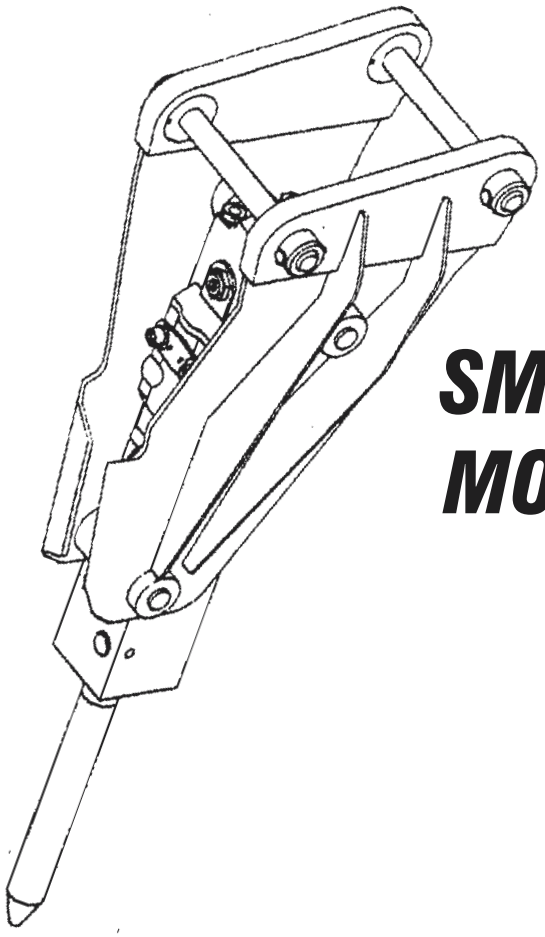
ALLIED
Construction Products, LLC

OPERATOR'S MANUAL

Manual Part No. 002036
October 22, 2003



HY-RAM HAMMERS

SMALL SIDE-PLATE MOUNTED MODELS

700B
711B
715B
725B

Allied Hy-Ram Small Models
700B, 711B, 715B, 725B
Document Change Notice

Date	Page	Change
12-30-98	4-1	Revised Specifications
12-30-98	4-2 thru 4-12	Updated Dimension Drawings
10/29/99	4-1	Revised Specifications
10/29/99	4-2 thru 4-23	Updated Dimension Drawings
04/16/01	4-1	Updated Specifications
04/16/01	Throughout	Minor Editting & Rewrites
12/07/01	No Changes	
07-03-02	Throughout	Updated Safety and Warranty Information

Table of Contents

Table of Contents (continued)

Table of Contents

Table of Contents

Section **Pag**

LIST OF FIGURES

Figure **Page**

LIST OF FIGURES

Figure **Page**

SECTION 1.0
INTRODUCTION & SCOPE

Hy-Ram Hammers Operator's Manual: Part Number 002036

This Operator's Manual is applicable to Small Side-Plate Mounted Models:

Models: 700B, 711B, 715B and 725B.

Years of Manufacture:
- 700B: 1997 - 2001
- 711B: 1992 and Beyond
- 715B: 1995 and Beyond
- 725B: 1995 - 2001

Serial Number(s)_____

This manual contains important information for the safe use and maintenance of the Allied Hy-Ram, Models 700B, 711B, 715B and 725B.

Read this manual thoroughly before installing, operating or servicing the Hy-Ram. This manual must be easily accessible to operators, service and transport personnel. Store this manual in a convenient location.

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

1.1 Safety Information

When using the Hy-Ram, safety procedures must be followed. See Section 5.0 for further safety guidelines.

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

These instructions are important for personnel safety and full service life of the Street Hammer. Follow them carefully.

1.2 Warranty Information

Warranty coverage of the Allied Hy-Ram depends on proper maintenance and operation of the Hy-Ram as detailed in this manual. Improper maintenance or operation shall void Hy-Ram warranty coverage. Immediately upon receipt of the Hy-Ram, read all Allied warranty documents delivered with the unit for a thorough understanding of warranty coverage.

Record the Hy-Ram Serial Number in the space provided above and in the Parts Manual.

1.3 Allied Product Policies

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

In this manual, Allied recommends Hy-Ram applications, maintenance and service consistent with industry practices. Allied takes no responsibility for the results of actions not recommended in this manual and specifically the results of:

- Operation in non-recommended applications
- Incorrect operation
- Improper maintenance
- Use of service parts not approved or supplied by Allied.

These exclusions apply to damage to the Hy-Ram, associated equipment, and injury to personnel.

SECTION 2.0
OVERVIEW

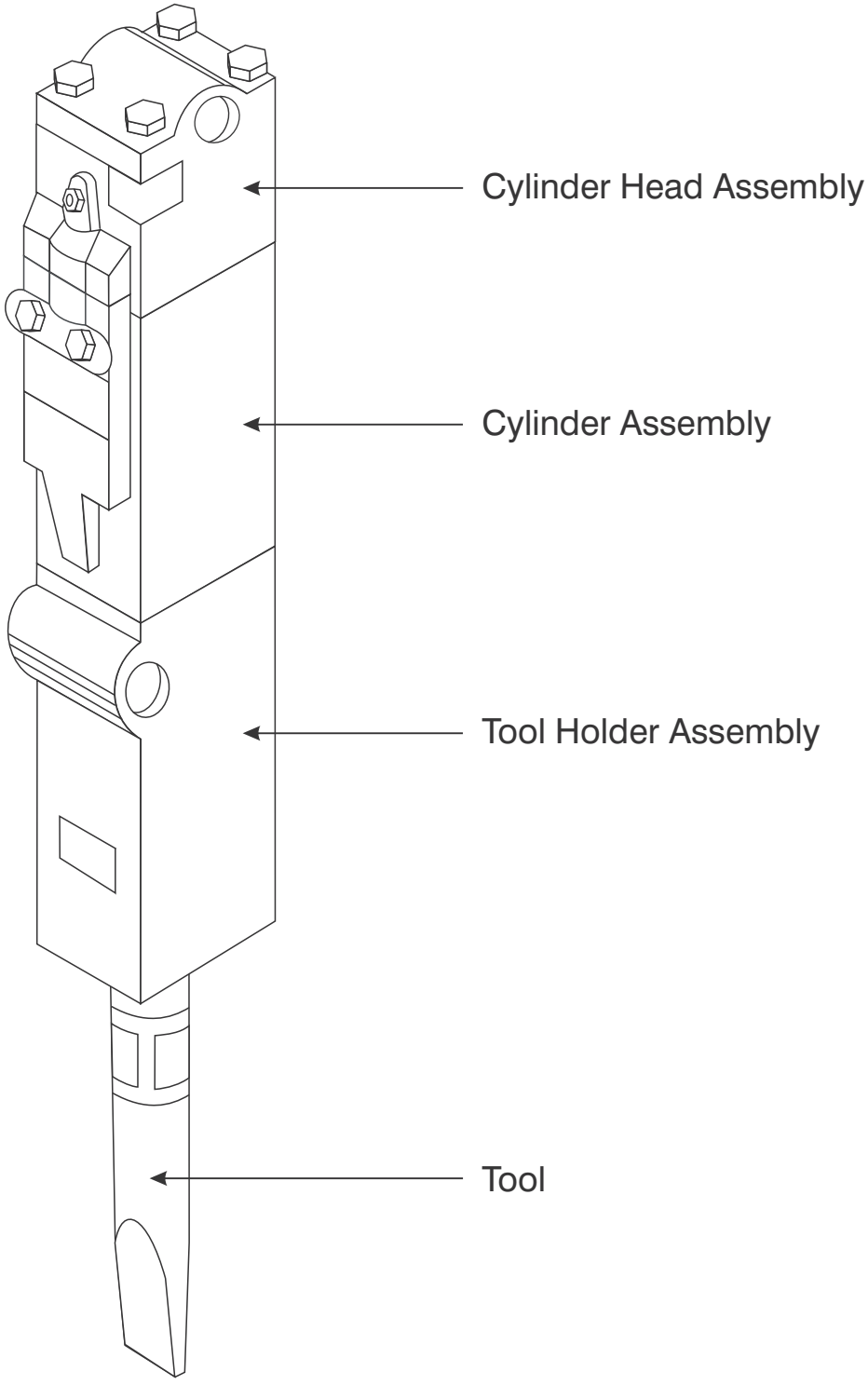


Figure 2-1. Typical Hy-Ram Main Components

2.1 Introduction

The Allied Hy-Ram small models are classified by carrier application:

(1) backhoes
(2) skid steer loaders
(3) mini-excavators.

Depending on the model, the Small Hy-Rams are compatible with backhoes, skid steer loaders and mini-excavators from 3,000 to 20,000 lbs. (1340 - 8930 kg). The hammers can be installed on almost any hydraulic system and can be operated with pump capacities as low as 4 gpm (15 lpm).

The maximum operating pressure is from 1750 to 2600 psi (120 - 180 bar). Hammer impact energy is derived from nitrogen gas pressure in the head and hydraulic pressure (see Section 3.0 Theory of Operation).

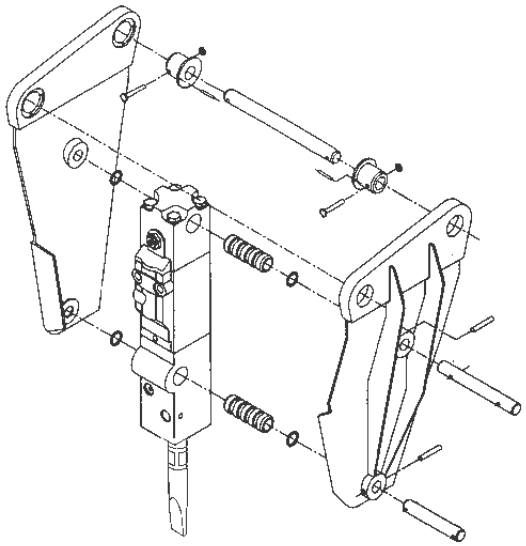


Figure 2-2. 711B Hy-Ram LTS Configuration

The hammer is designed to operate with the carrier's auxiliary attachment circuit. If the carrier does not have an auxiliary circuit, an Allied installation kit is required. In either case, proper hydraulic flow and pressure must be delivered by the auxiliary circuit.

The hammer side plates are pinned to the hammer with easy to remove pins and vibration dampening bushings.

Illustrations are representative of typical hammers. These illustrations are not to be used for repair or service.

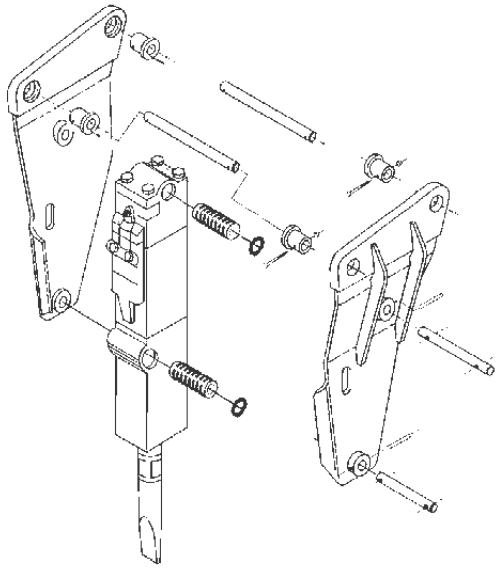


Figure 2-3. 715B and 725B Hy-Ram LTS Configuration

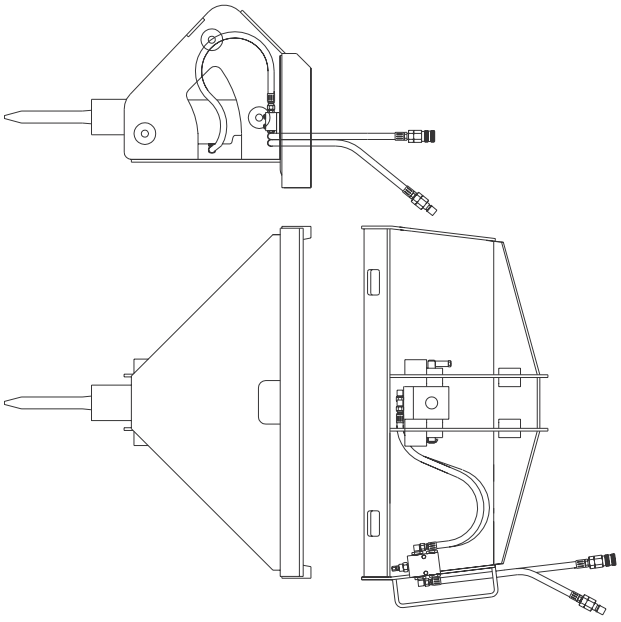


Figure 2-4. Typical Small Hammer Skid Steer Configuration

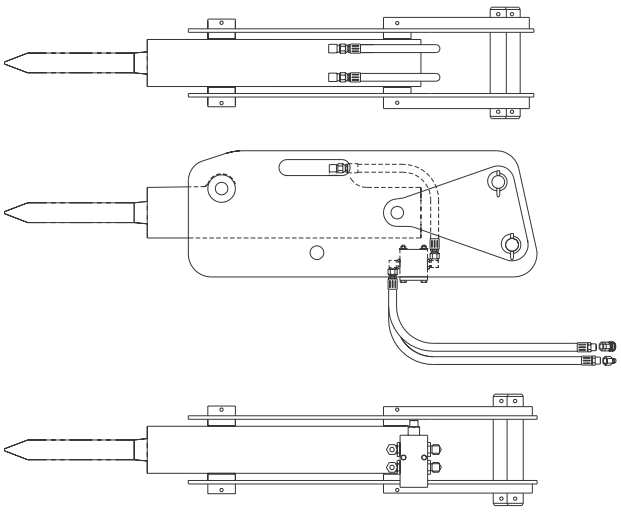


Figure 2-5. Typical Small Hammer Mini-Excavator Configuration

2.2 Description of Assembly Groups

- **Cylinder Head**

The cylinder head is the upper hammer section.

The nitrogen filling and measuring fitting for the precharge chamber is identified as Connection G on the cylinder head.

- **Cylinder**

The cylinder is the center section of the hammer between the cylinder head and the tool holder. These three assemblies are connected with tension bolts which pass through all three components.

The pressure connection (from the pump), Connection **P,** and the return connection (to the tank), Connection **T**, are located on the front of the cylinder body.

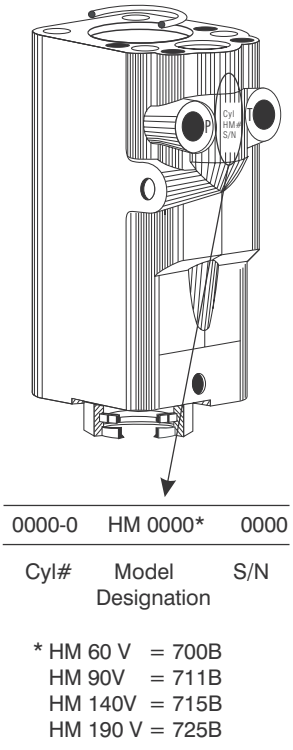


Figure 2-6. Typical Cylinder

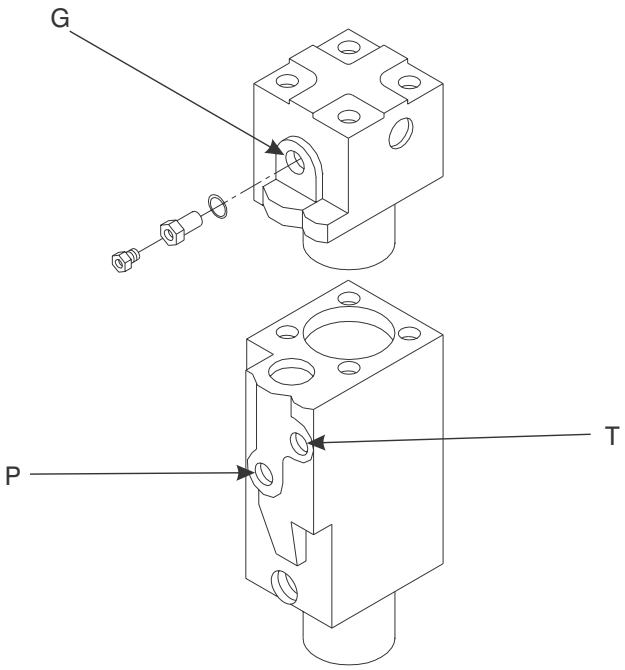


Figure 2-7-700B. Ports on Cylinder & Cylinder Head

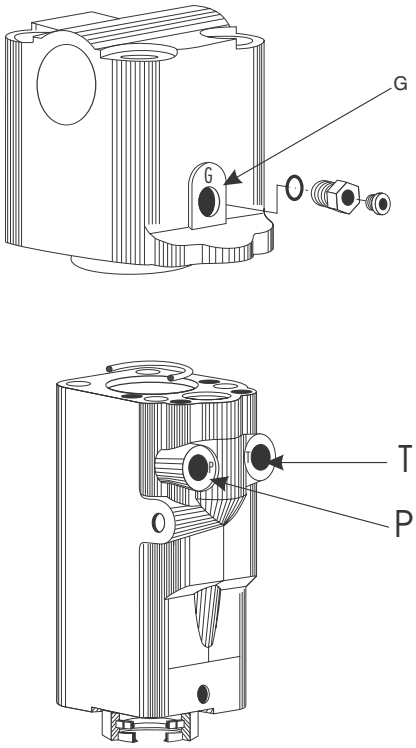


Figure 2-7-715B. Ports on Cylinder & Cylinder Head

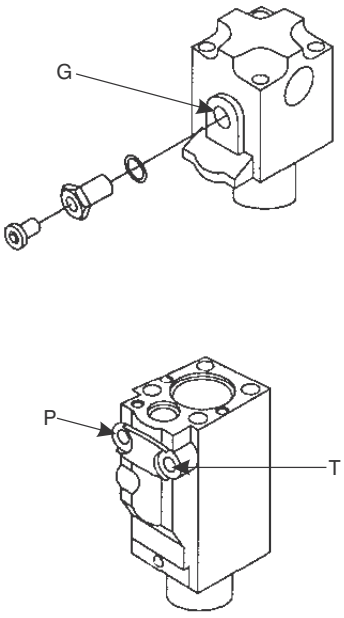


Figure 2-7-711B. Ports on Cylinder & Cylinder Head

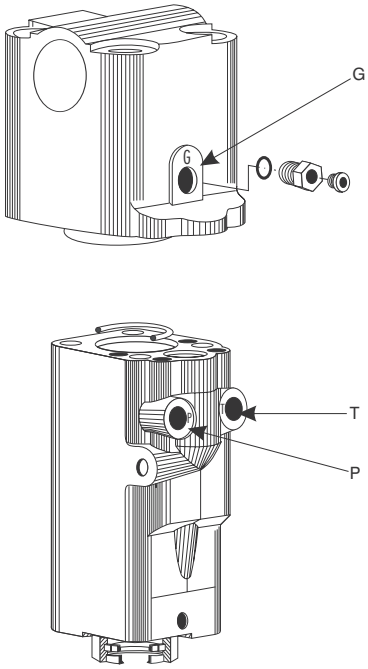


Figure 2-7-725B Ports on Cylinder & Cylinder Head

- **Piston**

The piston reciprocates in the cylinder transferring its energy to the demolition tool upon impact. The upper end of the piston has an identification number which is explained in Figure 2-8.

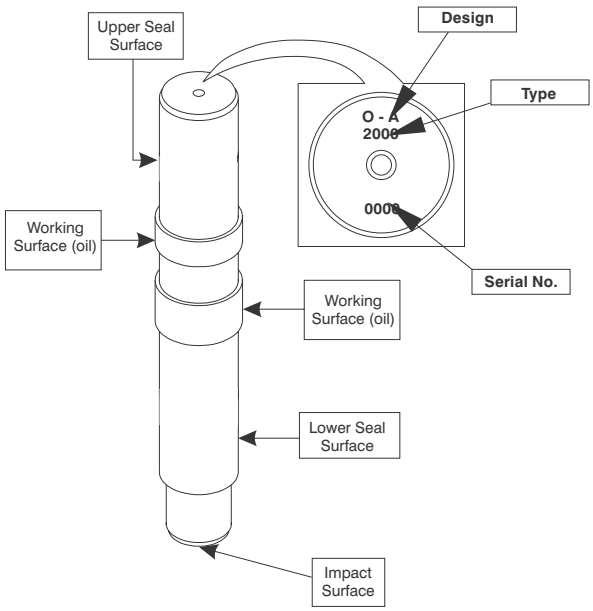


Figure 2-8. Typical Piston

- **Tool Holder**

The tool holder holds the demolition tool in place with a retainer pin. A tool bushing with an integral impact ring is located in the tool holder.

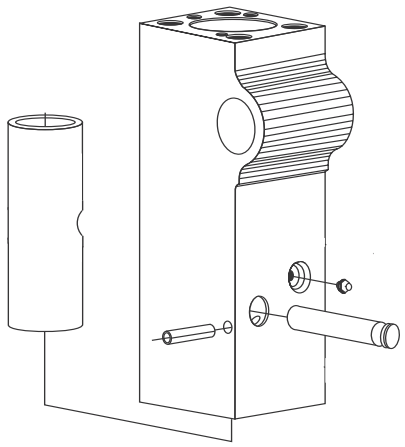


Figure 2-9. Typical Small Hammer Tool Holder

SECTION 3.0
THEORY OF OPERATION

Figure 3-1 is a diagram of basic Hy-Ram operation, illustrating how the piston is moved up and down to impact the demolition tool.

Up and down piston travel within the cylinder is controlled by hydraulic pressure above piston surface f2.

- When the pressure above surface f2 is low, the high pressure against surface f1 forces the piston up the cylinder. This movement also compresses the nitrogen gas, increasing pressure on piston surface f3.

- The upward piston movement causes a control valve (not shown) to shift position. This shift results in a high pressure above surface f2.

- When the pressure above surface f2 is high, the piston is forced downward. The nitrogen pressure against piston surface f3 also drives the piston downward with even greater force.

- Just before tool impact, the control valve shifts again. This shift results in a low pressure above surface f2.

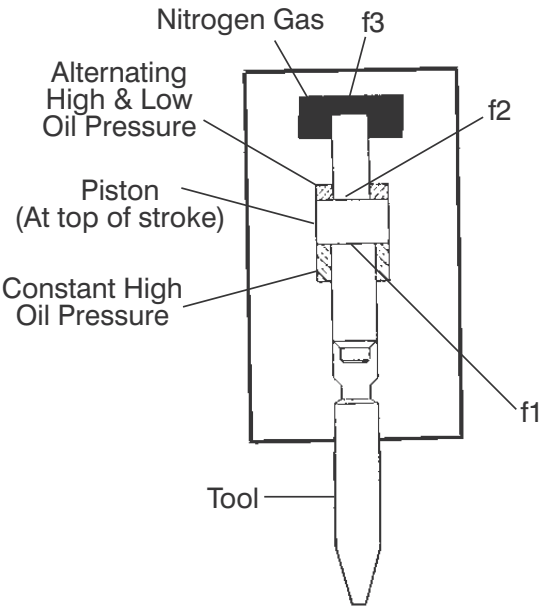


Figure 3-1. Hammer Block Diagram

SECTION 4.0 TECHNICAL INFORMATION

4.1 Technical Specifications

Technical Specifications					
Hy-Ram Model		**700B**	**711B**	**715B**	**725B**
Frequency Range	blows per minute	700 - 1500	450 - 1150	400 - 1150	450 - 1200
Hydraulic Flow	gpm (lpm)	4-9 (15-35)	7-12 (25-45)	9-15 (35-55)	13-24 (50-90)
Hydraulic Operating Pressure	psi (bar)	1300 - 1750 (90 - 120)	1300 - 1900 (90 - 130)	463 & Below 2000 - 2600 (140 - 180) 464 & Above 1750 - 2000 (120 - 140)	1300 - 1900 (90 - 130)
Pressure in Nitrogen Precharge Chamber	psi(bar) psi(bar) Note 1	233 (16.0) 270 (18.6)	150 (10.3) 175 (12.0)	463 & Below 185 (12.7) 215 (14.8) 464 & Above 200 (13.8) 230 (15.8)	215 (14.8) 250 (17.5)
Weight - LTS	lbs. (kg)	None	460 (205)	565 (250)	670 (299)
Weight - Skid Steer	lbs. (kg)	490 (222)	610 (270)	740 (330)	900 (408)
Weight - Mini-Excavator	lbs. (kg)	310 (140)	465 (201)	530 (240)	600 (272)
Working Length - LTS	in. (mm)	None	54.0 (1372)	61.7 (1567)	64.8 (1645)
Working Length - Mini-Excavator	in. (mm)	45.7 (1160)	55.8 (1417)	63.0 (1600)	66.8 (1695)
Working Length - Skid Steer	in. (mm)	38.0 (965)	46.8 (1187)	56.7 1439	57.4 (1457)
Demolition Tool Diameter Working Length	Type in. (mm) in. (mm)	Conical 1.89 (48) 12 (305)	Conical 2.44 (62) 15 (381)	Cross Cut 2.56 (65) 18 (457)	Cross Cut 2.95 (75) 19 (482)
Carrier Weight Class Backhoe	1000 lbs (1000 kg)		9 - 12 (4 - 5.4)	9 - 17 (4 - 7.7)	11 - 18 (5 - 8.2)
Carrier Weight Class Excavator	1000 lbs (1000 kg)	4 - 8 (1.8 - 3.6)	6 - 10 (2.7 - 4.5)	7 - 15 (3.1 - 6.8)	14 - 20 (6.3 - 9.0)
Carrier Weight Class Skid Steer	1000 lbs (1000 kg)	3 - 6 (1.3 - 2.7)	4 - 6 (1.8 - 2.7	5 - 8 (2.2 - 3.6)	8 & Up (3.6 & Up)
Hydraulic Hose Size	In. (mm)	½ (12)	½ (12)	¾ (19)	¾ (19)

Note 1: First value at 70°F (21°C), second value at 150°F (65°C).

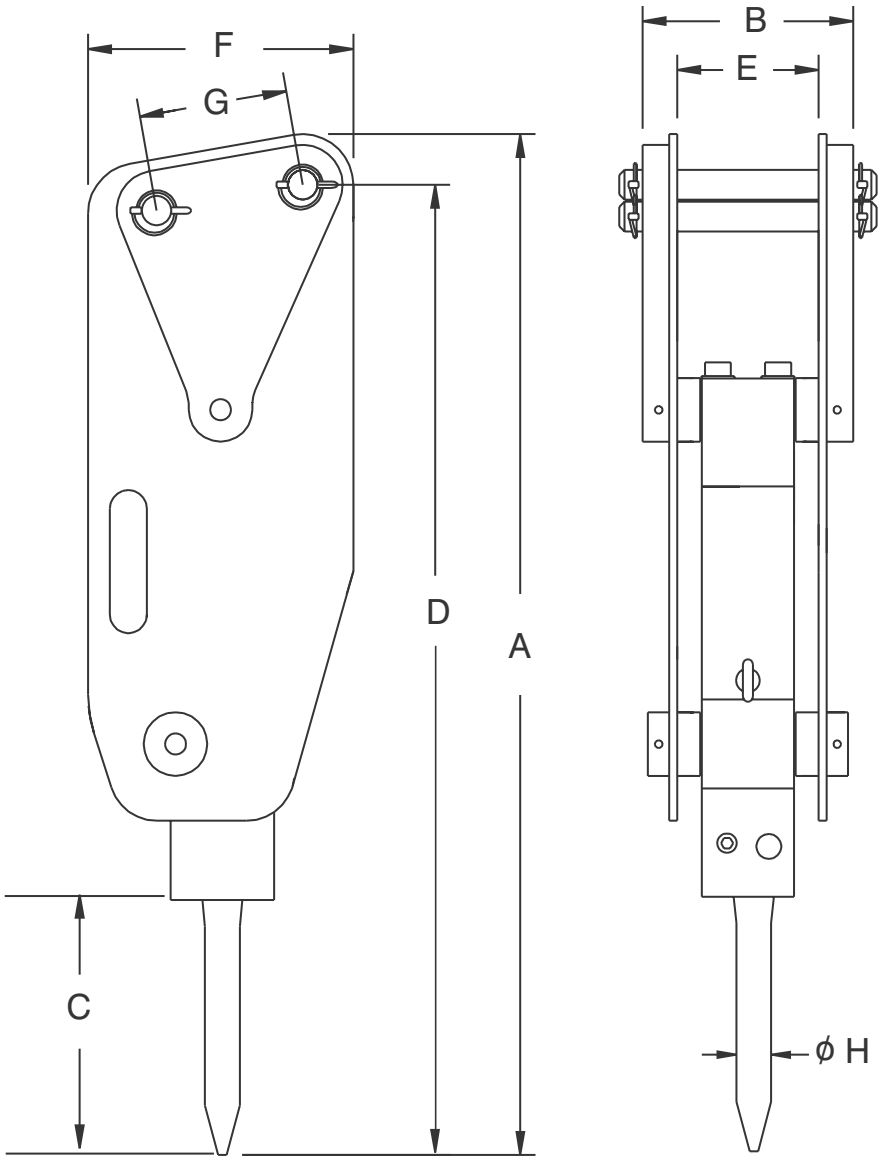
NOTE: For decal descriptions and locations, refer to the Parts Manual for each individual model covered in this operator's manual.

4.2 Dimensions

The dimensions listed in Table 4-1 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-1 lists these letters, each dimension and an explanation of the dimension.

Table 4-1. Dimensions of 700B Hy-Ram - Mini-Ex Configuration

Letter	Dimension in. (mm)	Decscription
A	48.0 (1219)	Hammer length
B	9.43 (240)	Hammer width
C	12.0 (305)	Tool length
D	45.7 (1161)	Hammer working length - stick pin to tool tip.
E	6.67 (169)	Mounting width
F	12.5 (318)	Hammer depth
G	7.00 (178)	Stick pin to link pin length
H	1.89 (48)	Tool diameter



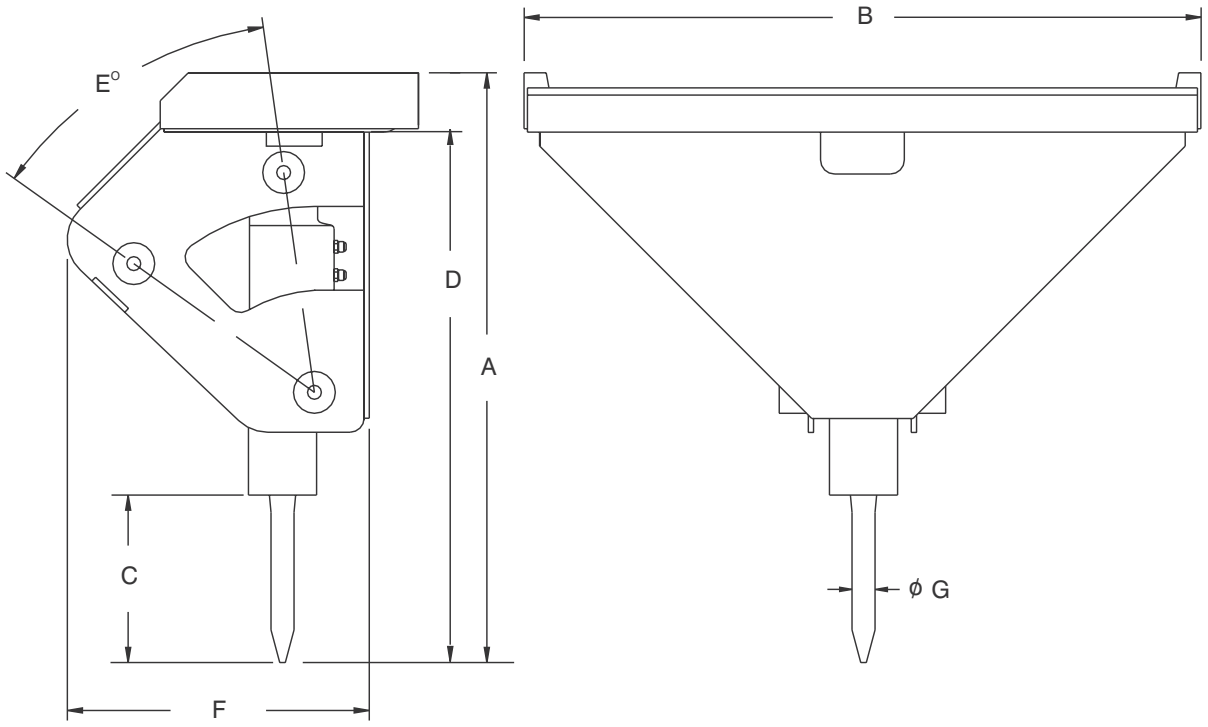
700B MS

Figure 4-1. Dimension Drawing - Model 700B Mini-Excavator Configuration

The dimensions listed in Table 4-2 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-2 lists these letters, each dimension and an explanation of the dimension.

Table 4-2. Dimensions of 700B Hy-Ram - Skid Steer Configuration

Letter	Dimension in. (mm)	Decscription
A	42.25 (1073)	Hammer length
B	48.50 (1232)	Hammer width
C	12 (305)	Tool length
D	38.0 (965)	Hammer working length - top of side plate to tool tip.
E	47°	Hammer rotation angle
F	21.65 (550)	Hammer depth
G	1.89 (48)	Tool diameter



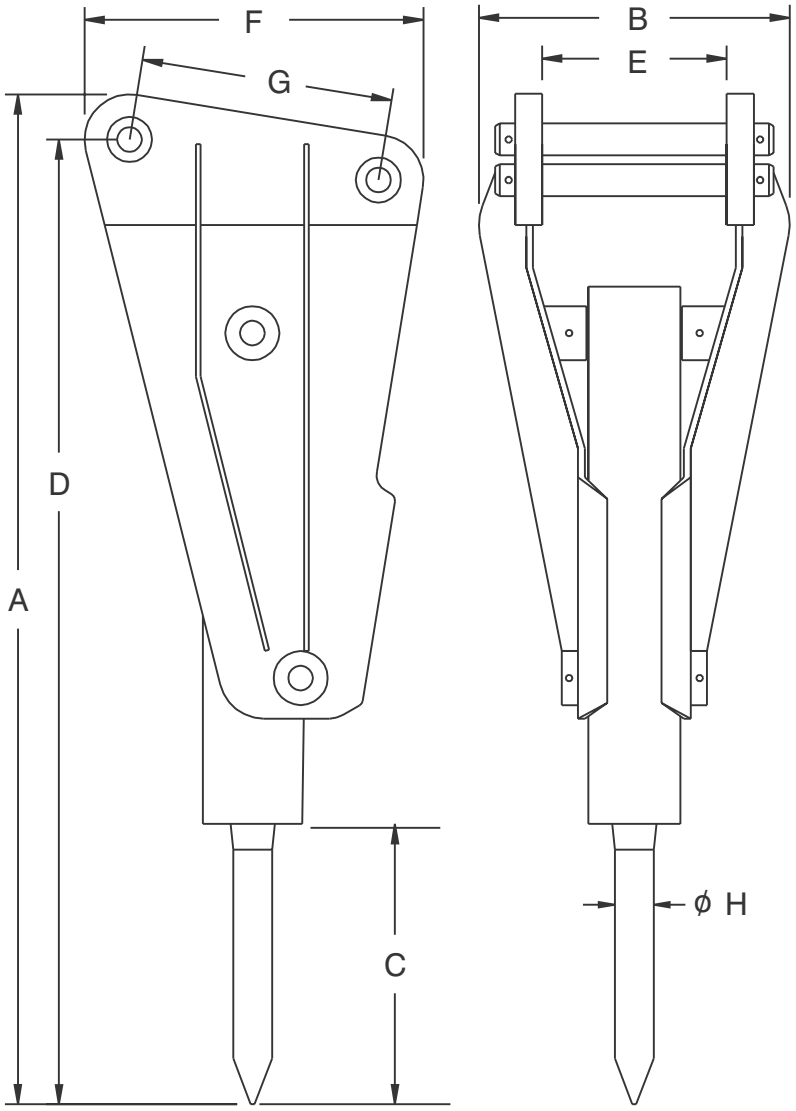
700M MSU

Figure 4-2. Dimension Drawing - Model 700B Skid Steer Configuration

The dimensions listed in Table 4-3 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-3 lists these letters, each dimension and an explanation of the dimension.

Table 4-3. Dimensions of 711B Hy-Ram - LTS Configuration

Letter	Dimension in. (mm)	Decscription
A	56.5 (1435)	Hammer length
B	39.0 (991)	Hammer width
C	15.0 (381)	Tool length
D	54.0 (1372)	Hammer working length - stick pin to tool tip.
E	10.3 (260)	Mounting width
F	18..8 (478)	Hammer depth
G	14.0 (356)	Stick pin to link pin length
H	2.44 (62)	Tool diameter



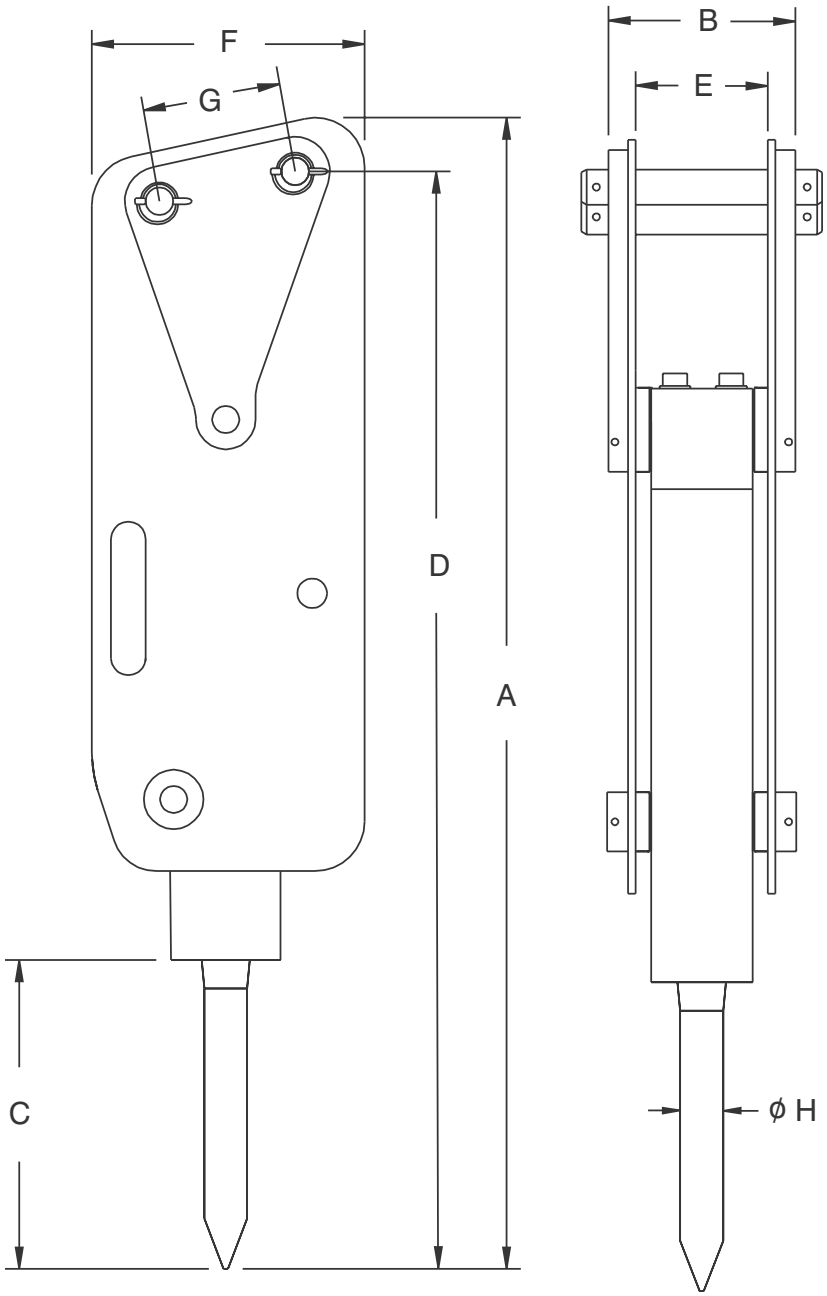
711B LTS

Figure 4-3. Dimension Drawing - Model 711B LTS Configuration

The dimensions listed in Table 4-4 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-4 lists these letters, each dimension and an explanation of the dimension.

Table 4-4. Dimensions of 711B Hy-Ram - Mini-Ex Configuration

Letter	Dimension in. (mm)	Decscription
A	58.5 (1486)	Hammer length
B	9.42 (239)	Hammer width
C	15.0 (381)	Tool length
D	55.8 (1417)	Hammer working length - stick pin to tool tip.
E	6.67 (169)	Mounting width
F	13.8 (349)	Hammer depth
G	7.00 (178)	Stick pin to link pin length
H	2.44 (62)	Tool diameter



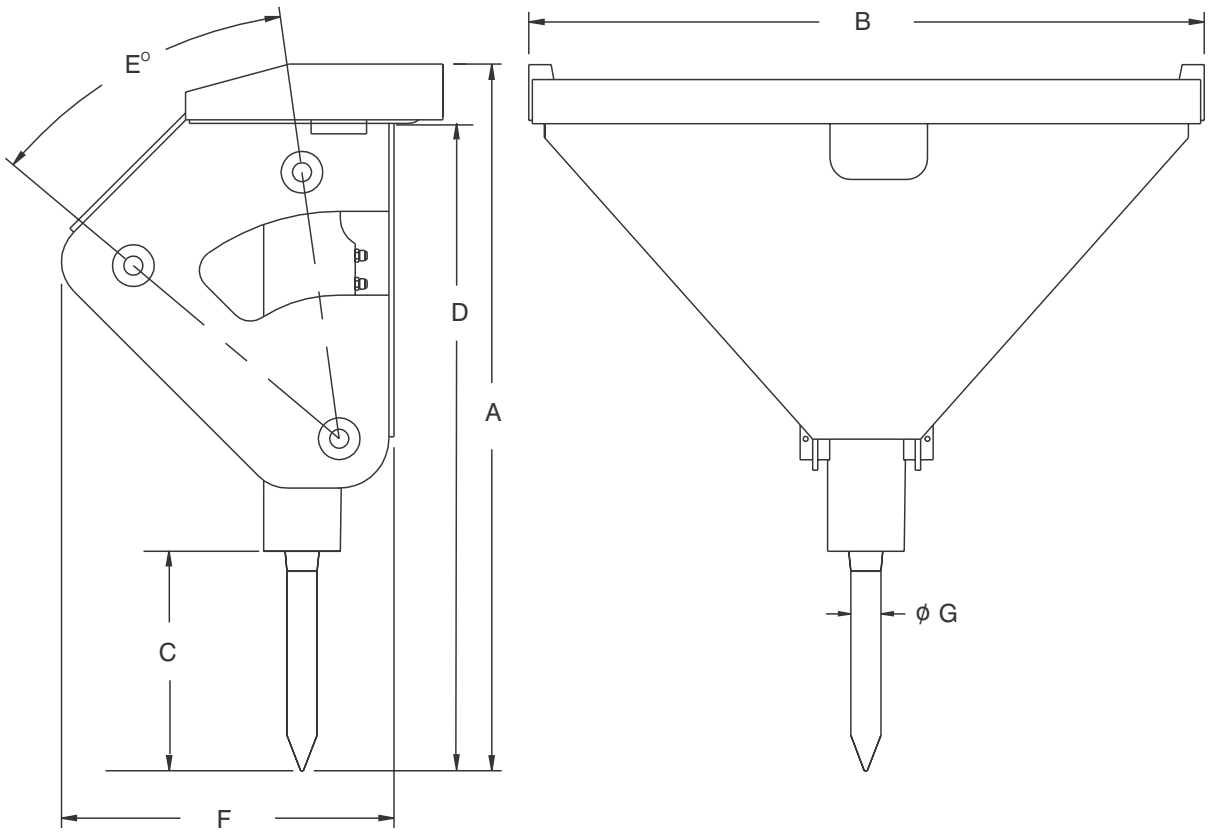
711B MX

Figure 4-4. Dimension Drawing - Model 711B Mini-Excavator Configuration

The dimensions listed in Table 4-5 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-5 lists these letters, each dimension and an explanation of the dimension.

Table 4-5. Dimensions of 711B Hy-Ram - Skid Steer Configuration

Letter	Dimension in. (mm)	Decscription
A	51.0 (1295)	Hammer length
B	48.5 (1232)	Hammer width
C	15.0 (381)	Tool length
D	46.8 (1187)	Hammer working length - top of side plate to tool tip.
E	42°	Hammer rotation angle
F	23.88 (607)	Hammer depth
G	2.44 (62)	Tool diameter



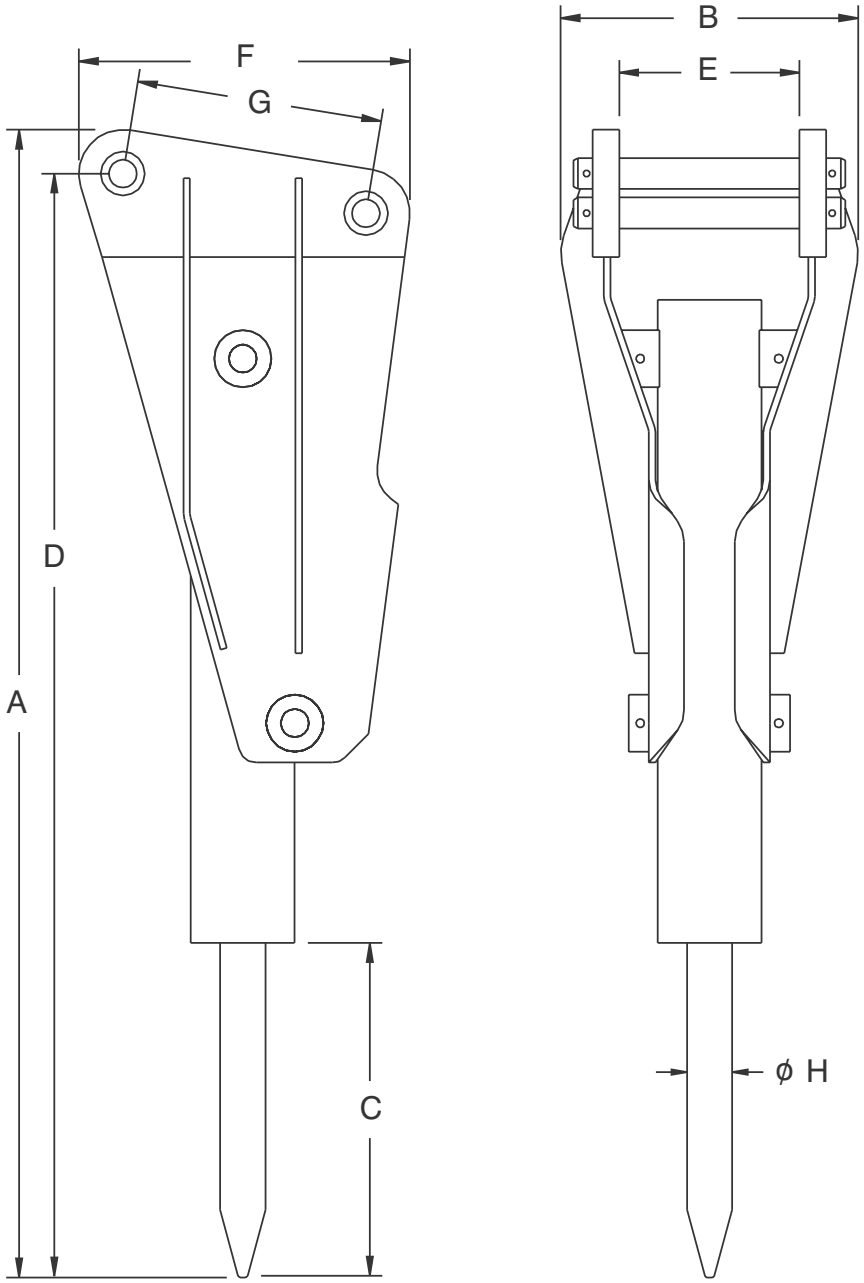
711B SSU

Figure 4-5. Dimension Drawing - Model 711B Skid Steer Configuration

The dimensions listed in Table 4-6 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-6 lists these letters, each dimension and an explanation of the dimension.

Table 4-6. Dimensions of 715B Hy-Ram - LTS Configuration

Letter	Dimension in. (mm)	Decscription
A	64.2 (1631)	Hammer length
B	16.9 (430)	Hammer width
C	18 (457)	Tool length
D	61.7 (1567)	Hammer working length - stick pin to tool tip.
E	10.25 (260)	Mounting width
F	18.8 (478)	Hammer depth
G	14.0 (356)	Stick pin to link pin length
H	2.56 (65)	Tool diameter



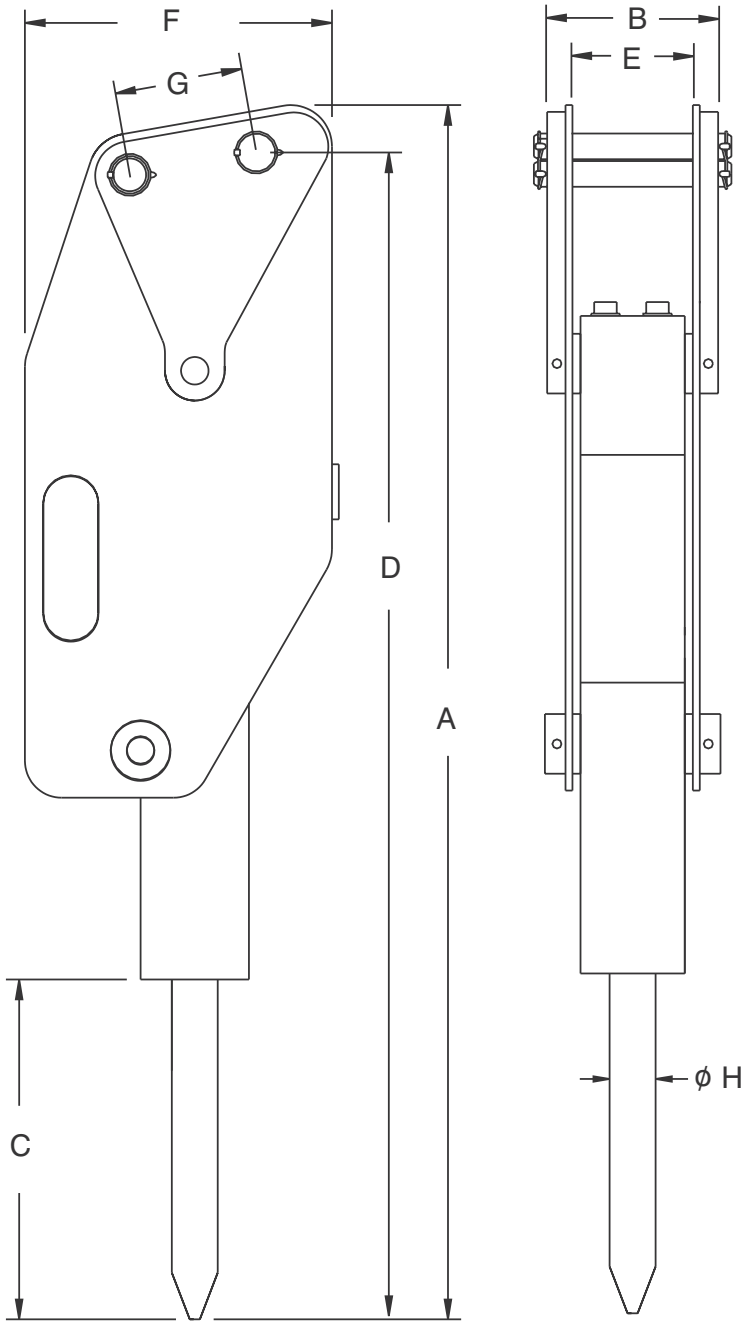
715B LTS

Figure 4-6. Dimension Drawing - Model 715B LTS Configuration

The dimensions listed in Table 4-7 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-7 lists these letters, each dimension and an explanation of the dimension.

Table 4-7. Dimensions of 715B Hy-Ram - Mini-Ex Configuration

Letter	Dimension in. (mm)	Decscription
A	65.7 (1669)	Hammer length
B	9.43 (240)	Hammer width
C	18 (457)	Tool length
D	63.0 (1600)	Hammer working length - stick pin to tool tip.
E	6.67 (169)	Mounting width
F	16.75 (426)	Hammer depth
G	7.00 (178)	Stick pin to link pin length
H	2.56 (65)	Tool diameter



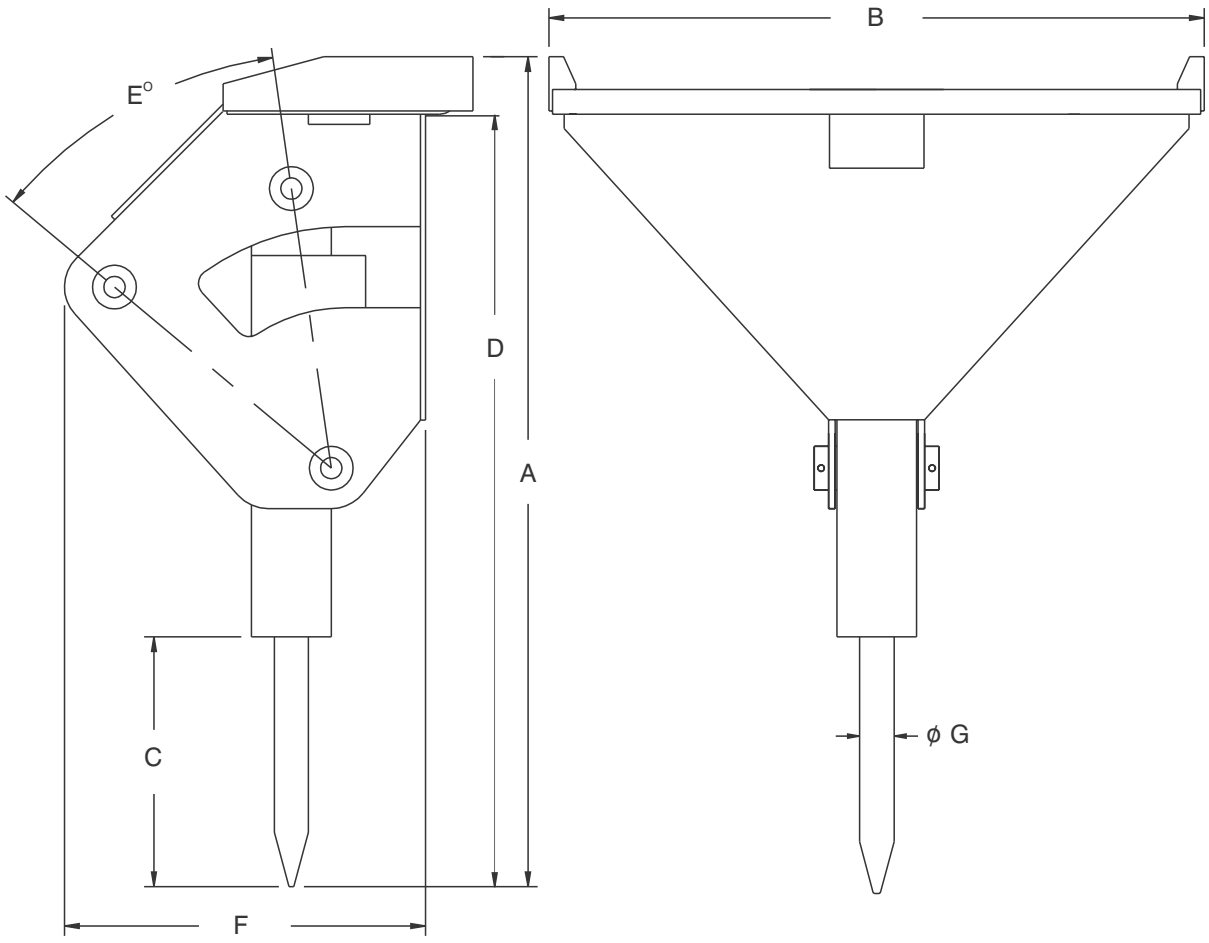
715B MXS

Figure 4-7. Dimension Drawing - Model 715B Mini-Excavator Configuration

The dimensions listed in Table 4-8 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-8 lists these letters, each dimension and an explanation of the dimension.

Table 4-8. Dimensions of 715B Hy-Ram - Skid Steer Configuration

Letter	Dimension in. (mm)	Decscription
A	60.9 (1547)	Hammer length
B	43.0 (1092)	Hammer width
C	18.0 (457)	Tool length
D	56.7 (1439)	Hammer working length - top of side plate to tool tip.
E	42°	Hammer rotation angle
F	26.75 (730)	Hammer depth
G	2.56 (65)	Tool diameter



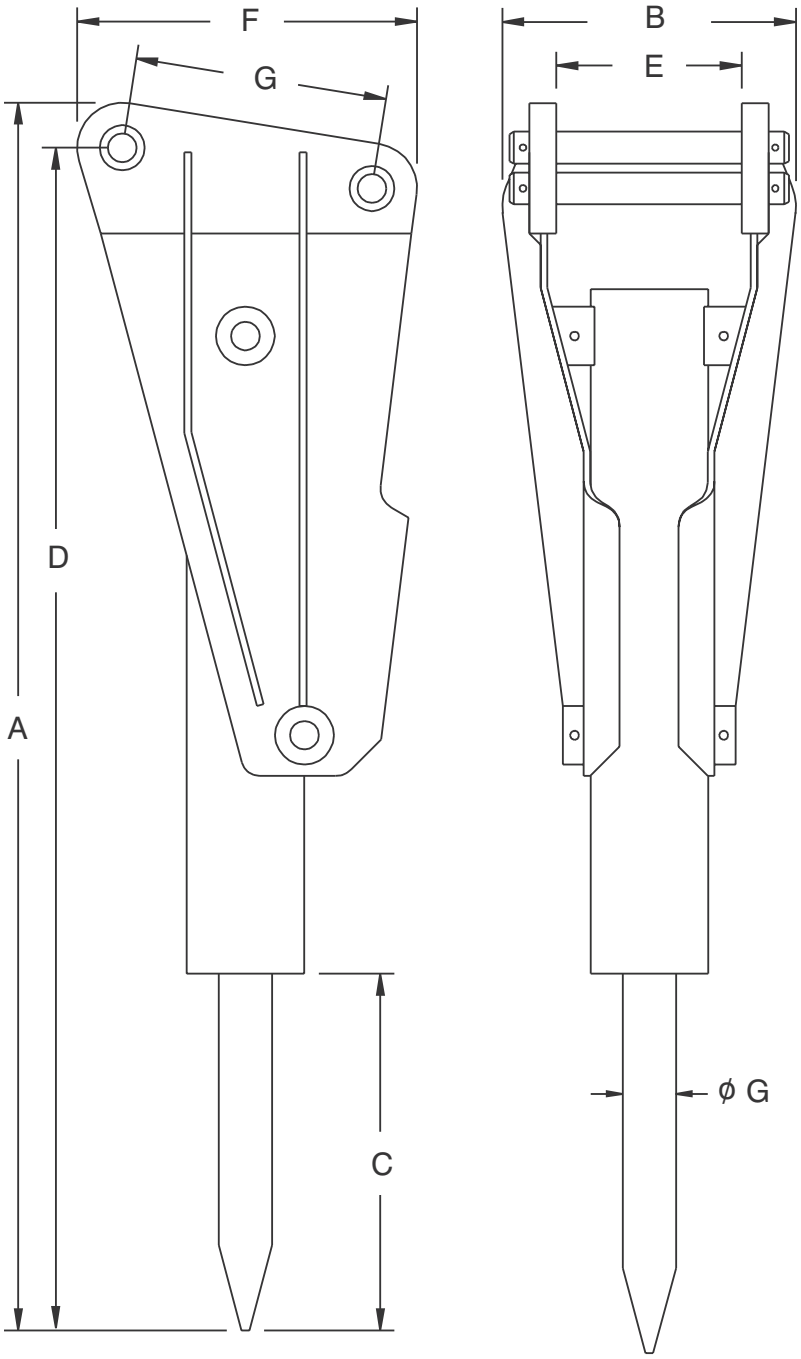
715B SSU

Figure 4-8. Dimension Drawing - Model 715B Skid Steer Configuration

The dimensions listed in Table 4-9 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-9 lists these letters, each dimension and an explanation of the dimension.

Table 4-9. Dimensions of 725B Hy-Ram - LTS Configuration

Letter	Dimension in. (mm)	Decscription
A	67.3 (1709)	Hammer length
B	16.25 (413)	Hammer width
C	19 (502)	Tool length
D	64.8 (1645)	Hammer working length - stick pin to tool tip.
E	10.25 (260)	Mounting width
F	18.8 (478)	Hammer depth
G	14.0 (356)	Stick pin to link pin length
H	2.95 (75)	Tool diameter



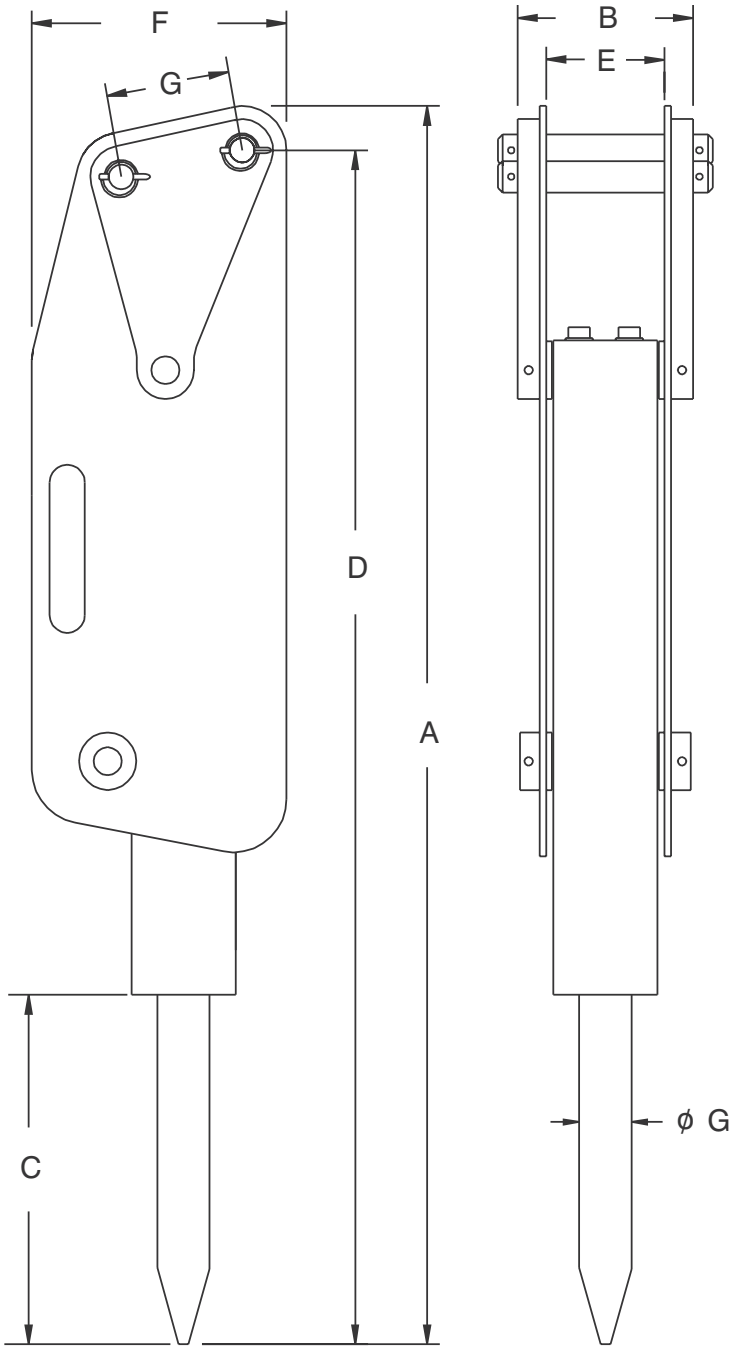
725 B LTS

Figure 4-9. Dimension Drawing - Model 725B LTS Configuration

The dimensions listed in Table 4-10 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-10 lists these letters, each dimension and an explanation of the dimension.

Table 4-10. Dimensions of 725B Hy-Ram - Mini-Ex Configuration

Letter	Dimension in. (mm)	Decscription
A	69.3 (1760)	Hammer length
B	9.93 (252)	Hammer width
C	19 (502)	Tool length
D	66.8 (1695)	Hammer working length - stick pin to tool tip.
E	6.67 (169)	Mounting width
F	14.4 (366)	Hammer depth
G	7.00 (178)	Stick pin to link pin length
H	2.95 (75)	Tool diameter



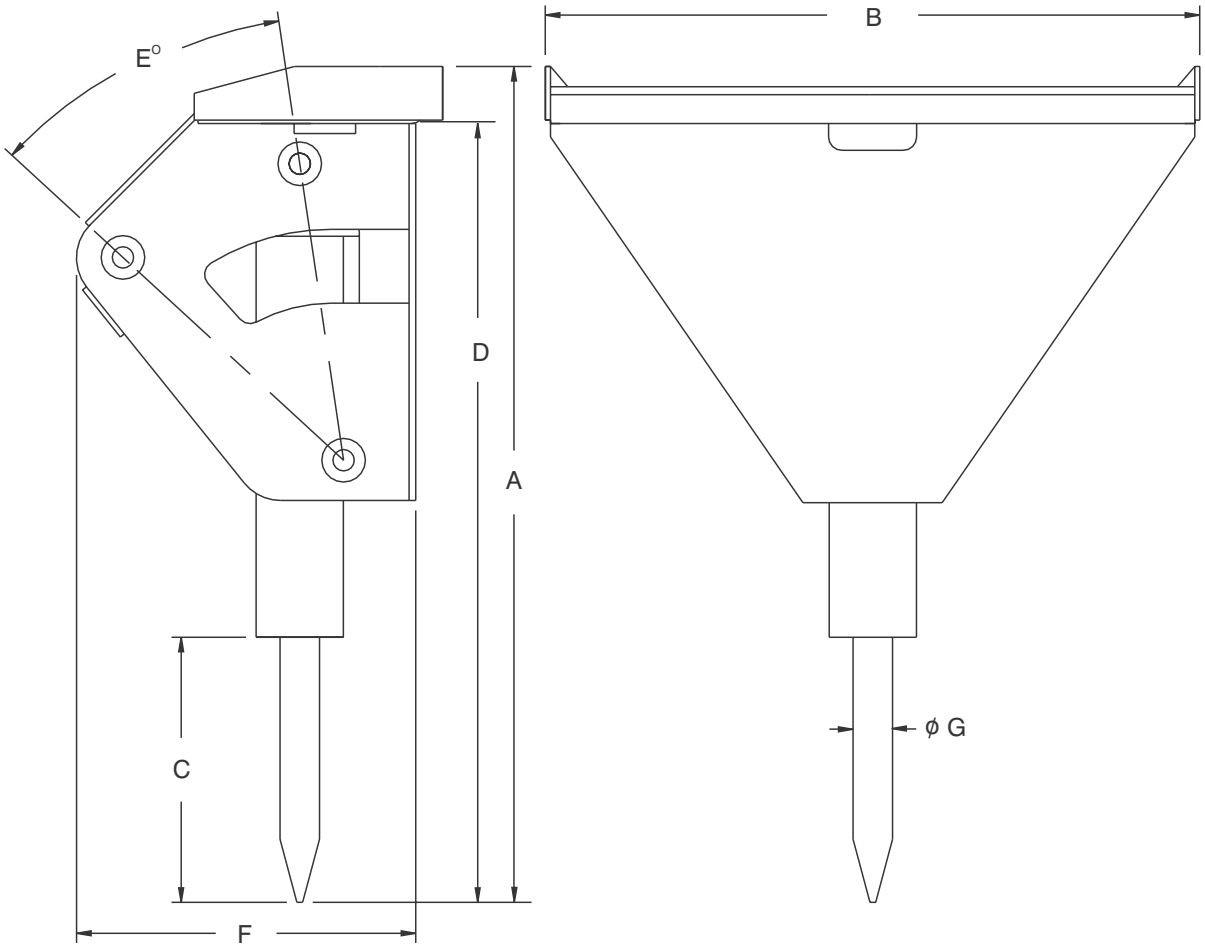
725B MXS

Figure 4-10. Dimension Drawing - Model 725B Mini-Excavator Configuration

The dimensions listed in Table 4-11 below are illustrated in the drawing on the next page. Each dimension is indicated by a letter on the drawing. Table 4-11 lists these letters, each dimension and an explanation of the dimension.

Table 4-11. Dimensions of 725B Hy-Ram - Skid Steer Configuration

Letter	Dimension in. (mm)	Decscription
A	61.6 (1565)	Hammer length
B	48.75 (1073)	Hammer width
C	19 (502)	Tool length
D	57.4 (1457)	Hammer working length - top of side plate to tool tip.
E	39°	Hammer rotation angle
F	25.25 (641)	Hammer depth
G	2.95 (75)	Tool diameter



725B SSU

Figure 4-11. Dimension Drawing - Model 725B Skid Steer Configuration

SECTION 5.0
GENERAL CONSTRUCTION SAFETY

5.1 Owner's Responsibilities

The equipment owner shall:

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

5.2 General Construction Safety

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

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

Use the Street Hammer 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. Bo 371954
Pittsburgh, PA 15250

Ask for Construction Industry OSHA Standards 29 CFR 1926/1910.

5.4 General Safety Summary

The safe and effective use of any heavy construction equipment depends upon proper installation, operation, maintenance and repair. Operational safety must encompass all of these factors. This section includes minimum safety policies the Street Hammer owner shall establish for all Street Hammer installations. The operational safety program must be tailored by the Street Hammer owner to the specific site and application. Such a program will result in increased equipment life and performance and reduced downtime. Most importantly, it will reduce the risk of equipment damage and personnel injuries.

5.4.1 CAUTIONS and WARNINGS

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

⚠WARNING⚠

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

⚠CAUTION⚠

Instructions identified with this symbol are important to prevent damage to equipoment and to maintain full service life of the Ho-Pac. Follow them carefully. Operation or service not in accordance with these instructions may subject the Ho-Pac to conditions beyond its design capability. Read this manual thoroughly before operating or maintaining the Ho-Pac.

5.4.2 Initial Operating Precautions

Some pre-operational checks and scheduled maintenance must be performed more frequently on a new Hy-Ram installation. Refer to the Operator Checklist and the Care and Maintenance Schedule in Section 11.0 of this manual.

5.4.3 Carrier Precautions

- To assure stable carrier operation, the carrier load capacity must meet or exceed the Hy-Ram working weight listed in the Technical Specifications Table, Section 4.1.
- To protect the operator from hot, high pressure hydraulic fluid, do not run any hydraulic lines through the operator's cab.
- Follow the carrier manufacturer's guidelines regarding filtration of return fluid from the Hy-Ram. The carrier oil filter must be cleaned according to the Carrier Maintenance Schedule.
- To protect the operator from injury from flying rock splinters, the operator's cab must have a protective shield. The shield must be closed during hammer operation.
- Refer to the carrier manufacturer's manuals for proper carrier operation, service and maintenance procedures.
- Never lift or move loads with the Hy-Ram.
- Operate the Hy-Ram only from the carrier operator's seat; and only after the carrier and Hy-Ram are correctly positioned.

5.4.4 Personnel Precautions

- The carrier operator shall perform some Hy-Ram procedures with an assistant. Both the operator and assistant must be experienced and thoroughly trained in these procedures.
- Always wear safety glasses and protective clothing when operating or handling the Hy-Ram.
- All personnel in the immediate area, including the carrier operator and the assistant, must wear ear protection.
- Avoid pinch points.
- Never put fingers in mounting bores or locking bars.
- Keep personnel away from the demolition tool while:
  - The demolition tool is jammed in the tool holder; it may release suddenly.
  - Trained technicians service the hydraulic system.
  - Trained technicians service the nitro-

gen precharge chamber.
- Trained technicians service the accumulator nitrogen chamber.

5.4.5 Hydraulic Pressure Precautions

- Before disconnecting any hydraulic lines, properly bleed all hydraulic system pressure.
- Make sure the Hy-Ram and carrier hydraulic systems are compatible, especially regarding:
  - Flow rate and pressure
  - Pressure relief valve setting
  - Hydraulic fluid compatibility
  - Heat exchanger if required

5.4.6 Nitrogen Gas Precautions

- To avoid an explosion and equipment damage, use only 99.8% pure nitrogen gas in the precharge chamber and the accumulator pressure chamber.
- Do not allow anyone into the service area while the service technicians are testing, measuring, filling or bleeding the nitrogen chambers.

5.4.7 Hoisting and Lifting Precautions

- The Hy-Ram and component weights are listed in the Technical Specifications table, Section 4.1. Before starting a procedure that requires hoisting, prepare the required lifting equipment.
- When hoisting the assembled Hy-Ram, use the designated lifting eyes on the -Box.
- Keep hands clear of any bores or fittings when moving, removing, attaching, or hoisting the Hy-Ram.

5.4.8 Maintenance Precautions

- Do not start maintenance on the Hy-Ram until it has cooled. The Hy-Ram is heated during operation and some components become very hot.

WARNING

Bodily injury and equipment damage could result if the Hy-Ram falls. After detaching it from the carrier, block the Hy-Ram securely.

WARNING

Clearing a jammed demolition tool is hazardous. Properly protect personnel against sudden release.

- Jamming the demolition tool in the holder can damage internal hammer components and shorten Hy-Ram service life. To reduce the risk of jamming, carefully follow the operator checklist and the care and maintenance schedule, especially:
  - Lubricating the demolition tool. (See Section 8-5.)
  - Checking impact ring wear. (See Section 11.2.3.)
  - Checking piston impact face wear (See Section 11.2.4.)
  - Checking demolition tool wear. (See Section 11.2.6.)

5.4.9 Site Precautions

- The danger area around the carrier is greater for hammer operation than for carrier operation due to the risk of flying rock splinters and debris. Immediately cease operation of the Hy-Ram if personnel without protective glasses or protective clothing enter the danger area.
- Never use the Hy-Ram in or under water unless compressed air is supplied to the hammer. Refer to Section 9.11.2 Working Underwater.

When work site temperatures are below minus 4°F [-20°C], follow the carrier manufacturer's low temperature operating instructions. Refer to Section 9.13 Working in Low Outside Temperatures.

SECTION 6.0
HY-RAM APPLICATIONS

The small Hy-Ram models are suited for many types of light duty construction and mining applications. The following examples are typical and suggest the variety and limitations of standard applications. The small hammers are not designed for use in or under water. Typical surface applications are:

Clearance Work: Light concrete and brick breaking; curb and gutter, sidewalk and driveway work. Cutting asphalt.*

Trenching: Trench compaction*; sheet, pipe and pile driving*. Trench rock excavation.

*in certain applications

Mining: Descaling in mines; horizontal breaking in tunnels.

Demolition: Concrete road and structural demolition.

Safety regulations for the Hy-Ram and the carrier must be observed at all times.

SECTION 7.0
HY-RAM ATTACHMENT & REMOVAL

7.1 Carrier Requirements

Refer to Section 4.1 Technical Specifications to determine the carrier weight required to adequately maneuver and handle the Hy-Ram.

CAUTION

Do not attempt to set the Hy-Ram operating pressure or flow without first consulting the installation instructions for your machine.
Do not exceed the maximum operating pressure for the Hy-Ram Model being used; refer to Section 4.1 Technical Specifications for operating pressures.

The hydraulic pressure and flow must be adequate for operation of both the carrier and the hammer simultaneously. Hydraulic pressure and flow requirements for the Hy-Ram model being used are given in Section 4.1 Technical Specifications.

The carrier must have an oil temperature gauge. Operating temperature range of the hydraulic oil is 140o F.(60oC.) to 176o F. [80oC.]. If the ambient temperature is low, warm the oil to a minimum of 32o F. (0o C.) by running the carrier (see Section 9.13 for operating at low temperature).

7.2 Installation Kits

Proper mounting hardware must be used to mount the Hy-Ram to a backhoe, mini-excavator, or skid steer. Allied installation kits are recommended; if others are used, they must satisfy the minimum requirements listed under Section 7.6 Attaching the Hy-Ram.

Allied Installation Kits are designed for most carrier makes and models and contain the parts required for the mechanical and hydraulic hookup.

7.3 Top Mounting Brackets

The small Hy-Rams do not have top mounting brackets.

7.4 Heat Exchanger

In some working environments with a high ambient temperature, a heat exchanger may be necessary to maintain a safe operating oil temperature. The oil temperature shall never exceed 176o F. [80oC.]. There are several operating problems that could cause oil to overheat. DO NOT install a heat exchanger before inspecting and correcting Hy-Ram or carrier malfunctions. Refer to Section 10.0 Troubleshooting and also carrier troubleshooting.

7.5 Tools Required to Attach Hy-Ram

No special tools are required, but the following tools are recommended:

- safety glasses & gloves
- sledge hammer
- drift pin
- socket wrench set
- grease gun
- open end wrenches
- caliper for checking tool wear
- pry bar

7.6 Attaching the Hy-Ram to the Carrier

WARNING

The Hy-Ram shall only be attached to a carrier with sufficient load carrying capacity. If the carrier is too light, it may become unstable.

WARNING

When an assistant is required to attach and remove the carrier attachments, all directions and signals must be agreed upon before beginning attachment or removal.

WARNING

Keep hands away from bores and pin areas when attaching the Hy-Ram. Do not touch any parts when the boom is moving. Never put fingers in bores to check alignment; use drift pin.

WARNING

Always wear safety glasses during attachment, operation, and removal of the Hy-Ram.

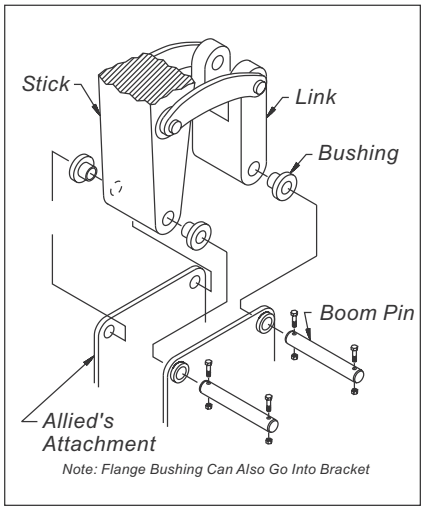
7.6.1 Attaching the Hy-Ram to a Backhoe

(Refer to Figure 7-1.)

NOTE

The backhoe installation desribed below is typical; installation procedures may vary. Consult carrier attachment installation instructions for specific details.

1. Before attaching the Hy-Ram, remove



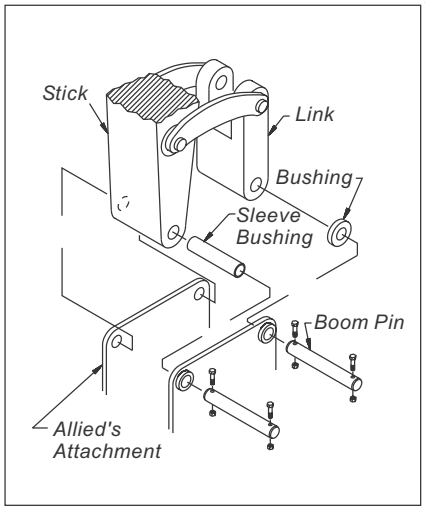


Figure 7-1.

the bucket or tool attached to the stick of the carrier.

2. Maneuver the stick into the hammer at the front (hose side) and align mounting holes. The front (hose side) of the hammer should face the operator in the carrier cab.
3. Push the stick pin into holes through the hammer, spacer, if required, and the stick. Tap stick pin through holes with a hammer if necessary. Note that a spacer may go between the stick and hammer on both sides.
4. Install stick pin bolts and nuts or klik pins.
5. Maneuver the stick until the link lines up with the holes on the back (non-hose side) of the hammer.
6. Install the spacers and link pin through the link and hammer.
7. Install nuts and bolts or klik pin in link pin.

NOTE

Hammers requiring less than 16 gpm are supplied with a flow valve which is mounted on the bracket. Two sets of hoses are supplied: one set of hoses connects the hammer to the valve; the other set connects the valve to the carrier.

8. Refer to Section 7-7 to connect hydraulic lines.

7.6.2 Attaching the Hy-Ram to a Mini-Excavator

NOTE

The installation desribed is typical; installation procedures may vary. Consult carrier attachment installation instructions for specific details.

The hammer is attached to the Mini-Execavator the same way it is attached to the Backhoe. Refer to Section 7.6.1

7.6.3 Attaching the Hy-Ram to a Skid Steer

NOTE

The skid steer installation desribed below is typical; installation procedures may vary. Consult carrier attachment installation instructions for specific details.

1. If the skid steer hammer is already attached to its mounting bracket, proceed to step 3; otherwise, see step 2.
2. Attach the hammer to the skid steer mounting bracket with the hoses facing the top. Refer to Figure 7-2. Use standard hammer pins to mount the hammer to the mounting bracket.

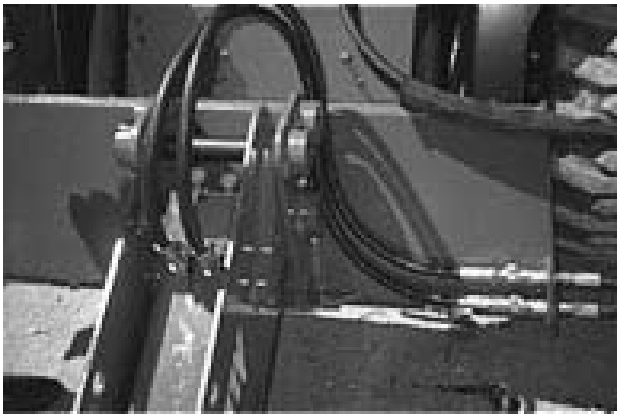


Figure 7-2.

3. Make sure skid steer attaching clamps are open. The locking pins should be retracted. Refer to carrier operator's manual for detailed attachment instructions.
4. Maneuver the skid steer to the mounting bracket. Operate the skid steer hydraulic controls to engage the mounting coupler under the flange at the top of the mounting bracket.
5. Using the skid steer hydraulic cylinders, slowly lift the mounting bracket until the bottom of the mounting bracket is flush with bottom of the mounting coupler.

WARNING

In Step 6, make sure the mounting pins are through the holes in the bottom of the mounting bracket. If pins are not fully engaged, there is danger of hammer and bracket falling off the carrier. This could result in equipment damage and personal injury. Refer to Figure 7-3.

6. Engage the skid steer attachment locking assembly so the locking pins protrude through the holes in the bottom of the mounting plate. Refer to Figure 7-3.

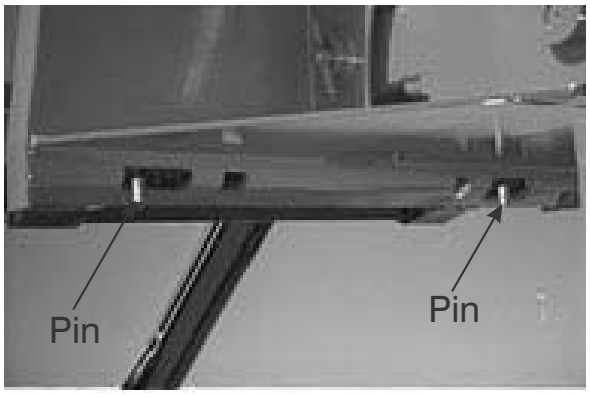


Figure 7-3.

NOTE

Hammers requiring less than 16 gpm are supplied with a flow valve which is mounted on the bracket. Two sets of hoses are supplied: one set of hoses connects the hammer to the valve; the other set connects the valve to the skid steer.

7. Refer to Section 7.7 to connect hydraulic lines.

CAUTION

Always position hammer perpendicular to the work or equipment damage could result. Refer to Figures 7-4 and 7-5.

Figure 7-4.

Figure 7-5.

WARNING

Secure the hammer before changing pin location so it does not swing. Damage to hammer and injury to peronnel could result if hammer is not secure.

8. The orientation of the hammer can be changed on the 2-PositionSkid Steer bracket by pivoting the hammer in the bracket to help keep the hammer perpendicular to the work. Refer to Figures 7-6 and 7-7.
   1. Remove the retainer pin closest to the top of the hammer.
   2. Pivot the hammer up or down in the mounting bracket.
   3. Insert the pin in the corresponding hole.

Figure 7-6.

Figure 7-7.

NOTE

Allied manufactures other brackets to mount LTS or Mini-Ex hammers to a Skid Steer. Contact Allied Customer Service.

CAUTION

Contaminated hydraulic oil is harmful to attachments and carriers. Clean connection areas and hose ends before and after removing protective caps so hose fittings are clean when attached to hammer and carrier.

7.7 Connecting the Hy-Ram Hydraulic Lines

Connect the hydraulic lines to the Hy-Ram as follows:

1. Clean dirt from connection areas.
2. Unscrew the cap nuts from Hy-Ram ports **P (pressure)** and **T (tank/return)**. Refer to Figure 7-9.
3. Wrap the cap nuts in clean plastic or cloth to protect them from dirt. Place the cap nuts in the tool box for safekeeping.

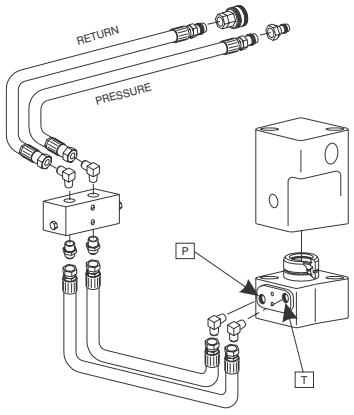


Figure 7-8-700B. Connecting Hydraulic Lines

Mini-Ex and Skid Steers (With Valves)

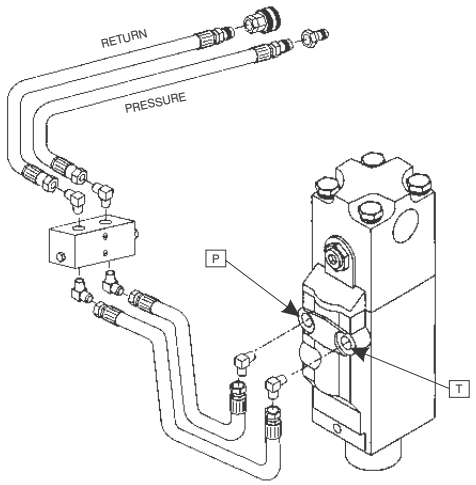


Figure 7-8-711B. Connecting Hydraulic Lines
Mini-Ex and Skid Steers (With Valves)

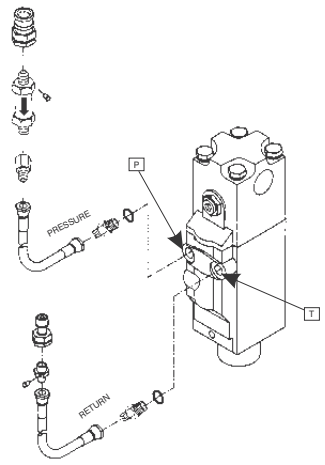


Figure 7-9-711B. Connecting Hydraulic Lines
Backhoes (No Valves)

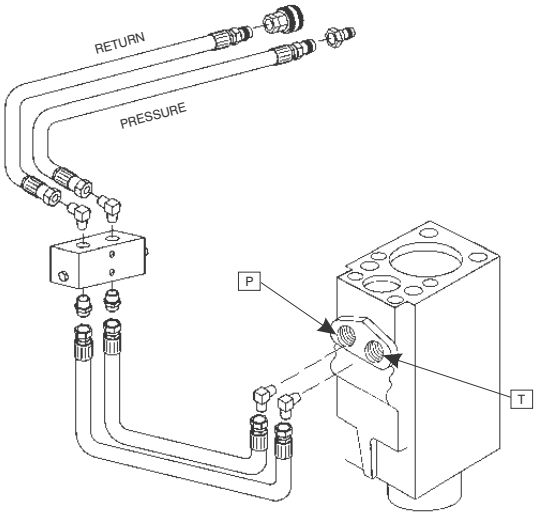


Figure 7-8-715B. Connecting Hydraulic Lines
Mini-Ex and Skid Steers (With Valves)

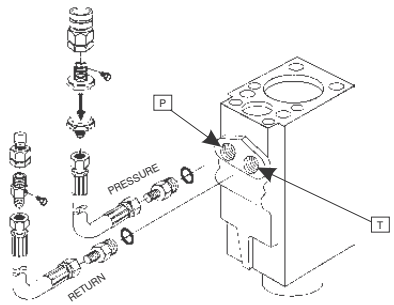


Figure 7-9-715B. Connecting Hydraulic Lines
Backhoes (No Valves)

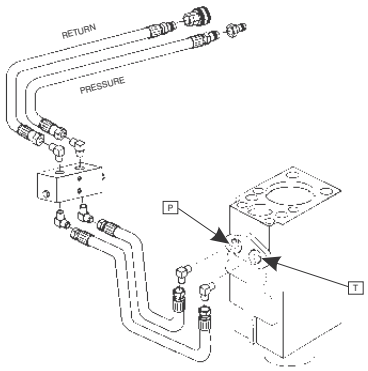


Figure 7-8-725B. Connecting Hydraulic Lines
Mini-Ex and Skid Steers (With Valves)

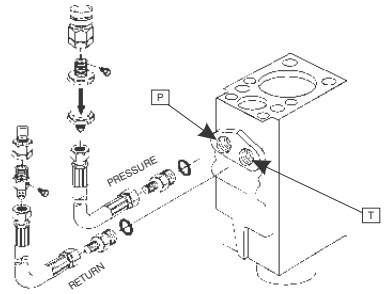


Figure 7-9-725B. Connecting Hydraulic Lines
Backhoes (No Valves)

4. Remove the plugs from the ends of the hydraulic lines that connect to the Hy-Ram.

WARNING

Do not run any hydraulic lines through the operator's cab; they may leak or burst. The hydraulic oil becomes very hot during operation.

5. Check all hose connecting threads. The threads must be undamaged and free of contamination.

NOTE

Hammers with 16 gpm or less are supplied with a flow valve which is mounted on the bracket. Two sets of hoses are supplied: one set of hoses connects from the hammer to the valve; the other set connects from the valve to the skid steer.

6. Connect the hydraulic lines as follows.

- Hammers without a flow regulator valve. Refer to Figures 7-9 and 7-12:
  a. Connect the pressure hose to the hammer port marked "P".
  b. Connect the return line to the port marked "T".
  c. Connect the pressure and return lines to their corresponding carrier quick disconnects.
- Hammers with a flow regulator valve. Refer to Figures 7-8, 7-10, and 7-12.
  a. Connect the hammer-to-valve pressure hose to the hammer port marked "P" and to the port on the bottom of valve marked "P2".
  b. Connect valve-to-carrier pressure hose to the port on the top of the valve marked "P1" and to the carrier pressure quick disconnect (or pressure line).
  c. Connect the hammer-to-valve return (tank) hose to the hammer port marked "T" and to the port on the bottom of the valve marked "T1".
  d. Connect the valve-to-carrier return hose to the port on the top of the valve marked "T2" and to the carrier return quick disconnect (or return line).

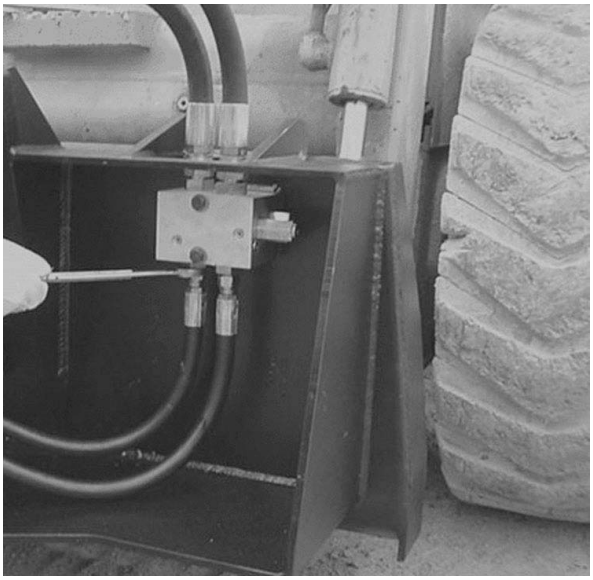


Figure 7-10.

- Hammers with a union bulkhead connector. Refer to Figures 7-11 and 7-12.
  a. Connect the hydraulic lines to the Hy-Ram ports. The port marked "P" is the pressure port; the port marked "T" is the return or tank port.
  b. Connect the two pressure hoses and the two return hoses through the bulkhead connector.
  c. Connect the pressure and return lines to the carrier quick disconnects.

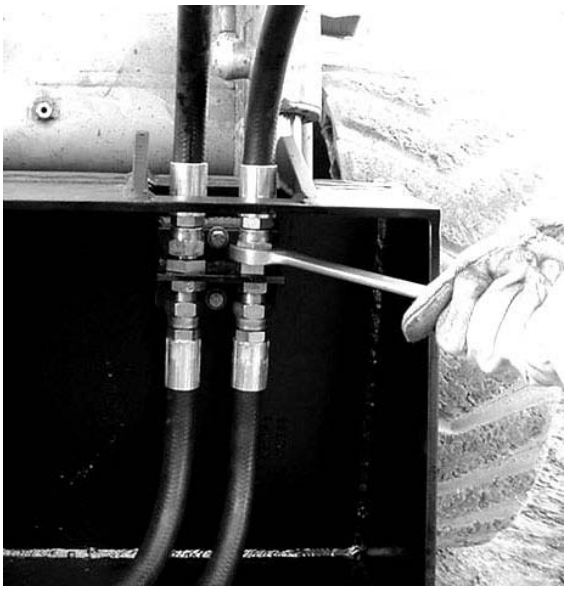


Figure 7-11.

Figure 7-12.

7.8 Removing the Hy-Ram from the Carrier

WARNING

All directions and signals must be agreed upon beforehand with the assistant. Keep hands well clear of bores and boom pin areas when removing the hydraulic hammer. Do not touch any parts when the boom is moving.

CAUTION

Collect any oil which leaks out and dispose of it correctly.

Removal of the Hy-Ram is done in reverse order of attachment unless otherwise stated.

SECTION 8.0
DEMOLITION TOOL

8.1 Demolition Tool

Only use genuine Allied demolition tools. Use of other demolition tools may render the warranty invalid.

It is important that the demolition tools be used correctly, especially longer demolition tools which are more susceptible to damage from prying. Pay particular attention to Section 9.0 Operation.

Demolition tools shall only be remachined on suitable equipment. Conical and blunt demolition tools can be remachined on a lathe with carbide tooling. Chisels can be sharpened on a shaping or milling machine. During remachining, the demolition tool must be cooled thoroughly with liquid coolant.

Never attempt to burn or weld the demolition tools. The high temperatures involved can damage the demolition tools.

8.3 Installing the Demolition Tool

WARNING

The demolition tool shall only be installed in the way described. Failure to do so could allow the demolition tool to be driven out of the tool holder with force possibly causing bodily injury or physical damage.

WARNING

Always wear safety glasses and gloves when installing the demolition tool and clear the area of bystanders. Metal chips and debris may fly off when hammering the pins in or out, injuring workers or bystanders.

8.3.1 Locking Pin Style - Installation

None of the small Hy-Rams have the locking pin style demolition tool.

8.3.2 Spring Pin Style - Installation

None of the small Hy-Rams have the spring pin style demolition tool.

8.3.3 Retainer Pin/Plunger Spring Style - Installation

None of the small Hy-Rams have the plunger spring style demolition tool.

8.3.4 Retainer Pin/Spring Pin Style Installation

(Refer to Figure 8-1.)

1. Position hammer horizontally to allow access from below.
2. Using a hammer and drift pin, drive the spring pin that holds the retainer pin out of the spring pin hole.
3. Push up from the bottom on the retainer pin to remove it.

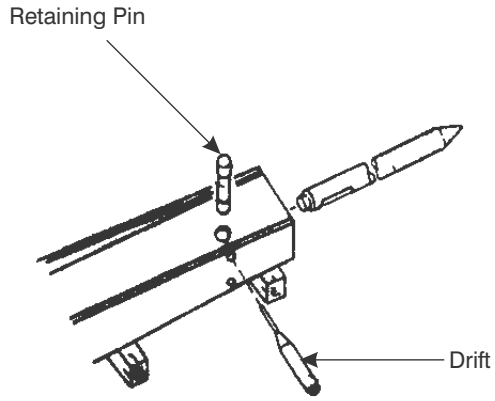


Figure 8-1. Installing the Demolition Tool

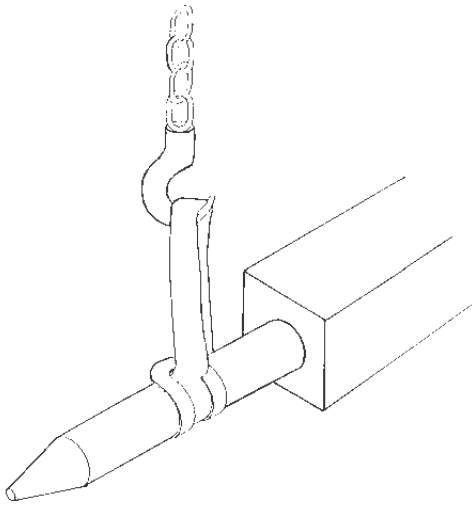


Figure 8-2. Lifting Demolition Tool

4. Clean tool holder bore and upper half of tool.
5. Lubricate the shank of the demolition tool with Allied Chisel Paste.
6. Using a hoist, lift the demolition tool and insert it into tool holder bore, turning it until the slot in the tool is in line with the retainer pin hole.
7. Insert the retainer pin in the retainer pin bore turning it until the slot in the retainer pin is in line with spring pin bore.
8. Using a hammer and drift pin, drive the spring pin into its bore until it seats into the slot on the retainer pin.

8.4 Removing The Demolition Tool

8.4.1 Tools that may be required:

- Hand sledge
- Large size screwdriver
- 3/8-inch diameter x 8-inch long rod

8.4.2 Locking Pin Style - Removal

None of the small Hy-Rams have the locking pin style demolition tool.

8.4.3 Spring Pin Style - Removal

None of the small Hy-Rams have the spring pin style demolition tool.

8.4.4 Retainer Pin/Plunger Spring Style - Removal

None of the small Hy-Rams have the retainer pin/plunger spring style demolition tool.

8.4.5 Retainer Pin/Spring Pin Style - Removal

1. Position the Hy-Ram horizontally to allow access from below.
2. Using hammer and drift pin, drive the spring pin that holds the retainer pin out of spring pin bore.

3. Push up on the retainer pin to remove it from its bore.
4. Using a hoist, remove the demolition tool from the Hy-Ram.
5. Reinstall retainer and spring pins to avoid losing them.
6. Refer to Section 13.0 for Storage Instructions.

8.5 Manually Lubricating the Demolition Tool

(Refer to Figure 8-3.)

Allied Chisel Paste is recommended for lubrication. If Allied Chisel Paste is unavailable, a high quality, petroleum based, lubricating grease with molybdenum disulfide can be used.

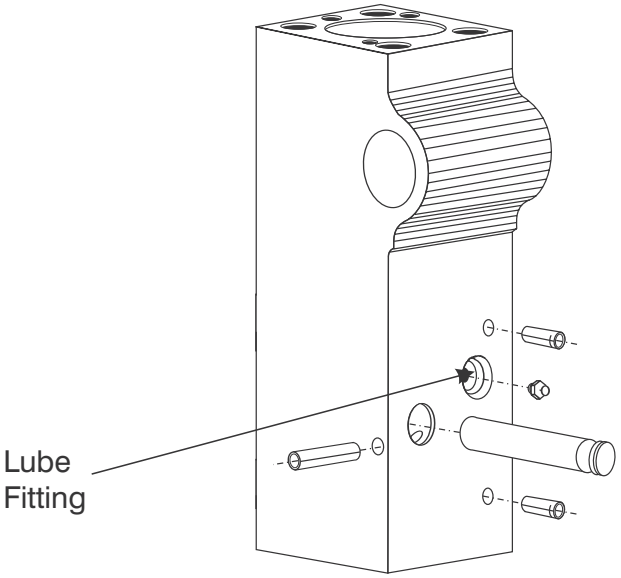


Figure 8-3. Lubricating the Demolition Tool

WARNING

Serious injury or death could result if the hammer falls from the carrier. Make sure that all mounting hardware is secure before lubrication or any other maintenance.

On Skid Steers, be sure that attachment locking pins are securely engaged.

The demolition tool must be lubricated every two hours during operation as follows:

1. Check that hammer is securely mounted to carrier; on skid steers, be sure attachment locking pins are securely engaged.

CAUTION

Be sure to maintain contact pressure on the demolition tool during lubrication procedure or hammer could be damaged.

2. On level ground, stand the hammer vertically on the demolition tool and apply contact pressure. This ensures that the tool is in contact with the impact ring to prevent grease from entering piston area.

WARNING

Serious injury or death could result if carrier is not properly secured and locked when performing any carrier or hammer maintenance. Follow all safety instructions included in carrier manual and the CIMA Safety Manual supplied with hammer.

3. Block carrier wheels to ensure carrier stability.
4. Shut off carrier and engage carrier interlock. Operator shall remain in cab.

WARNING
DO NOT crawl between carrier and hammer. Serious injury could result.

5. Assistant: Reach around hammer from the side, remove cover plug and attach grease gun to lubrication fitting as shown in Figure 8-3.
6. Lubricate until grease emerges from the gap between the tool bushing and the demolition tool.

8.5.1. Allied AutoLube Automatic Lubrication System

The Allied AutoLube Automatic Lubrication System is not used on the small Hy-Ram hammers covered in this manual.

8.5.1.1 Using the AutoLube During Under Water Operation

WARNING
Never use a Model 700B, 711B, 715B, or 725B Hy-Ram Hammer under water. These models are not built for under water use.

SECTION 9.0
OPERATION

9.1 Operator Check List

Before operating the Hy-Ram, inspect the following:

- Check that hose and tube connections are secure.
- Check all fasteners for wear and tightness.
- Check all fasteners according to the maintenance schedule (see Section 11.0).
- Check that demolition tool is inserted properly.
- Be sure scheduled maintenance is performed before operating the Hy-Ram.
- Frequently check the oil temperature. The temperature of the hydraulic oil must never exceed 176ºF. [80ºC.].
- Be sure all tools that will be required for functions to be performed are available.
- Remember to lubricate the demolition tool every two hours during operation.

9.2 Tools Required by Operator

No special tools are required, but the following tools are recommended:

- safety glasses & gloves
- sledge hammer
- drift pin
- 3/4-inch socket wrench
- 3/4-inch sockets
- grease gun
- open end wrenches
- caliper for checking tool wear

9.3 Operating the Hy-Ram

WARNING

The precharge chamber shall only be filled with 99.8% pure nitrogen gas. Make sure no other gas, i.e., air or oxygen, is allowed into the precharge chamber; this could result in an explosion.

CAUTION

Check the oil temperature often to ensure it does not exceed 176ºF [80ºC]. If higher temperatures are measured in the tank, refer to Chapter 10. Troubleshooting.

9.4 Startup

WARNING

Close the protective shield on the operator's cab to prevent possible injury from flying rock splinters during hammer operation.

All persons in the immediate area, including the carrier operator, must wear ear protection.

The Hy-Ram shall only be operated from the operator's seat and shall not be put into operation until both carrier and hammer are in the correct position.

WARNING

Immediately cease operation of the Hy-Ram if anyone moves into the danger area, which is greater for hammer operation than for carrier operation due to the risk of flying debris.
When working with a hydraulic hammer, operation of the carrier is governed by the carrier manufacturer's safety regulations.

On the Model 725B, the hydraulic fluid can be warmed up by operating the 725B in pressure-reduced mode. This is done by turning on the operating switch with **NO** contact pressure on the demolition tool. After oil has been warmed to operating temperature, turn off the hammer, position the tool for operation, then restart the hammer.

On all models, when contact pressure is applied to the demolition tool, the piston in the Hy-Ram is driven up to its starting position. When the foot switch is activated, the hammer cycles the demolition tool up and down.

9.5 Advance from Outer Edge

(Refer to Figure 9-1.)

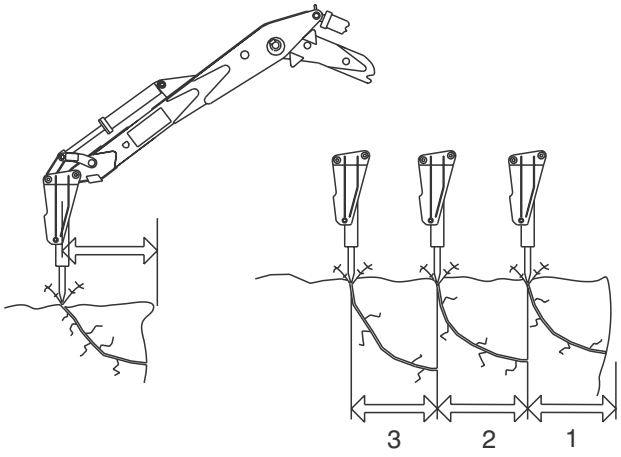


Figure 9-1. Advancing From Outer Edge

Start breaking large and hard rocks near the outer edge.

Place the tool a short distance from the edge of the material. If the rock does not break away after thirty (30) seconds (maximum), the advance must either be reduced or breaking restarted at a different point.

9.6 Angle of Operation
(Refer to Figure 9-2.)

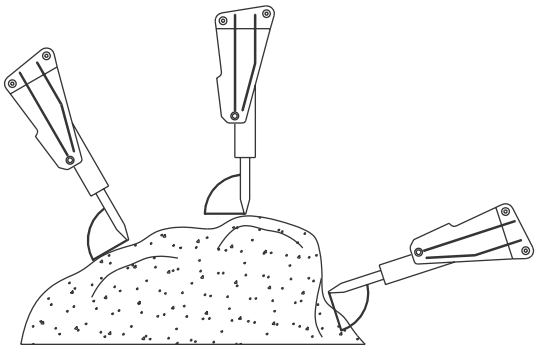


Figure 9-2. Angle Of Operation

Always place the demolition tool at right angles to the surface of the material. If not placed at right angles, the hammer will wear more quickly, leading to permanent damage.

9.7 Hammer Rocking
(Refer to Figure 9-3.)

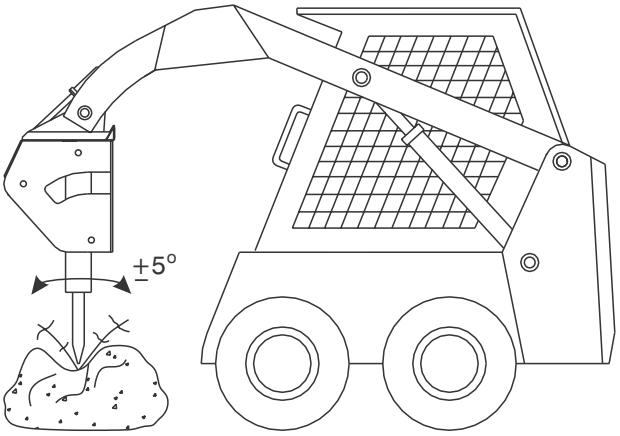


Figure 9-3. Rocking The Hammer

The hammer may be gently rocked backward and forward at a maximum of 5º to allow dust to escape which would otherwise dampen the impact power of the demolition tool. Do not rock the hammer at angles greater than 5º or bending strain will occur damaging the demolition tool and the Hy-Ram.

9.8 Incorrect Use of the Hydraulic Hammer

Carefully read through this section. The following paragraphs describe functions that damage the Hy-Ram or cause personal injury.

9.8.1 Never Use as a Crowbar
(Refer to Figure 9-4.)

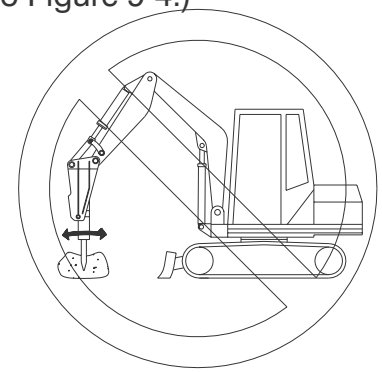


Figure 9-4. Never Use Hy-Ram As A Crowbar

Using the Hy-Ram as a crowbar may cause the demolition tool to break.

9.8.2 Never Drive Demolition Tool into The Material
(Refer to Figure 9-5.)

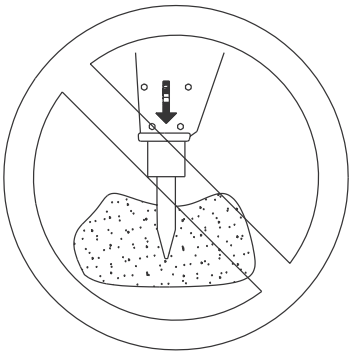


Figure 9-5. Never Drive Tool into Material

If the advance is too large and the hammer is not rocked to release the dust, the demolition tool will be driven into the material, causing the tip to glow red hot and become soft. It then could become wedged in the hole.

9.8.3 Never Pound with the Hammer and Demolition Tool

(Refer to Figure 9-6.)

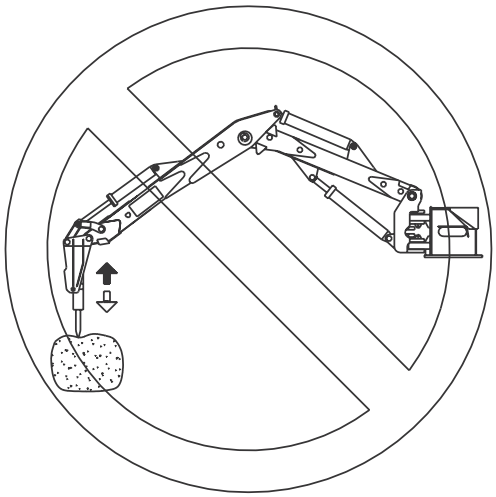


Figure 9-6. Do Not Pound With Hammer

Pounding at material with the hammer could cause damage to the Hy-Ram and the carrier.

CAUTION

The Hy-Ram is not designed to lift or transport loads. This practice will damage the Hy-Ram.

9.8.4 Never Lift or Transport Loads with the Hammer

(Refer to Figure 9-7.)

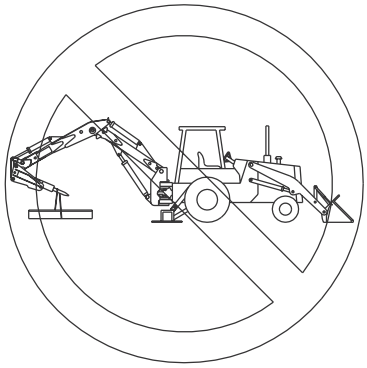


Figure 9-7. Do Not Use Hammmer As Lift Or Transport

9.9 Never Use in or Under Water

WARNING

Never use a 700B, 711B, 715B or 725B Hy-Ram Hammer underwater. These models are not built for underwater use.

9.10 Special Operating Features

9.10.1 Energy Recovery

The small Hy-Rams do not have the Energy Recovery feature.

9.10.2 Two-Speed Operation

The small Hy-Rams do not have the two-speed operation feature.

9.10.3 Auto-Control

The small Hy-Rams do not have the AutoControl feature.

9.10.4 Auto Shut-Off

The Model 725B is equipped with the auto shut-off feature. Automatic shut-off refers to an automatic system of hydraulic pathways and controls which protect the hammer components from damage when the demolition tool is not in impact position. This feature eliminates blank-firing: the hammer automatically shuts down when there is no contact pressure on the tool.

9.10.5 Pressure Reduced Mode

The Model 725B is equipped with the pressure-reduced mode feature. Pressure-reduced mode can be used to warm oil by cycling it through the hammer without operating the demolition tool. This is done by turning on the operating switch with

NO contact pressure on the tool. After oil has been warmed to operating temperature, the hammer is turned off, the tool is set for operation, then the hammer is restarted. Refer to Section 9.4 Startup.

9.10.6 Precharge Chamber - All Models

The precharge chamber is located in the cylinder head above the piston and is filled with nitrogen. As the piston moves to its upper most position, the nitrogen is compressed. The force arising from this compression is transferred to the top of the piston and helps drive the piston down.

Both the precharge chamber and the hydraulic system of the carrier provide the force for the working stroke. This design feature makes the impact energy of the hammer largely independent of fluctuations in the hydraulic system of the carrier during operation.

9.11 Special Operation Environments

9.11.1 Working Underground

When using the Hy-Ram underground (tunnelling or mining applications) special regulations may apply. Additional considerations include:

- Use water sprays to suppress dust.
- Use fire-resistant hydraulic fluids when required.

Hydraulic systems using fire resistant fluids require special engineering consideration when using the Hy-Ram. With some fluids, decreased flow and/or pressure to the hammer may be necesasry. Contact Allied well before installation for specific parameters for your particular fluid.

9.11.2 Working Underwater

WARNING

Never use a 700B, 711B, 715B or 725B Hy-Ram Hammer under water. These models are not built for under water use.

9.12 Working in High Outside Temperatures

Check the oil temperature frequently to ensure it does not exceed 176ºF [80ºC]. If higher temperatures are measured in the tank, a heat exchanger must be installed. Use only hydraulic oils with adequate viscosity.

CAUTION

When working in temperature conditions below minus 4ºF [-20ºC], the hydraulic hammer shall not be put into operation while the hydraulic oil is still cold. Operating the hammer with cold hydraulic oil may cause the seals in the hammer to break and the diaphragm in the high-pressure accumulator to tear. Observe the carrier manufacturer's regulations.

9.13 Working in Low Outside Temperatures

When the temperature is below minus 4° F. (-20° C.), warm up the oil by running the carrier before starting the Hy-Ram. Once the oil has reached 32° F. (0° C.), the Model 725B can be run in pressure-reduced mode as described in Section 9.4 Startup, to flush out the cold oil and warm circulating oil to operating temperature of 140° F. (60° C.).

Keep oil circulating in the carrier during breaks in work so that the oil does not get too cold for normal operation.

SECTION 10.0
OPERATOR TROUBLESHOOTING CHART

WARNING

Before removing the hydraulic lines, bleed off all hydraulic pressure.
When rectifying faults, observe all safety regulations.

CAUTION

Before disassembling the Hy-Ram, bleed all nitrogen pressure in the precharge chamber.

Problem	Cause	Remedy
Hammer does not start.	Pressure and return lines crossed.	Reverse hoses.
	Quick disconnects not opening.	Repair or replace.
	Insufficient impact pressure.	Force tool full into tool holder by pressing down with the carrier.
	Nitrogen precharge is too high.	Check and reset pressure if needed.
	Operating pressure is too low.	Check and reset pressure if needed.
	Fault in electrical circuit.	Check for power at solenoid.
Hammer runs slow.	Insufficient flow of oil.	Increase flow if possible.
	Return oil pressure too high.	Find and repair restriction to return flow.
	Nitrogen precharge is too high.	Check and reset pressure as needed.
Reduced breaking power.	Operating pressure is too low.	Check and reset pressure as needed.
	Nitrogen precharge pressure is too low.	Check and reset as needed.
	Operating temperature is too high.	Correct overheating problem.
	Tool binding in bushing(s).	Repair or replace as needed—check for proper lubrication.
	Return line pressure is too high.	Locate and correct problem.

CHART (cont')

10.0 OPERATOR TROUBLESHOOTING

Problem	Cause	Remedy
Operating pressure is too low.	Relief valve set too low.	Reset pressure, check dynamically.
	Damaged relief cartridge or seals.	Inspect-repair or replace.
	Insufficient pump delivery (low flow means low pressure at the hammer).	Check pump with flow meter (check dynamic pressure).
	Flow control not set properly.	Set flow control.
Return line pressure too high.	Failed hoses or blockage at crimp on fitting.	Replace hoses that are frayed or damaged.
	Heat exchanger and return filters.	Change filter and repair or replace plugged heat exchanger.
	Return line connected to valve bank.	Hammer return must pass directly to tank or filter.
	Hoses or fittings too small for installation.	Always use proper hose and fitting sizes.
Operating temperature too high.	Operating pressure too high.	Adjust as needed.
	Excessive leakage through hammer.	Repair or replace worn parts.
	Ambient temperature is high.	A cooler may be necessary — check with carrier manufacturer.
	Tool binding in bushing(s).	Repair or replace as needed. Check for proper lubrication.
	Return line pressure is too high.	Locate and correct problem.
	Excessive cycle time.	Limit Hy-Ram operation to 30 second bursts.
	Engine speed too high.	Repair flow control.
	Breaking cycle too long.	Reduce advance.

SECTION 11.0
CARE AND MAINTENANCE

11.1 Care and Maintenance Schedule

During Shift

- Lubricate demolition tool every two hours or anytime the tool appears dry. (See 8-5.)
- Check lube fitting for damage.

Daily

- Tighten threaded connections (during first 50 hours).
- Check for leaks in hydraulic lines.
- Check that pipe clamps fit correctly.
- Check mounting brackets for wear.

Weekly

- Check threaded connections.
- Check mounting bracket pins for wear.
- Check retainer pin and spring pin in tool holder for tight fit.
- Check demolition tool for burrs. Pay special attention to slot area.

Every Two Weeks

- Check precharge chamber pressure.
- Check demolition tool for wear.
- Check tool bushing for wear.
- Check side plates for wear.

Monthly

- Check piston impact surface for dents.
- Check impact surface (top) of demolition tool for chips.
- Check impact surface (top) of tool bushing for cracks, chips, wear or looseness.

As Required

- Replace bent and damaged tubes.
- Replace any damaged hose(s).
- Clean hydraulic oil filter.

11.1.1 Warranty Protection

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

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

11.2 Care and Maintenance Instructions

Refer to sections 11.2.1 thru 11.2.15.

11.2.1 Checking Hydraulic Lines for Leaks Before Starting Work

1. Visually check all hydraulic lines (tubes and hoses) from the pump to the hydraulic hammer and back into the tank.
2. Tighten any loose fasteners and hose clamps.
3. Replace any damaged tubes or hoses.

11.2.2 Daily Checking for Cracks

Check the side plates for cracks everyday.

11.2.3 Checking Wear To The Tool Bushing

(Refer to Figure 11-1.)

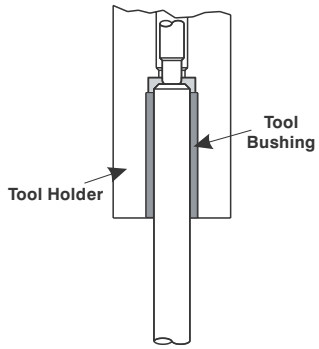


Figure 11-1. Checking Wear Of Tool Bushing

Check the inside diameter of the tool bushing every time the demolition tool is changed or at the least, every 100 operating hours. Determine the allowable diameter from the following table. If the diameter has increased to more than the specified dimension, the tool bushing must be replaced.

Tool Bushing Inside Diameter			
700B	711B	715B	725B
2.00 in. 51mm	2.56 in. 65mm	2.68 in. 68mm	3.07 in. 78mm

NOTE

It is recommended that the Hy-Ram be taken to an Allied distributor service department to make this repair.

The tool bushing must be replaced by a service technician in a suitably equipped workshop.

11.2.4 Checking Impact Face of Piston for Wear

The impact face of the piston must be checked each time the demolition tool is changed or at least once a month. After the demolition tool has been removed, proceed as follows:

1. Shine a light on the piston's impact surface and check for dents or chipping.
2. Do not operate if dents or chips are evident.
3. Contact your authorized Allied service center.

11.2.5 Checking Wear to the Retainer Bars

The small Hy-Rams do not have retainer bars.

11.2.6 Checking Wear to the Demolition Tool

(Refer to Figure 11-2.)

Check the demolition tool diameter each time it is changed or at the least, every 100 operating hours. If the shank diameter of the demolition tool has worn to less than the dimension listed in the following table, the demolition tool must be replaced.

Burrs on the shank of the demolition tool must be smoothed off carefully. A grinder may be used observing the following CAUTION .

CAUTION

Do not allow the shank of the tool to get too hot if using a grinder to remove burrs.

Demolition Tool Outside Diameter			
700B	711B	715B	725B
1.65 in 42mm	2.25 in. 56mm	2.56 in. 65mm	2.95 in. 75mm

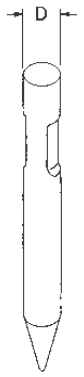


Figure 11-2. Check Wear To Demolition Tool

11.2.7 Inspect Dust Ring

The small Hy-Ram hammers do not have a dust ring.

11.2.8 Check Tightness Of Threaded Connections

The hydraulic hammer threaded connections are subjected to high stresses. All hydraulic hammer threaded connections must be checked daily for the first 50 operating hours and thereafter once a week. Loose connections shall be tightened to the specified torque. Refer to the Torque Table below for applicable connections. Figure 11-3 on the following page shows the item numbers referenced in the table. This table and figure 11-3 provide torque information and location for Models 700B, 711B, 715B and 725B.

Torque Table for Allied Hy-Ram Models 700B, 711B, 715B, and 725B

Connection	Item No.	Interval	Model	Tool Required	Torque Req'd. Ft. Lbs. (N·m)
Tension Bolts (see Notes 1,2,3)	1	As Required	700B 711B 715B 725B	Socket wrench, 30 mm Socket wrench, 36 mm Socket wrench, 36 mm Socket wrench, 41 mm	75 (100)+60° +60°) 75 (100) +60° +90° 75 (100) +60° +90° 150 (200) +60° +90°
Fill Valve G	2	Weekly	700B 711B 715B 725B	Socket wrench 7/8 in.	96 (130)
Connections P & T	3	Weekly	700B 711B 715B 725B	Open-ended wrench 7/8 to 1-1/4 in.	48 (65) 66 (90) 66 (90) 66 (90)
Locking pin Dowel pin	4	As Required	700B 711B 715B 725B	Pin punch 1/4 to 1/2 in. and hand hammer	
Lubricating Nipple	5	As Reuired	700B 711B 715B 725B	Socket wrench 9/16 in.	15 (20)
Hose conections on hydraulic hammer		As Required	700B 711B 715B 725B	Open-ended wrench 7/8 to 1-1/4 in.	—

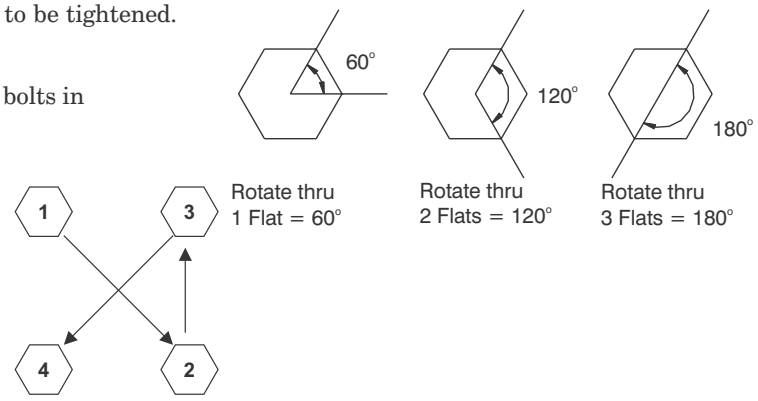
**A flat is one of the six hexagonal edges of the top of the tension bolts. The number in parentheses ( ) indicates the number of flats that correspond to the number of degrees to be tightened.

In each of the following steps, tighten the tension bolts in a diagonal sequence as shown to the right.

Step 1: Tighten all bolts to specified torque.

Step 2: Tighten all bolts specified number of degrees.

Step 3: Tighten all bolts specified number of degrees.



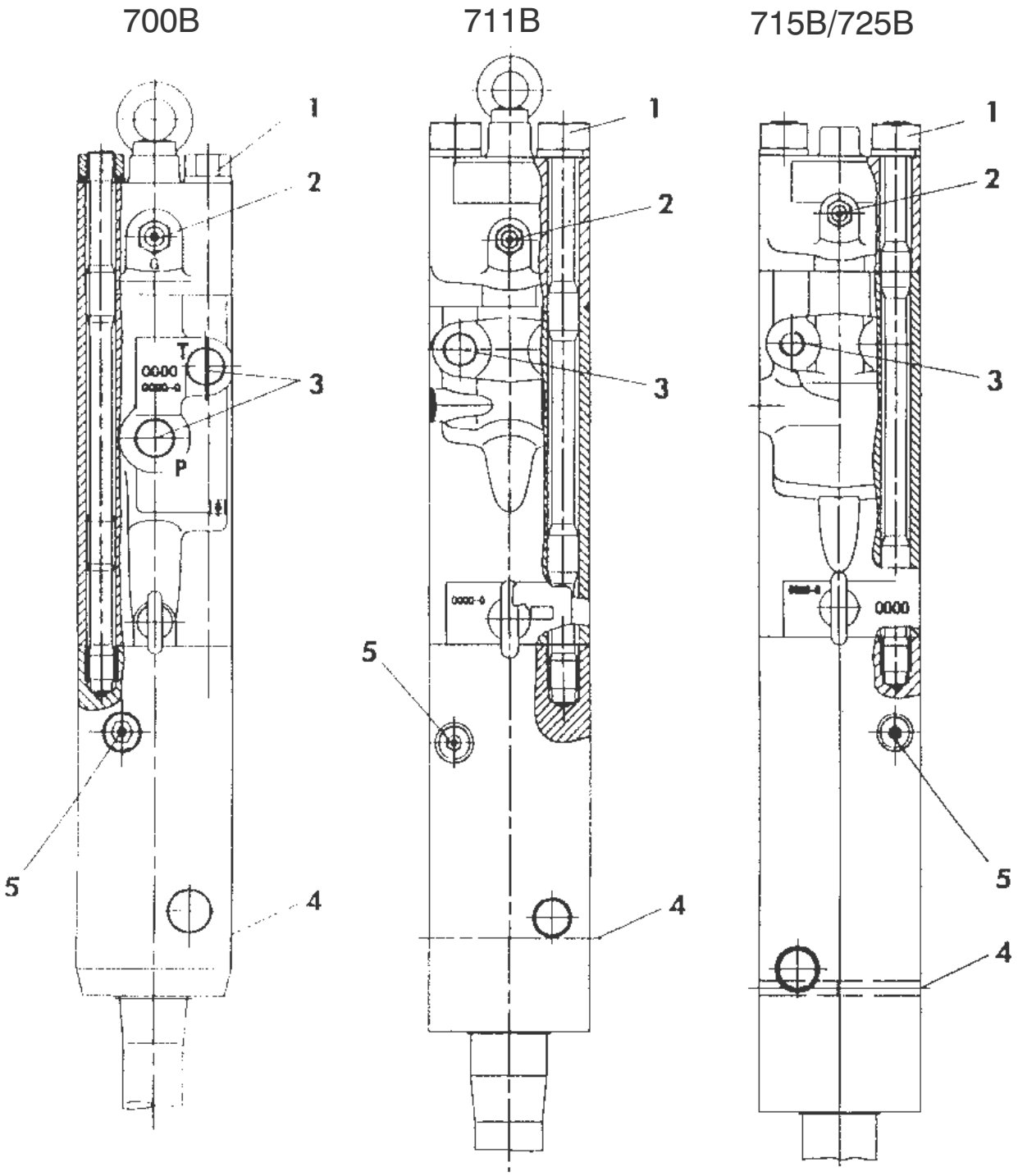


Figure 11-3. Models 700B, 711B, 715B, 725B

Torque Items on Hammer

11.2.9 Checking the Nitrogen Precharge Chamber.

(Refer to Figure 11-4.)

> **WARNING**
> When checking the chamber, make sure no one is in the vicinity of the demolition tool. If the demolition tool has jammed, an increase in pressure in the chamber may release it suddenly.

1. Clean the area around the fill valve plug **G** on cylinder head. Compressed air can be used with caution to blow dirt away.
2. To check the pressure, lay the Hy-Ram on its side with no contact pressure on the demolition tool.
3. Remove the screw plug from filling valve **G**.
4. Firmly insert test gauge hose into fill valve. Refer to Figure 11-4.
5. Read the pressure.

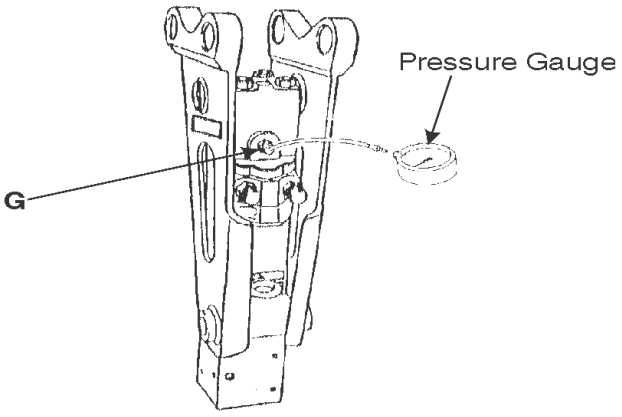


Figure 11-4. Typical Hy-Ram Nitrogen Precharge Chamber

6. Refer to the following table for the correct pressure. A tolerance of plus 0/minus 5 psi is acceptable.

Nitrogen Precharge Chamber Pressure psi (bar) 70°F. (21°C.)			
700B	711B	715B	725B
235 psi 16 bar	150 psi 10 bar	185 psi 13 bar	215 psi 15 bar
150°F. (65°C.)			
270 psi 19 bar	175 psi 12 bar	215 psi 15 bar	250 psi 17 bar

7. After pressure reading is obtained, quickly remove test gauge nozzle from fill valve **G**. The fill valve check will automatically close to seal.
8. Replace fill plug in fill valve.

> **WARNING**
> Before removing the complete fill valve **G** for repair, the precharge chamber must be totally depressurized or injury could result.

> **CAUTION**
> Use only the hose nozzle to relieve the pressure. Using nails, screw drivers or similar objects will damage the fill valve.

11.2.10 Refilling the Precharge Chamber

(Refer to Figure 11-5.)

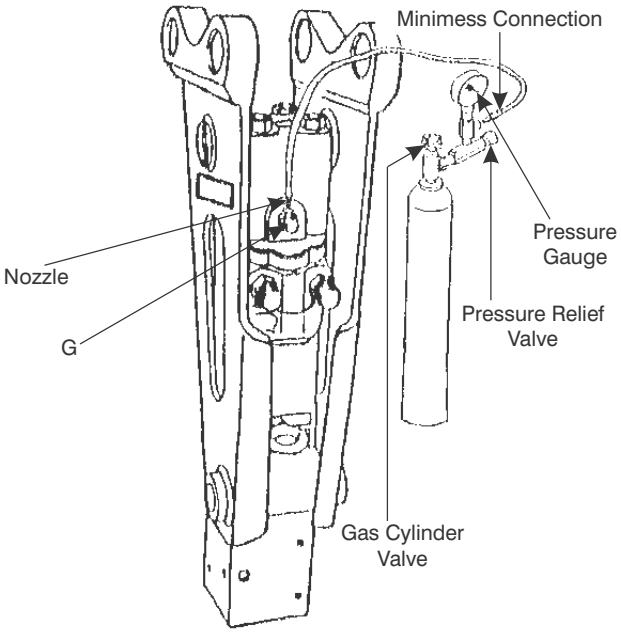


Figure 11-5. Filling the Nitrogen Precharge Chamber

WARNING

The nitrogen precharge chamber shall only be filled with 99.8% pure nitrogen gas. Make sure no other gas, e.g. air or oxygen, is allowed into the precharge chamber: THIS COULD RESULT IN AN EXPLOSION!

When the pressure in the nitrogen precharge chamber drops more than 15 psi (1 bar) at 70°F. (21°C.) or 20 psi (1.5 bar) at 150°F. (65°C.), the chamber must be refilled as follows:

1. Connect nitrogen regulator valve to nitrogen cylinder.
2. Clean the area around fill valve plug on cylinder head.
3. Connect one nozzle of the filling hose to the nitrogen regulator valve.
4. Back out the nitrogen regulator pressure adjustment.
5. Open valve on nitrogen cylinder.
6. Remove plug from fill valve **G**.
7. Carefully blow out filler assembly to remove any internal foreign matter.
8. Press free nozzle of filling hose into fill valve **G.** Maintain in this position by applying a steady but moderate force.
9. Open the nitrogen regulator valve slowly allowing nitrogen into precharge chamber. Pressure increase can be read on the pressure gauge.
10. Allow approximately 15 seconds for gas chamber in Hy-Ram to fill, or, under quiet conditions, until the gas can no longer be heard entering the cylinder head.
11. Close the nitrogen cylinder valve when the reference value has been reached. Quickly remove fill nozzle from fill valve. The fill valve check will automatically close to seal. Refer to the table on page 11-6 for the correct pressure for the model number Hy-Ram being filled. Pressures are given for temperatures at 70°F. (21°C.) and 150°F. (65°C.)
12. Bleed remaining gas from regulator and disconnect it from nitrogen tank

CAUTION

Use only the hose nozzle to relieve the pressure. Using nails, screw drivers or similar objects will damage the filling valve.

13. Press free nozzle of test hose into fill valve **G** and read pressure.
14. Make any adjustments necessary so that the correct pressure is set.
15. Close fill valve **G** with screw plug.
16. Remove nitrogen regulator from cylinder and recap.

11.2.11 Checking the High-Pressure Accumulator

The small Hy-Rams do not have a high-pressure accumulator.

11.2.12 Checking the Pins on the Top Mounting Bracket for Wear

The small Hy-Rams do not have top mounting brackets.

11.2.13 Checking the Side Plates

The side plates shall be checked at least twice a month for cracks or heavy wear. Contact Allied for recommended repair or rebuild procedures.

11.2.14 Checking and Cleaning the Hydraulic Oil Filter

1. On new hydraulic hammer installations, clean the oil filter for the first time after eight (8) operating hours, and the second time after fifty (50) operating hours.
2. Thereafter, check the oil filter every 500 hours and clean if necessary.

11.2.15 Checking and Cleaning the Hydraulic Oil Filter on the Carrier

Refer to the carrier manual and change and clean the oil filter in the carrier as instructed.

SECTION 12.0
LIFTING & TRANSPORT

If the hammer is to be transported independently of the carrier;

1. Remove all loose debris from hammer.
2. Follow removal instructions in Section 7.9.
3. Secure hoses to unit to avoid accidental damage.
4. Lift the hammer at approved lift points only with appropriate lifting equipment. See Figure 12-1.
5. Adequately stabilize and secure the hammer for transport.

If the hammer is transported while installed on the carrier:

1. Remove all loose debris from hammer.
2. Secure hoses to unit to avoid accidental damage.
3. Inspect the mounting pins and hardware for damage and integrity.

WARNING

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

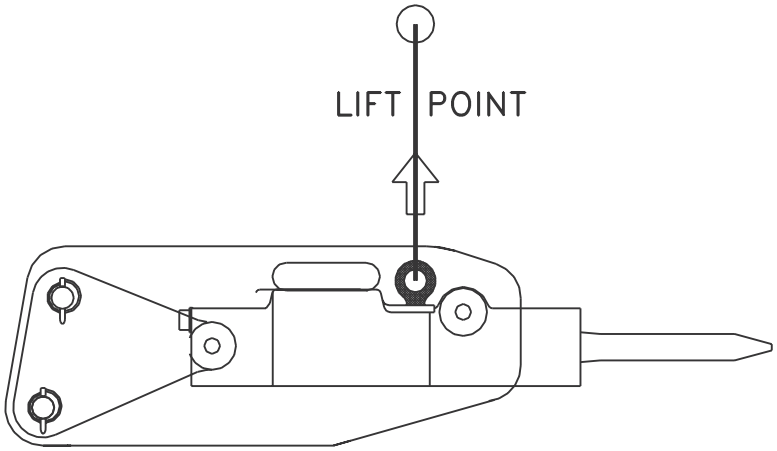


Figure 12-1. Hammer Lift Point

SECTION 13.0
STORAGE OF THE HAMMER

13.1 Storing Hy-Ram on the Carrier

The Hy-Ram shall be stored in the vertical position with the tool pushed all the way in. This lifts the piston into its uppermost position. In this position, the sliding surfaces are covered by oil.

13.2 Short Term Hy-Ram Storage off the Carrier—14 Days or Less

1. The Hy-Ram may be stored on or off the carrier in a vertical or horizontal position with no special storage requirements.
2. If storing the Hy-Ram in a horizontal position, the top of the hammer should be higher than the tool end to prevent water from entering the tool holder.
3. If outside, cover with a waterproof tarp.

13.3 Long Term Hy-Ram Storage off the Carrier—More than 14 Days

1. Refer to Section 8.4 and remove the demolition tool from the Hy-Ram.
2. Drain the nitrogen precharge chamber.
3. Remove the hydraulic hoses.

CAUTION

Several liters of oil will run out when threaded connections **P** and **T** are opened. This oil must be collected and disposed of correctly.

4. Open threaded connections **P** and **T**.
5. Using a rod or tube, push the piston to its highest position.
6. Block the piston with a rod or tube so it cannot return to the down or out position.
7. Close threaded connections **P** and **T**.
8. Close the bore for the demolition tool using either the protective plug or a clean rag.
9. Fill the connections on the hammer with hydraulic oil.
10. Plug all hydraulic connections.

CAUTION

DO NOT store the Hy-Ram in the horizontal position.

The weight of the piston can cause flattening and damage to the seals and O-rings when storing a Hy-Ram in the horizontal position.

Surface condensation on the normally exposed lower area of the piston can cause destructive rust and pitting of the piston in the lower seal contact area.

CAUTION

Surface condensation on the normally exposed lower area of the piston can cause destructive rust and pitting of the piston in the lower seal contact area.

11. Store the Hy-Ram blocked in an upright position or on a stand. The piston must be blocked in the upper position.
12. If possible, stand the hammer upside down. The piston will slide to the top of the hammer.

> **CAUTION**
> Secure the hammer so that it cannot fall over.

13. If outside, cover hammer with a waterproof tarp.

Construction Products, LLC

3900 Kelley Avenue, Cleveland, Ohio 44114
Tel: 216-431-2600 Fax: 216-431-2601
e-mail: Sales@AlliedCP.com
website: http://www.AlliedCP.com