Ho-Pac

Vibratory Plate Compactor /Driver

Model 1000B

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.

SOM573833

Contact Information

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Revision History for Document 573833

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. Specifications are based on published information at the time of publication. Go to www.alliedcp.com for product or document updates.

Effective Date	Page	Summary of Change
2013, Dec		Parts Table 14.3. S/N1469&DN Item 8 was 574394. Item 9 was 573789. Motor ports shifted from 7 o'clock [OUT] and 1 o'clock [IN]. Created revision kit PN-576761.
2010, May	27,33,35,37	Revise torque table. SHCS for motor is 95 ft/lbs.
2009, Jun	Through out	Revise Safety Information
2008	---	Original Issue

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 contained in the safety message 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

The information provided in the safety message is important for your safety. These messages provide instructions on how to avoid injury from potential hazards associated with improper use, operation or handling of the Allied equipment. Read and follow the instructions in each safety message. Be aware of the consequence if these instructions are not followed.

Safety messages provide 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

ATTENTION, BECOME ALERT, YOUR SAFETY IS INVOLVED.

Fig. S1

Fig. S1. The exclamation point within an equilateral triangle is the safety alert symbol. This symbol, either used alone or with a signal word, is used to draw attention to the presence of potential hazards.

Signal Words

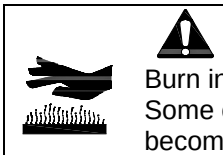
"DANGER", "WARNING" and "CAUTION" are used to express the different degrees of hazard seriousness. Learn to recognize and understand the severity and consequence associated with each of these signal words should a potentially hazardous condition be encountered.

"**DANGER"** identifies the highest degree of hazard seriousness. Its use is limited to the most extreme situations.

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.



CAUTION

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

Fig. S2 Safety Message – Typical Presentation

Non-Hazardous Type Signal Words Used for Messages

Other signal words found in this manual are IMPORTANT and NOTE. Text followed by either of these will contain information messages aimed at avoiding equipment damage and to further emphasize instructions.

IMPORTANT – Flags information or instructions that if not followed, may damage the equipment or diminish the service life of components

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 / Refer to the manual for information

Read / Refer to the Service Manual for information

- Pinch point

- Crush point

Moving part (in direction indicated by arrow)

- Falling object
- Unsupported loads

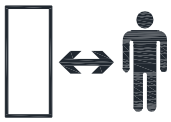
- Falling part
- Safety shoes

Personal protection equipment

Hearing protection

Safety eyewear

Gloves



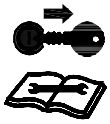
- Stay clear
- Maintain a safe distance

Flying debris

Leaking fluid under pressure - injection

Hot surface

Oil / Gas under pressure



Shut off carrier & remove key before servicing

Identifies lift point

Electric Shock

- Falls into open excavations
- Trench collapse

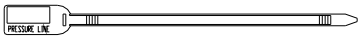
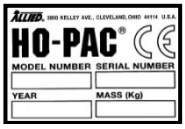
Safety Information – [cont'd]

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 S1 Labels

Fig	Label	Description
L1		**READ INSTRUCTIONS** - Decal indicates that it is important to read the manual for detailed explanations and instructions
L2		**STAY CLEAR -** Decal alerts personnel and by-standers to maintain a safe distance from the Allied work tool during operation.
L3		**HOT SURFACE** - Decal identifies components of the Allied work tool that may become hot during operation.
L4		**LIFT POINT-** Decal identifies approved lift points of the Allied work tool.
L5		**PRESSURE LINE IDENTIFICATION** – 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.
L6	ALLIED	**ALLIED LOGO** – This decal is the Allied brand identifier and is a registered trademark of Allied Construction Products, LLC.
L7	**1000B**	**MODEL IDENTIFICATION** - Decal indicates the model of the Allied work tool.
L8		**EQUIPMENT IDENTIFICATION TAG** - Manufacturer's Name and Address, Product Name, CE compliance marking, Model Number, Serial Number, Year of Manufacture, and Mass

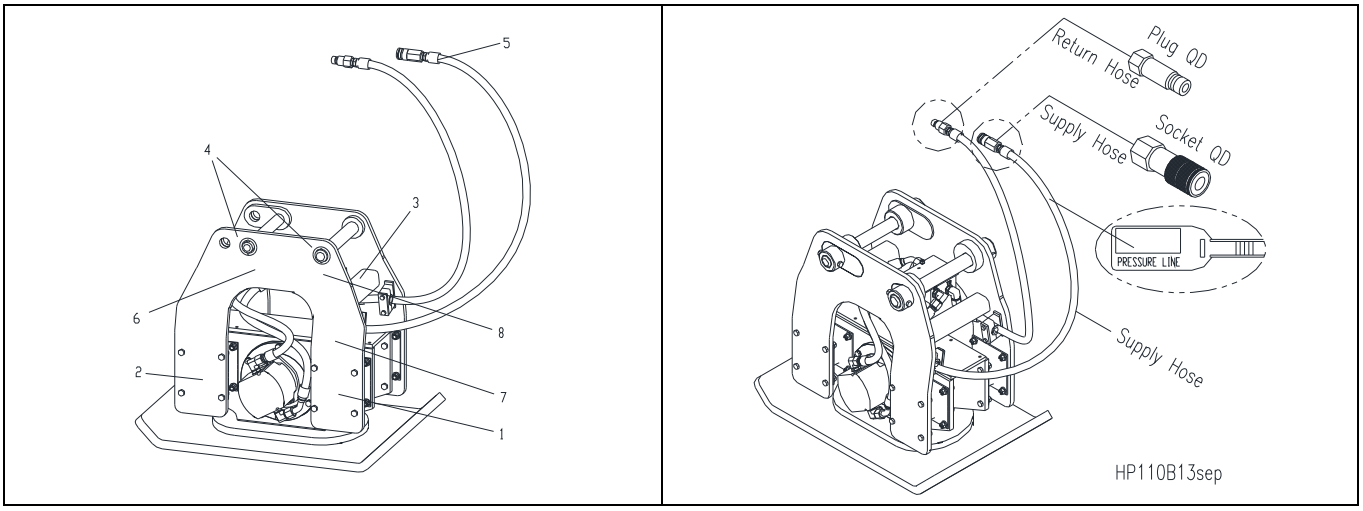


Fig. S3 Labels applied to both sides except items 3,5 & 8

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

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 and equipment damage.

Personal Protective Equipment (PPE)

Personnel operating or nearby the equipment and exposed to the hazard of falling, flying and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall use the particular personal protection equipment (PPE) necessary to protect them from the hazard. Such PPE may include safety eyewear, face shield, hearing protection, safety footwear, gloves, and dust mask. Supervisors shall review proper PPE selection and ensure PPE is made available to personnel. Personnel are responsible for wearing PPE as directed by the supervisor.

Protective Equipment - Guarding

Allied equipment designed with guards shall have guards in place when equipment is in use. Guards are fitted to the equipment to protect against unsafe situations that could not be eliminated through design measures. 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 hazardous condition.

Guards shall not be removed unless for the purpose of inspection and service of components. All guards must be reinstalled after service or adjustments are completed. Do not operate the Allied equipment without guards installed.

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.

To prevent accidental start up, the control switch shall be located in a protected area that is guarded and makes it difficult to accidently operate the Allied work tool.

Unapproved Modifications

In order to provide and maintain efficient production and reliable service, while ensuring operator safety, the Allied equipment may not be modified or used for any other purpose other than, for which it was intended. Use of the Allied equipment, other than those specified in this manual, may place personnel at risk of injury and/or may subject the equipment to damage. The Allied equipment shall not be modified or used in unapproved applications unless written consent is received from the Allied Engineering Department.

Table of Contents

Table of Contents - [cont'd]

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.

Also included in this manual is the spare parts list for this equipment. 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.	TM573833
Type	Safety, Operation and Maintenance
Current Status	See Inside Cover
Product Name:	Ho-Pac
Generation	III
Applicable Model[s]:	1000B Ser. No. 00106 & above
Years of Manufacture:	2008 & above

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.

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2.0 Equipment Identification

2.1 Location of the Serial Number

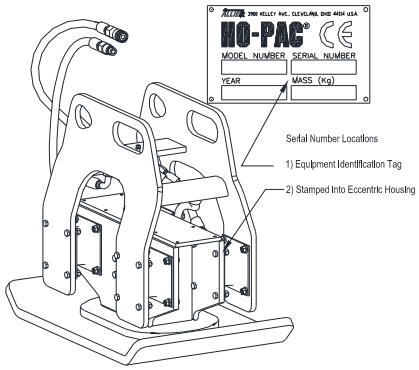


Fig. 2-1 Equipment Identification

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

1. The Equipment ID Tag located on the top mounting frame
2. Stamped on eccentric housing.

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

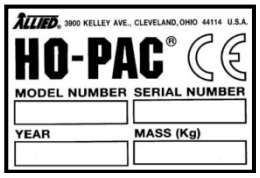


Fig. 2-2 Equipment Identification Tag

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.

Product Name: **Ho-Pac**

Model: **1000B**

Part Number: **573456C**
573458C
573460C
573462C
573464C

Serial Number: _____

In Service Date: _____

Registration Date _____

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. Refer to the Compaction Manual for further details.

4.2 Familiarization of Ho-Pac Components

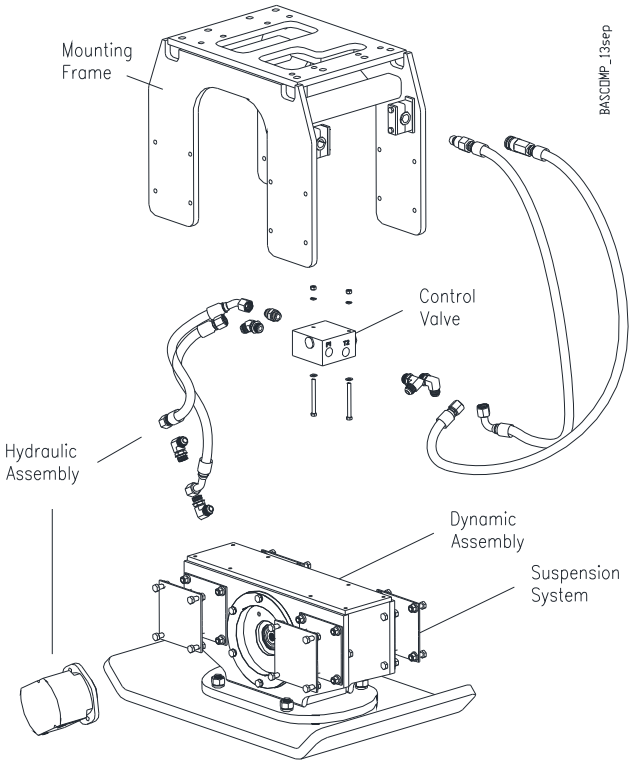


Fig. 4-1 Main Components and Subassemblies

Major subassemblies of the Ho-Pac include:

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

Suspension System – Rubber Spring Mounts suspend the Dynamic Assembly from the Mounting Frame. They isolate the vibratory energy from transferring to the carrier and operator.

Dynamic Assembly - Generates and transfers the vibratory energy to the soil. The assembly includes the hydraulic motor, bearings, eccentric mass, housing and compaction plate.

Control Valve – All Ho-Pac models come standard with the multi-function control valve. Benefits include optimized operation and 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** - Prevents over-speeding the hydraulic motor.
- **Pressure control** – Protects the motor and other 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 protects motor from damage on circuits not set up 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 is generated by the eccentric movement of the out of balance weight, driven by the hydraulic motor turning at a high rpm.

5.0 Ho-Pac Selection and Application

5.1 Match Compactor Type to 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 Size the Ho-Pac to the Carrier

The task of choosing the right carrier with the right capabilities (reach, lift and hydraulic capacity) is important if you are to achieve optimum results. Select the Ho-Pac size that will work best with the size of the carrier. If too small for the carrier, the compactor will be damaged by the carrier, while a compactor too large will damage an undersized carrier.

5.1.3 Other Carrier Criteria

- Select a size with sufficient reach to compact the deepest area of the trench or excavation.

- 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.

- Select a carrier equipped with a one-way hydraulic circuit that's capable of proper flow and pressure.

- Select a carrier that will provide adequate down pressure without loss of hydraulic power to the Ho-Pac. If the carrier cannot maintain the power required, the proper density will not be reached.

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

Optimum efficiency is only obtained 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 Carrier With 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 Ho-Pac and other hydraulic work tools are not self-powered. Performance hinges upon the ability of the host machine's hydraulic circuit to meet critical flow and pressure demands.

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.

5.2 Conversion Kit For Carrier Without Hydraulic Circuit

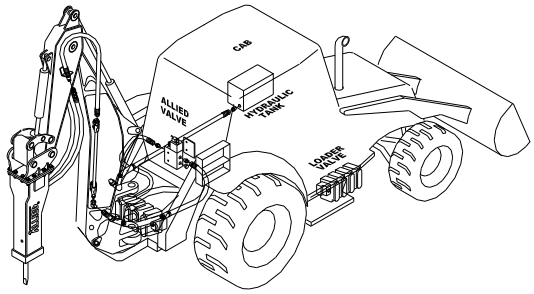


Fig 5-1 Allied Conversion Kit with AC-Series Valve

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 Available Mounting Frames

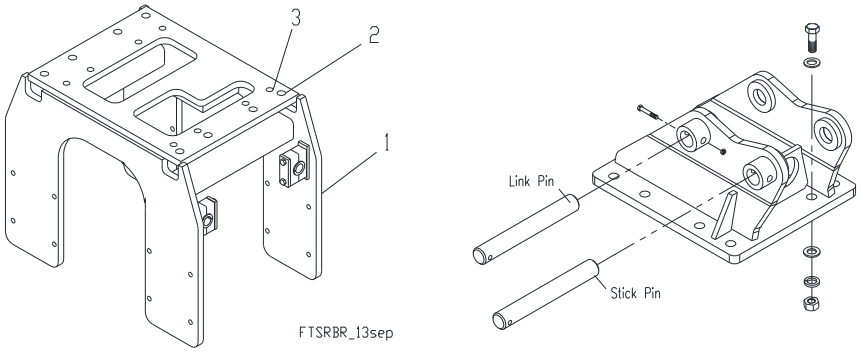
The mounting frame serves as the connection point between the Ho-Pac and the carrier and is attached in the same manner as mounting a bucket. Options available include the "Flat Top", "BSF" and "VMS".

6.1.1 Flat Top Frame

The Flat-Top mounting frame (Fig. 6-1) requires a mounting bracket (sold separately). Allied offers an array of mounting brackets to fit virtually any carrier, including those equipped with pin-grab or hook-type quick mounting couplers.

The mounting bracket is fastened to the flat plate located on the mounting frame. Each top frame will typically include two sets of hole patterns. Each bolt hole pattern is teamed to a Mounting Family. Table 6.1 identifies the bolt hole pattern used for each flat top frame. Other Allied work tools, including hydraulic breakers, share these same hole patterns. Dimensions for bolt hole patterns are located in the General Dimensions section of this manual.

IMPORTANT
Complete information about the carrier is required when ordering mounting brackets and kits. This includes the make, model, series and serial number. Additional information is required if the carrier is equipped with a quick coupler.



Allied brackets are typically designed to utilize the carrier's bucket pins. The bolt set (furnished with the Ho-Pac) fastens the bracket to the top frame.

Fig. 6-1 Flat Top Frame and Mounting Bracket

Table 6.1 Flat Top Mounting Family & Hardware

Family	Ho-Pac Model	Bolt	FL Washer	Nut	Bolt Set
IN1	300B, 500B	91027 (M20 x4)	91138 (x8)	91017 (x4)	---
IN2	300B, 500B	91027 (M20 x4)	91138 (x8)	91017 (x4)	---
XR	300B, 500B	91027 (M20 x4)	91138 (x8)	91017 (x4)	---
BR	1000B	90566 (M16 x8)	574847 (x16)	90548 (x8)	574818
SR	1000B	91027 (M20 x8)	91138 (x16)	91017 (x8)	574819
SR	1600	901382 (M20 x8)	91138 (x16)	91017 (x8)	574820
MR	1600	901445 (M24 x8)	90511 (x16)	90507 (x8)	574821
MR	2300	101765 (M24 x10)	901291 (x20)	90507 (x10)	---
LR8	2300	101765 (M24 x10)	901291 (x20)	90507 (x10)	---
LR9	4000	571516 (M36 x10)	90521 (x20)	90519 (x10)	---

Follow proper tightening procedures and torque.

6.0 Mounting Information – [cont'd]

6.1.2 Backhoe Side Frame (BSF)

The Backhoe Side Frame (Fig. 6-2) is adaptable to fit most backhoes and small excavators.

BSF Mounting Kits (sold separately) provide adapters that enable the BSF frame to fit virtually any machine. (Its use with carriers equipped with quick mounting couplers is limited).

Examples of common adapter arrangements include:

a) Insert flange bushings into pin bores of top mounting frame. Use mounting pin(s) provided with kit.

b) Insert flange bushings into pin bores of carrier. Use pins furnished with Ho-Pac.

c) Insert flange bushings into pin bores of carrier. Add spacers to position not occupied by flange bushings.

d) Insert one set of flange bushings into bore of carrier. Insert second set into bores of top mounting frame. Use mounting pin(s) provided with kit.

e) Insert sleeve bushing(s) into pin bore of carrier.

f) Insert sleeve bushing into pin bore of carrier. Add spacers to position not occupied by sleeve bushing.

g) Spacers shim the gap to control side-to-side movement

6.1.3 Variable Mounting System (VMS)

The VMS mounting frame (Fig. 6-3) provides versatility and ease in attaching the Ho-Pac to the desired carrier, and in transferring from one carrier to another. The VMS configuration adapts to virtually any carrier, including those equipped with pin grab type quick mounting couplers.

Fig. 6-2 BSF Frame

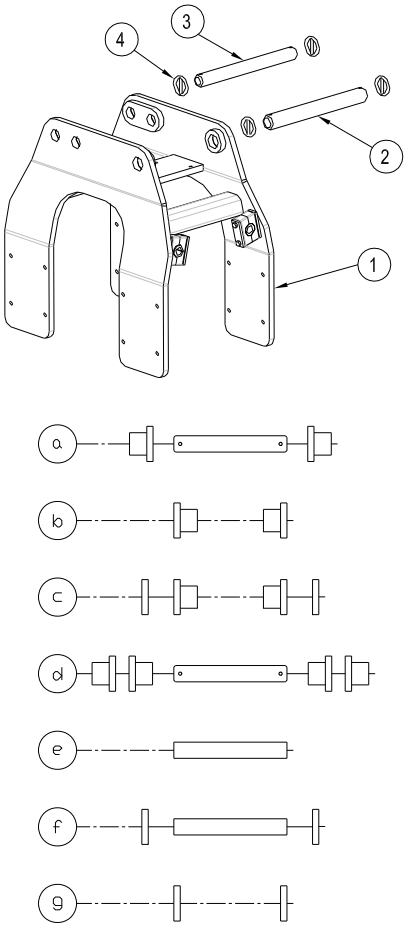
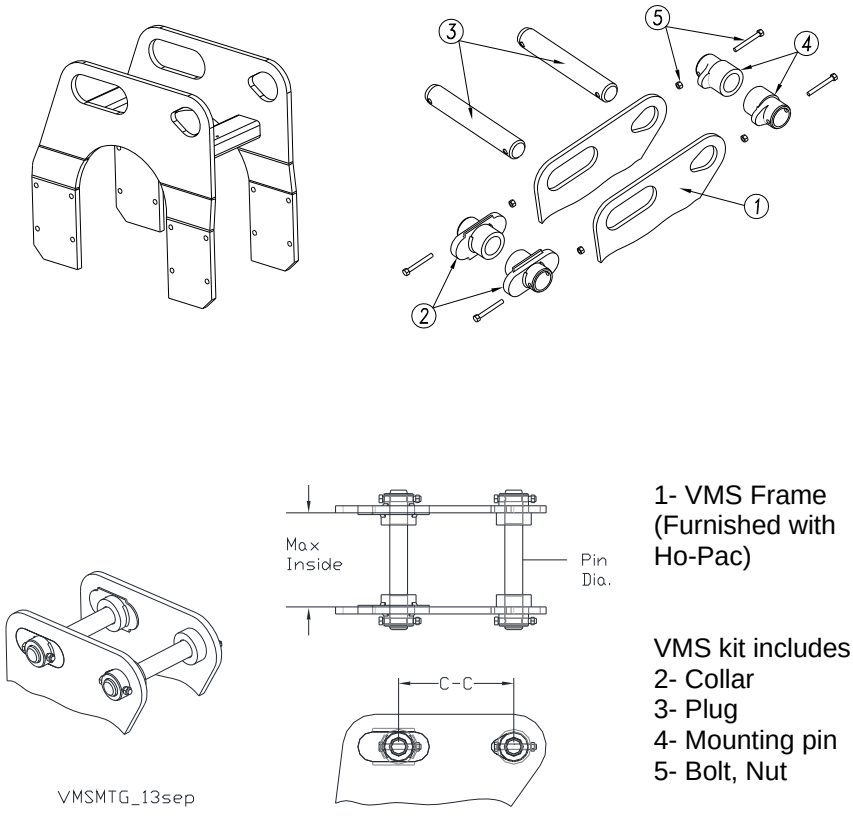


Fig 6-3 VMS Frame



1- VMS Frame (Furnished with Ho-Pac)

VMS kit includes:
2- Collar
3- Plug
4- Mounting pin
5- Bolt, Nut

7.0 Install / Uninstall Ho-Pac

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:

- 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

CAUTION

Personal protection equipment required when handling. Protective equipment 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

Exercise extreme care to ensure fluids are collected in a suitable container when opening the hydraulic system. 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”. The Ho-Pac is equipped with a control valve. Port connections have identification markings.

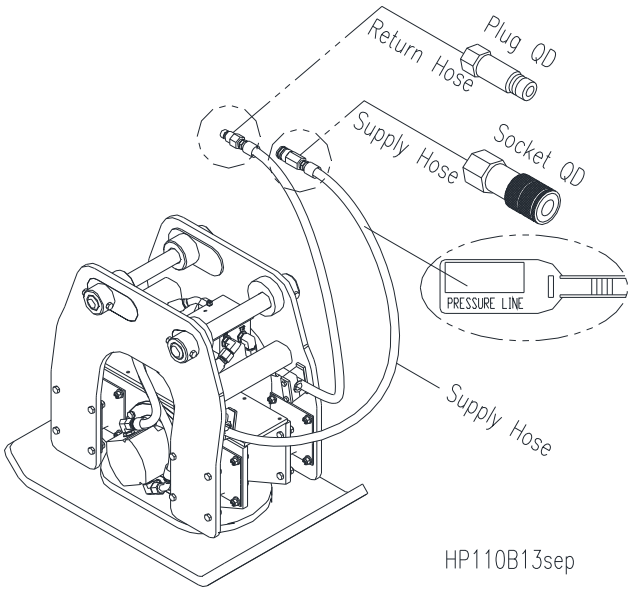


Fig. 7-1
Supply hose tagged with [Pressure Line]
Supply hose connection to valve port [P1]
Return hose connection to valve port [T2]

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

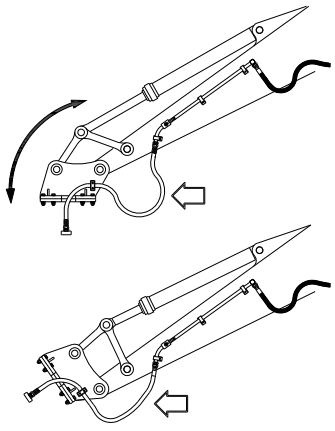


Fig. 7-2 Check hose length & routing for unrestricted movement

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

Exercise extreme care to ensure fluids are collected in a suitable container when opening the hydraulic system. 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:

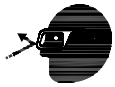
   - Inspect rubber of spring mounts for cracks or separation from end plate
   - Inspect hoses, seals, motor and valve for oil leaks
   - Check for loose or missing fasteners

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

8.2 Operation

CAUTION

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.



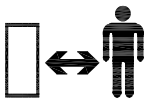
CAUTION

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.

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.

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.

The Allied Ho-Pac is a vibratory plate compactor that is highly effective in the compaction of granular type soils. It combines three actions:

1. **Vibration** – The vibratory action is generated by the eccentric movement of the out of balance weight, driven by the hydraulic motor 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 has been 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 on the Ho-Pac by the carrier.

8.0 Operation – [cont'd]

1. Clear all personnel from the work area.

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

3. 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.

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

5. 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.

6. The spring mounts can be stretched to approximately one-half (1/2) their width.

IMPORTANT
Overstretching the rubber springs causes premature failure. The spring mounts can be stretched to approximately one-half (1/2) their width.

7. 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.

8. 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.

9. After compaction is complete, re-position the Ho-Pac and/or carrier to continue working.

NOTE: *It is not necessary to stop the Ho-Pac for minor re-positioning.*

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)

NOTE: *Further information is available in the "Compaction Manual". For 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	Hours							
Item	10	50	250	500	1000	2000	N/A	Note
Visual inspection - Walk around	X							A, B
Re-check Fasteners Torque		X						C, B
Bearing Re-Lubrication							X	D

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 lubricated for life and sealed. No re-lubrication is necessary nor possible.

9.1 Maintenance Schedule Overview

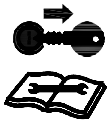
When properly installed, operated and maintained by qualified personnel, the Allied equipment requires a minimum of maintenance.

Table 9.1 specifies how often and what items need to be inspected in order to maintain safety, reliability and performance.

Intervals are based on standard (normal) operating conditions and must be adjusted accordingly when 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.

A type of inspection identified in Table 9.1, is described 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.

9.2 Inspection Safety Precautions



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

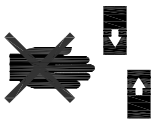
Injury from pressurized fluid. Fluid under pressure can penetrate skin. Never use hands to locate leaks. Use cardboard.

Regularly inspect hoses for damage. Replacement hoses must be the same type and pressure rating.

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.

CAUTION

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

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 hoses that are damaged or deteriorated. 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. Safeguard against contaminating the oil. Care must be taken to ensure that fluids are contained while performing maintenance and service. Use a suitable container to collect fluids before any component containing fluids is disassembled. Clean up any spilled oil. Obey all local regulations for the disposal of these fluids.

9.5 Check Threaded Fasteners

IMPORTANT

Keep fasteners tight. Replacement fasteners must be the same type and grade.

- Tighten the fasteners according to Table 9.3.

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

9.6 Conditional Maintenance

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

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

- Extremely humid weather conditions
- Muddy or extremely wet soils.
- If reduced performance is observed.

9.0 Care and Maintenance – [cont'd]

9.7.1 Bearing Lubrication

Bearings are lubricated for life and sealed. No regular re-lubrication is necessary nor possible.

9.7.2 How To Check 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.

9.7.3 Bearing Replacement

IMPORTANT
Non-approved parts may cause loss of performance or damage. Use only genuine Allied replacement parts to protect total warranty coverage.

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.

9.7.4 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. Press bearing out of housing. Ensure 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
Properly dispose of used oil. Obey all local regulations for the disposal of these fluids.

9.7.5 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 bearing's outer race.
3. Slowly press bearing into housing.
4. Clean and lubricate the eccentric shaft.
5. Slip bearing/housing onto shaft. **NOTE**: Close tolerance slip fit.
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
Replace missing or damaged fasteners with new. Follow proper torque procedures. Refer to Table 9.2 for bolt torque.

9.8 Spring Mounts - Replacement

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

9.0 Care and Maintenance – [cont'd]

CAUTION

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

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.

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, flat washer and nuts.

IMPORTANT

Place flat washer on the "Rubber Side" of mount.

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

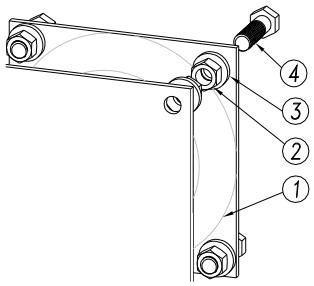


Fig. 9-1 Position of Flat Washer on Spring Mount

9.9 Threaded Fasteners Tightening Torque

Due to vibration and shock loads experienced by the Ho-Pac, all threaded fasteners must be checked frequently for loose, broken or missing bolts.

IMPORTANT

Keep fasteners tight. Replacement fasteners must be the same type and grade.

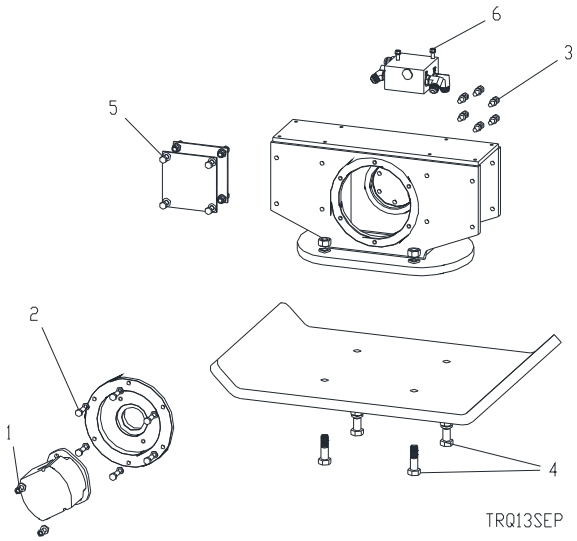


Fig. 9-2 Position of Threaded Fasteners

9.9.1 Bolts - Proper Preparation, Pre-tensioning and Torque

1. Clean threaded fasteners and surfaces to be bolted.
2. Lightly lubricate threads. (Except for compaction plate bolts. Follow special preparation instructions).

IMPORTANT

Do not apply thread lock compound to the bolt threads unless instructed to do so. For compaction plate bolts only, apply a commercially available thread locker (Example Loctite 271 or equivalent). Follow manufacturer's instructions for application.

1. Install all bolts finger tight.
2. Follow a criss-cross pattern and tighten all bolts until 1/3 of the specified torque in Table 9.3 is reached.
3. Tighten all bolts again until 2/3 of the specified torque is reached.

9.0 Care and Maintenance – [cont'd]

4. Continue criss-cross pattern and tighten to the full torque shown in Table 9.2.

Table 9.2 Standard Tightening Torque

Bolt head identification markings. SAE Grade and for metric bolts, the Property Class is indicated.

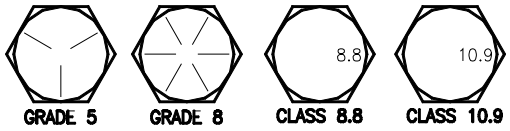


Fig. 9-3 Bolt Head Bolt Markings

SAE Grade 8

Size	ft-lb	N•m	
3/8	35	47	
7/16	65	88	
1/2	55	74	(1/2-20)
1/2	85	115	(1/2-13)
1/2	95	129	(Socket Head)
5/8	170	230	Only bearing carrier bolts
5/8	190	257	All except bearing carrier
3/4	270	366	
7/8	400	542	

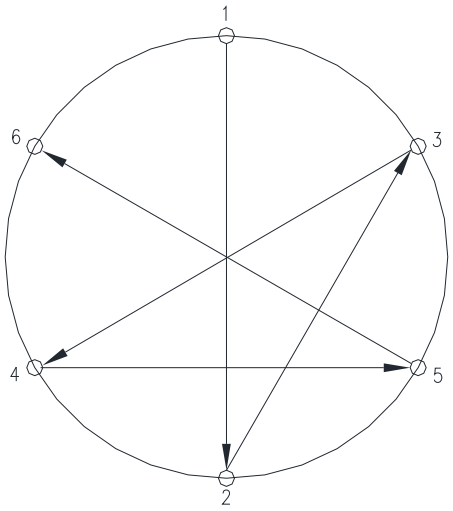


Figure 9-4 Tightening Sequence

7.6.3 Tightening Method

- Bolts should be systematically tightened starting from the most rigid part of the joint.
- A hardened washer must be used under the head of a bolt in a blind hole.
- When a bolt and nut are used, a hardened washer must be used under the element to be turned.
- The part not turned must be prevented from rotating during this operation.

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

10.0 Lifting, Transport & Storage

10.1 Lifting & Transport Precautions

WARNING

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

10.2 Transport

10.2.1 When 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 7.3.
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. Adequately stabilize and secure attachment for transport.

10.2.2 When transported while attached to the carrier:

1. Remove all loose debris from attachment.
2. If the optional 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.

10.3 Storage

During periods of non-use, protect against damage.

- 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

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
No operation	Insufficient oil pressure or flow.	Check hydraulic supply system. Correct as required.
	Failed bearings.	Inspect and replace bearings.
	Broken motor shaft or worn splines.	Inspect and replace worn parts.
Erratic operation	Erratic oil pressure or flow.	Check hydraulic supply system. Correct as required.
	Failed spring mount.	Inspect and replace failed mount.
Operation with excessive noise or vibration	Failed bearing.	Inspect and replace bearings.
	Loose bolts or mounting hardware.	Inspect and tighten bolts.
Operation stalls under load	Pressure relief too low	Check hydraulic supply system. Correct as required.
	Failed bearing.	Inspect and replace bearings.
	Motor worn or motor seals failed.	Inspect and replace motor.
Operation smooth, but at reduced speed	Flow too low.	Check carrier output.
		If motor or flow regulator valve was replaced, check that the motor and valve are properly matched.
Oil discharge from pressure relief vent	Oil level too high	Check oil level

This Allied work tool is not self-powered. Its performance level is affected by a hydraulic system that is not operating to specification.

The Allied Ho-Pac is designed to provide optimum performance with reliable service life at a specific oil flow. There are three motor options to choose from.

If the machine is equipped with a work mode switch, verify the selector switch is set on the proper attachment setting for operating the Ho-Pac.

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 Allied Ho-Pac will provide efficient and reliable results if the motor is operated at the accepted oil flow rate and turns at the optimal speed.

It's important to validate the performance of the hydraulic circuit before the Allied work tool is first used on a machine. The performance of the work tool is affected by a hydraulic system that is not operating correctly or set outside the accepted specifications.

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 [ºF]	Relief [Crack]	Relief [Static]	Return [PSI]
			0				
			1000				
			1500				
			1800				
			2000				
			2200				
			2400				
			2600				
			2800				
			3000				
			3200				
			3400				

CAUTION

Only qualified personnel, having knowledge of the machine's systems, proper test equipment and tools should attempt testing and adjustments. Before starting, make sure the circuit to be tested has a relief valve. Open restrictor valve on flow meter. Procedures can vary depending on specifics of your equipment. Follow the instructions provided by the manufacturer of the carrier and flow meter when testing.

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 life at specific oil flow and pressure. Inattention to correct machine set up may result in equipment damage, diminished service life and poor efficiency.

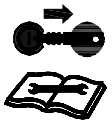
Measure Oil Pressure Whenever the Following Conditions Occur

- When first installed on a carrier
- Anytime repairs or modifications are made to the machine's hydraulic circuit.
- The machine operates other hydraulic work tools.
- Anytime 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:

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.

Efficient Ho-Pac performance is directly related to speed of the motor. The speed at which the motor is spun must be regulated and kept inside a narrow flow range. Too little flow will under-speed the motor, resulting in poor performance. A higher flow (above the accepted flow rate) does not improve compactor performance. It not only results in oil overheating, but increasing the motor speed also adds 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 and result in damage to the equipment.

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

12.0 Technical Information – [cont'd]

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.

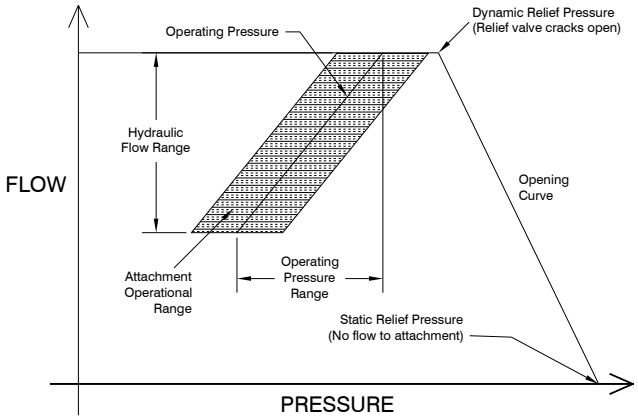


Fig. 12-1 Flow-Pressure Diagram

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.

12.0 Technical Information – [cont'd]

12.5 General Specifications

Pay strict attention to captions, figures and notations. The Ho-Pac is offered in multiple configurations (i.e. Mounting frame type, motor options and compaction plate size).

Table 12.1 General Specifications

Impulse Force			8,000 [35,586]	Lbs [N]
Cycles Per Minute			2000	1/min
Oil Flow [a)]	Motor Option	1	12 [45]	gpm [lpm]
		2	18 [68]	
		3	21 [79]	
Max Operating Pressure	Motor Option	1	2800 [193]	psi [bar]
		2	2000 [138]	
		3	2000 [138]	
Oil Pressure @ No Load			300-500 [20-35]	
Auxiliary Circuit Relief Pressure	Dynamic [b)]		Max Operating + 400 [28]	
	Static [c)]		Max Operating + 650 [45]	
Compaction Plate Dimensions	[Std]		24 x 28 [61 x 71]	Inch [cm]
	[Opt]		18 x 32 [41 x 91]	
Compaction Area	[Std]		4.7 [0.43]	Ft^2 [m^2]
	[Opt]		4.0 [0.37]	
Hose Size	Pressure		3/4 [16]	Inch [mm]
	Return		3/4 [16]	
Weight [e)]	Frame Option	Flat-Top	950 [430]	Lbs [kg]
		BSF		
		VMS10		
		VMS12		
		VMS13	960 [435]	
Carrier Weight [d)]	Backhoe		9-25 [4-11]	Lbs (1,000) [kg] (1,000)
	Excavator		14-30 [6-14]	
Sound Power Level			106 (Est'd)	DBA [LWA]

[a)] Optimal motor speed is attained only when the carrier's hydraulic circuit is capable of providing sufficient oil flow at a pressure equal to at least the dynamic relief pressure. Up to three motor options are available. Proper pairing of motor and valve is critical to reaching target soil density and machine efficiency.
[b)] Verify the setting of the carrier's main relief is meets the value established by the manufacturer. The value must be greater than the dynamic relief setting.
[c)] At no time is it permissible for the oil pressure at the Ho-Pac to exceed 3000 psi.
[d)] Return line pressure (measured at the Ho-Pac) in excess of 150 psi [10 bar] will negatively impact service life of motor.
[e)] Working weight – (Operating weight) Equipped with typical mounting kit and/or mounting bracket.
[f)] Mount only to carriers having adequate load-carrying capabilities.

12.0 Technical Information – [cont'd]

12.6 Hydraulic Motor Options

There are three motor options available. Refer to Table 12.2.

Table 12.2 Motor Identification

Motor Option	Flow gpm [lpm]	"L" - Length Inch [mm]	Part Number
1	12 [45]	3-13/16 [97]	101346
2	18 [68]	4-1/2 [114]	A102668
3	21 [79]	4-3/4 [121]	102867

12.6.1 Motor Identification

When the part number of the motor is not known, measure the length of the motor's body, as shown in Figure 12-2.

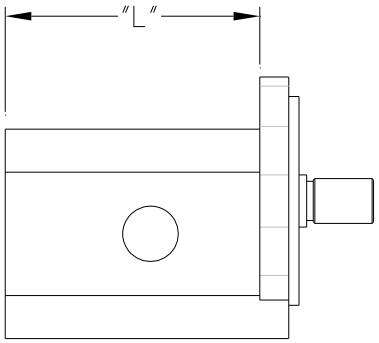


Fig. 12-2 Side View of Motor - Measure Body "L"

Start from the back edge of the body and measure up to but not including the mounting flange. (Do not include bolt heads in your measurement). Compare your measurement with the dimensions in Table 12.1.

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

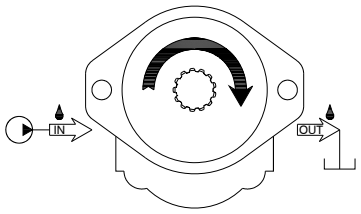


Fig. 12-3 *Shaft End View of Motor

The motor is assembled for *CLOCKWISE ROTATION. Motor ports are marked [IN] and [OUT] with the [IN] port located on the *left-hand side. (*Viewed from the shaft end and with the larger portion of the body downward).

12.7 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.

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

As previously stated, there are three motor options available. For each motor there is a corresponding control valve.

12.8 Control Valve – Adjustments, Function, Identification & Port Connections

12.8.1 Control Valve – Adjustments

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

12.8.2 Control Valve – Function & Benefit

The four functions are:

1. **Flow regulator** - Prevents over-speeding the hydraulic motor.

2. **Pressure control** – Protects the motor and other hydraulic components from over-pressure. This is factory pre-set at the maximum operating pressure plus 200 psi (14 bar).

12.0 Technical Information – [cont'd]

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 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.

12.8.3 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 ports on the control valve are stamped P1, P2, T1 and T2.

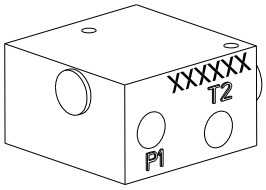


Fig. 12-4 View of P1 & T2 Side of Flow Valve Identification Markings

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).

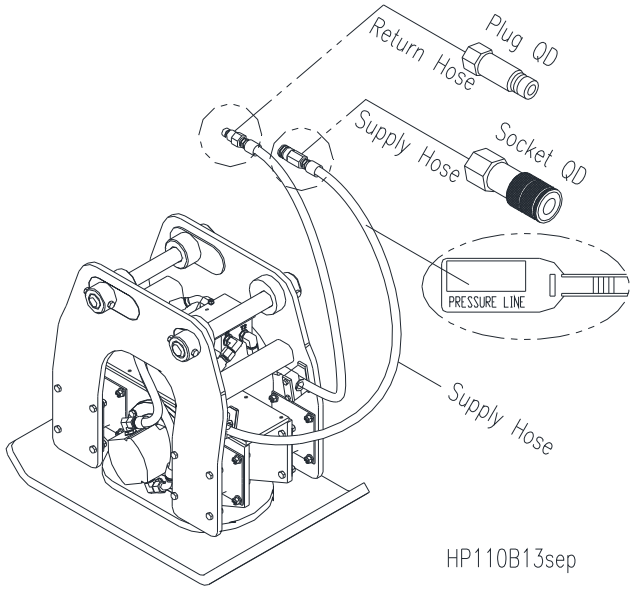


Fig. 12-5 Hose Connections
Supply hose tagged with Pressure Line ID Tag
Supply hose connection to valve port [P1]
Return hose connection to valve port [T2]

13.0 General Dimensions

Pay strict attention to captions, figures and notations. The Ho-Pac is offered in multiple mounting frame configurations - Flat Top, BSF and the VMS.

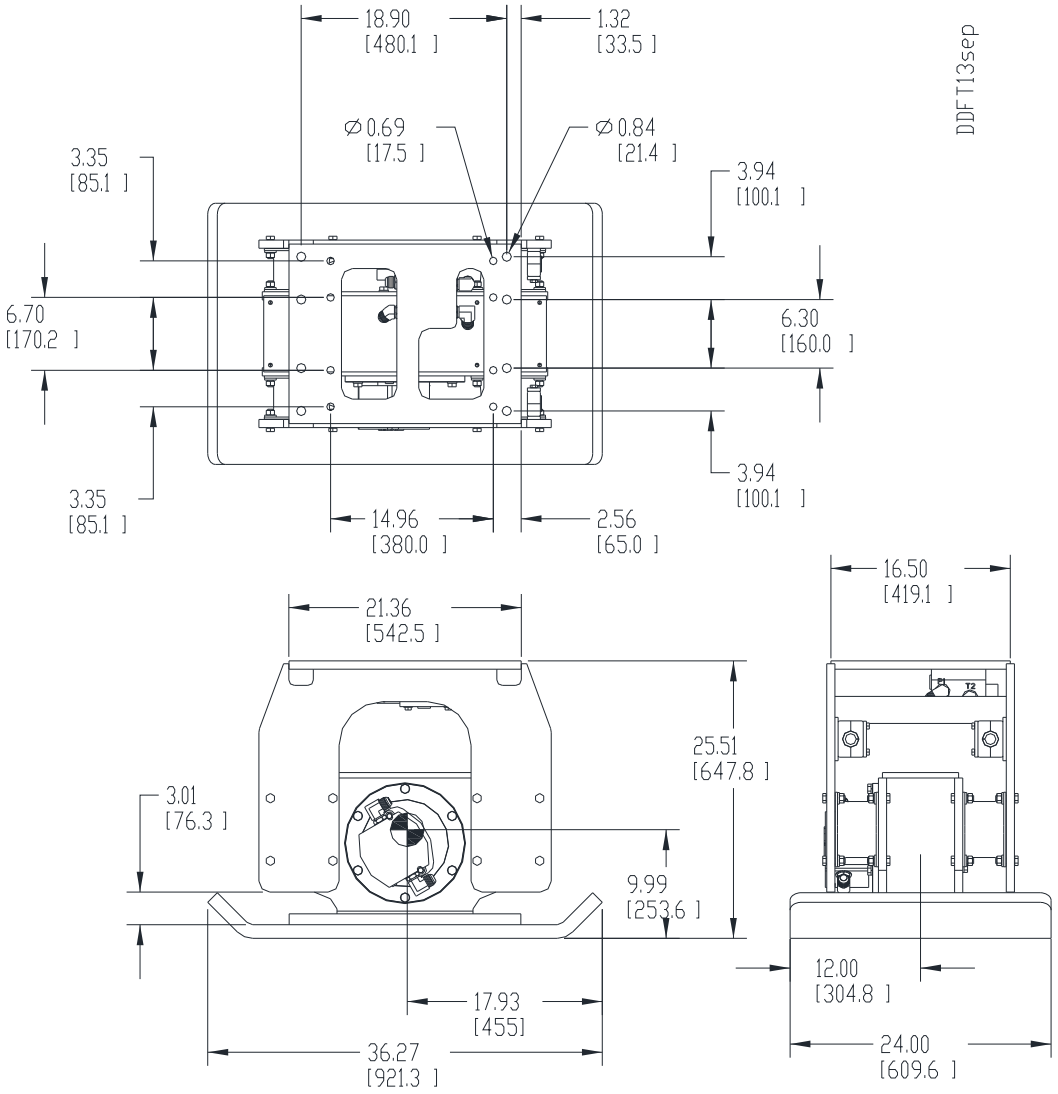


Fig. 13-1 1000B Shown with Flat Top Mounting Frame (BR / SR Bolt Hole Pattern)
⌖ Indicates Center of Gravity

13.0 General Dimensions – [cont'd]

Pay strict attention to captions, figures and notations. The Ho-Pac is offered in multiple mounting frame configurations - Flat Top, BSF and the VMS.

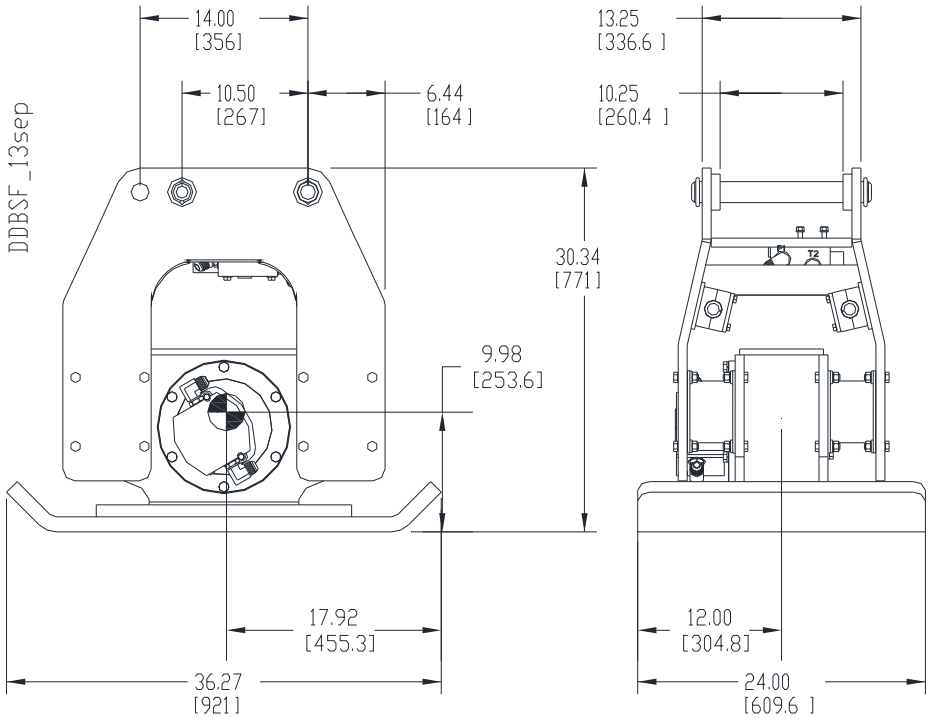


Fig. 13-2 1000B Shown with BSF Mounting Frame
⊕ Indicates Center of Gravity

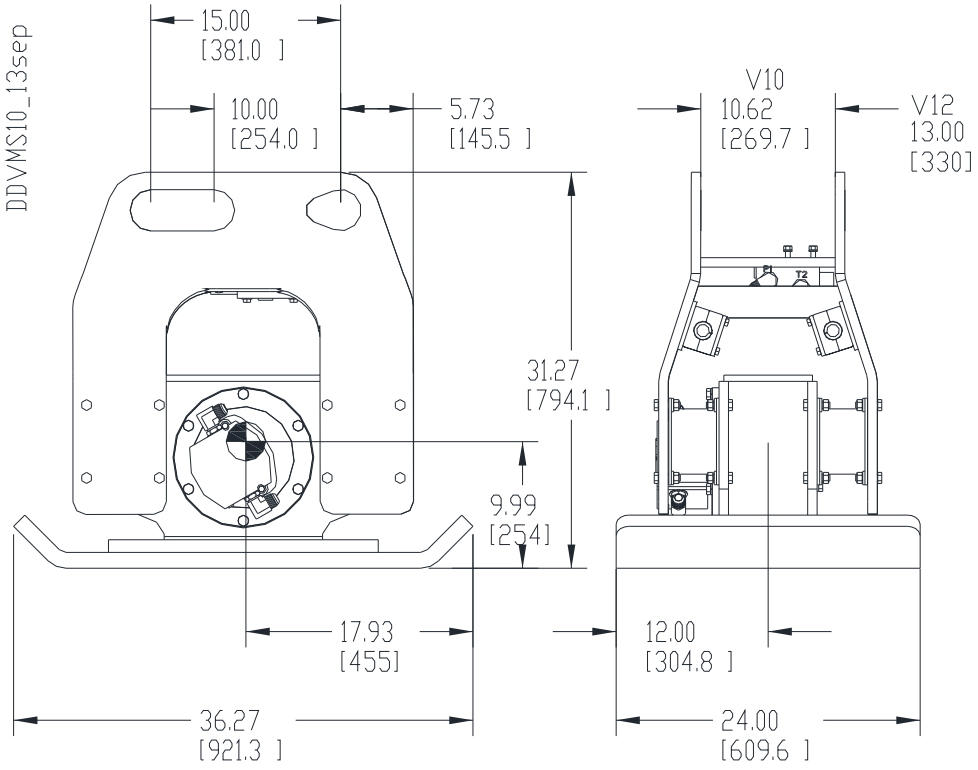


Fig. 13-3 1000B Shown with VMS V10 and V12 Mounting Frame
⊕ Indicates Center of Gravity

13.0 General Dimensions – [cont'd]

Pay strict attention to captions, figures and notations. The Ho-Pac is offered in multiple mounting frame configurations - Flat Top, BSF and the VMS.

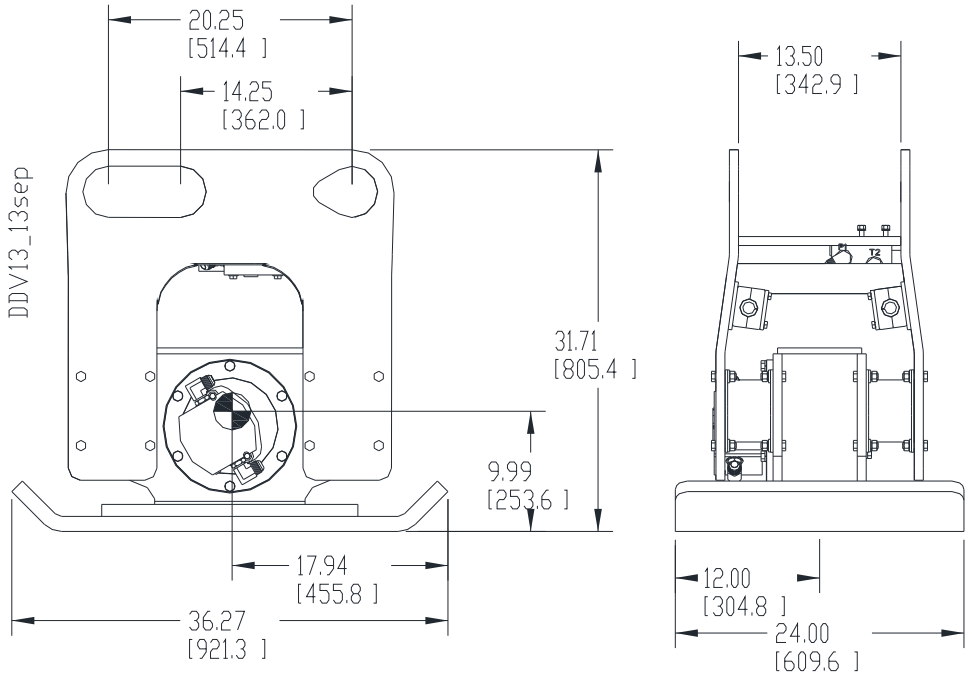


Fig. 13-4 1000B Shown with V13 Mounting Frame
⊕ Indicates Center of Gravity

Table 13.2 Ho-Pac Mounting Dimensions

Figure Frame Type	13-1 Flat-Top	13-2 BSF	13-3 VMS-10	13-3 VMS-12	13-4 VMS-13
Mounting Pin Diameter Inch [mm]	Varies with mounting bracket	1.75 & 1.50 [44.5 & 38]	Varies 1.18-2.56 [30-65]	Varies 1.18-2.56 [30-65]	Varies 2.36-3.54 [60-90]
Mounting Pin C-C Inch [mm]		10.50 & 14.00 [266.7 & 355.6]	10.00-15.00 [254-381]	10.00-15.00 [254-381]	14.25-20.25 [361.95-514.35]
Maximum Stick Width Inch [mm]		10.25 [260]	10.25 [260]	12.50 [317]	13.00 [330]

14.0 Parts Information

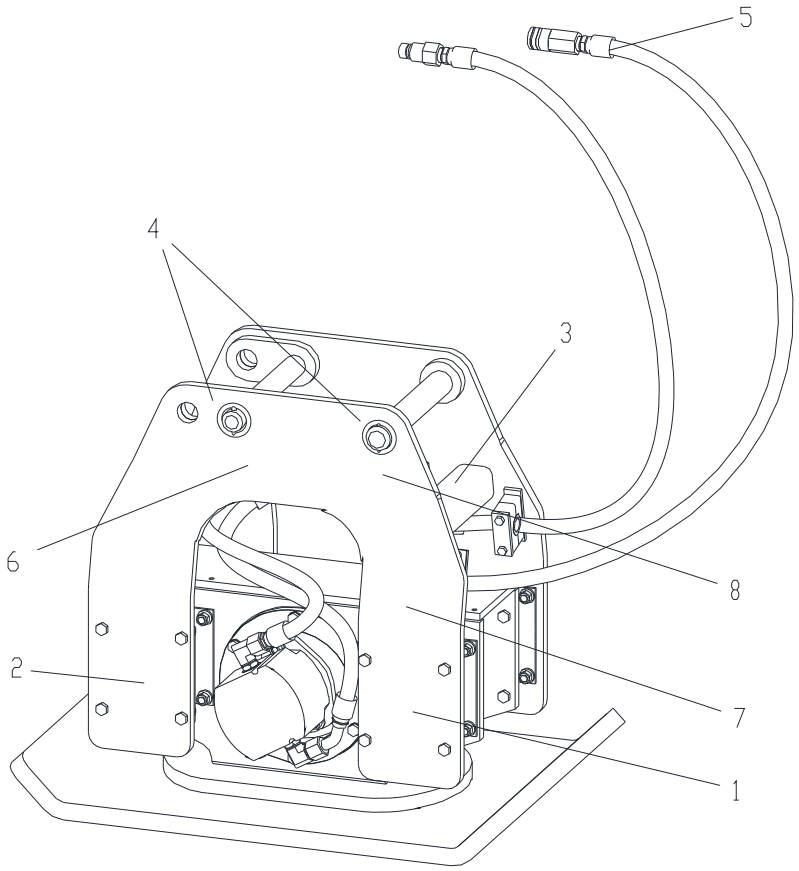


Fig. 14-1 Label Position on Equipment

Table 14.1 Information Labels

Item	Part No.	Description	Qty	Remarks / Specifications
---	573831	**Decal Set**	1-Set	Set includes 1-7
1	676984	Label - Read Instructions / Manual	2	Left and Right Side
2	676981	Label - Stay Clear	2	Left and Right Side
3	676983	Label - Hot Surface	1	Locate near valve
4	676982	Label - Lift Point	4	Left and Right Side
5	818676	Tag - Pressure I.D.	1	Located on Pressure Hose
6	676653	Label - Allied Logo	2	Left and Right Side
7	573832	Label - Model 1000B	2	Left and Right Side
8	676980	Tag – Equipment ID	---	Not included in set – order separately

14.0 Parts Information

4.1 Dynamic Assembly

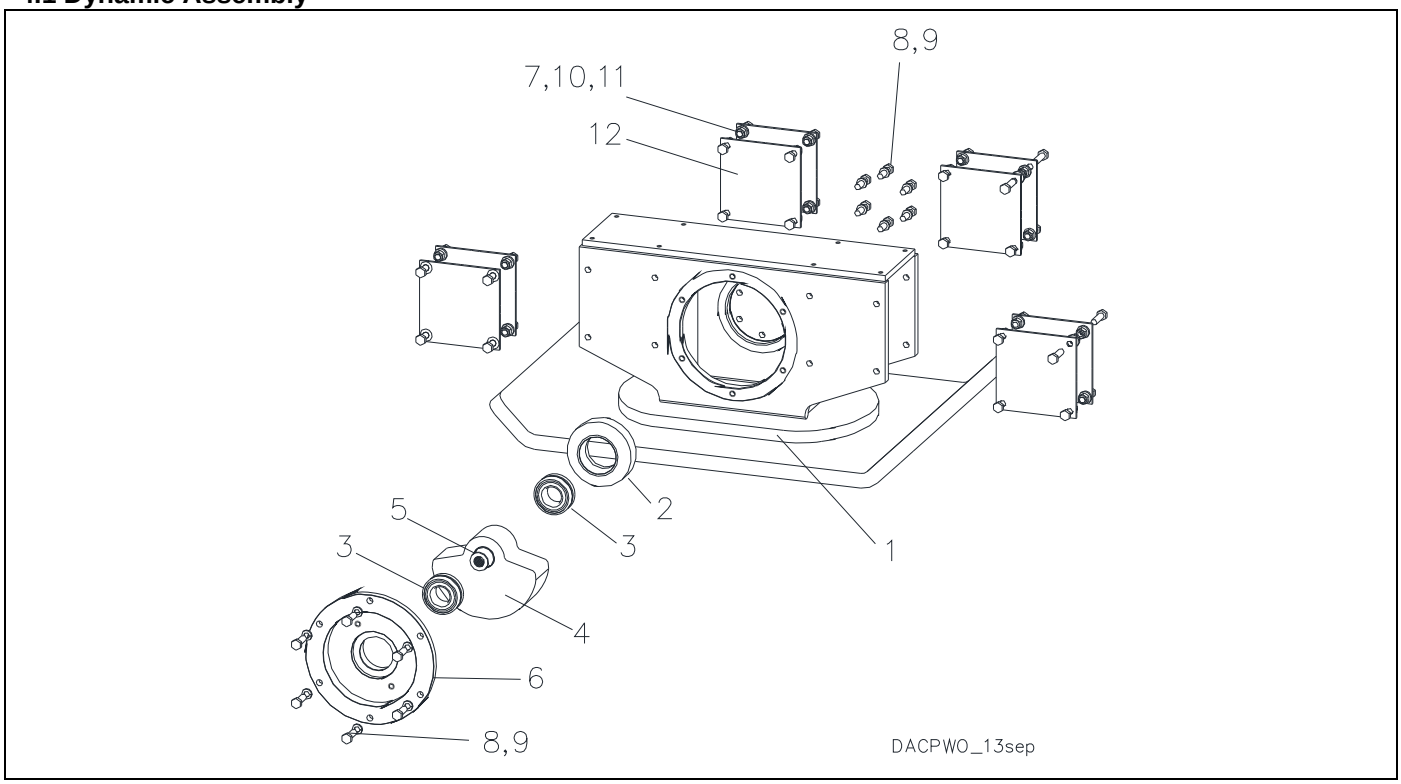


Fig. 14-2 With Weld-on Compaction Plate (Standard)

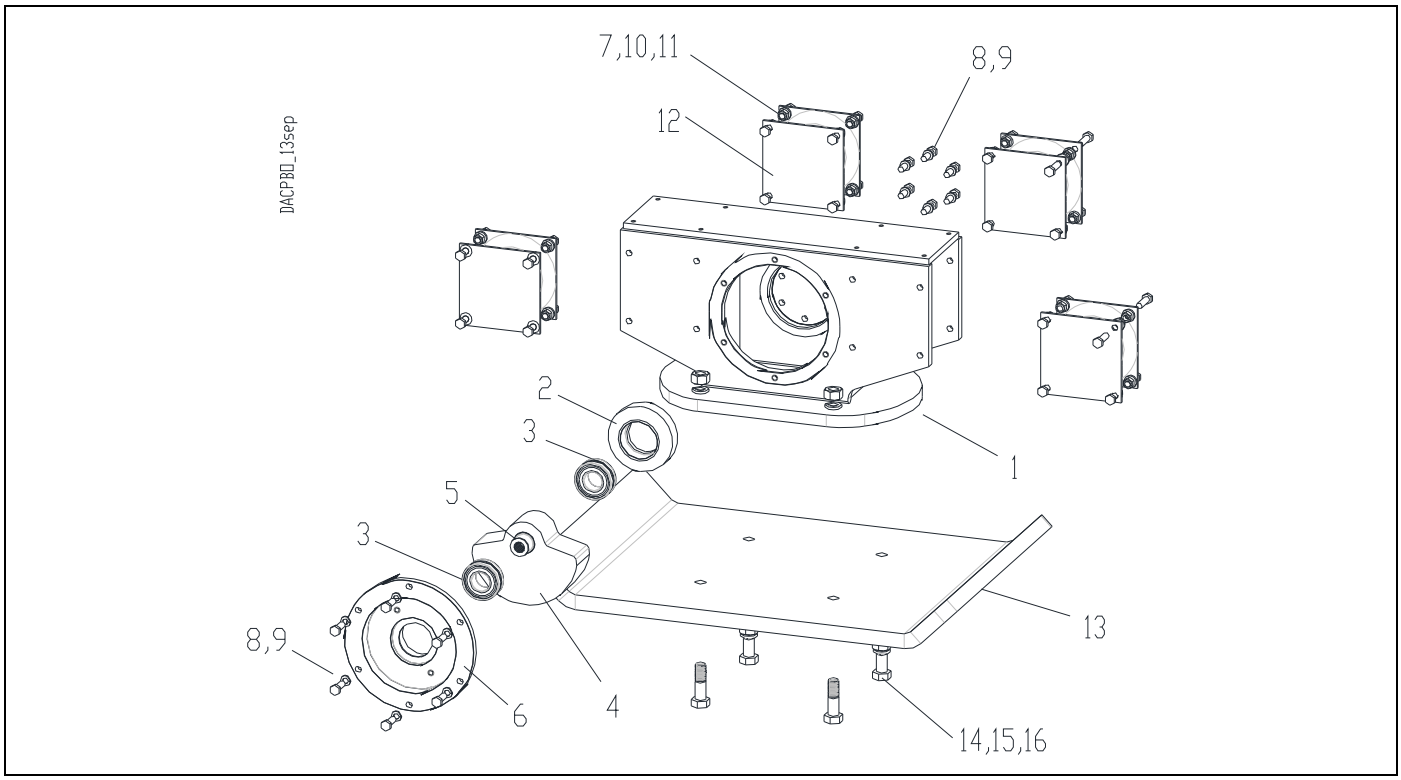


Fig. 14-3 With Bolt-on Compaction Plate (Optional)

14.0 Parts Information – [cont'd]

Pay strict attention to figures, captions and notations. Multiple configures are offered for the Ho-Pac. Parts, including top mounting frame, motor options and compaction plate size will vary.

Table 14.2 Dynamic Assembly

Item	Description	Part No.	Qty	Remarks / Specifications
1-12	**Dynamic Assembly**	**573778**	**1**	**Fig. 14-2 Standard Configuration Includes 24 x 28 Weld-on Compaction Plate**
	Dynamic Assembly	**573823**	**Opt.**	**Fig. 14-2 Optional Configuration Includes 18 x 32 Weld-on Compaction Plate**
1-16	**Dynamic Assembly**	**573781**	**Opt.**	**Fig. 14-3 Optional Configuration Includes 24 x 28 Bolt-on Compaction Plate**
1.1	Eccentric Housing w/ CP	573776	1	Std w/ weld-on compaction plate 24 x 28
1.2	Eccentric Housing w/ CP	573788	Opt.	Opt w/ weld-on compaction plate 18 x 32
1.3	Eccentric Housing w/o CP	573774	Opt.	Opt configured for bolt-on compaction plate
2	Bearing Housing	573784	1	Inner
3	Roller Bearing	573374	2	
4	Eccentric Assembly	573780	1	Includes 5.1 and 5.2
5.1	Eccentric Weight	573782	1	
5.2	Eccentric Shaft	573779	1	
6	Bearing Housing	573783	1	Motor Side
7	Hex Head Bolt	719730	32	
8	Hex Head Bolt	708791	12	
9	Lock Washer	719238	12	
10	Torque Nut	708787	32	
11	Flat Washer	708512	32	
12	Rubber Spring Mount	719749	4	
13	Compaction Plate	573786	1	Bolt-on type. Std. 24 x 28
14	Hex Head Bolt	708516	4	Items 14, 15, 16 for use with Item 13
15	Flat Washer	719003	4	
16	Hex Nut	708359	4	

14.0 Parts Information – [cont'd]

Pay strict attention to figures, captions and notations. Multiple configures are offered for the Ho-Pac. Parts, including top mounting frame, motor options and compaction plate size will vary.

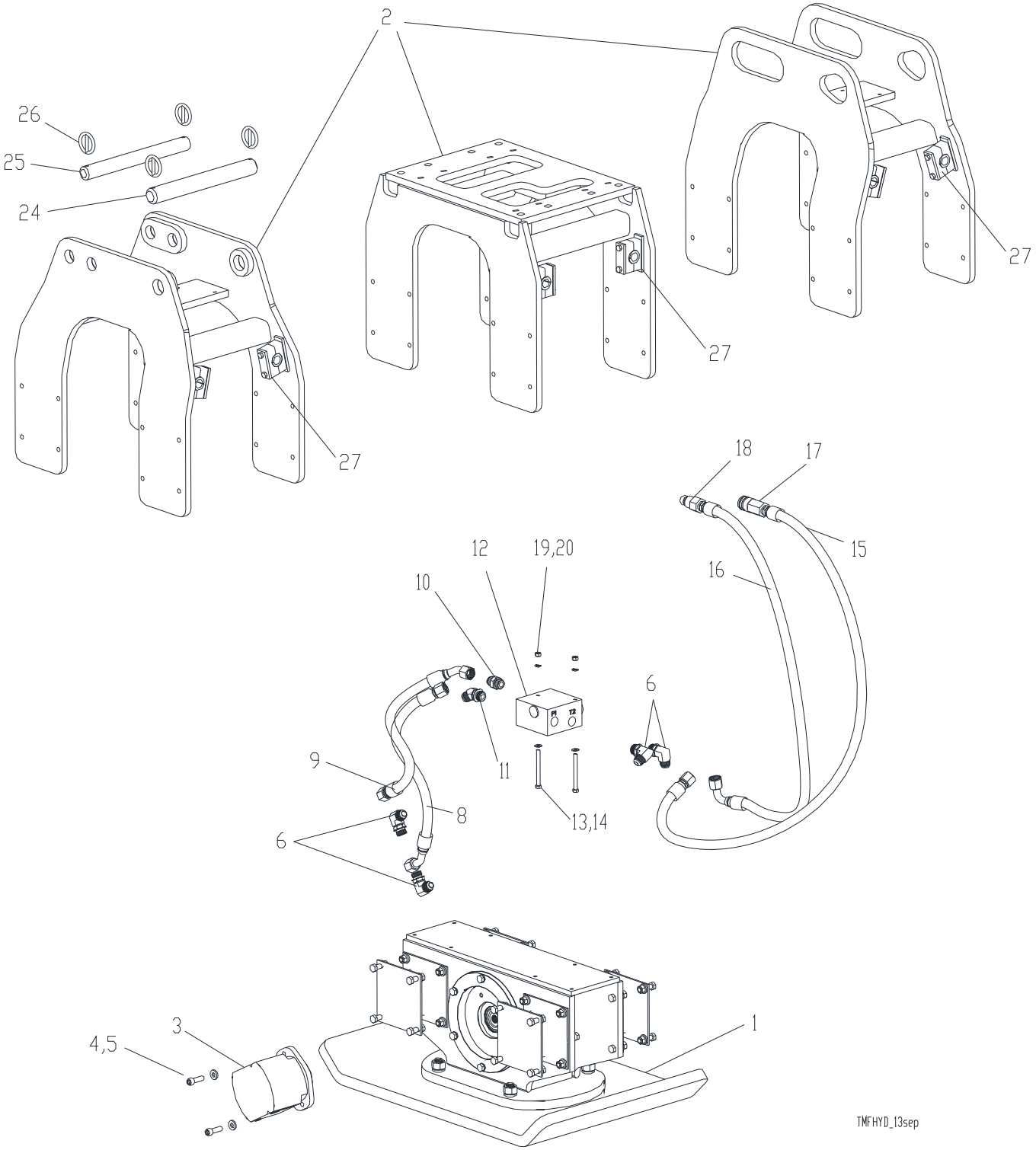


Fig.14-4 1000B Parts View

14.0 Parts Information – [cont'd]

Pay strict attention to figures, captions and notations. Multiple configures are offered for the Ho-Pac. Parts, including top mounting frame, motor options and compaction plate size will vary.

Table 14.3 1000B Ho-Pac

Item	Description	Part No.	Qty	Remarks / Specifications
	1000B Ho-Pac	**573456C**	**Std.**	**Configured w/ Flat Top Mounting Frame**
		573458C	**Opt.**	**Configured w/ BSF Mounting Frame**
		573460C	**Opt.**	**Configured w/ V10 Mounting Frame**
		573462C	**Opt.**	**Configured w/ V12 Mounting Frame**
		573464C	**Opt.**	**Configured w/ V13 Mounting Frame**
1	Dynamic Assembly	573778	Std.	For Options See Parts Table 14.2
2	Top Mounting Frame	573767	Std.	Flat Top (BR/SR Mtg Family)
		573766	Opt.	BSF
		573746	Opt.	VMS - V10
		573769	Opt.	VMS - V12
		573770	Opt.	VMS - V13
3	Motor	Varies	1	Match w/ Valve See Options Table 14.4
4	Washer	572080	2	1/2" Nord-Lock (Pair)
5	Socket Head Bolt	103369	2	
6	Elbow	656531	4	90º (Was qty-3).
---	---	---	---	7 was x1-679306. Rev. +1 to Item 6 656531
8	Hose	A102045	1	Supply – 29" (Was 574394)
9	Hose	576668	1	Return – 28" (Was 573789)
10	Adapter	656723	1	
11	Elbow	102699	1	45º
12	Valve	Varies	1	Match w/ Motor See Options Table 14.4
13.1	Hex Head Bolt	813290	2	4" Used on Flat Top Frame Only
13.2		679530	2	4 ½" Used on BSF & VMS Top Frames
14.1	Lock Washer	798190	2	Flat Top Frame – Pair with bolt head
14.2				All other frames – Pair with nut
15	Hose	573928	1	Supply
16	Hose	573929	1	Return
17	QD Socket	101571	1	
18	QD Plug	101570	1	

14.0 Parts Information – [cont'd]

Pay strict attention to figures, captions and notations. Multiple configures are offered for the Ho-Pac. Parts, including top mounting frame, motor options and compaction plate size will vary.

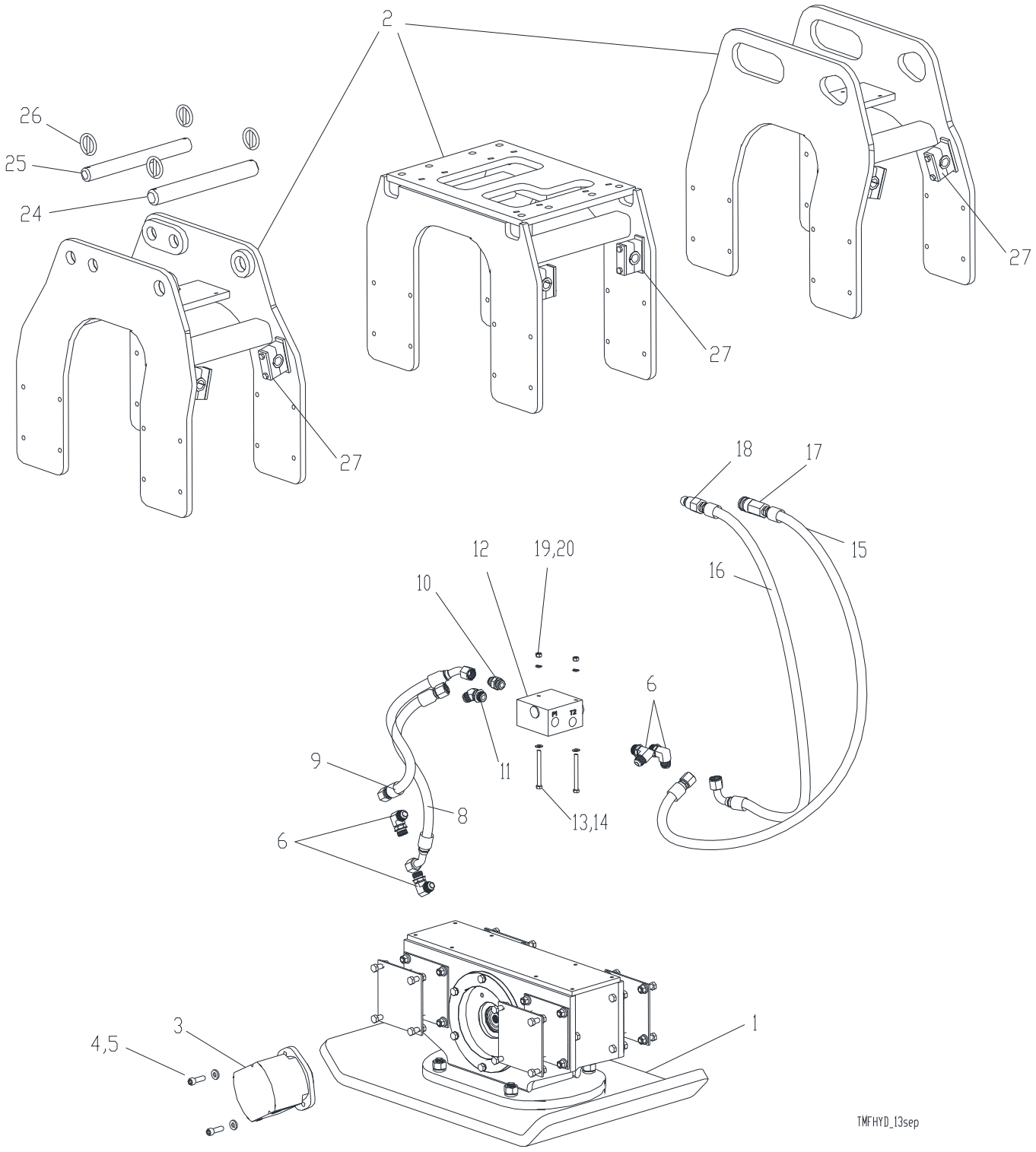


Fig.14-4 1000B Parts V*i*ew

14.0 Parts Information – [cont'd]

Pay strict attention to figures, captions and notations. Multiple configures are offered for the Ho-Pac. Parts, including top mounting frame, motor options and compaction plate size will vary.

Table 14.4 Ho-Pac Assembly – [cont'd]

Item	Description	Part No.	Qty	Remarks / Specifications
19	Hex Nut	798189	2	Not used on Flat Top Frame
20	Flat Washer	653339	2	Not used on Flat Top Frame
21	Hex Head Bolt	903702	1	SN-01469&DOWN
22	Flat Washer	653339	1	SN-01469&DOWN
23	Clamp	656702	1	SN-01469&DOWN
24	Mounting Pin	653378	1	ø 1.75"
25	Mounting Pin	617080	1	ø 1.50"
26	Klik Pin	617104	4	
27	Hose Clamp	573563	2	With size 12 rubber insert

14.3 Parts Information for Motor and Valve

Table 14.5 Motor & Valve Package (12, 18, or 21 gpm)

Option	"L" - Length Inch [mm]	Flow gpm [lpm]	Part Number			
			Motor	(Seal Kit)	Valve	Motor & Valve Package*
1	3-13/16 [97]	12 [45]	101346	(103304)	102650	103006
2	4-1/2 [114]	18 [68]	A102668	(103304)	102516	103007
3	4-3/4 [121]	21 [79]	102867	(103305)	102652	A103008

*Package includes one (1x) Motor and one (1x) Flow Regulator Valve.

Seal kits are available for the motor only. There are no user-serviceable parts in the flow regulator valve. Contact Allied Technical Service for further information.

14.0 Parts Information – [cont'd]

14.4 Motor and Valve Identification

IMPORTANT
Incorrect combination of motor and valve will result in poor performance or damage.

14.4.1 Motor Identification

When the part number of the motor is not known, the motor's body length is used to determine its correct identity.

Refer to Figure 12-1. Measure the distance ("L") from the back surface of the mounting flange to the rear of the motor body (not including bolts). Use the dimensions in Table 12.1 to determine the part number.

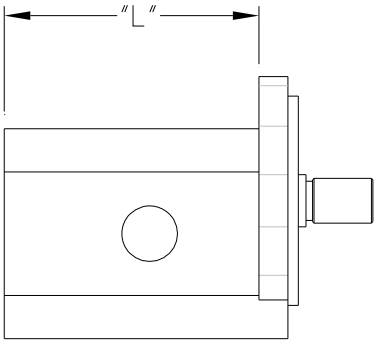


Fig. 14-5 Measure ("L") to identify the motor's part number

14.4.2 Valve Identification

Locate the part number stamped on the manifold to correctly identify the flow regulator valve.

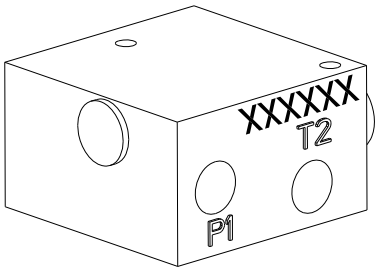


Fig. 14-6 Flow Regulator Valve - Part Number Location XXXXXX

14.0 Parts Information – [cont'd]

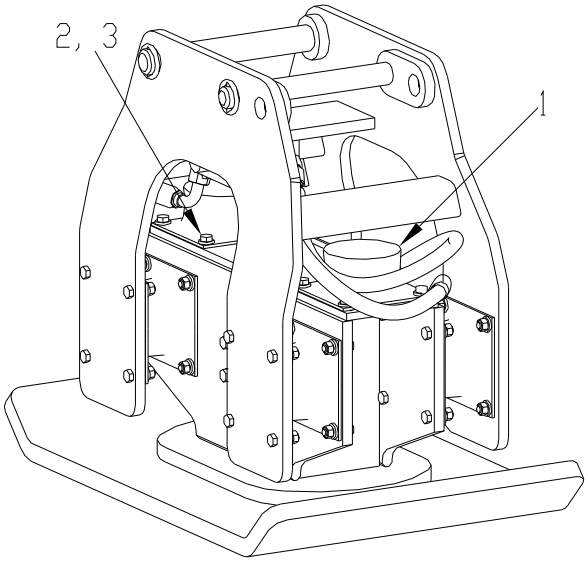


Fig.14-7 Bumper Kit Option

Table 14.6 Bumper Kit (Optional – *Order separately)

Item	Description	Part No.	Qty	Remarks / Specifications
---	Bumper Kit	573827	1	Kit includes 1, 2, 3
1	Bumper	573785	2	
2	Hex Head Bolt	903702	8	
3	Flat Washer	563642	8	

14.0 How To Order Spare Parts

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 _____

Model _____

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

Notes

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