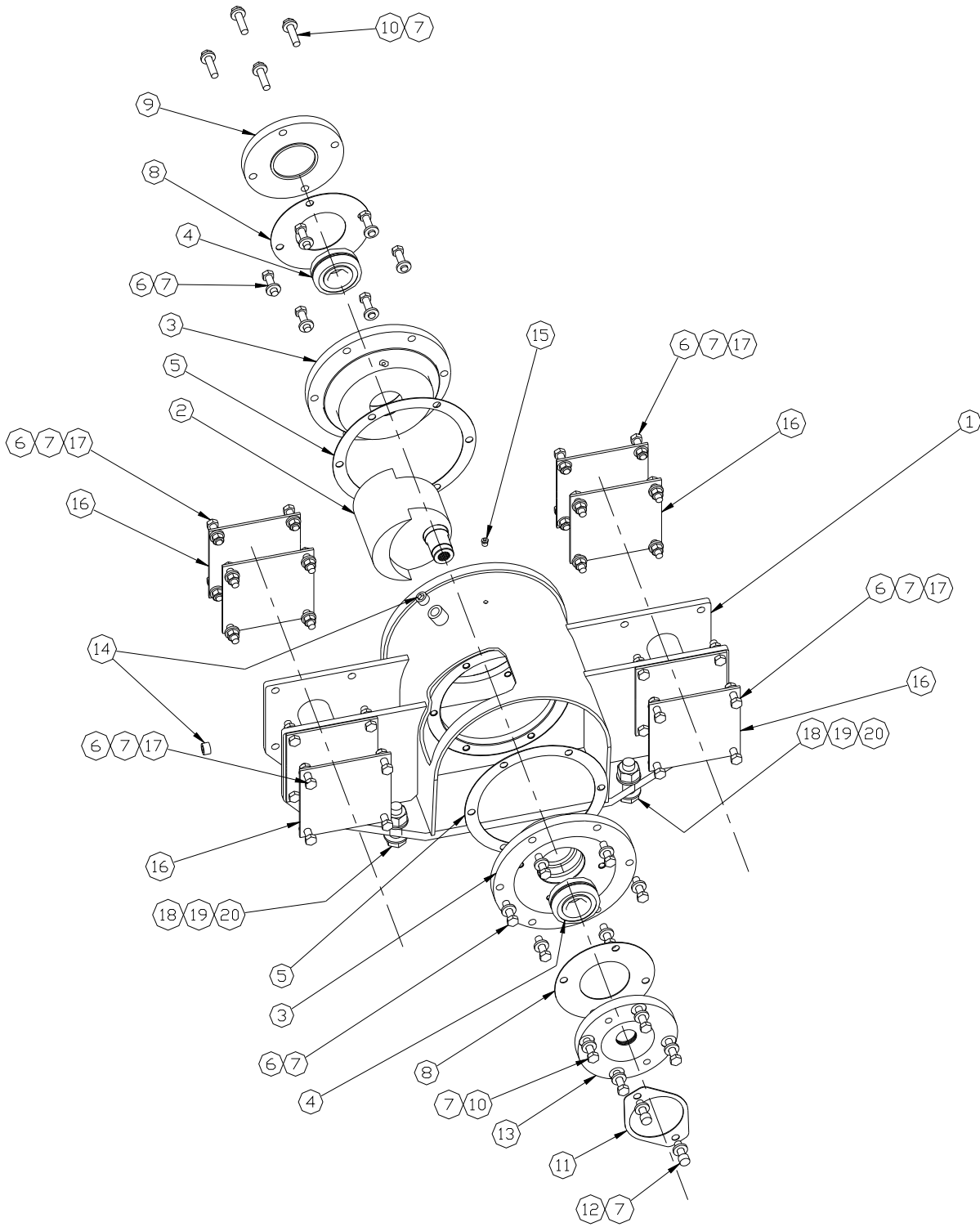


Figure 14.1a: Dynamic Assembly & Suspension System (SN 1399 & below)
(Configuration: 2 Bearing housing, motor adapter plate, bearing cover)

Table 14.2a Dynamic Assembly & Suspension System Part No. A103358 (SN 1399 & below) (Configuration: 2 Bearing housing, motor adapter plate, bearing cover)			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	103361	Eccentric Housing
2	1	103366	Eccentric
3	2	103363	Bearing Housing
4	2	708507	Bearing
5	2	103362	Gasket, Bearing Housing
6	44	719730	Hex Head Cap Screw
7	54	708512	Flat Washer
8	2	A103364	Gasket, Bearing Cover
9	1	103389	Cover Plate
10	8	883654	Hex Head Cap Screw
11	1	103367	Gasket, Motor
12	2	103369	Socket Head Cap Screw
13	1	103391	Adapter Plate
14	2	656775	Socket Head Plug
15	1	A102780	Relief Plug
16	4	719749	Rubber Spring Mount
17	32	708787	Torque Nut
18	4	708516	Hex Head Cap Screw
19	4	719004	Hex Nut
20	8	719003	Flat Washer

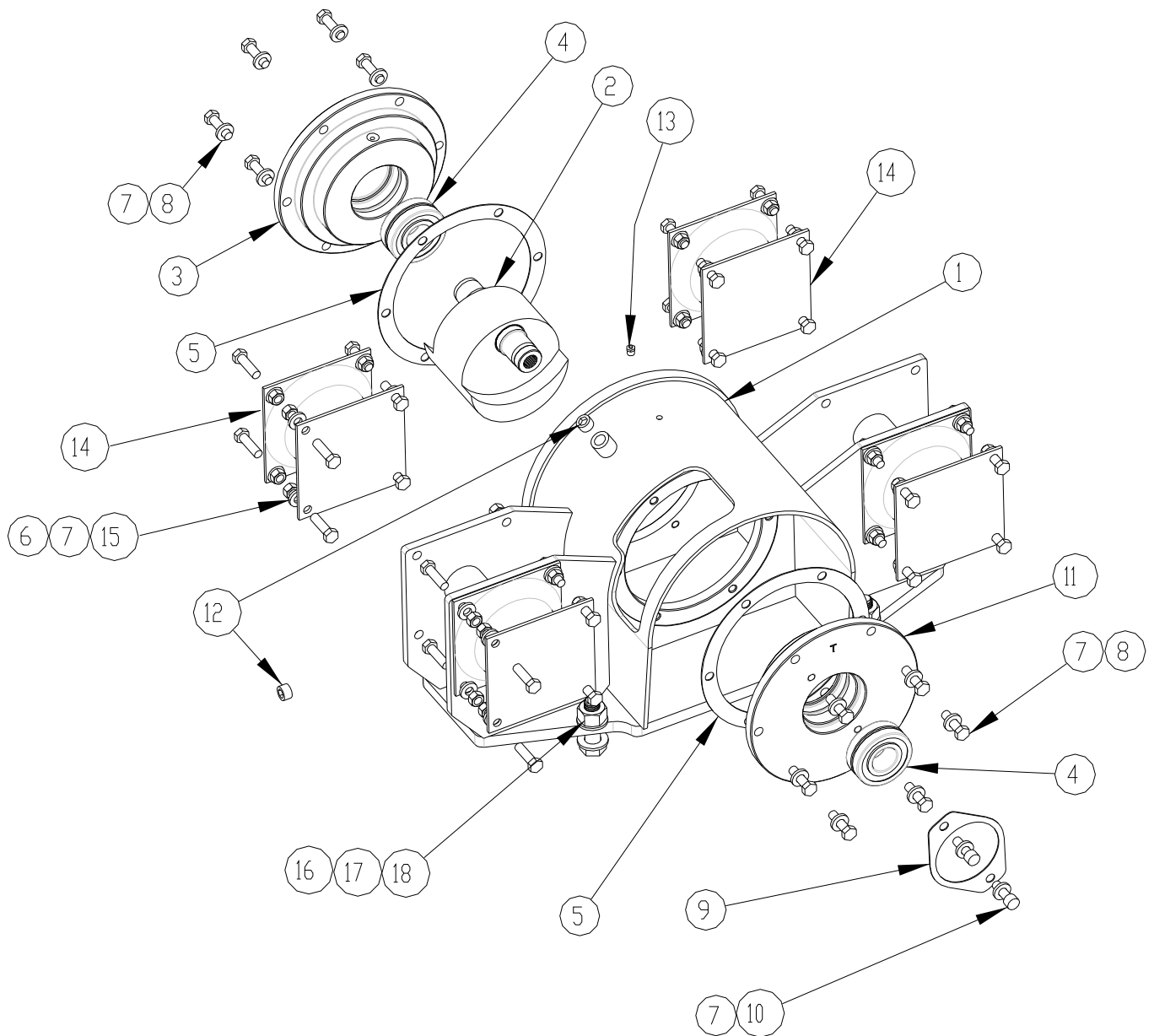


Figure 14.1b: Dynamic Assembly & Suspension System (SN 1400 & above)
 (Configuration: Motor bearing housing, bearing housing cover, bolt-on compaction plate)

Table 14.2b Dynamic Assembly & Suspension System Part No. A103358 (SN 1400 & above) (Configuration: Motor bearing housing, bearing housing cover, bolt-on compaction plate)			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	103361	Eccentric Housing
2	1	103366	Eccentric
3	1	571549	Bearing Housing Cover
4	2	708507	Bearing
5	2	103362	Gasket, Bearing Housing
6	32	719730	Hex Head Cap Screw
7	46	708512	Flat Washer
8	12	708791	Hex Head Cap Screw
9	1	103367	Gasket, Motor
10	2	103369	Socket Head Cap Screw
11	1	571550	Bearing Housing Motor
12	2	656775	Socket Head Plug
13	1	A102780	Relief Plug
14	4	719749	Rubber Spring Mount
15	32	708787	Torque Nut
16	4	708516	Hex Head Cap Screw
17	4	719004	Hex Nut
18	8	719003	Flat Washer

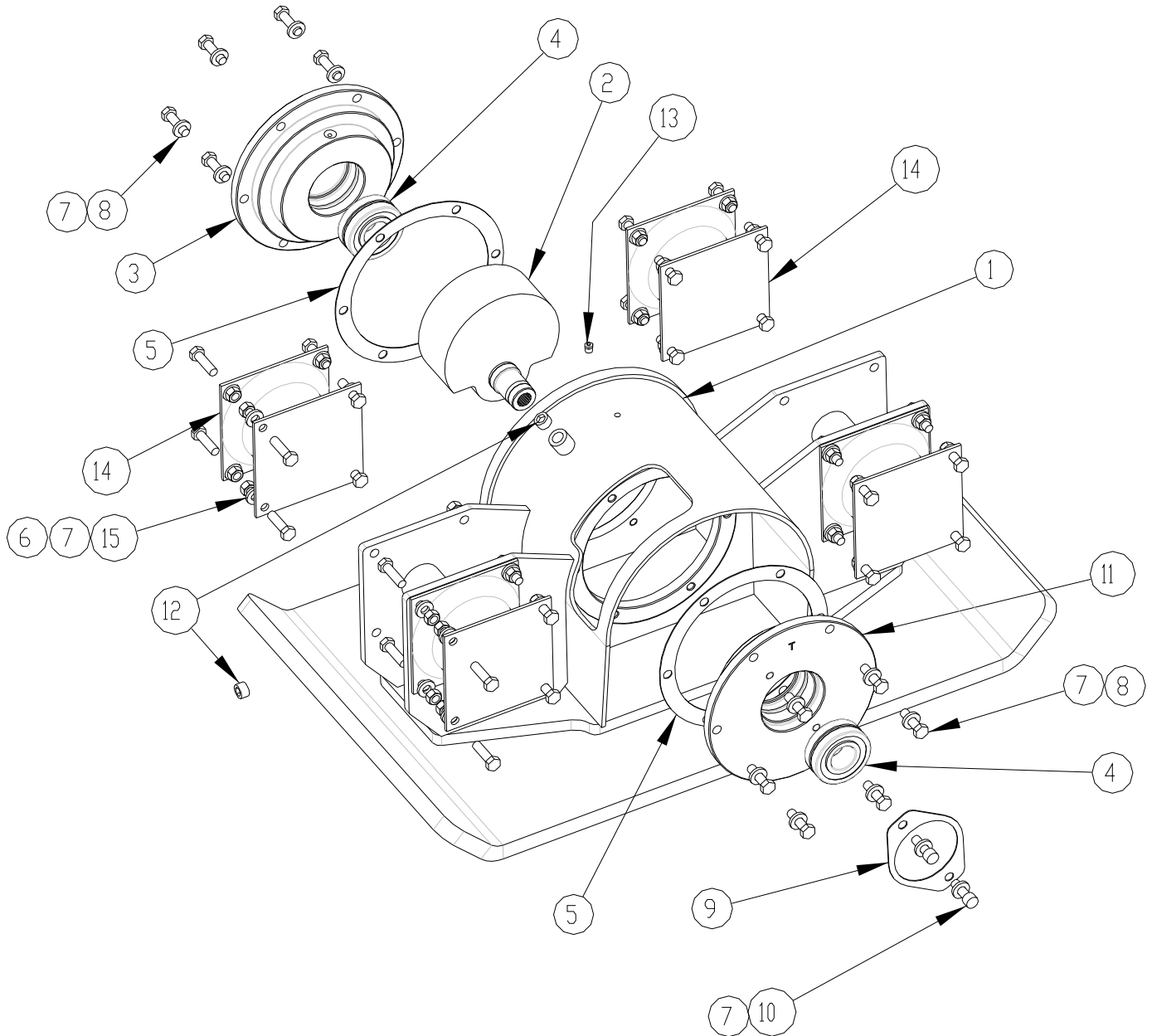


Figure 14.1c: Dynamic Assembly & Suspension System (SN 1400 & above)
 (Configuration: Motor bearing housing, bearing housing cover, welded compaction plate)

Table 14.2c Dynamic Assembly & Suspension System Part No. A103358 (SN 1400 & above) (Configuration: Motor bearing housing, bearing housing cover, welded compaction plate)			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	572573	Eccentric Housing w/ Compaction Plate
2	1	572584	Eccentric
3	1	571549	Bearing Housing Cover
4	2	708507	Bearing
5	2	103362	Gasket, Bearing Housing
6	32	719730	Hex Head Cap Screw
7	46	708512	Flat Washer
8	12	708791	Hex Head Cap Screw
9	1	103367	Gasket, Motor
10	2	103369	Socket Head Cap Screw
11	1	571550	Bearing Housing Motor
12	2	656775	Socket Head Plug
13	1	A102780	Relief Plug
14	4	719749	Rubber Spring Mount
15	32	708787	Torque Nut

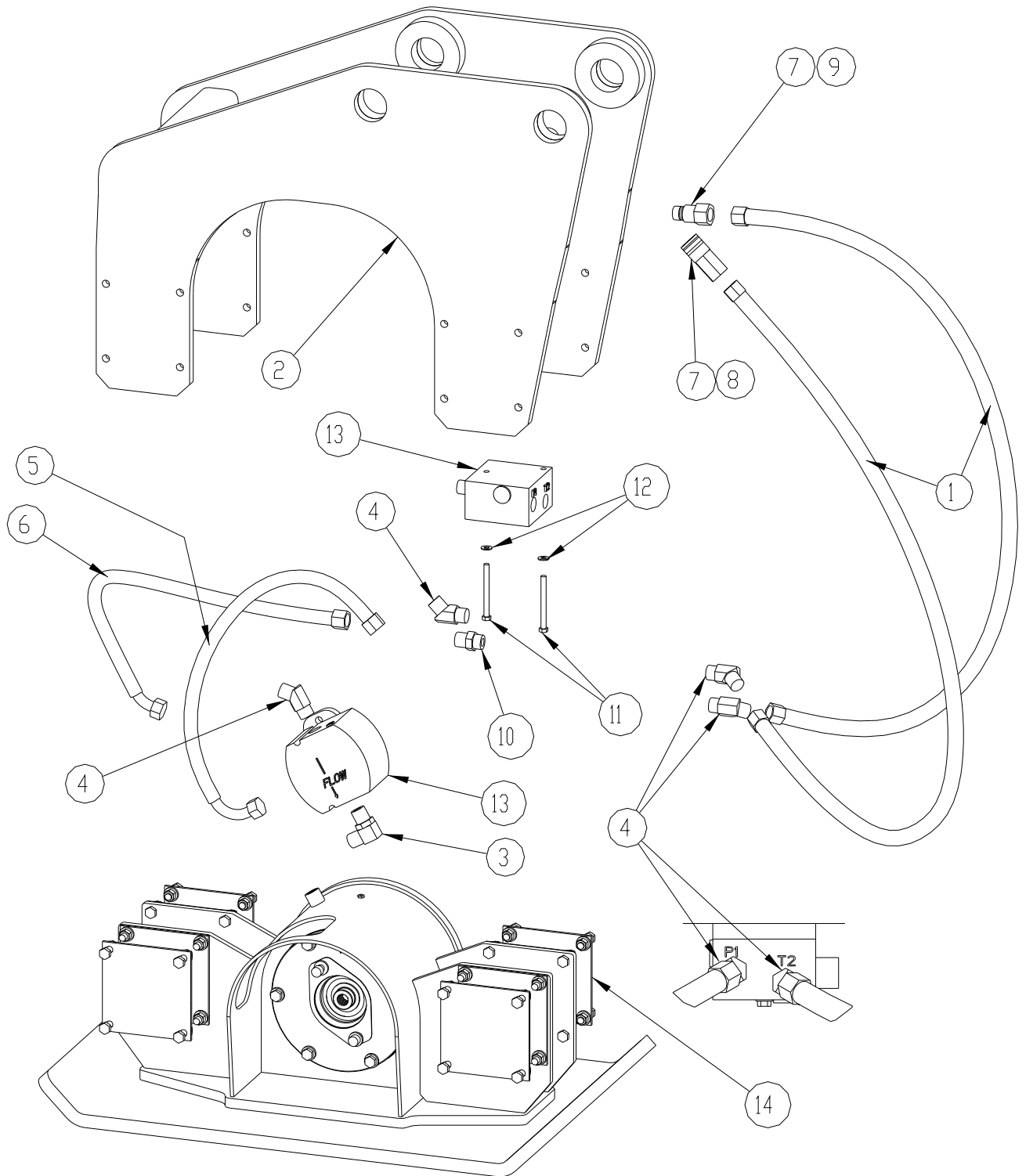


Figure 14.2: USF Mounting Frame Ho-Pac

Table 14.3 USF Mounting Frame Ho-Pac Part No. 570080C			
ITEM	QTY	PART NO.	DESCRIPTION
1	2	102865	Hose Assembly
2	1	570311	USF Mounting Frame
3	1	656531	90° Elbow
4	4	817521	45° Elbow
5	1	658495	Hose Assembly - Pressure Line
6	1	103379	Hose Assembly - Return Line
7	1	670006	Q.D. Coupler Package (Includes Items 8 & 9)
8	1	670007	Quick Disconnect Socket
9	1	670008	Quick Disconnect Plug
10	1	656723	Adapter
11	2	813290	Hex Head Cap Screw
12	2	653339	Flat Washer
13	1	Varies	Motor & Valve Package - Refer to Table 14.1
14	1	A103358	Dynamic Assembly (See separate parts diagram)

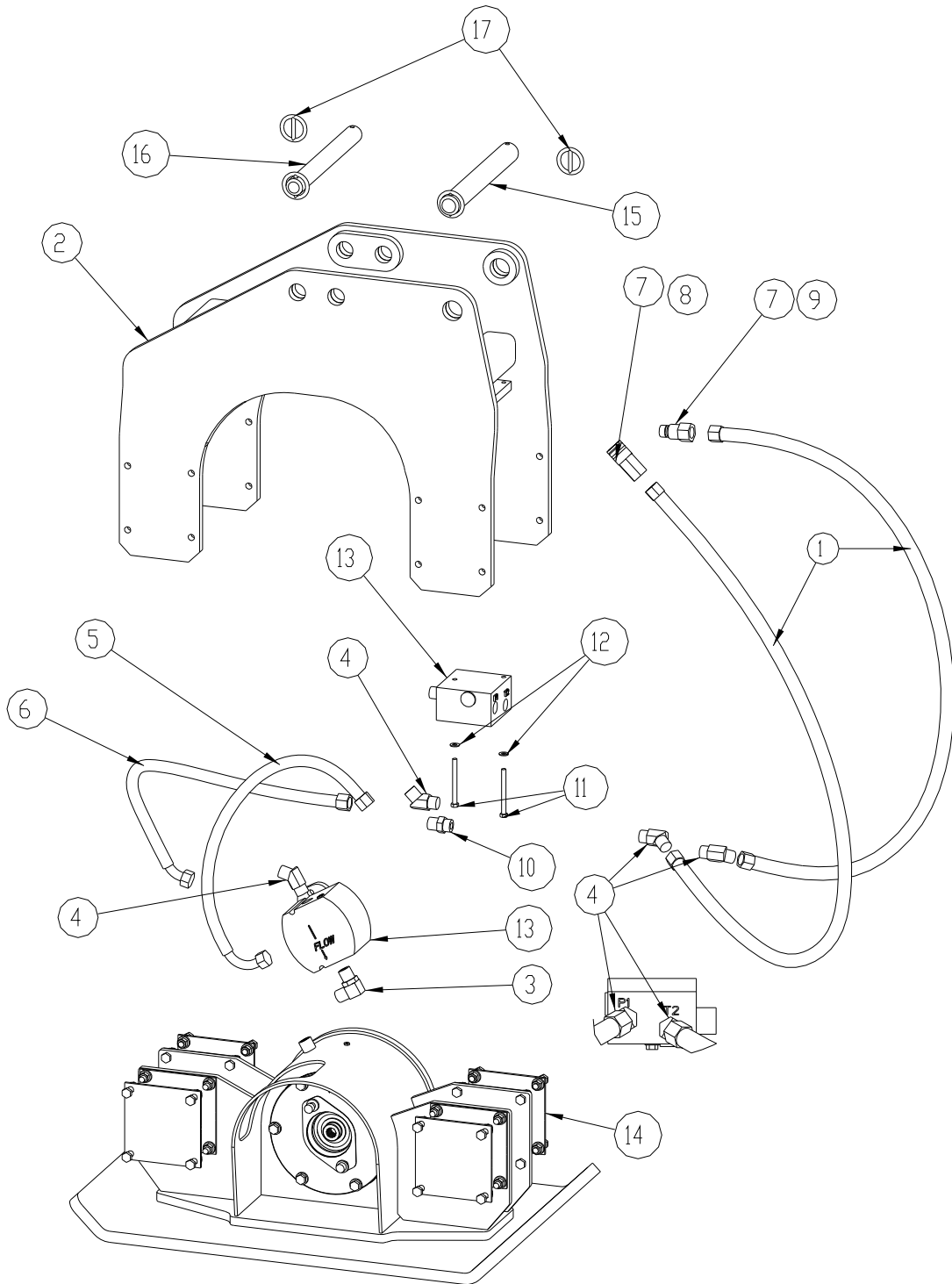


Figure 14.3: BSF Mounting Frame Ho-Pac

Table 14.4
BSF Mounting Frame Ho-Pac
Part No. 570100C

ITEM	QTY	PART NO.	DESCRIPTION
1	2	102865	Hose Assembly
2	1	570087	BSF Mounting Frame
3	1	656531	90° Elbow
4	4	817521	45° Elbow
5	1	658495	Hose Assembly - Pressure Line
6	1	103379	Hose Assembly - Return Line
7	1	670006	Q.D. Coupler Package (Includes Items 8 & 9)
8	1	670007	Quick Disconnect Socket
9	1	670008	Quick Disconnect Plug
10	1	656723	Adapter
11	2	813290	Hex Head Cap Screw
12	2	653339	Flat Washer
13	1	Varies	Motor & Valve Package - Refer to Table 14.1
14	1	A103358	Dynamic Assembly (See separate parts diagram)
15	1	653378	1.75 Boom Pin
16	1	617080	1.50 Boom Pin
17	2	617104	Pin Keeper

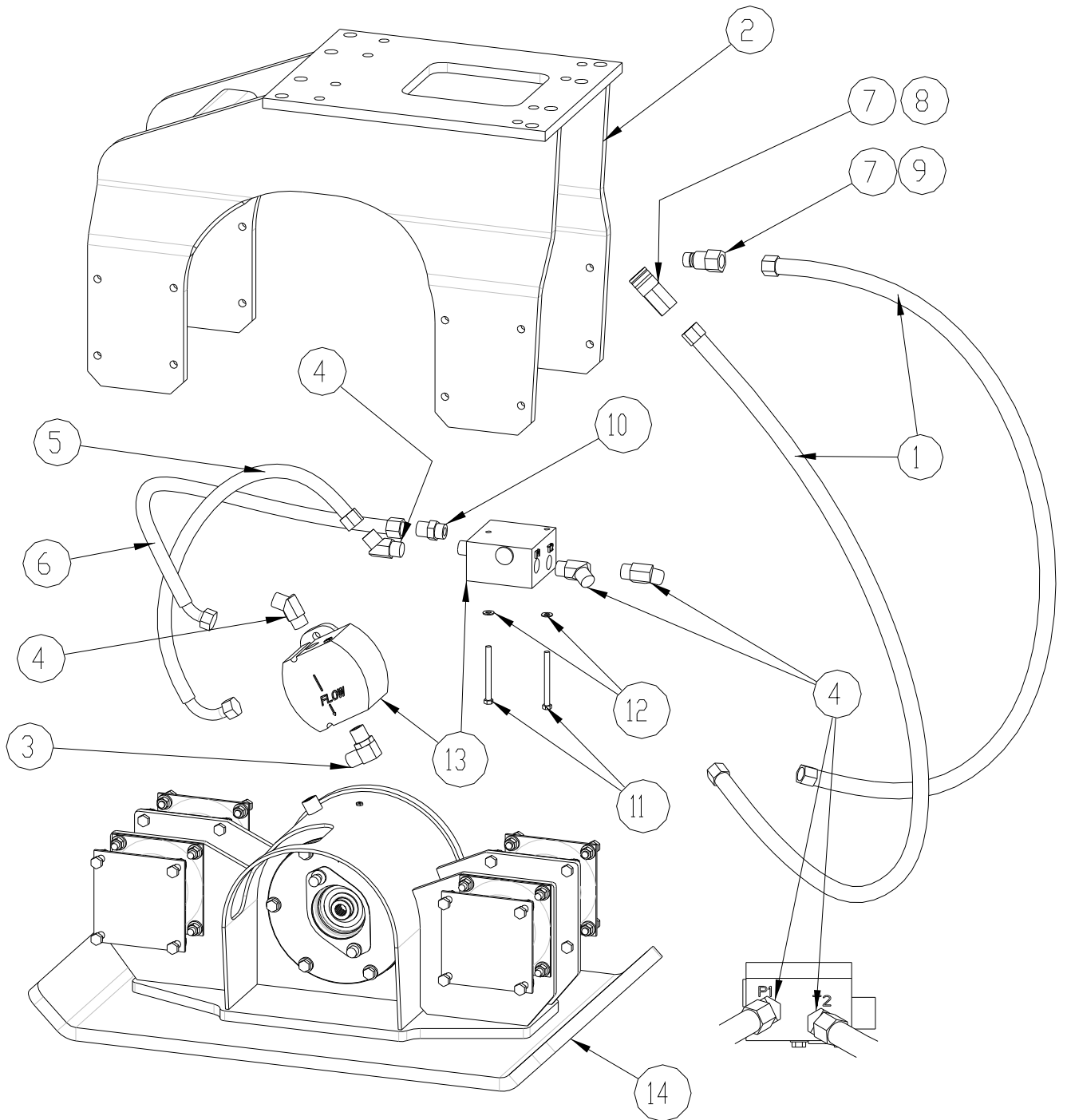


Figure 14.4: BR / SR Mounting Frame Ho-Pac

Table 14.5
BR /SR Mounting Frame Ho-Pac
Part No. 103380C

ITEM	QTY	PART NO.	DESCRIPTION
1	2	102865	Hose Assembly
2	1	570310	BR / SR Mounting Frame
3	1	656531	90° Elbow
4	4	817521	45° Elbow
5	1	658495	Hose Assembly - Pressure Line
6	1	103379	Hose Assembly - Return Line
7	1	670006	Q.D. Coupler Package (Includes Items 8 & 9)
8	1	670007	Quick Disconnect Socket
9	1	670008	Quick Disconnect Plug
10	1	656723	Adapter
11	2	813290	Hex Head Cap Screw
12	2	653339	Flat Washer
13	1	Varies	Motor & Valve Package - Refer to Table 14.1
14	1	A103358	Dynamic Assembly (See separate parts diagram)

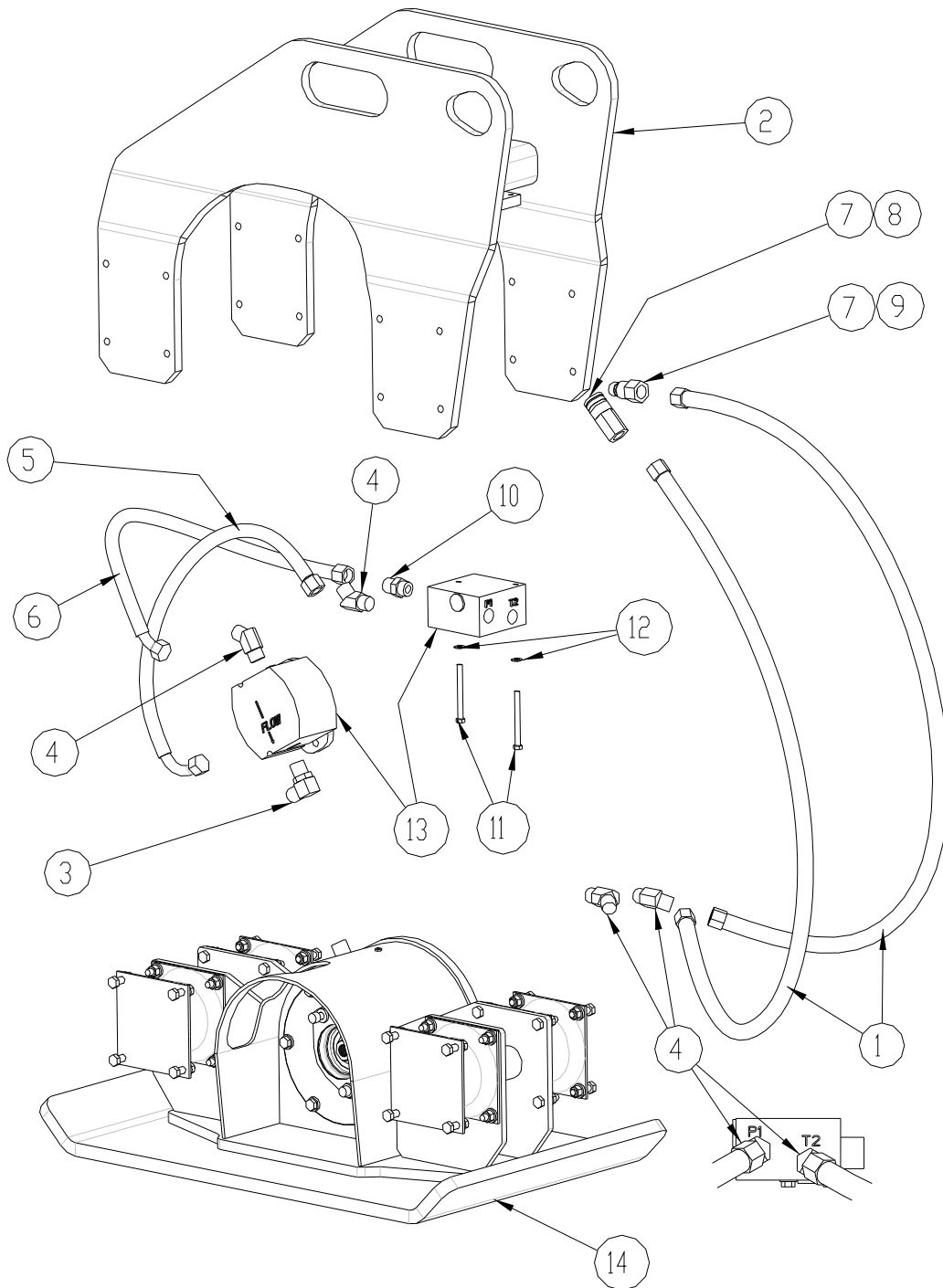


Figure 14.5: VMS V10 & V12 Mounting Frame Ho-Pac

Table 14.6 VMS Mounting Frame Ho-Pac Part Nos. 570090C (V10) & 103370C (V12)			
ITEM	QTY	PART NO.	DESCRIPTION
1	2	102865	Hose Assembly
2	1	103359	VMS V10 Mounting Frame
		A103841	VMS V12 Mounting Frame
3	1	656531	90° Elbow
4	4	817521	45° Elbow
5	1	658495	Hose Assembly - Pressure Line
6	1	103379	Hose Assembly - Return Line
7	1	670006	Q.D. Coupler Package (Includes Items 8 & 9)
8	1	670007	Quick Disconnect Socket
9	1	670008	Quick Disconnect Plug
10	1	656723	Adapter
11	2	813290	Hex Head Cap Screw
12	2	653339	Flat Washer
13	1	Varies	Motor & Valve Package - Refer to Table 14.1
14	1	A103358	Dynamic Assembly (See separate parts diagram)



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