

# HO-PAC®

## Vibratory Plate Compactor / Driver

Model  
2300



# ALLIED

### Safety, Operation, Maintenance and Parts

Thoroughly read and understand the content of this manual before using the Allied HO-PAC. The safe and efficient use of the Allied equipment depends upon proper installation, operation, maintenance and training.

Keep this manual in a convenient location so that it is easily accessible for future reference. Contact your Allied Dealer or the Allied Customer Service Department for replacement manuals. Inquiries regarding the content of this manual must include effective date shown on inside cover.



TM103349

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Continuous improvement of our products is an Allied policy. The material in this publication, including figures, captions, descriptions, remarks and specifications, describe the product at the time of its printing, and may not reflect the product in the future. When changes become necessary, these will be noted in the table below. Specifications are based on published information at the time of publication. Allied Construction Products, LLC, reserves the right to change, edit, delete or modify the content of this document, including descriptions, illustrations and specifications without prior notification. For document updates go to [www.alliedcp.com](http://www.alliedcp.com).

### Table of Revision History for TM103349

<u>Effective Date</u>	<u>Page</u>	<u>Summary of Change</u>
2015, February	24	Revise General Specifications Table.
2011, September	21,28	Revise specifications for bearing lubrication. QD change was 719827 & 719828
2008, June	Throughout	Design change Flat Top Frame. Update figures & dimension diagrams.
2008, May	34	Revise parts diagram
2007, March	33,34	Begin weld-on compaction plate as standard configuration. Add figures and parts table. Reference 103698(C).
2007, February	32,33	Discontinue use of bearing housing 103695 [Ref fig/table 103698(A)]. Introduce new bearing housings 571841, 571842 to figures and tables with reference 103698(B).
2006, April	25	Torque table updated
2004, July	All	Original Issue of TM103349

## Safety Information

### Safety Statements and Hazard Alerts

Safety messages appear throughout this manual and on labels affixed to the Allied equipment. Read and understand the information communicated in safety messages before any attempt to install, operate, service or transport the Allied equipment.

Keep all safety labels clean. Words and illustrations must be legible. Before operating this equipment, replace damaged or missing labels.

### Purpose of Safety Messages

Information provided in safety messages is important to your safety. Safety messages communicate the extent, magnitude and likelihood of injury associated with unsafe practices such as misuse or improper handling of the Allied equipment. Safety messages also explain how injury from potential hazards can be avoided.

Safety messages presented throughout this manual communicate the following information:

1. **Alert** personnel to potential hazards
2. **Identify** the nature of the hazard
3. **Describe** the severity of the hazard, if encountered
4. **Instruct** how to avoid the hazard

### Safety Alert Symbol

The safety alert symbol is represented by the exclamation point within an equilateral triangle. This symbol means - **ATTENTION, BECOME ALERT, YOUR SAFETY IS INVOLVED.**



Fig. S1 Safety Alert Symbol

The Safety Alert Symbol (Fig. S1), either used alone or in conjunction with a signal word, is used to draw attention to the presence of potential safety hazards.

### Signal Words

“DANGER”, “WARNING” and “CAUTION” are signal words used to express severity of consequences should a hazard be encountered.

**DANGER** - Indicates an imminent hazard, which, if not avoided, **will** result in death or serious injury.

**WARNING** - Indicates an imminent hazard, which, if not avoided, **can** result in death or serious injury.

**CAUTION** - Indicates hazards which, if not avoided, **could** result in serious injury or damage to the equipment.

### Pictograms

Safety messages may also include a pictogram in addition to the safety alert symbol and signal word. Pictograms provide another component of information that will further enhance the effectiveness of the hazard communication.



Fig. S-2 Components of Safety Message - Typical

### Signal Words Used for Non-Hazard Messages

Other message types appearing in this manual utilize signal words 'IMPORTANT' and 'NOTE'. These contain messages that describe instructions and suggestions, but are not safety-related.

**IMPORTANT** – Identify instructions that if not followed, may diminish performance; interrupt reliability and production or cause equipment damage.

**NOTE** – Highlight suggestions, which will enhance installation, reliability, or operation.

**Safety Information – [cont'd]**

**Meaning of Pictograms**

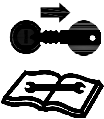
Pictograms are used to rapidly communicate information. For the purposes of this manual and labels affixed to the Allied equipment, pictograms are defined as follows:



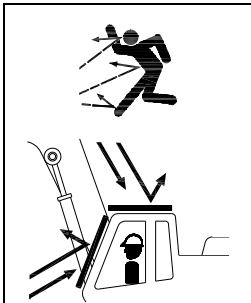
Read the manual before use. Refer to the manual for further details or procedures.



Read the Service Manual For Additional Information

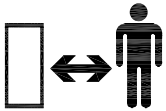


Shut off power & remove key before servicing



Fragments / debris becoming projectiles.

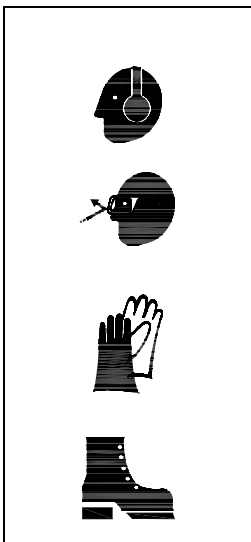
Install protective guards on cab to shield operator against fragments / debris



Personnel must always maintain a safe distance from the work tool, work zone



Identifies lift point



Personal Protection Equipment

Hearing protection

Safety eyewear

Gloves

Safety shoes



Falling object  
Unsupported loads



Crush point / Falling part



Electric Shock



- Falls into open excavations
- Trench collapse



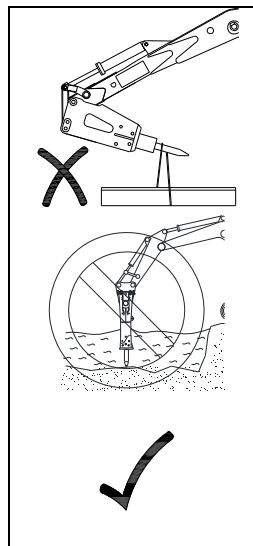
Gas / Oil under pressure



Hot surfaces



Fluid injection



Prohibited actions must be avoided to prevent injury and/or equipment damage

Illustrations used to depict prohibited actions are identified with the X-out or a circle with a diagonal slash.

Actions that are recommended and approved are identified with the check mark symbol.






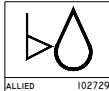





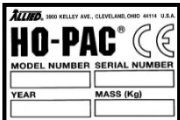
**Safety Information – [cont'd]**

**Safety, Identification and Information Labels**

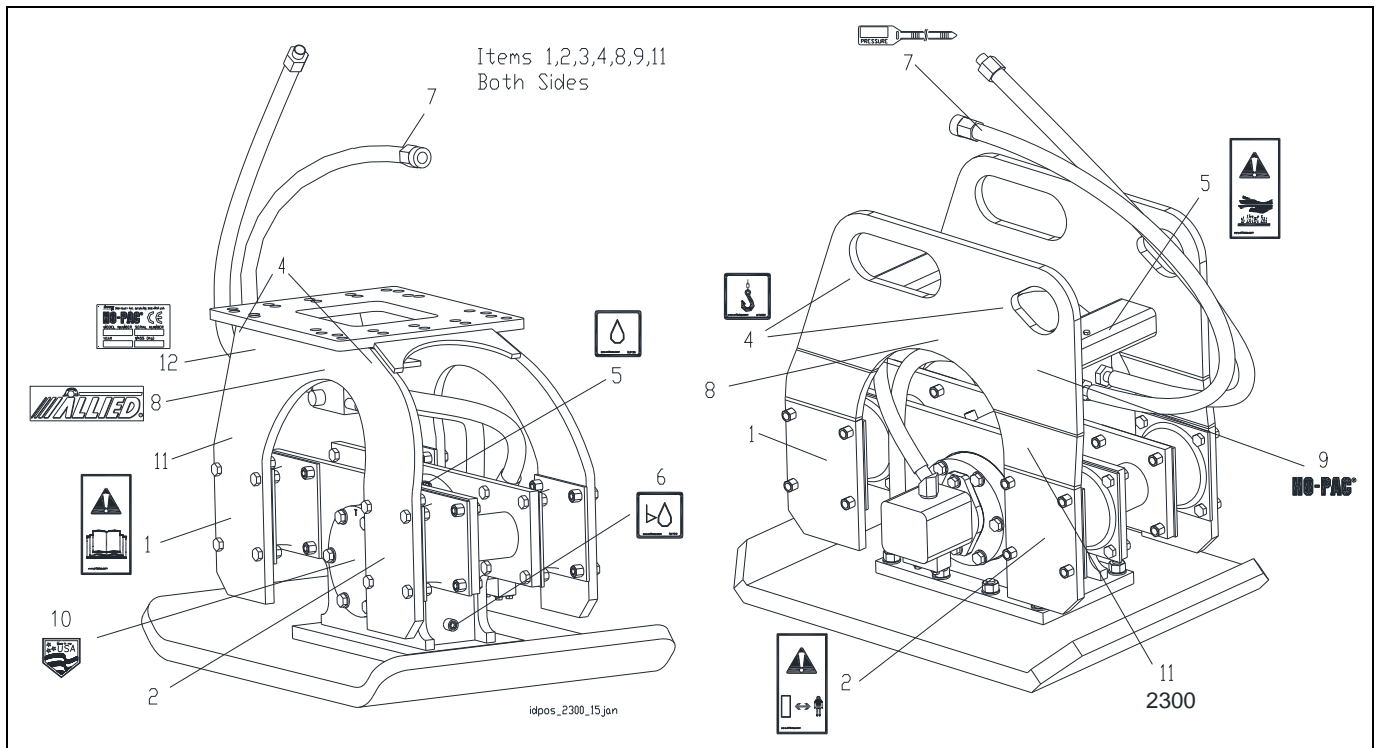
Information labels affixed to the Allied equipment include safety warnings, identification and instructions important to operation and service.

Keep all safety labels clean. Words and illustrations must be legible. Before operating this equipment, replace damaged or missing labels. Refer to the parts section for ordering information. Refer to Figure “S-3” for their location on the equipment.

**Table S.1 Label Illustration and Description**

Fig	Label	Description
L1		<b>Read the Manual</b> - Decal indicates that it is important to read the manual for detailed explanations and instructions
L2		<b>Stay Clear</b> - Decal alerts personnel and by-standers to maintain a safe distance from the Allied work tool during operation.
L3		<b>Hot Surface</b> - Decal identifies components of the Allied work tool that may become hot during operation.
L4		<b>Lift Point</b> - Decal identifies approved lift points of the Allied work tool.
L5		<b>OIL FILL</b> - Decal identifies the location to add oil to fill the oil reservoir. Refer to Section 11.5 for more information.
L6		<b>OIL LEVEL</b> - Decal identifies the location to check the oil level. Refer to Section 11.5 for more information.
L7		<b>Pressure Line Marker</b> – A red colored cable tie marked “PRESSURE IN” is attached to the SUPPLY hose of the Allied work tool for ease of identification between hoses.
L8		<b>ALLIED Logo</b> – This decal is the Allied brand identifier and is a registered trademark of Allied Construction Products, LLC.
L9		<b>Product Identification</b> – HO-PAC is a registered trademark of Allied Construction Products, LLC used for identifying the hydraulic vibratory plate compactor / driver.
L10		<b>Made in USA</b>
L11		<b>Model Identification</b> - Decal indicates the model of the Allied work tool.
L12		<b>Equipment Identification</b> - Manufacturer's Name and Address, Product Name, CE compliance marking, Model Number, Serial Number, Year of Manufacture, and Mass

**Safety Information – [cont'd]**



**Table S.2 Information Labels**

Pos	Type	Description	Part No.	Qty	Remarks / Specifications
---	---	<b>Decal Set</b>	<b>103348</b>	<b>1-Set</b>	<b>Set includes 1-10</b>
L1	Safety	Label - Read Instructions / Manual	676984	2	
L2	Safety	Label - Stay Clear	676981	2	
L3	Safety	Label - Hot Surface	676983	1	
L4	Safety	Label - Lift Point	676982	4	
L5	Info	Tag - Pressure I.D.	818676	1	Located on Supply Line
L6	Info	Label - Oil Fill	102728	1	
L7	Info	Label - Oil Level	A102729	1	
L8	ID	Label - Allied Logo	676654	2	
L9	ID	Label - HO-PAC®	577554	2	
L10	ID	Label – Made In USA	815696	1	
L11	ID	Label - Model 2300	103347	2	L11 Not included in set
L12	ID	Plate – Equipment ID	676980	1	L12 Not included in set

**SAFETY INFORMATION – [cont'd]****Attention Read the Manual**

Improper installation, operation or maintenance of the Allied equipment could result in serious injury or death. Only qualified operators may operate the Allied equipment. Personnel responsible for the maintenance of the Allied equipment or its systems, including inspection, installation or adjustments must also be qualified. Operators and personnel responsible for maintenance of this equipment should read this manual. Other manuals, such as those published by the machinery used in support of the Allied equipment, should also be read.

**Qualified Person**

For the purposes of this manual, a qualified person is an individual that has successfully demonstrated or completed the following:

- Has read, fully understands and adheres to all safety statements in this manual.
- Is competent to recognize predictable hazardous conditions and possess the authorization, skills and knowledge necessary to take prompt corrective measures to safeguard against personal injury and/or property damage.
- Has completed adequate training in safe and proper installation, maintenance and operation of this Allied equipment.
- Is authorized to operate, service and transport the Allied equipment identified in Table 1.1.

**Safety Information Overview**

It's important for all personnel working with the Allied equipment to read this manual in its entirety. It contains important safety information that must be followed so that unsafe situations may be avoided. Safety information described at the beginning of this manual is generic in nature. As you continue reading through later sections of this manual, instructions and safety information become more and operation-specific.

Allied has made every effort to provide information as complete and accurate as possible for this document. Allied cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this manual and labels affixed to the Allied attachment are therefore not all inclusive.

**General Construction Safety**

Always follow procedures that promote safe conditions for workers and bystanders. The standard safety precautions expected and required of those working in construction shall include, but not limited to:

- Locating existing underground service and utility lines
- Establishing pedestrian barriers
- Using personnel protection equipment appropriate to working conditions, etc.

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

Use the Allied equipment 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. 15250-7954

Website: [www.osha.gov](http://www.osha.gov)

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

**Owner's Responsibilities**

Ensure that only qualified personnel operate and service the Allied equipment.

Ensure personnel protection equipment is available to personnel and enforce the use of PPE

Ensure equipment is kept in safe operating condition

Ensure safety-related materials such as instructions and including this manual are kept in a convenient location so that they are easily accessible to operators and maintenance personnel.



**SAFETY INFORMATION – [cont'd]**

**Operational Safety Program**

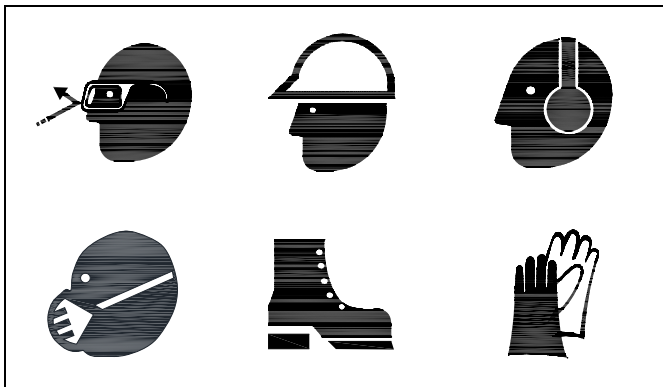
The safe and efficient use of the Allied equipment depends upon proper installation, operation, maintenance and repair. Operational safety programs must encompass all of these elements.

Accident prevention through operational safety programs are most effective when the equipment owner further develops the program by taking into account his own experience in using and maintaining equipment.

Developing such programs will help minimize equipment downtime, while maximizing service life and performance. Most importantly, it will minimize the risk of personal injuries.

**Personal Protective Equipment (PPE)**

Personal protection equipment (PPE) must be available to any personnel operating or nearby the equipment that may be exposed to hazards such as falling, flying and splashing objects, or harmful dusts, fumes, mists, vapors, or gases. Approved PPE, when used correctly, helps protect against certain harmful effects from exposure with the identified hazard.



Examples of PPE include safety eyewear, safety hat, hearing protection, dust mask, safety footwear, and gloves. (Shown Pictograms of PPE is not all-inclusive).

Those responsible for administering PPE shall train personnel with the proper selection and use of PPE to protect against misuse.

**Safety Guards and Protective Barriers**

A safety guard is a physical barrier designed to prevent access to danger areas. Guards are fitted to the Allied equipment to protect against unsafe situations that could not be eliminated through design measures. Guards are only effective when properly

installed and in place. Guards shall not be removed unless for the purpose of inspection and service of components. Reinstall all guards after service or adjustments are completed.

Where it was not possible to prevent an unsafe situation by means of a guard, safety messages appear on the equipment, warning personnel of a recognized hazard.

Additional guarding, not included with the Allied equipment, is necessary at the operator's station to protect the operator and other nearby personnel against flying debris from material being cut or demolished. Do not handle, demolish or cut material overhead without proper guards installed.

The control switch shall be located in a protected area that is guarded against accidental operation of the Allied work tool.

**Unapproved Use or Modifications**

In order to provide and maintain efficient operation with reliable service, while ensuring operator safety, the Allied equipment may not be used for any purpose other than, for which it was intended. Use of the Allied equipment, other than those cited in this manual, may place personnel at risk of injury and/or may subject the equipment to damage.

When making repairs, use only the manufacturer's genuine parts. Substitute parts may not meet the required standards for fit and quality, or may impair function, safety and performance. The Allied equipment shall not be modified or used in unapproved applications unless written consent is received from the Allied Engineering Department.



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## 1.0 Introduction & Scope

### 1.1 Purpose of this Manual

This manual has been prepared in support of the product named in Table 1.1 and is intended to assist the operator and maintenance personnel with the information necessary for the safe and proper use of the Allied equipment.

The spare parts list is also included in this manual. Illustrations depicted in the Parts Information Section are for purposes of parts identification and are not intended for use in repair or service of the equipment.

Material presented in this manual may show equipment that is optional. Figures, captions, parts tables and descriptions are intended solely for use with the product identified in Table 1.1 and may not be suitable for other models.

### 1.2 About This Manual

**Table 1.1 About This Manual**

Document ID No.	TM103349
Type	Safety, Operation and Maintenance
Current Status	See Inside Cover
Product Name:	Ho-Pac®
Generation (Series)	III
Applicable Model[s]:	2300
Years of Manufacture:	Begin 2003

This document is published solely for information purposes and should not be considered all-inclusive. If further information is required, contact your local Allied dealer or the Allied Customer Service Department.

Prior to using, confirm that the information recorded on the Equipment's Identification Tag corresponds with the model information located in Table 1.1.

The content of this document has been reviewed for accuracy. Allied Construction Products, LLC has endeavored to deliver the highest degree of accuracy and every effort has been made to provide information as complete as possible. However, continuous improvement of our products is an Allied policy. The material in this publication, including figures, captions, descriptions, remarks and specifications, describe the product at the time of its

printing, and may not reflect the product in the future. A summary of changes made to the content of this document can be found on the inside cover of this manual.

### 1.3 How to Order Replacement Publications

This manual is an integral part of this product. Keep it in a convenient location so that it is easily accessible for future reference.

Replacement manuals can be ordered by contacting your local Allied dealer or the Allied Customer Support Department. See inside cover for contact information.

### 1.4 Related Publications

Related publications for the product identified in Table 1.1. include the following:

#### 1.4.1 Manual PN-103467 Swivel Option

The optional swivel assembly permits precise positioning of the Ho-Pac without repositioning of the carrier. Turning the swivel is done manually. Content in the Manual includes:

- Safety Information
- Applications/Intended Use
- Mounting Information
- Attaching To/From Carrier
- Technical Data/General Dimensions & Weights
- Pre-use Inspection
- Operation
- Maintenance/Lubrication/Repair
- Troubleshooting
- Lifting, Transport & Storage
- Spare Parts Information

#### 1.4.2 Compaction Handbook 103392

The Compaction Handbook contains:

- Background information about soil, soil compaction and basic overview of different types of soil compaction equipment.
- General information on operating techniques for vibratory plate compactors / drivers
- Performance data for Ho-Pac models derived from field tests.

## 2.0 Equipment Identification

### 2.1 Serial Number Location

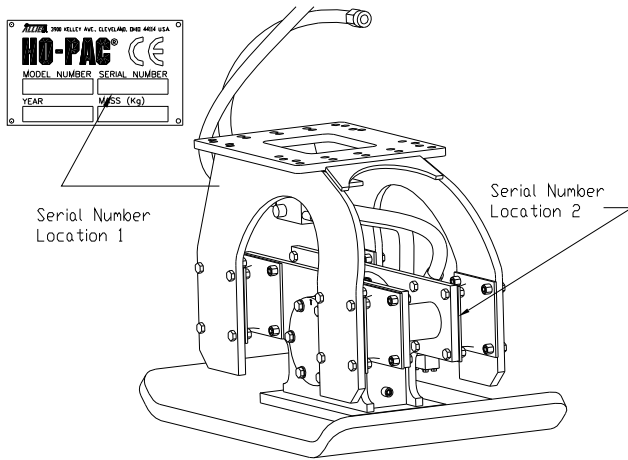


Fig. 2-1 Equipment Identification

Refer to Figure 2-1. The Serial Number assigned to this equipment can be found in the following locations:

1. On the Equipment ID Tag
2. Stamped in the lower assembly – motor side.

### 2.2 Equipment Identification Tag

Refer to Figure 2-2. The Equipment Identification Tag is affixed to the top mounting frame. It provides the following useful information:

- Manufacturer's name
- Address
- Product name
- Model number
- Serial number
- Year of manufacture
- Mass

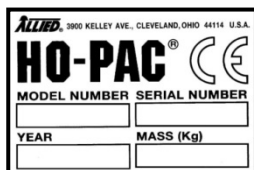


Fig. 2-2 Equipment Identification Tag

Verify that the information contained on the Tag corresponds with the information provided in Section 1 of this manual.

### 2.3 Owner's Record of the Equipment

Your local Allied dealer requires the Product Name, Model and Serial Number to better assist you with questions regarding parts, warranty, operation, maintenance, or repair. This information should be copied from the Equipment Identification Tag to the space provided below.

- Indicate the date in which the Allied equipment was placed into service.
- Fill out the Warranty Registration form and return to Allied Construction Products, LLC.

**In Service Date:** \_\_\_\_\_

**Registration Date:** \_\_\_\_\_

**Product Name:** Ho-Pac®

**Serial Number:** \_\_\_\_\_

**Model:** 2300

	<b>Part Number</b>	
<b>(V16)</b>	103345C	<input type="checkbox"/>
<b>(V17)</b>	103355C	<input type="checkbox"/>
<b>(V21)</b>	A103365C	<input type="checkbox"/>
<b>(FTMR/LR8)</b>	570085C	<input type="checkbox"/>

<b>2300</b>	Model (Weight approx.)
<b>(V) VMS 16,17,21</b>	Variable Mount System / Size
<b>FT MR/LR8</b>	Flat Top Frame Mounting Hole Pattern
<b>C</b>	Configure Options

### 3.0 Warranty Protection Summary

#### 3.1 Overview

The Allied work tool is delivered assembled, lubricated, and factory tested. Upon receipt of the equipment, inspect for possible shipping damage.

For every new Ho-Pac, Allied requires that a Warranty Registration form be filled out. The form provides a section for information about the host machine that the work tool will be installed on. Complete all sections of the form and return to Allied.

Use of non-Allied parts, unapproved service methods, modifications to the Allied equipment, or installation, operation and maintenance, not in accordance with the instructions outlined in this manual may cause equipment failure or personal injury.

For details regarding warranty terms and conditions, refer to document A100668.

#### 3.2 Owner's Responsibilities

When properly installed, operated and maintained by qualified personnel, the Allied work tool will remain productive with a minimum of service.

Keep the Allied equipment operating within its performance limits by familiarizing yourself with the specifications provided in the technical data and specifications tables. Improper installation, including failure to calibrate the carrier correctly may result in loss of performance or subject the equipment to conditions beyond their design.

The following outlines general maintenance policies required for all Ho-Pac models. The owner is strongly encouraged to adopt these general guidelines and further develop them in order to manage particular applications and operating environments.

Ensure that personnel entrusted with installation, operation, maintenance and transporting of the Allied equipment adhere to the following:

- Read and thoroughly understand the information and procedures detailed in this manual.
- Understand proper operating techniques for all recommended applications.
- Use the Allied attachment only if it is in sound operating condition. Take prompt action to rectify any faults that, if left uncorrected, could lead to personal injury or further damage.

- Use the Allied attachment only for the purpose for which it is intended.
- Understand that particular applications, such as working underwater, will require modifications to the standard breaker and additional training for operation and service.
- Appoint Who Does What. Ensure that all personnel understand what their specific responsibilities include.
  1. Establish maintenance responsibilities to be performed by the OPERATOR.
  2. Establish maintenance responsibilities to be performed by the SERVICE TECHNICIAN.
- Recognize problems and know how to take corrective action as detailed in Troubleshooting Section 11.
- Conduct regular checks and inspections as scheduled in the Care & Maintenance Section 9.
- Allow only qualified operators and Allied trained service technicians to perform maintenance and repair as specified in the care and maintenance schedule.
- Use only genuine Allied replacement parts and recommended lubricants to protect total warranty coverage.
- Maintain written records of equipment maintenance, service and repair. These records are helpful if warranty coverage is ever in question.
  - Each record shall include at least:
    - Date of service, maintenance or repair.
    - 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.

### 3.0 Warranty Protection Summary [cont'd]

#### 3.3 Allied Product Policies

In this manual, Allied recommends Ho-Pac applications, maintenance and service consistent with industry practices.

Allied assumes no responsibility for the results of actions not recommended in this manual and specifically the results of:

- Improper Training
- Improper Installation
- Operation in unapproved applications
- Incorrect operation
- Inadequate maintenance
- Use of non-genuine Allied replacement parts
- Unapproved modifications

These exclusions apply to damage to the Allied equipment, associated equipment and injury to personnel.

## 4.0 Product Information

### 4.1 Description and Application - Typical

The Allied Ho-Pac® is a boom-mounted, hydraulic powered, vibratory plate compactor and driver. It is used for soil compaction and sheet/pile installation.

The Ho-Pac is designed for mounting on mobile equipment with hydraulic booms, such as rubber tired or track-type construction vehicles and is attached to the carrier in the same manner as mounting a bucket. The Ho-Pac operates off the host machine's hydraulic system and reaches out to work anywhere the machine's boom can reach.

Applications include backfill compaction, base course preparation, finish surface treatment and embankment buildup.

The Ho-Pac can also be an effective sheet or pile driver. Vibration energy is transferred through the sheet or pile to the soil. Soils with 50% or more granular content are "liquefied" by the vibration, which breaks the skin friction, allowing the sheet or pile to penetrate more easily. Further information is available in the "[Compaction Handbook](#)". To request a copy, contact your local dealer or Allied's Customer Service. Ask for part number 103392.

### 4.2 Familiarization of Main Components

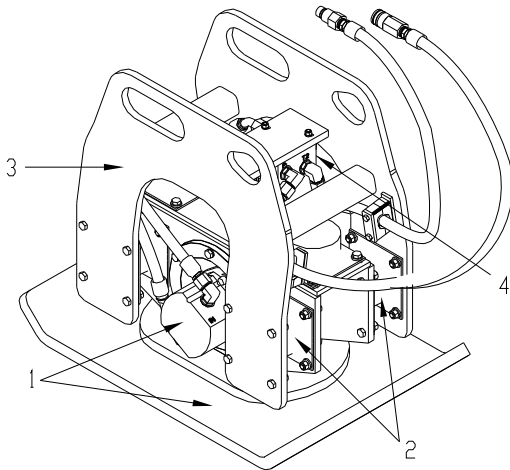


Fig. 4-1 Main Components

**Top Frame** – The Top Frame serves as the connection point used to attach the Ho-Pac to the stick / linkage of the carrier.

**Suspension System** – Rubber Springs mounted between the Top Frame and Dynamic Assembly isolate the vibratory energy from the carrier.

**Dynamic Assembly** – Consists of the lower assembly, eccentric mass, bearings and rubber springs. The strength of vibration is affected by the rotation speed of the motor, weight of the eccentric mass and the off-center distance between eccentric mass and shaft. The vibratory action and impulse force is transferred through the attached compaction plate.

**Control Valve** – All Ho-Pac models come standard with the multi-function control valve. Benefits include optimized operation with improved reliability of critical components such as the motor and bearings.

**NOTE:** *The valve is factory pre-set and requires no further adjustments.*

The control valve performs the following functions:

- **Flow regulator** – Protects the bearings from excessive loads by limiting oil flow that can over-speed the hydraulic motor.
- **Pressure control** – Protects the hydraulic components from over-pressure. This is factory pre-set at the maximum operating pressure plus 200 psi (14 bar).
- **Anti-cavitation circuit** - Controls deceleration of the hydraulic motor and eccentric mass. Also provides protection against motor damage if circuits not equipped with an open return.
- **Return line check valve** - Prevents reverse flow to the hydraulic motor. Also provides a nominal back-pressure to ensure the proper operation of auxiliary valves, such as Allied's AC40 and AC75 priority flow control valves.

### 4.3 Principle of Operation

The vibratory action and impulse force are generated by the hydraulic motor turning the eccentric mass at a high rate of speed. Efficient compaction of granular type soils is further aided by the static pressure exerted by the weight of the carrier pressing against the rubber springs.



## 5.0 Product Selection and Application Guide

### 5.1 Match Compactor Type to the Application

The Allied Ho-Pac is a vibratory plate compactor, designed for mounting on mobile equipment with hydraulic booms, such as rubber tired or track-type construction vehicles. It is best suited for compacting granular type soils by combining three actions:

- Impulse Force
- Vibration Frequency
- Down Pressure (Static Weight)

#### 5.1.2 Ho-Pac and Carrier Compatibility

The Allied work tool is designed to provide satisfactory operation with reliable service life when teamed with a compatible carrier. Balance the size of the Ho-Pac with the size of the carrier. If too small for the carrier, the compactor will be damaged by the carrier. Conversely, too large a compactor can damage an undersized carrier.

#### 5.1.3 Other Considerations


- **Reach** - Select a carrier size having sufficient reach to compact the deepest area of the trench or excavation.
- **Lift Capacity** - Know how your machine is equipped and if any modifications have been made. Factors such as boom type, stick length, undercarriage, tracks, counterweights, etc., all affect the lifting capacity of the carrier. Also take into account any add-ons, such as a quick attach coupler. Consult the carrier manufacturer's manual for specifications.
- **Hydraulic Circuit** - Select a carrier equipped with a one-way hydraulic circuit and free flowing return. It must maintain adequate flow and pressure without loss of hydraulic power to the Ho-Pac when carrier applies down-pressure. If not, motor speed slows and soil density targets won't be reached.

Undersized compactors (as well as underperforming compactors) are less economical to use because compaction is limited to smaller lifts and require additional passes. This generates other inefficiencies as longer running cycles result in loss of time, increased energy consumption and component wear.

Optimum efficiency is achieved only when proper operating technique is employed. How many passes it will take, along with the duration, will vary with material type and lift. Additional fill material and


repositioning of the carrier may be required to achieve a finished surface.

### 5.2 Auxiliary Hydraulic Circuit



**CAUTION**

Hydraulic circuits differ between machines. Improper oil flow or pressure can damage the Ho-Pac or carrier.



Only qualified personnel, having knowledge of the machine's systems, proper test equipment and tools should perform conversion set-up and adjustments.

The Allied Ho-Pac is a hydraulic-driven work tool that is not self-powered. Satisfactory performance centers on the hydraulic circuit of the host machine to achieve flow and pressure requirements.

Generally, most machines will require some degree of conversion to make use of their hydraulic power. Conversions to machines equipped with a factory or dealer installed auxiliary circuit, however, may require little more than minor adjustments to flow and pressure settings.

Carefully follow all instructions, including those provided by the machine manufacturer, when making adjustments.

### 5.3 Allied Auxiliary Conversion Kits

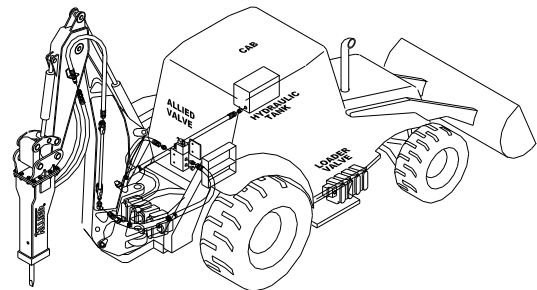


Fig 5-1 Allied Conversion Kit with AC-Series Valve

Allied conversion kits are available for almost any carrier. For machines without an auxiliary hydraulic circuit, the kit may include an "AC" series valve. These solenoid-operated valves will control flow and pressure to the work tool.

Requests for further information or assistance with Ho-Pac selection or conversion kits should be directed to your Allied dealer or by contacting Allied Sales or Product Support Departments.

## 6.0 Mounting Information

### 6.1 Standard Top Frames Available

Standard Top Frames available for the Ho-Pac are shown in Fig. 6-1 and Fig. 6-2. The Ho-Pac can be attached to the carrier once the bucket is removed and the mounting bracket (Fig. 6-3) is bolted to the top frame or is fitted with a VMS kit (Fig. 6-4).

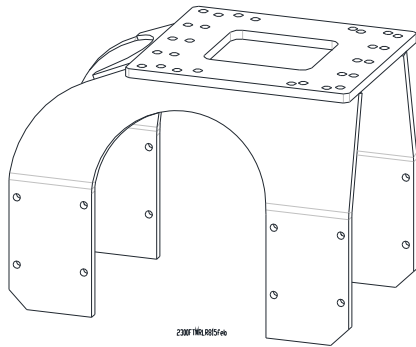


Fig. 6-1 Flat-Top Frame with MR / LR8 Bolt Pattern

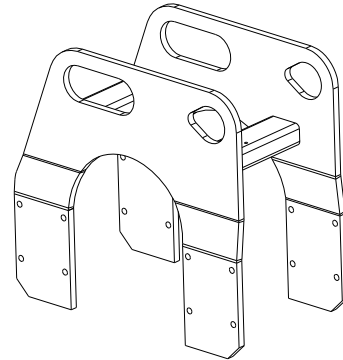


Fig. 6-2 VMS Top Frame

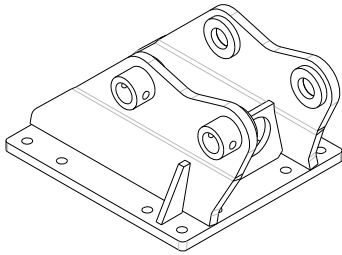


Fig. 6-3 Mounting Bracket – Pin Design Typical

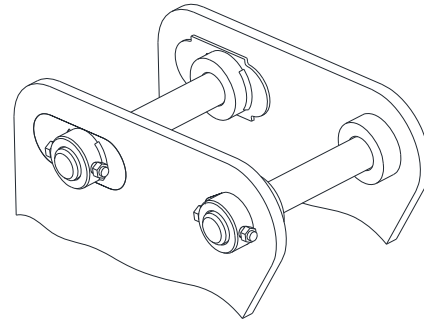


Fig. 6-4 VMS Mounting Adapters

### 6.2 Mounting Bracket for Flat-Top Frame

Allied offers an array of bolt-on mounting brackets to fit virtually any carrier, including those equipped with pin-grab or hook-type mounting couplers. When possible, Allied typically designs mounting brackets to utilize the carrier's bucket pins. A typical mounting

bracket design is shown in Fig. 6-2. The Flat-Top Frame designed to accept bolt-on brackets with the same bolt pattern. Mounting brackets are interchangeable for use with other Allied attachments, including hydraulic breakers that share the same bolt pattern.

Table 6.1 Mounting Bracket for Flat Top Frame

Flat-Top Frame	Mounting Bracket	Bolt Set
MR / LR8	Order Separately*	Included with Ho-Pac

Mounting Bracket design varies with carrier make – model and quick coupler if applicable.

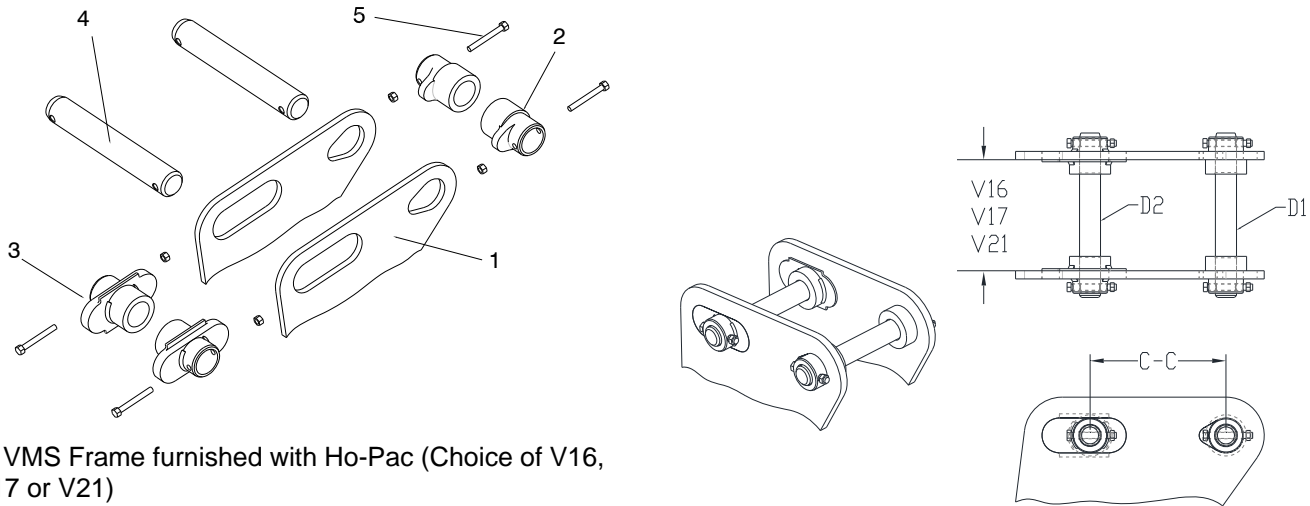
### IMPORTANT

Mounting kits are carrier specific and requires complete information about the carrier, including make, model, series and serial number. Additional information is required if equipped with a quick coupler. Make, model, series and serial number.

## 6.0 Mounting Information [cont'd]

### 6.3 VMS (Variable Mounting System)

When equipped with the VMS design, the Ho-Pac possesses the ability to be transferred from one carrier and mounted to another. The VMS design can be adapted to most pin grab type quick couplers.



1- VMS Frame furnished with Ho-Pac (Choice of V16, V17 or V21)

- 2- Collar -2x
- 3- Plug -2x
- 4- Mounting pin -2x
- 5- Bolt, Nut -2x each

Fig. 6-4 Components of a VMS kit - typical.

Table 6.2 VMS Top Frame and VMS Adapter Kit

A quantity of one (1) VMS kit is furnished with each Ho-Pac.	Stick / Link Width Max. Inch [mm]	Pin Dia. Min-Max Range Inch [mm]	Pin C-C Min-Max Range Inch [mm]
VMS-V16 Kit*	16.25 [413]	2.36-3.54 [60-90]	Refer to the dimension diagrams located in the Technical Data Section of this manual for details.
VMS-V17 Kit*	17.25 [438]	2.95-4.33 [75-110]	
VMS-V21 Kit*	20.75 [527]	2.95-4.33 [75-110]	

\*Part number of VMS kit varies. The carrier make & model is required. Note: Make & model of Quick Coupler is required if applicable.

## 7.0 Installation & Removal

### 7.1 Attach the Ho-Pac to Carrier


The Ho-Pac is attached to the carrier in the same manner as mounting a bucket. Use standard mechanic's techniques and tools. The described installation is for a typical pin on type. Procedures may vary and you should always follow the instructions in the manual that is provided by the carrier manufacturer.

For carriers equipped with a quick coupler, refer to the owner's manual furnished by the coupler manufacturer for instructions.

#### 7.1.2 Tools Required to Mount Ho-Pac On Carrier

No special tools are required, but the following tools should be available:


- PPE including Safety eyewear & gloves
- Sledge Hammer
- Drift pin / Alignment bar
- 3/4 drive socket wrench
- 3/4 drive metric sockets
- Grease gun
- Standard & Metric open end wrenches
- Rags
- Suitable container to collect fluids



**CAUTION**  
Personal protection equipment required when handling. PPE should include appropriate clothing, gloves, safety eyewear and shoes.

**CAUTION**

Some procedures, such as attaching the Ho-Pac to and from the carrier, will require an assistant. Both the operator and assistant must be qualified in these procedures. All directions and signals must be agreed upon in advance.



**CAUTION**  
Crush injury. Keep hands, feet and other body parts clear of crush points. Use sufficient blocking and restraints to avoid accidental or sudden movement of loads.

With the bucket removed, install the Ho-Pac to the carrier in same manner as mounting a bucket. Installation procedures can vary. Mounting bracket, hardware, pins and adapters may be furnished with the Ho-Pac or supplied in the mounting kit.

The following describes basic procedures used to mount a Ho-Pac to a machine equipped with a typical pin on type mounting arrangement.

The machine operator and an assistant shall perform the following procedure:

1. Operator: Move carrier and Ho-Pac to a firm level surface. Position the Ho-Pac with the hose side toward the carrier.
2. Assistant: Check that the Ho-Pac is stable and all loads are supported.
3. Operator: Maneuver the stick in between lugging of the mounting bracket. Align the stick pin holes to the mounting bracket holes.
4. Assistant: Clean pins of rust and debris before they are installed. Insert the stick pin and secure with keepers.
5. Repeat procedure for installing link pin.
6. Lubricate pins.

### 7.2 Connect Pressure and Return Lines


**IMPORTANT**

Contamination can diminish service life. Prevent contaminating the oil. Always clean the area around connections prior to opening the hydraulic system.

**IMPORTANT**

Collect fluids in a suitable container. Clean up spilled fluids and obey all local regulations for the disposal of these fluids.

1. Connect Supply [IN] and Return [OUT] hoses to carrier's hydraulic circuit.



**CAUTION**  
Hydraulic circuits differ between machines. Improper set up can damage the Ho-Pac or carrier. Only qualified personnel, having knowledge of the machine's systems should install.  
Identify whether the carrier's pressure line is located on the right-hand or left-hand side. Do not guess. The Ho-Pac will not operate if these hoses are crossed.

## 7.0 Install / Uninstall Ho-Pac

### IMPORTANT

For ease of identification, the supply hose is tagged with a red colored cable tie and marked "PRESSURE LINE".

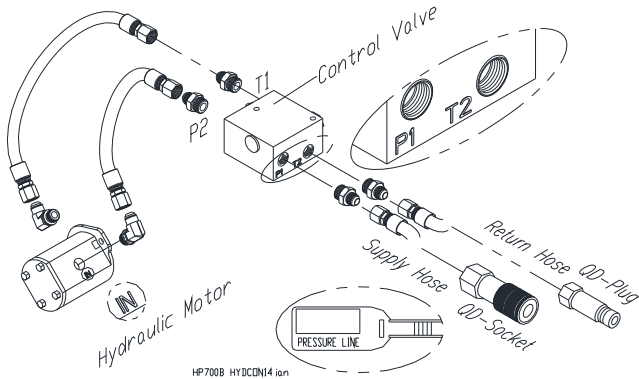


Fig. 7-1

Supply hose tagged with [Pressure Line]  
Supply hose connection to valve port [P1]  
Return hose connection to valve port [T2]

### IMPORTANT

The Ho-Pac is equipped with a control valve. For ease of identification, the valve body is stamped with the part number and the ports are stamped P1, P2, T1 and T2.

2. Raise the Ho-Pac off the ground and operate the bucket cylinder to ensure hoses will not be pinched or restricted.

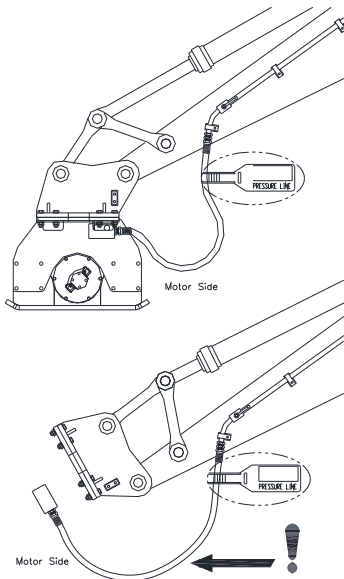


Fig. 7-2 Check hose length & routing for unrestricted movement

3. Briefly test Ho-Pac for proper operation. Stop and check for hydraulic leaks. Tighten hoses and connections as necessary.

### IMPORTANT

Read, understand and follow the instructions included with the installation kit. The installation is not complete until the hydraulic circuit is tested for flow and pressure. Tools required for testing include a flow meter and pressure gages. Test procedures, along with a form to record the results of the flow test, can be found in the Technical Data section of this manual. Questions regarding testing procedures should be directed to Allied Technical Service.

## 7.3 Remove the Ho-Pac From the Carrier



### CAUTION

Some procedures, such as attaching the Ho-Pac to and from the carrier, will require an assistant. Both the operator and assistant must be qualified in these procedures. All directions and signals must be agreed upon in advance.



### CAUTION



Burn injury from contact with hot fluids and surfaces. Some machine components become hot during operation. Allow surfaces and fluids to cool before handling.



### CAUTION



Fluid penetration hazard. Release pressure trapped in hoses before disconnecting. Wear appropriate protective equipment including safety eyewear and gloves.

### IMPORTANT

Collect fluids in a suitable container. Clean up spilled fluids and obey all local regulations for the disposal of these fluids.

1. Position Ho-Pac on stable ground.
2. Disconnect hydraulic connections.
3. With loads adequately supported, remove mounting pins and hardware.
4. Keep mounting hardware with Ho-Pac to avoid loss or damage.

## 8.0 Operation

### 8.1 Pre-operation Checks

#### IMPORTANT

The Allied Ho-Pac is designed to provide optimum performance with reliable service life at a specific flow range and oil pressure. Prior to its first use on a machine, it's important to test the hydraulic circuit. Operating the Ho-Pac beyond its performance limits will cause equipment damage. Follow the accepted specifications listed in Technical Data Section of this manual.



#### CAUTION

Repair or replace any damaged components prior to operation. Do not operate Ho-Pac until all faults are corrected.

For safe and proper operation, perform a thorough daily inspection of the equipment before use.

Daily, before operating:

1. Ensure Ho-Pac is securely attached to the carrier. Check mounting pins and hardware for wear or damage.
2. Excessive dirt and debris on the Ho-Pac can decrease performance and should be removed.
3. Inspect the following for damage:
  - Inspect rubber of spring mounts for cracks or separation from end plate
  - Inspect hoses, seals, motor and valve for oil leaks
  - Check for loose or missing fasteners

**NOTE:** Further maintenance details are located in Section 9 of this manual.

### 8.2 Operation



#### CAUTION

Injury from flying debris. Do not operate the Ho-Pac with workers in close proximity of work zone.



Clear all personnel from work area before the Ho-Pac is operated.



#### CAUTION

Injury from flying debris. Personal protection equipment, including safety eyewear, must be worn when operating or servicing this equipment.



Prolonged exposure to high noise levels may risk hearing impairment or loss. Hearing protection must be worn when equipment is in operation.



#### WARNING

Injury from falls into open excavations. Establish pedestrian barriers around open excavations. Ground vibrations may collapse trench walls.

Excavations must be shored to meet federal, state and local guidelines.



#### CAUTION

Never activate the Ho-Pac unless the operator is seated in the operator's seat and in full control of the machine. Follow instructions in the operator's manual provided with carrier.

1. Position carrier in-line with direction of work.
2. Position the Ho-Pac parallel to the work surface and within view of the operator. The compaction plate must be in full contact with the work surface for maximum effectiveness.
3. Activate the Ho-Pac with the switch located in the operator's cab.
4. Use the carrier to push down on the Ho-Pac. This will not only transfer the vibratory energy more effectively to the soil but also provides a static pressure which assists in the compaction.
5. The spring mounts can be stretched to approximately one-half (1/2) their width.

#### IMPORTANT

Overstretching the rubber springs will contribute to early spring failure. Stretch the spring mounts no greater than approximately one-half (1/2) their width.

## 8.0 Operation – [cont'd]

6. Maintain down pressure as the material compacts. For larger areas, decrease boom down-force and slide the compactor over the material with a repetitive, back and forth motion. The initial pass is continued until compaction is no longer apparent, typically 5 to 15 seconds. Run the compactor until maximum density is achieved but avoid unnecessary run time that can lead to loosening the soil previously compacted.
7. Repeat compacted lifts as necessary until a finished surface is achieved. 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 finished grade.
8. After compaction is complete, re-position the Ho-Pac and/or carrier to continue working.

**NOTE:** Factors that adversely affect the longevity of the spring include abrasions, over-stretching and prolonged operating cycles that build-up heat in the rubber. Stopping the Ho-Pac during repositioning can help minimize the rubber from heat-aging.

The rate of compaction to a 95% Modified Proctor will vary due to many factors, including variations in operator technique. Other factors that will produce different results include -

- Soil densities are reduced at the bottom of excessively high lifts. It may be necessary to try different lifts to determine the maximum and most effective lift that can be used and still achieve the required density.
- Compaction is affected by material type. Soils with 50% or more granular content are the most responsive to compaction through vibratory action.
- Moisture content is also critical to achieving maximum compacted densities of fill material. Fill materials may need conditioning prior to compaction.

### IMPORTANT

Always practice proper operating techniques.

- Do not allow mounting frame to contact base plate. Spring mount and frame damage may result. The spring mounts can be stretched to approximately one-half (1/2) their width.
- Do not use the Ho-Pac to lift or push materials. Damage to spring mounts and other components may result.
- Do not operate the Ho-Pac underwater. Bearing damage may result.
- Do not operate the Ho-Pac without the compaction plate attached. A dynamic imbalance may result in equipment damage.
- 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.
- Do not operate Ho-Pac with hydraulic oil temperature above 180°F (80°C)

The Allied Ho-Pac combines three actions that are highly effective in the compaction of granular type soils:

1. **Vibration** – The vibratory action is generated by the hydraulic motor that drives the out-of-balance eccentric mass turning at a high rpm. Granular soils are extremely responsive to consolidation by vibration. Soil particles are set in motion and settle under their own weight. The air surrounding these particles is forced out, which allows them to pack closely together.
2. **Impulse Force** - Generated by the centrifugal force of the rotating eccentric mass. When properly controlled, this also gives an impact force.
3. **Down Force** – A pressing force exerted by the carrier against the Ho-Pac springs.

### 8.3 Compaction Handbook

Further information is available in the "[Compaction Handbook](#)". To request a copy, contact your local dealer or Allied's Customer Service. Ask for part number 103392.



## 9.0 Care and Maintenance

### 9.1 Maintenance Schedule

Table 9.1 Maintenance Schedule

Item	Hours						N/A	Note
	10	50	250	500	1000	2000		
Visual inspection - Walk around	X							A, B
Re-check Fasteners Torque		X						C, B
Check Bearing Lubrication Level		X						C, D, B
Replace Bearing Lubricant					X			B

N/A – Non-applicable

Note

A) Refer to the list of parts to include during the inspection.

B) As recommended unless a change in performance is observed.

C) After first 50 hours of use

D) Bearings are continuously lubricated by oil splash. Add oil if below mark. Do Not Overfill.

#### 9.1.1 Maintenance Schedule Overview

In Table 9.1, the method described for daily inspections is identified as a "walk around". All external components must be looked at for any visible signs of wear, damage, loose, missing or unsecured fasteners, fluid leaks, and cracks in welds.

#### 9.1.2 Conditional Maintenance

When properly installed, operated and maintained by qualified personnel, the Allied equipment requires a minimum of maintenance.

Table 9.1 specifies how often and what items need to be inspected in order to maintain the safety, reliability and performance of the Allied equipment. Intervals are based on standard (normal) operating conditions and must be adjusted accordingly if operating under harsh applications or extreme conditions. For example, if using water content hydraulic fluid or when operating under conditions of extreme temperatures, dust, high elevations, or extended continuous use, components will require more frequent monitoring. Use regular component inspection to determine if interval adjustment is warranted.

While the frequency of inspections and maintenance depend primarily on use, other factors such as extreme environmental conditions require additional measures.

Clean Surfaces of Ho-Pac

- In conditions of extreme humidity
- Muddy and wet soils.
- If reduced performance is observed

### 9.2 Safety Precautions During Inspection



#### WARNING

Unless otherwise instructed, all maintenance is performed with the work tool supported on stable ground and the machine shut off.

Remove the ignition key, engage interlock and apply parking brake.



#### WARNING

Crush injury. Never rely on the rotation system or cylinders as a means of support when servicing the Allied equipment. Hydraulic cylinders are strictly lifting devices and not a structural support member.

Prevent sudden or unexpected movement by using proper blocking to support loads.



#### WARNING

Crush injury. When releasing pressure make sure that the boom and work tool cannot fall or make unexpected movements.

Refer to the manuals provided by the carrier manufacturer for instructions on how to depressurize the hydraulic system.




#### WARNING

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


## 9.0 Care and Maintenance - [cont'd]




**WARNING**  
Crush injury. Any guard removed from the equipment for purpose of inspection or maintenance must be reinstalled before returning back to work.



**WARNING**  
Injury from pressurized fluid. Fluid under pressure can penetrate skin. Never use hands to locate leaks. Use cardboard.  
Regularly inspect hoses for damage. Replacement hoses must be the same type and pressure rating.



**CAUTION**  
Personal protection equipment, including safety eyewear, must be worn when operating or servicing this equipment.



**CAUTION**  
Burn injury from contact with hot surface. Some components become hot during operation. Allow parts and fluids to cool before handling.

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

### 9.3 10 Hour (Daily) Maintenance


- Remove all excessive dirt/debris on the Ho-Pac that can decrease performance.
- Check for loose or missing fasteners.
- Check components for excessive wear.
- Check spring mounts for cracks.
- Check fasteners for tightness. Check and replace any threaded fasteners that are missing or damaged. Follow proper torque procedures.
- Check hoses and connections for oil leaks.

Replace damaged or deteriorated hoses. Replace if any of the following conditions are present:

- Leak at end fitting that cannot be eliminated through proper tightening techniques
- Outer coverings are chafed or cut.
- Wires are exposed

- Outer coverings are ballooning
- Flexible part of the hoses are kinked
- Outer covers have embedded armoring
- End fittings are displaced

### 9.4 Check Carrier's Oil Level and Quality



**CAUTION**  
Follow the recommended service intervals from the carrier manufacturer.

Check oil level in reservoir. Check records for last oil and filter service. Test oil quality. Review the manufacturer's maintenance schedule. It may specify operating conditions that require special attention to maintenance and adjusted service intervals.

Maintain clean oil in the carrier. Follow the recommendations from the carrier manufacturer for approved hydraulic oils and hydraulic system maintenance.

**IMPORTANT**  
Contamination will diminish service life of components. Use care while performing service to hydraulic systems. Safeguard against contaminating the oil. Before connections are opened, ensure fluids are collected in a suitable container. Clean up any spilled oil. Obey all local regulations for the disposal of these fluids.

### 9.5 Bearing Lubrication System

The bearings are continuously lubricated during operation from the oil splash system located within the eccentric housing. The sealed system contains the oil and protects it from outside contamination.

#### 9.5.1 Bearing Lubrication Type and Capacity

The oil level must be checked regularly and maintained at a specific height to allow adequate oil splash.

Check daily for visible oil leaks.

- If leaks are detected, check oil level
- Determine cause of leak, (e.g. loose bolts, faulty gasket) and make necessary repair.

## 9.0 Care & Maintenance - [cont'd]

### Bearing Lubrication - Type

The Allied Ho-Pac is factory filled with premium quality hydraulic oil ISO VG32 combining non-foam and anti-wear additives. The use of other oils shall be permitted only if they have a minimum viscosity of at least 12 cSt at an operating temperature of 66° C (150° F).

### Oil Capacity

Approximate oil capacity is 2.4 qt (2.2 l). **Do not overfill.** Excess oil (from over-filling) will discharge through the pressure relief plug.

### Oil Change Interval

Replace the bearing oil every 1000 operating hours, or once per year. \*Maintenance intervals are subject to adjustment if operating under extreme operating conditions.

### 9.5.2 Pressure Relief Valve

The pressure relief valve, located on the eccentric housing near the fill plug, vents any pressure build-up inside the eccentric housing. A slight accumulation of oil residue surrounding its location is normal.

### 9.5.3 How To Check Oil Level



#### CAUTION

Burn injury from contact with hot surface. Some components become hot during operation. Allow parts and fluids to cool before handling.

#### IMPORTANT

Contamination can shorten bearing life. Prevent dirt and debris from contaminating the oil. Always clean the area around the plugs prior to removal.

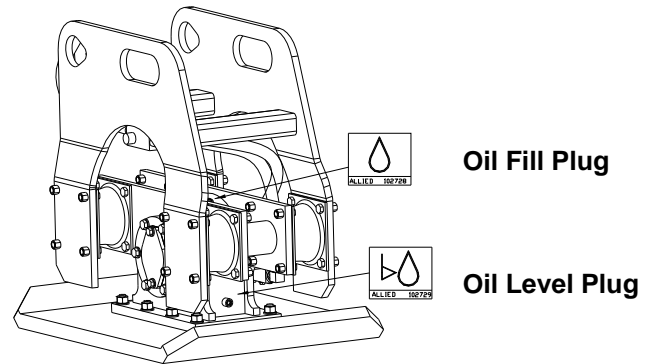


Fig. 9-1 Location of Plugs for Oil Fill & Level

1. Position the Ho-Pac on a level surface with easy access to both the oil fill and oil level plugs.
2. Prevent contamination by cleaning area around the oil level plug before removal.
3. With plug removed, the oil level should be visible at the bottom of the opening.

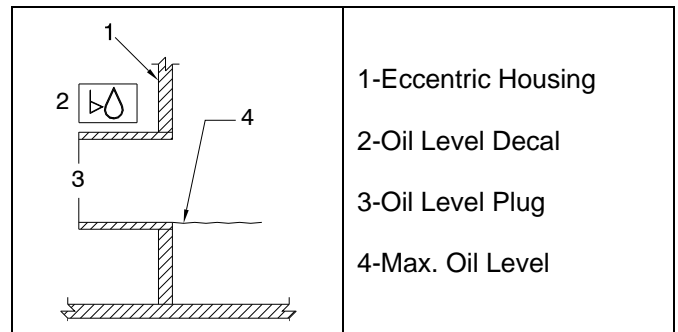


Fig. 9-2 Oil Level for Bearings

### 9.5.4 How To Add Oil

1. Position the Ho-Pac on a level surface with easy access to both the oil fill and oil level plugs. Refer to Figure 9-1.
2. Clean the area around the oil fill plug before removing.
3. Add oil until excess drips from the opening.
4. Install and tighten oil fill and level plugs.
5. Wipe up any oil spills

## 9.0 Care & Maintenance - [cont'd]

### 9.5.5 How To Drain Oil

1. Position the Ho-Pac on a level surface with easy access to both the oil fill and oil level plugs. Refer to Figure 9-1.
2. Prevent contamination by cleaning area around the oil level plug before removal.
3. Loosen, but do not remove the oil level plug.
4. Point the oil level plug downward so that oil will drain.
5. Place a suitable container under the plug to catch oil.
6. Remove oil level plug and drain oil.

#### IMPORTANT

Properly dispose of used oil. Obey all local regulations for the disposal of these fluids.

#### IMPORTANT

If the oil is contaminated with water or dirt, flush the eccentric housing with clean oil prior to oil replacement.

7. Fill with new oil to proper level. Use correct type.

### 9.6 How To Check Condition of Bearings

Due to the high loads and rotational speeds, bearing failure is usually sudden. A rattling or scraping sound is a tell-tale sign of imminent failure. Visual inspection of bearing requires removal of the bearing housing.

#### 9.6.1 Bearing Replacement

#### IMPORTANT

When repairs are made, use only the manufacturer's genuine parts. Substitute parts may not meet the required standards for fit and quality, or may impair function, safety and performance.

#### IMPORTANT

Bearings are interference press fit into housing. Replacement requires a workshop equipped with a manual arbor or hydraulic press.

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

Questions regarding maintenance, repair or operation can be directed to Allied Technical Service. For

questions regarding replacement parts, contact Allied's Customer Service.

#### 9.6.2 Bearing Removal

1. Remove hydraulic motor.
2. Remove the motor side bearing housing from the eccentric housing.
3. Remove the eccentric mass.
4. Remove the other bearing housing.
5. Ensure the bearing housing is properly supported and press only against the bearing's inner race.



#### CAUTION

Crush injury. Eccentric mass is heavy. Handle carefully to avoid injury to hands or fingers.

#### IMPORTANT

Do not pry out the outer bearing race if it remains in the housing. Place a small weld bead, @ 1/8 inch (3 mm) along the inside diameter. When cool, remove the outer race.

#### IMPORTANT

Obey all local regulations for the proper disposal of all used fluids.

#### 9.6.3 Bearing Installation

#### IMPORTANT

Handle new bearings with care to prevent damage. Do not remove from packaging until ready to install.



#### CAUTION

Bearings are interference press fit. Apply contact pressure to the outer race only. Do not hammer on the bearing rings.

1. Clean the bearing housing.
2. Lightly lubricate outer race of bearing.
3. Slowly press bearing into housing.
4. Clean and lubricate the eccentric shaft.
5. Slip bearing/housing onto shaft. **NOTE:** Close tolerance slip fit.

## 9.0 Care & Maintenance - [cont'd]

6. Repeat steps 1-4 with other bearing and housing.
7. Install the bearings and eccentric in to the eccentric housing. Install bolts.
8. Install hydraulic motor and bolts.
9. Install hydraulic hoses.

### IMPORTANT

Keep threaded fasteners tight. Replace with new if missing or damaged. Replacement fasteners must be the same type and grade. Follow proper tightening procedures and bolt torque.

## 9.7 Rubber Springs - Replacement

The rubber springs will require periodic replacement due to aging. Other factors that adversely affect the longevity of the rubber include abrasions, over-stretching and prolonged operating cycles that build-up heat in the rubber. Stopping the Ho-Pac during repositioning can help minimize heat-aging.



### CAUTION

Crush injury. Do not place hands or fingers between mounting frame and compaction plate during removal of spring mounts.

Ensure all loads are adequately supported before performing any service work.



### CAUTION

Some components of the Ho-Pac are heavy. Use approved lifting equipment to properly support and stabilize loads.

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

1. Position Ho-Pac on flat, stable surface.
2. Support top mounting frame to remove weight from mounts.
3. Loosen all nuts. Remove nuts and washers.
4. Remove all bolts and mount.
5. Position new mount. Use alignment bar to align bolt holes.
6. Install new bolts, washers and nuts.

7. Tighten bolt to proper torque. Refer to Table 9.2.

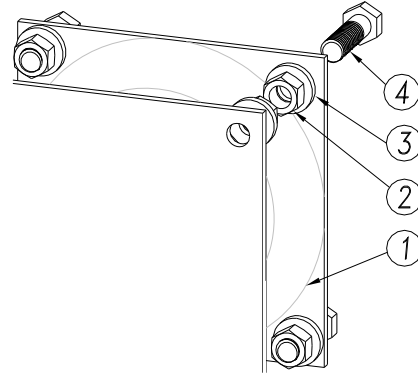


Fig. 9-3 Flat Washer (3) must be placed against "rubber side" (1) of Spring Mount

### IMPORTANT

Flat washer must be installed on the "Rubber Side" of mount. Refer to Figure 9-3.

## 9.8 Threaded Fasteners

### IMPORTANT

All threaded fasteners must be checked frequently for loose, broken or missing bolts. Keep threaded fasteners tight. Replace with new if missing or damaged. Replacement fasteners must be the same type and grade. Follow proper tightening procedures and bolt torque.

### 9.8.1 Bolts – Replacement, Preparation, Tightening Method, Pre-tensioning and Torque

- Replacement fasteners must be the same type and grade.
- A hardened washer must be used under the head of a bolt in a blind hole.
- With a nut and bolt combination, a hardened washer must be used under the element to be turned. AND the element not turned must be prevented from rotating during tightening.
- Do not apply thread lock compound to the bolt threads unless instructed to do so.
- All threads must be free of damage and foreign debris. Surfaces to be bolted must be flat.
- The bolt threads should be lightly lubricated.
- Install all bolts finger tight.

**9.0 Care & Maintenance - [cont'd]**

- Bolts should be systematically tightened starting from the most rigid part of the joint.

Step 1. Tighten the first bolt to 1/3 of its final torque in Table 9.2. Follow a crisscross pattern (Ref Fig. 9-3) and tighten remaining bolts to 1/3 of final torque.

Step 2. Repeat pattern and tighten all bolts until 2/3 of the specified torque is reached.

Step 3. Continue crisscross pattern and tighten until final torque shown in Table 9.2 is reached.

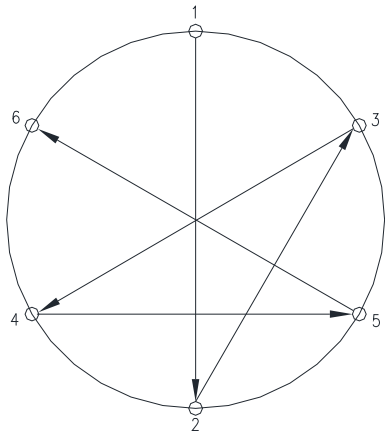


Fig. 9-4 Tightening Pattern for Bolted Assemblies

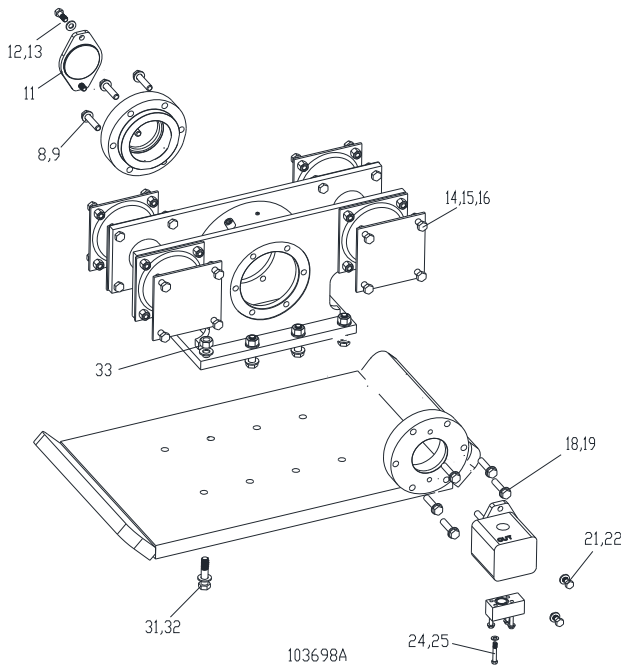


Fig. 9-5 Position of Threaded Fasteners

**Table 9.2 Standard Tightening Torque**

Radial lines on the head of SAE bolts identify grade. Metric bolts identified by the class number on head.

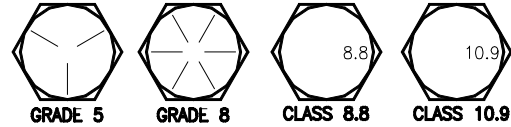


Fig. 9-6 Bolt Head Markings SAE vs. Metric Class

Size	SAE GR 8		CL 8.8		CL 10.9	
	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m
3/8	35	47				
1/2	85	115				
5/8	170	230				
3/4	280	380				
7/8	400	542				
1	650	880				

**NOTE:** After bolt installation, operate the Ho-Pac for a few hours, and then re-check bolt torques.



**IMPORTANT**

For compaction plate bolts only, apply a commercially available thread locker (Example Loctite 271 or equivalent). Follow manufacturer's instructions for application.


**9.9 Hydraulic Motor & Flow Regulator Valve**

**NOTE:** The hydraulic motor and flow valve have no maintenance requirements. Contact Allied's Technical Service if further information is required.

## 10.0 Lifting, Transport & Storage

**WARNING**  
Crush hazard. Injury may result if the Ho-Pac shifts or falls. Do not lift the Ho-Pac by the mounting pins or whip hose. The LIFT POINT decal identifies the recommended lifting points. Lifting devices must safely carry the loads to which they will be subjected. Lift away from people. Do not enter the danger zone while the attachment is being lifted.



**CAUTION**  
Crush hazard. Keep hands and feet clear of crush points. Always use sufficient blocking to avoid accidental or sudden movement of the attachment.

### 10.1 Lifting & Transport

See Technical Data Section for the weight of the work tool.

#### 10.1.1 When the attachment is transported independently of the carrier

1. Remove all loose debris from attachment.
2. If the swivel assembly is installed, lock swivel position with bolt.
3. Follow removal instructions in Section 7.
4. Secure hoses to unit to avoid accidental damage.
5. Lift attachment only at approved lift points. Refer to the Safety Section of this manual for the location.
6. Stabilize and secure the attachment adequately for transport.

#### 10.1.2 When the attachment is transported while installed on the carrier

1. Remove all loose debris from attachment.
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.

### 10.2 Storage

Observe the following storage precautions.

- Store in upright position
- Avoid wet or damp conditions to minimize rust
- Seal hydraulic connections to protect against contamination
- Keep the motor full of oil to protect internal components
- Protect rubber components such as spring mounts and hoses from exposure to direct sunlight to reduce aging effects
- Support the mounting frame with blocks to minimize permanent sag in spring mounts.



## 11.0 Troubleshooting Guide

This guide identifies several commonly encountered conditions and the recommended corrective action. For conditions other than these, contact the Allied Technical Service Department.



### CAUTION

Only qualified personnel, having knowledge of the machine's systems, proper test equipment and tools should attempt adjustments and repairs.

Fault	Possible Cause	Corrective Action
<b>No operation</b>	Insufficient oil pressure or flow	Check hydraulic supply system. Correct as required
	Failed bearings	Inspect and replace bearings
	Failed motor	Inspect and replace worn parts
<b>Erratic operation</b>	Erratic oil pressure or flow	Check hydraulic supply system. Correct as required
	Failed spring mount	Inspect and replace failed mount
<b>Operation with excessive noise or vibration</b>	Failed bearing	Inspect and replace bearings
	Imperfect bearing lubrication	Check oil level, quality & type
	Loose bolts or mounting hardware	Inspect and tighten bolts
<b>Operation stalls under load</b>	Pressure relief too low	Check hydraulic supply system. Correct as required
	Failed bearing.	Inspect and replace bearings
	Motor internal bypass failed seals or worn gears	Inspect and replace motor
<b>Operation smooth, but at reduced speed</b>	Insufficient oil flow	Check carrier output If motor or flow regulator valve was replaced, check that the motor and valve are properly matched
<b>Oil discharge from pressure relief vent</b>	Oil level too high	Check oil level

This Allied work tool is not self-powered and its performance level will be impaired by a hydraulic system that is not operating to specification.

If the carrier machine is equipped with an adjustable work mode switch, verify its proper setting for Ho-Pac operation.

Use a flow meter to measure oil delivery and to verify the cracking pressure of the relief valve.

When troubleshooting, include all associated parts of the attachment circuit to exclude any possibility of a collapsed hose or other fault or malfunction.

Tools required for testing include a flow meter and pressure gages. Test procedures, along with a form to record the results of the flow test, can be found in the Technical Data section of this manual.

## 12.0 Technical Information

### 12.1 Testing the Hydraulic Circuit

The performance of the Allied work tool is impaired by a hydraulic system that is not operating correctly or set outside the accepted specifications.

Prior to first use, it's important to test the integrity of the machine's hydraulic circuit to confirm its performance can adequately deliver to the accepted specifications of the Allied work tool.

Tools required to complete these tests include a flow meter and pressure gages. Record the test measurements in the worksheet provided below.

Tests are performed under varied conditions, including temperature, work mode, engine speed and load. Use test results to confirm that the hydraulic circuit is properly calibrated and set in accordance to the accepted specifications listed in the technical data section of this manual.

Work Mode	Engine RPM	Flow [GPM]	Load [PSI]	Oil Temp [°F]	Relief [Crack]	Relief [Static]	Return [PSI]
			0				
			1000				
			1500				
			1800				
			2000				
			2200				
			2400				
			2600				
			2800				
			3000				
			3200				
			3400				

**Work Mode** – Set to correct position (if equipped).

**Engine RPM** – Set to normal operating speed

**Flow [GPM]** – Record measured flow at each load pressure

**Load Pressure [PSI]** – Steadily increase load with restrictor valve on the flow meter

**Oil Temperature** – Oil temperature must be at normal operating temperature while testing. Stop test if temperature exceeds 176° F (80° C)

**Relief Pressure [Crack]** – Slowly close restrictor valve until pressure gage indicates relief valve has cracked open.

**Relief Pressure [Static]** – After cracking pressure is reached, further adjust restrictor valve until flow gage indicates relief valve is fully open.

**Return Pressure [PSI]** – Record the pressure measured in the return line. Measuring point for gage must be located near the motor's outlet port.

If troubleshooting, include all associated parts of the attachment circuit to exclude any possibility of a collapsed hose or other fault or malfunction.

## 12.0 Technical Information – [cont'd]

### 12.2 Oil Pressure Check

#### IMPORTANT

The Ho-Pac is designed to provide optimum performance with reliable service at specific oil flow and pressure. Inattention to correct machine set up may result in equipment damage, diminished service life and poor efficiency.

Measure oil pressure whenever any the following conditions occur

- When first installed on a carrier
- When repairs or modifications are made to the machine's hydraulic circuit.
- When the machine operates other hydraulic work tools.
- When the Ho-Pac is removed from one machine and attached to a different machine.
- Check the pressure every 250 operating hours is recommended.

### 12.3 How to Measure the Oil Pressure

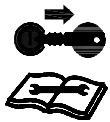


#### CAUTION

Only qualified personnel, having knowledge of the machine's systems, proper test equipment and tools should attempt testing and adjustments.



#### WARNING



Prevent accidental start. Engage interlock, shut off engine and apply parking brake. Follow all safety and operating instructions provided by the carrier manufacturer.

Certain tests, such as measuring the oil pressure, can only be done while the Ho-Pac is operating.

- Lower the Ho-Pac to the ground and stop the carrier engine.
- Relieve hydraulic pressure in attachment circuit.
- Connect a pressure gauge [0-5000 PSI] to the supply hose at the [IN] side of the Ho-Pac.
- Use the form provided in Section 12.1 to record your results.

- Start the carrier. Use the boom and arm controls to extend the Ho-Pac away from the carrier. Position the tamper plate against the ground.
- Adjust the engine's rpm to the normal operating speed and set operating mode to "work tool".
- The test can begin when the normal operating temperature is reached.
- Start the Ho-Pac and record the pressure reading. It's normal for the pressure reading to increase and decrease as the carrier applies varying amounts of down pressure.
- Compare your results with the values listed in the General Specifications Table.
- When finished with the pressure-measuring test, lower the Ho-Pac safely on the ground and stop the engine. Relieve hydraulic pressure in attachment circuit. Remove test gauge.

### 12.4 Definition of Hydraulic Terms

For the purposes of this manual, the following terms are defined as:

**Range** – A range is represented by two values 'V1 – V2' and generally means the lowest-to-highest limit of a device that will allow it to adequately respond. The term "minimum flow" describes the least amount required that permits continuous operation that is both satisfactory and efficient.

**Hydraulic Flow** – A measure of the volume of oil (values given in GPM / LPM) necessary for the safe and efficient operation of the Allied work tool.

The motor is coupled to the eccentric mass. The rotation speed of the motor must be kept inside a narrow flow range. Too little flow results in under-speeding and unsatisfactory performance. Excessive flow (above the accepted flow rate) does not improve compactor performance. Too much flow not only results in overheating the oil, but also causes the motor to over-speed which will add significantly higher loads that contribute to early bearing failure.

#### IMPORTANT

Never use a relief valve as a means to reduce the hydraulic oil flow to the Ho-Pac. Oil by-passed over the relief valve will cause significant heat generation.

## 12.0 Technical Information – [cont'd]

**Operating Pressure** – A measure of the hydraulic oil pressure (values given in PSI / BAR) taken in the attachment's supply line during operation.

Oil pressure will fluctuate with changes to soil density and the force exerted by the carrier. With the Ho-Pac raised off the ground, the oil is under a state of no load, and oil pressure is minimal. Each component of the hydraulic system has a maximum working pressure. For safety and reliability, it's important that pressure is regulated so that no component is subjected to pressures beyond their design.

### IMPORTANT

The operating pressure is not to be used as a relief valve pressure setting. Poor performance and significant heat generation will occur.

**Relief Valve** – An adjustable, spring-loaded valve that opens when a preset pressure value is reached. A relief valve is safety device, used to protect the circuit against hydraulic overload. Relief valves vary in design. Pilot controlled pressure relief valves are designed so that the relief pressure increases very little as the flow through the valve increases. For Ho-Pac applications, they are recommended over direct acting type relief valves.



### CAUTION

The relief valve is a safety device, used to protect the circuit against hydraulic overload. It is a required component.

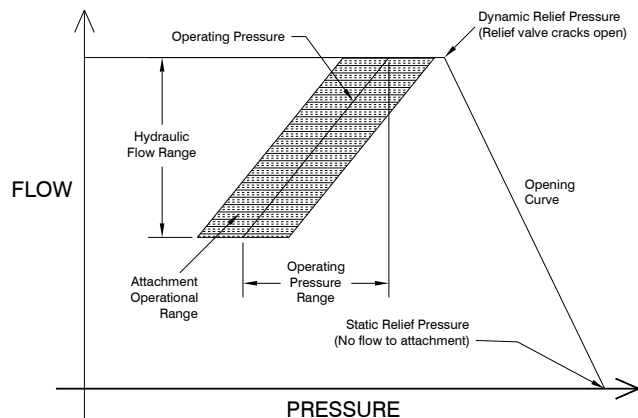


Fig. 12-1 Flow-Pressure Diagram

**Dynamic Relief Pressure** – Also referred to as “Cracking Pressure”. The pressure measured at the moment the oil pressure exceeds the preset value of the relief valve and the spool “cracks” open.

**Static Relief Pressure** – Also referred to as “Full Relief Pressure”. The pressure measured at the moment the relief valve has opened fully and all oil is by-passed.

**Opening Curve** – The dynamic pressure is always less than the static pressure. A relief valve adjusted to a dynamic pressure of 3000 psi (200 Bar) will crack open when the preset point is reached, but fully opens at a higher pressure. The opening curve is the rise of pressure between dynamic and static.

### IMPORTANT

The carrier's hydraulic system must be capable of providing the accepted oil flow at a pressure equal to at least the dynamic relief pressure.

## 12.5 Hydraulic Motor Options

Some Ho-Pac models may offer optional size motors. Refer to the Technical Data Section of this manual for availability.

### 12.5.1 Motor Rotation

Refer to Fig. 12-2. The motor is assembled for CLOCKWISE ROTATION. Motor ports are marked [IN] and [OUT]. When viewed from the shaft end and with the larger portion of the body downward, the [IN] port is located on the left-hand side.

### IMPORTANT

The motor is assembled for clockwise rotation. Pressurizing the outlet port of the motor will damage internal components. Verify correct installation before pressurizing the hydraulic circuit.

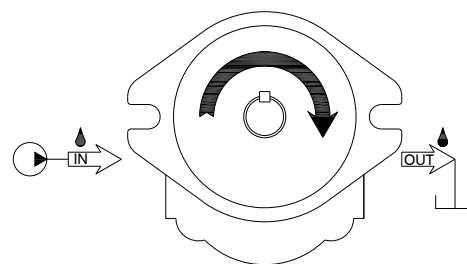


Fig. 12-2 [IN] & [OUT] \*Motor Viewed From Shaft End

## 12.0 Technical Information – [cont'd]

### 12.6 Motor and Valve Combination

#### IMPORTANT

Incorrect motor and valve combination will result in poor performance or damage. Always identify which motor and valve package option is installed if Ho-Pac is moved to a different carrier or anytime the motor or valve is replaced.

The Ho-Pac is standard equipped with a multi-function control valve. Benefits of this valve include optimized operation and improved reliability of critical components such as the motor and bearings.

Some Ho-Pac models may offer optional size motors. Refer to the Technical Data Section of this manual for availability.

### 12.7 Control Valve – Adjustments, Function, Identification & Port Connections

#### 12.7.1 Control Valve – Adjustments

#### IMPORTANT

The valve is factory pre-set and requires no further adjustments.

#### 12.7.2 Control Valve – Function & Benefit

The four functions are:

1. **Flow regulator** – Protects the bearings from damage by limiting the oil flow and preventing the hydraulic motor from over-speeding.
2. **Pressure control** – Protects the hydraulic components from over-pressure. This is factory pre-set at the maximum operating pressure plus 200 psi (14 bar).
3. **Anti-cavitation circuit** - Controls deceleration of the hydraulic motor and eccentric mass. Also protects motor from damage on circuits not set up with an unrestricted, free flowing, and open return.
4. **Return line check valve** - Prevents reverse flow to the hydraulic motor. Also provides a nominal back-pressure to ensure the proper operation of priority flow control valves, such as Allied's AC40 and AC75.

### 12.7.3 Control Valve – Part Number Identification & Port Connections

The part number of the control valve is stamped on the manifold and just above the T2 port.

#### IMPORTANT

For ease of identification, the valve body is stamped with the part number and the ports are stamped P1, P2, T1 and T2.

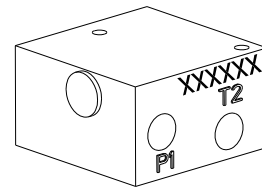


Fig. 12-3 View of P1 & T2 Side of Flow Valve Identification Markings

**XXXXXX:** Marks Area Stamped with Part Number

**P1:** Incoming supply oil flow from carrier.

**P2:** Regulated oil flow to motor's [IN] port.

**T1:** Return oil flow from motor's [OUT] port.

**T2:** Return oil flow to the carrier (Tank).

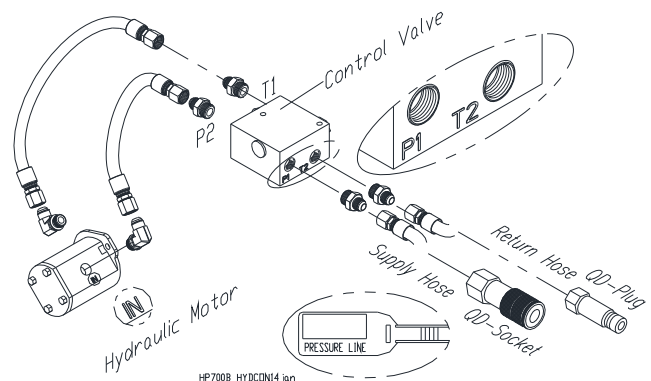


Fig. 12-4 Hose Connections

Supply hose tagged with Pressure Line ID Tag  
Supply hose connection to valve port [P1]  
Return hose connection to valve port [T2]

## 12.0 Technical Data

### 12.8 Specifications

Table 12.1 General Specifications

<b>Ho-Pac Model 2300</b>					
<b>Impulse Force</b>		24,000 [106,760]		Lbs [N]	
<b>Cycles Per Minute</b>		2100		1/min	
<b>Sound Power Level</b>		108 [Est'd]		DBA [LWA]	
<b>Hydraulic Flow <sup>a)</sup></b>	Standard Motor		47 [178]		gpm [lpm]
	Motor	Option-1	Option Not Available		
		Option-2			
<b>Max Operating Pressure</b>	Standard Motor		2200 [152]		psi [bar]
	Motor	Option-1	Option Not Available		
		Option-2			
<b>Oil Pressure @ No Load</b>		300-500 [20-35]			
<b>Auxiliary Circuit Relief Pressure</b>	Dynamic <sup>b)</sup>		Max Operating + 400 [28]		
	Static <sup>c)</sup>		Max Operating + 650 [45]		
<b>Compaction Plate Dimensions- Standard</b>		34 x 36 [860 x 910]		Inch [mm]	
<b>Compaction Area (Std)</b>		8.5 [0.79]		Ft <sup>2</sup> [m <sup>2</sup> ]	
<b>Compaction Plate Dimensions-Option</b>		Contact Allied		Inch [mm]	
<b>Compaction Area (Opt)</b>		For Available Size Options		Ft <sup>2</sup> [m <sup>2</sup> ]	
<b>Hose Size Ø</b>	<b>Supply / Return <sup>d)</sup></b>		1 [25] / 1 [25]		Inch [mm]
<b>Back Pressure <sup>d)</sup></b>		Requires free flowing return		psi [bar]	
<b>Weight <sup>e)</sup></b>	Flat-Top		MR / LR8 2216 [1005]		Lbs [kg]
	VMS		VMS-16 & 17 2190 [994]	VMS-21 2270 [1030]	
<b>Carrier Weight <sup>f)</sup></b>	Excavator		35-120 [16-54]		Lbs (1,000) [kg] (1,000)

<sup>a)</sup> The optimal motor speed is reliant on the ability of the carrier's auxiliary circuit to provide the oil flow specified and at a minimum pressure equal to the dynamic relief pressure. Sufficient flow to the motor is critical if the target for soil density and machine efficiency is to be attained.

<sup>b)</sup> Verify carrier's main relief is set to the value established by the manufacturer. Its value must be greater than the dynamic relief setting.

<sup>c)</sup> At no time is oil pressure permitted to exceed 3000 psi at the Ho-Pac.

<sup>d)</sup> Requires unrestricted, free flowing, and open return. Permissible pressure is 100 psi or less. Elevated pressures will raise the case pressure and result in excessive loads on the shaft seal that negatively impact longevity of shaft.

<sup>e)</sup> Service weight – (Working weight) Equipped with typical mounting adapter.

<sup>f)</sup> Mount only to carriers having adequate load-carrying capabilities.

12.0 Dimension Diagrams – Model 2300

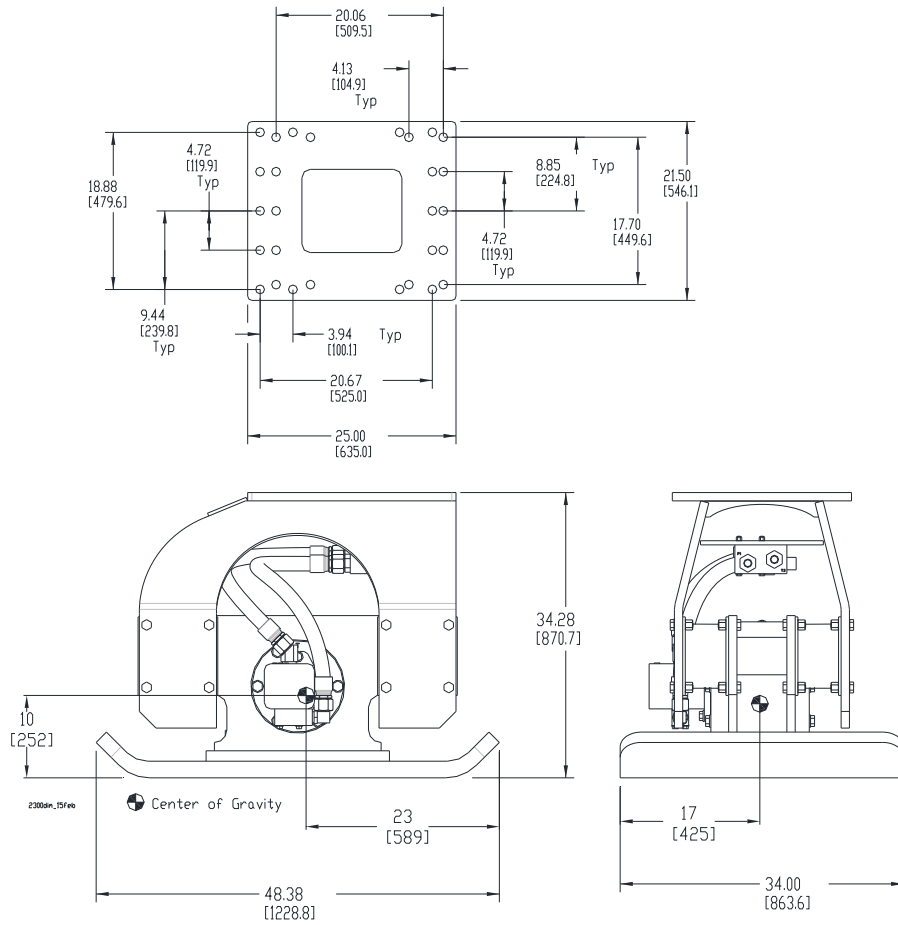


Fig. 12-5 Configured with Flat Top Frame MR / LR8

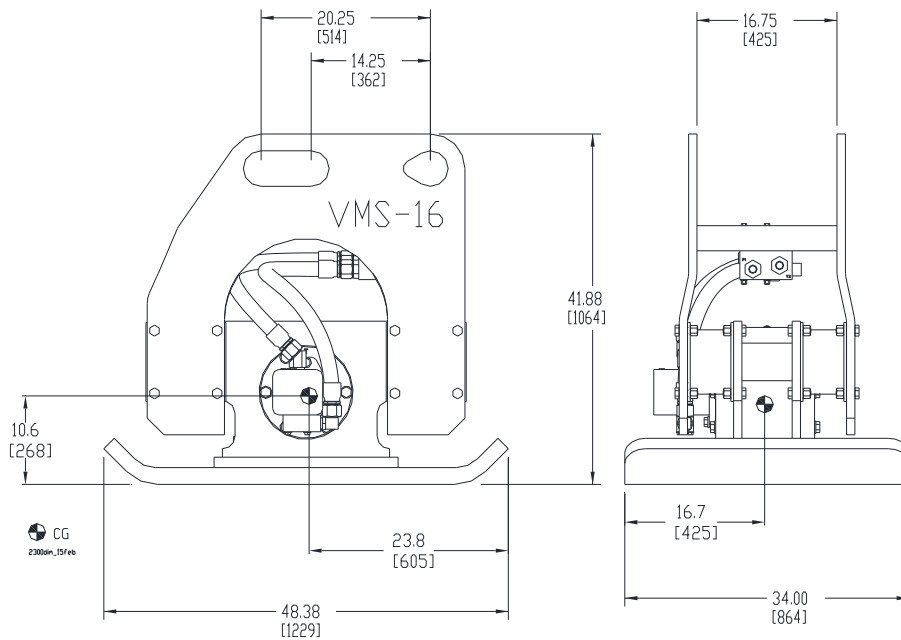
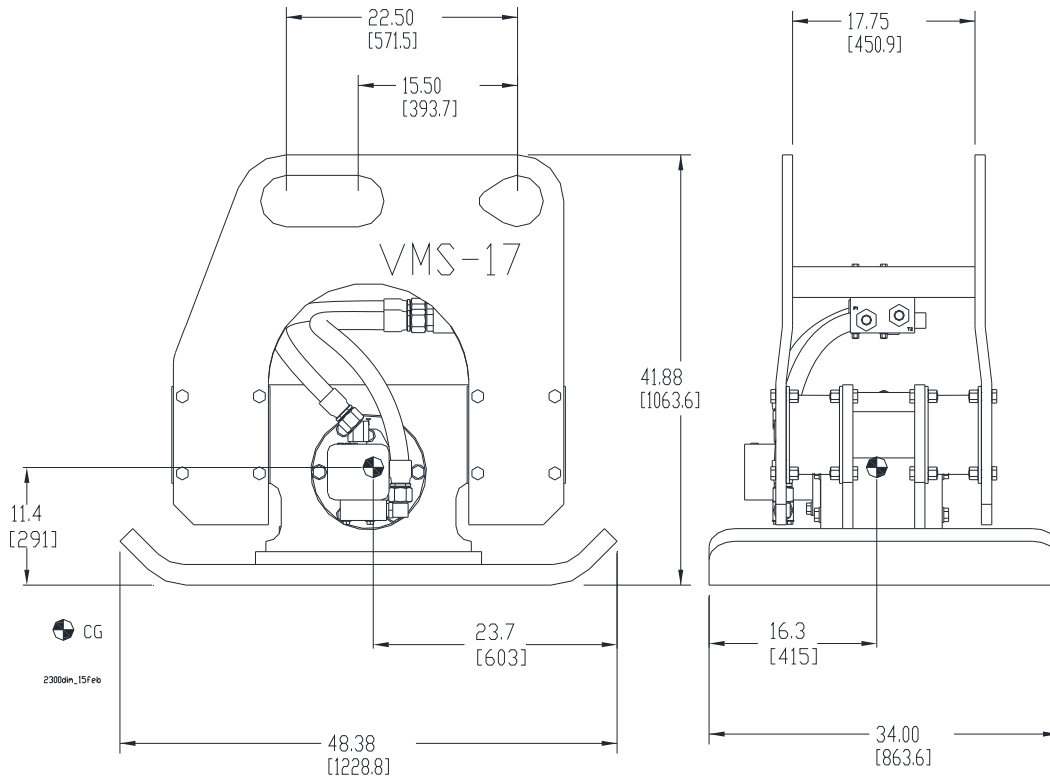


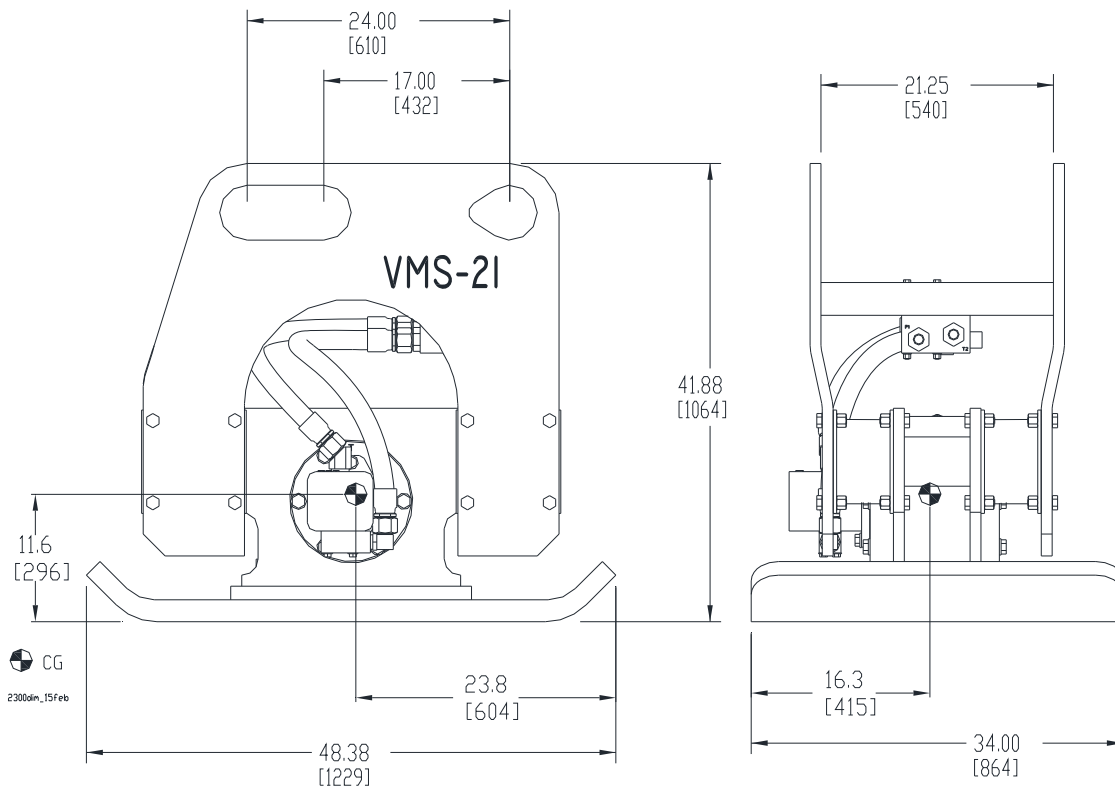
Fig. 12-6 Configured with VMS-16 Top Frame



**12.0 Dimension Diagrams – Model 2300**



**Fig. 12-7 Configured with VMS-17 Top Frame**



**Fig. 12-8 Configured with VMS-21 Top Frame**

## 13.0 Spare Parts Information

### IMPORTANT

When making repairs, use only the manufacturer's genuine parts. Substitute parts may not meet the required standards for fit and quality, or may impair function, safety and performance.

### 13.1 General

This section contains spare parts information. Components used in the final assembly of the Ho-Pac, such as the top mounting frame, dynamic assembly, compaction plate, motor and flow regulator valve, can vary.

**NOTE:** Check that the model number of your Ho-Pac corresponds to the model information described in Sections 1 and 2 of this manual.

The Ho-Pac is offered in multiple configurations. Pay strict attention to captions used for figures and the descriptions and notations used in Parts Tables.

Figures and tables will identify the different configurations, such as optional Mounting Frames. Figures and tables will also identify areas and items that have evolved through product improvement (such as the bearing housing and weld-on compaction plate).

To order replacement parts, Allied recommends contacting the dealer from which the equipment was purchased.

To expedite the ordering process and ensure accuracy, please provide your dealer with the following information-

- Manufacturer – Allied Construction Products
- Product name - Ho-Pac®
- Model number
- Serial number
- Description of the part(s)
- Part number(s)
- Quantity

Figures and the descriptions of parts used in this manual are typical of the model identified in Section 1 of this manual. Verify that the figure and description is correct for your Ho-Pac.

Examples of the top frame configurations available for the Ho-Pac are illustrated in Figures 13-1 and 13-2.

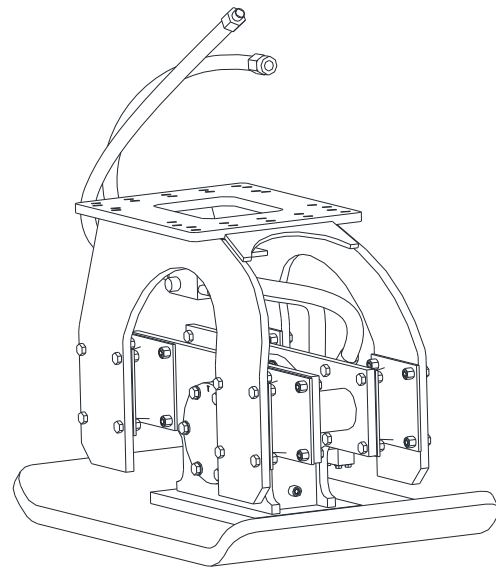


Fig. 13-1 Ho-Pac Model 2300 MR/LR8

**570085 Configured w/ Flat Top Frame MR / LR8**

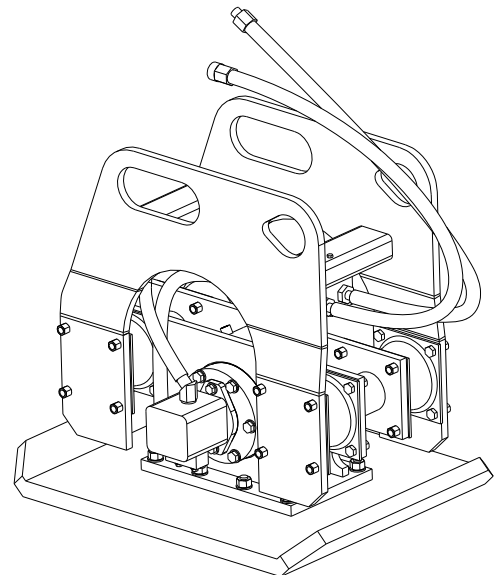


Fig. 13-2 Ho-Pac Model 2300-V

**103345C Configured w/ VMS-16 Frame**

**103355C Configured w/ VMS-17 Frame**

**A103365C Configured w/ VMS-21 Frame**

**13.0 Spare Parts Order Form**

Your local Allied dealer requires the Product Name, Model and Serial Number to better assist you with questions regarding parts, warranty, operation, maintenance, or repair. This information should be noted in Section 2.3 of this manual.

Product Ho-Pac®  
 Model 2300  
 Serial No. \_\_\_\_\_

Complete information is required

Line	Description	Part Number	Quantity	Price
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Your contact information

Your Name \_\_\_\_\_ Company Name \_\_\_\_\_  
 Phone \_\_\_\_\_ Account Number \_\_\_\_\_  
 Fax \_\_\_\_\_ Purchase order \_\_\_\_\_  
 Email \_\_\_\_\_ Shipping carrier \_\_\_\_\_

\*See note below

Billing Address \_\_\_\_\_ Shipping Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**\*Note: All backordered parts will be shipped when available via the same method as the original order unless initialed and checked below:**

Initials \_\_\_\_\_  
 Ship complete order only  
 Ship available parts and contact customer on disposition of backordered parts  
 Other – specify below

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**13.1 Spare Parts Information [cont'd]**

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

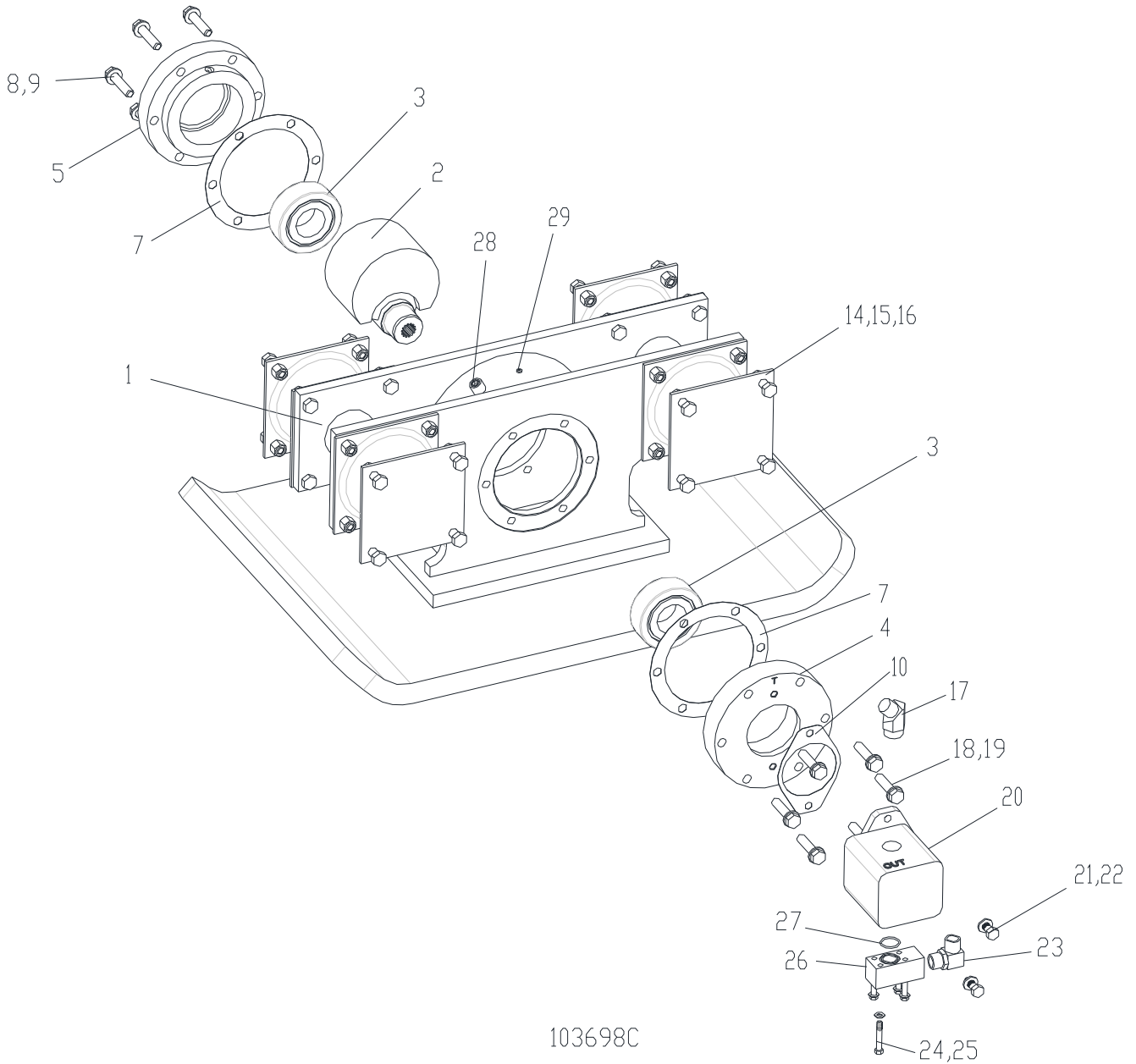


Fig. 13-3 Dynamic Assembly with Weld-on Compaction Plate

**13.1 Spare Parts Information [cont'd]**

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

**Table 13.1 / 103698(C) With weld-on compaction plate.**

Item	Description	Part No.	QTY	Remarks / Specifications
---	<b>Dynamic Assembly</b>	<b>A103698</b>		Weld-on compaction plate
1	Eccentric Housing	572578	1	w/ Compaction Plate (34 x 36)
2	Eccentric Mass	A103699	1	
3	Bearing	719807	2	
4	Bearing Housing – Motor Side	571841	1	
5	Bearing Housing	571842	1	
6	---	---	---	Found on 103698(A)
7	Gasket Housing	103702	2	
8	Flat Washer	719021	6	Hardened
9	Hex Head Bolt	572711	6	.75 x 2.75
10	Gasket, Motor	103701	1	
11	---	---	---	Found on 103698(A)
12	---	---	---	Found on 103698(A)
13	---	---	---	Found on 103698(A)
14	Rubber Spring Mount	719849	4	
15	Hex Head Bolt	653335	32	
16	Nut	620605	32	
17	Elbow 45°	676709	1	
18	Hex Head Bolt	719815	6	.75 x 3.25
19	Flat Washer	719021	6	Hardened
20	Hydraulic Motor	719817	1	
21	Hex Head Bolt	719018	2	
22	Flat Washer	719015	2	
23	Elbow 90°	656535	1	
24	Flat Washer	708514	4	
25	Hex Head Bolt	719814	4	
26	Manifold	719812	1	
27	O-Ring	814281	1	
28	Plug	656775	2	
29	Relief Plug	A102780	1	

**13.2 Spare Parts Information [cont'd]**

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

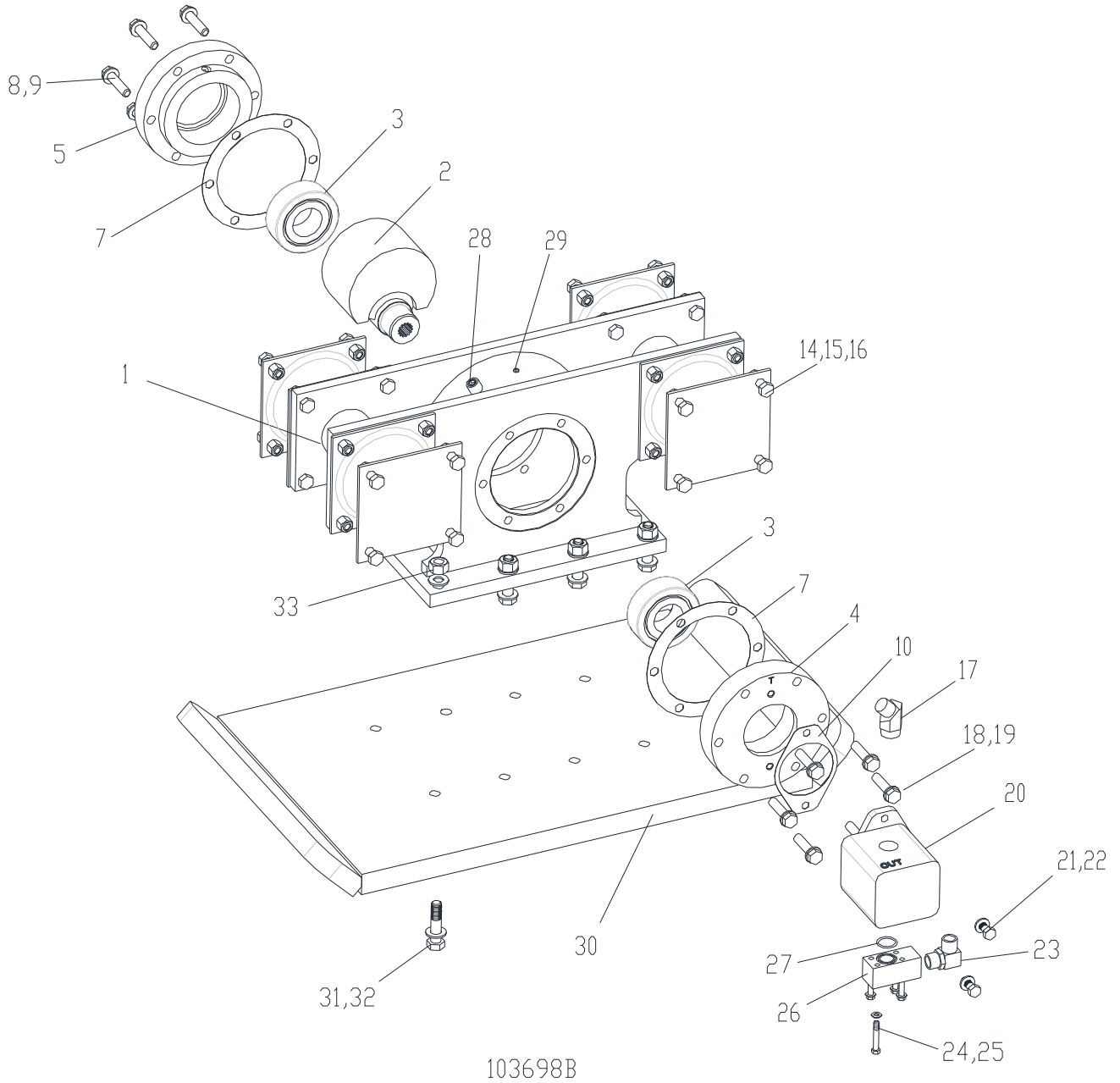


Fig 13-4 / 103698(B) Dynamic Assembly with Bolt-on Compaction Plate Option

**13.3 Spare Parts Information [cont'd]**

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

**Table 13.2 / 103698(B) With bolt-on compaction plate.**

Item	Description	Part No.	QTY	Remarks / Specifications
---	<b>Dynamic Assembly</b>	<b>A103698</b>		With 34 x 36 Bolt-on Compaction Plate
1	Eccentric Housing	103693	1	
2	Eccentric Mass	A103699	1	
3	Bearing	719807	2	
4	Bearing Housing - Motor Side	571841	1	
5	Bearing Housing - Cover	571842	1	
6	---	---	---	Found on 103698(A)
7	Gasket Housing	103702	2	
8	Flat Washer	719021	6	Hardened
9	Hex Head Bolt	572711	6	.75 x 2.75
10	Gasket, Motor	103701	1	
11	---	---	---	Found on 103698(A)
12	---	---	---	Found on 103698(A)
13	---	---	---	Found on 103698(A)
14	Rubber Spring Mount	719849	4	
15	Hex Head Bolt	653335	32	
16	Elastic Stop Nut	620605	32	
17	Elbow 45°	676709	1	
18	Hex Head Bolt	719815	6	.75 x 3.25
19	Flat Washer	719021	6	Hardened
20	Hydraulic Motor	719817	1	
21	Hex Head Bolt	719018	2	
22	Flat Washer	719015	2	
23	Elbow 90°	656535	1	
24	Flat Washer	708514	4	
25	Hex Head Bolt	719814	4	
26	Manifold	719812	1	
27	O-Ring	814281	1	
28	Plug	656775	2	
29	Relief Plug	A102780	1	
30	Compaction Plate 34 x 36	719831	1	Bolt-on Type (Early units - now optional)
31	Hex Head Bolt	719002	8	
32	Flat Washer	719003	16	
33	Heavy Hex Nut	719004	8	

13.4 Spare Parts Information [cont'd]

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

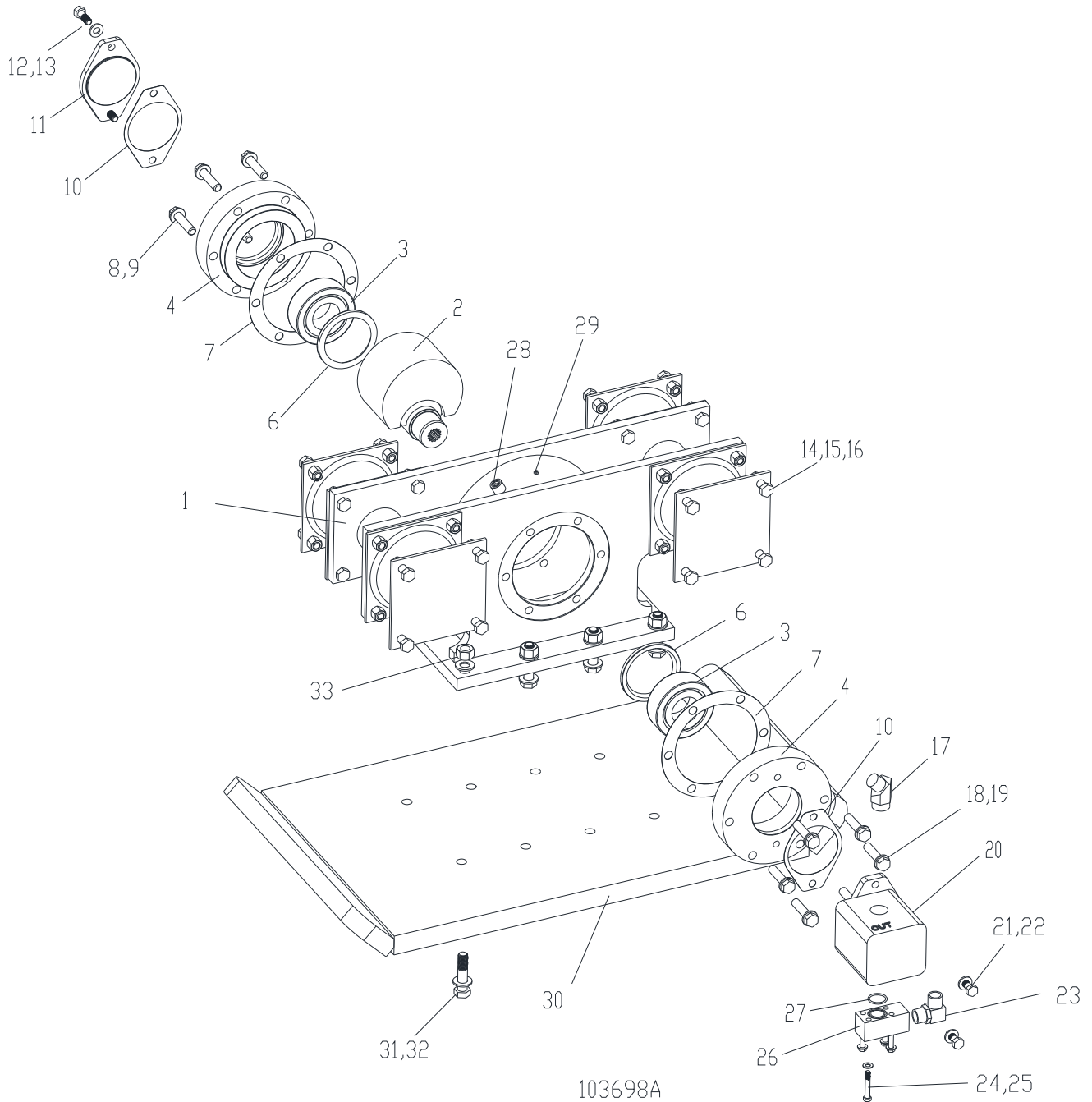


Fig. 13-5 / 103698(A) Dynamic Assembly with Earlier Bearing Housing Design



**13.4 Spare Parts Information [cont'd]**

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

**Table 13.3 / 103698(A) With bolt-on compaction plate.**

Item	Description	Part No.	QTY	Remarks / Specifications
---	<b>Dynamic Assembly</b>	<b>A103698</b>	1	With bolt-on type compaction plate Items 4,5,6,9,11,12,13 early design
1	Eccentric Housing	103693	1	
2	Eccentric Mass	A103699	1	
3	Bearing	719807	2	
4	Bearing Housing	103695	2	Earlier design used both sides
5	---	---	---	Found on 103698(B,C)
6	Oil Ring	103694	2	
7	Gasket, Housing	103702	2	
8	Flat Washer	719021	6	
9	Hex Head Bolt	719815	6	
10	Gasket, Motor	103701	2	
11	Cover Plate	103703	1	
12	Hex Head Bolt	719018	2	
13	Flat Washer	719015	2	
14	Rubber Spring Mount	719849	4	
15	Hex Head Bolt	653335	32	
16	Elastic Nut	620605	32	
17	Elbow 45°	676709	1	
18	Flat Washer	719021	6	
19	Hex Head Bolt	719815	6	
20	Hydraulic Motor	719817	1	
21	Hex Head Bolt	719018	2	
22	Flat Washer	719015	2	
23	Elbow 90°	656535	1	
24	Hex Head Bolt	719814	4	
25	Flat Washer	708514	4	
26	Manifold	719812	1	
27	O-Ring	814281	1	
28	Plug	656775	2	
29	Relief Plug	102780	1	
30	Compaction Plate 34 x 36	719831	1	Bolt-on Type (Early units - now optional)
31	Hex Head Bolt	719002	8	
32	Flat Washer	719003	16	
33	Heavy Hex Nut	719004	8	

13.5 Spare Parts Information [cont'd]

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations.

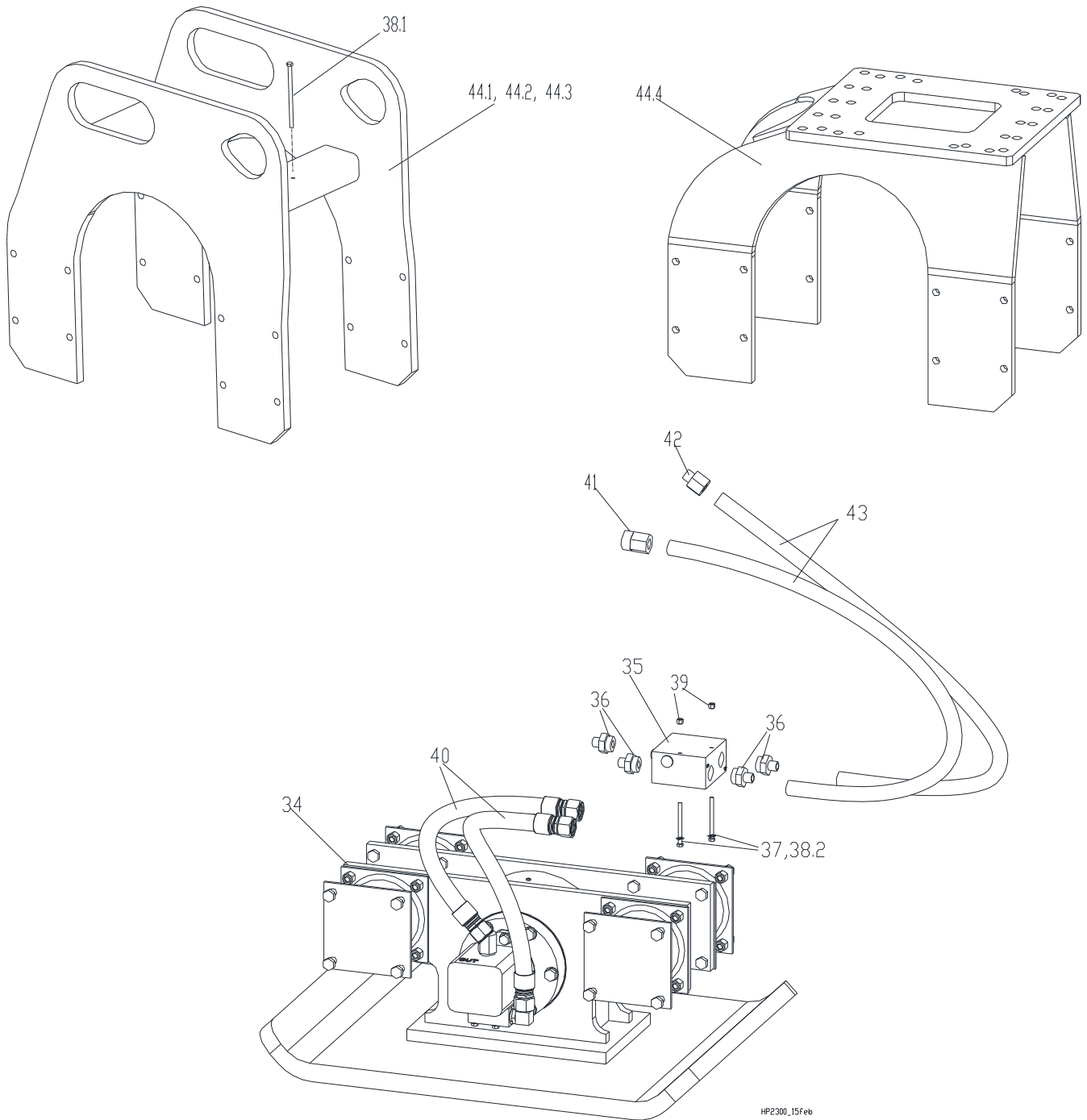


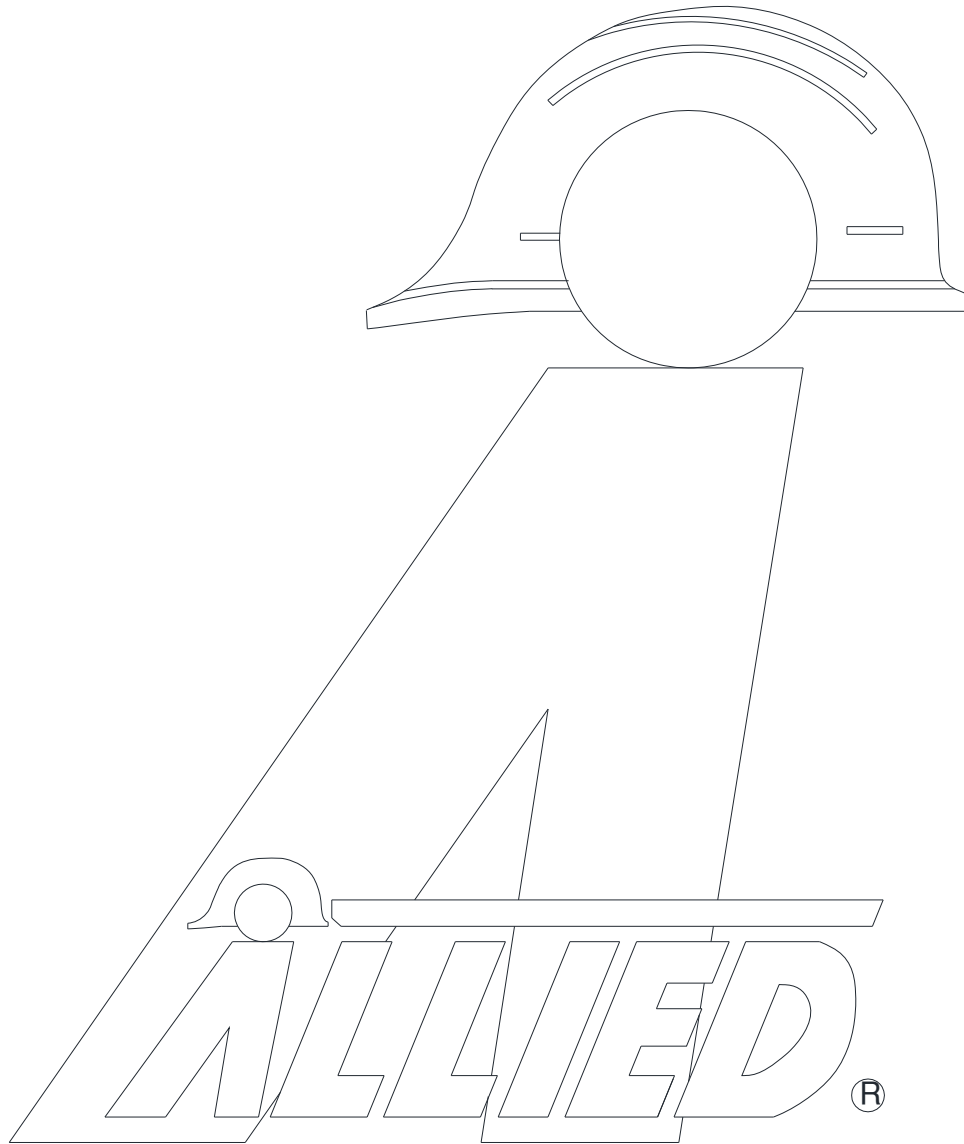
Fig. 13-6 Dynamic Assembly and Top Frame Options - VMS & Flat-Top

**13.1 Spare Parts Information [cont'd]**

The Ho-Pac is offered in multiple configurations. Pay strict attention to values, figures, captions and notations

**Table 13.4 Parts List use with Figure 12-3.**

Item	Description	Part No.	QTY	Remarks / Specifications
---	<b>Ho-Pac 2300-VMS V16</b>	<b>103345C</b>	<b>1</b>	<b>Configured w/ VMS-16 Frame</b>
---	<b>Ho-Pac 2300-VMS V17</b>	<b>103355C</b>	<b>1</b>	<b>Configured w/ VMS-17 Frame</b>
---	<b>Ho-Pac 2300-VMS V21</b>	<b>A103365C</b>	<b>1</b>	<b>Configured w/ VMS-21 Frame</b>
---	<b>Ho-Pac 2300-MR / LR8</b>	<b>570085</b>	<b>1</b>	<b>Configured w/ Flat Top Frame</b>
34	Dynamic Assembly	A103698	1	See separate figures & parts lists – A,B,C
35	Flow Regulator Valve	103351	1	
36	Adapter	719059	4	
37	Flat Washer	653339	2	
38.1	Hex Head Bolt	103453	2	For use on VMS Frames 3/8 x 7 1/2
38.2		679530		For use on Flat Top Frames 3/8 x 4 1/2
39	Elastic Nut	759808	2	
40	Hose Assembly	102003	2	1" x 31"
41	Quick Disconnect Socket	670066	1	
42	Quick Disconnect Plug	670065	1	
43	Hose Assembly	103465	2	1" x 96"
---	Available Frame Options	Varies	---	
44.1	Top Frame VMS V-16	101747		
44.2	Top Frame VMS V-17	101748	1	Refer to Dimension Diagrams Fig. 5-1, 5-2, 5-3, 5-4 for frame identification
44.3	Top Frame VMS V-21	102477		
44.4	Top Frame Flat Top MR / LR8	570314		



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