



# S-240 Series Power Extruder

# User Manual

Version 2.2

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### **IMPORTANT**

**Before beginning installation procedures, these Installation and Operating Instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.**

### **Information Record**

Model #: S-240

Sold By: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

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## IMPORTANT SAFETY INSTRUCTIONS

- **Safety is a priority in the design of our remediation equipment. This manual highlights the areas that are important when you install and use this equipment. Following is a partial list of safety procedures:**
- **Wear chemically resistant clothing**
- **Wear safety goggles to protect your eyes**
- **Point air and discharge hoses away from your person and other personnel**
- **Turn off the air supply to the pump prior to service**
- **Avoid the pinch points during assembly and disassembly of the pumps**
- **Properly protect air supply and fluid discharge hoses from damage**



### **WARNING!**

**Any electrical components used in an explosive atmosphere must be located in compliance with Chapter 5 of the National Electrical Code and any other local codes. This applies to electrically powered air compressors as well.**

# RECEIVING

To insure optimum performance it is strongly suggested that the operators read the manual prior to using the MVP Pumps. Failure to follow the installation and operation instructions may result in voiding the warranty of the equipment.

## **1.0 Models Covered**

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This Manual covers the following DGSI models:  
S-240

## **2.0 Receiving Procedures**

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### **2.1 Damage in Transit**

This product has been packed to insure that it arrives at your location free from damage. Damage in shipping is rare but may happen so always check for evidence of damage or loss before signing for any shipment. Do not sign for any shipment with apparent damage until the carrier notes damage on the receipt and signs same. Do not discard original packing materials until equipment has been fully examined in operation. If damage to contents is evident, an examination and report by the transport agent must be requested. If damage is found after the carton is unpacked, notify the transport agent immediately to arrange an inspection and provide you necessary forms for filing a concealed damage report. Concealed damage must be reported to and inspected by the carrier within ten days.

## **3.0 Typical Tools for assembly**

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- Standard wrenches

## **4.0 Unpacking**

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Remove the S-240 from the packing crate. Check the contents you have received against the enclosed packing slip. Check all components for shipping damage and/or shortages. Notify Durham Geo Enterprises, Inc. immediately if damages or shortages are found.

## **5.0    Setup Procedures**

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### **5.1 Placement of Base Unit**

Place the Base Unit on a sturdy, level surface. Place the Hydraulic Power Unit at a location close to the Hydraulic Cylinder.

### **5.1 Connecting Hydraulic Hoses**

There are two hydraulic hoses supplied with the Power Extruder. Each hose is labeled to assist you in assembly. If for any reason the hoses are not labeled, remember that the manual hydraulic valve will work in either direction. Insure that one end of one hose is connected to the cylinder and the other end of the hose is connected to the hydraulic valve, repeat with the other hose. Connect the hoses and tighten them securely, insure that the hoses are not kinked or bent too sharply. The hydraulic pressure is quite high and the hoses will try to straighten out when loading.

### **5.2 Check Oil Reservoir**

Plug the hydraulic power unit in and turn the power **switch** on. Move the control valve **handle** towards the hydraulic cylinder until the hydraulic cylinder rod is fully retracted. Remove the **oil cap** and check the fluid level. Add hydraulic oil if needed (A good grade of hydraulic oil is required). Extend and retract the hydraulic cylinder several times and recheck the oil level. Add more oil if necessary.

**CAUTION: NEVER** fill the reservoir with the cylinder rod extended. This will cause the reservoir to over flow when the ram is retracted.

**The unit is now ready to use.**

### **NOTE:**

During shipping and assembly air will be introduced into the hydraulic system, after approximately 2 weeks of use most of this air will be removed from the system, recheck the reservoir level. Fill if required. Check once per month thereafter.

# OPERATING PRINCIPLES

## 6.0 Principles of Operation

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### 6.1 Operating Instructions

Plug in unit and turn the switch to the on position. With the **Piston** in the fully retracted position, loosen the **plastic knobs** on the **3" clamp** move the clamp bolts out of the way and remove the top support. Place a tube, containing a sample, onto the clamp. Make sure that the cutting edge of the sample tube is facing the hydraulic cylinder of the S-240. Move the tube forward until it shoulders against the **Front tube support**.

Slide the clamp forward until it rests 1/4 of the way from the free end of the sample tube. Replace the top support and move the clamping bolts back into position and tighten both plastic knobs until the tube is held down securely. Move the hydraulic control valve handle to the extend position. Stop just before the piston reaches the end of the tube. Adjust the piston, if necessary, for proper entry into the tube.

**Note:** There is a speed control valve on the nose end of the cylinder. **(See page 12 detail B)** Adjust as necessary to control the speed. Shutting this valve off will cause the relief valve to lift and will cause the oil to overheat. Avoid shutting this valve off.

### **CAUTION:**

Keep fingers away from cutting edge of tube and piston. It may be necessary to clean out 1"-2" of material to facilitate piston entry. Continue extending piston until the sample is completely extruded from the tube. Retract piston fully. Loosen the plastic knobs on the 3" clamp and remove the clamp top. Remove the tube and replace the clamp top and tighten the plastic knobs. Turn off and unplug unit.

## **7.0   Accessories**

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### **7.1 Leg Assembly**

The leg assembly consists of two steel frame assemblies. The extruder base has 4 tapped holes on the bottom that will line up with the leg assembly. All necessary fasteners are included with the leg assembly kit. Place the base unit on the legs and insert the 1" long screws through the holes. Put the washers and nuts on and tighten everything securely.

Remove the **Vibration Isolators (Page 12 # 24)** from the hydraulic pump. Set the hydraulic pump on the **cross beam** of both legs. Insert the 1" **long screws** into the 4 holes. Put the **washers** and the **nuts** on and tighten everything securely.

### **CAUTION:**

The base unit of the S-240 is heavy and awkward to handle. To avoid injury, at least 2 people are needed to assemble base onto the leg assembly.

### **7.2 Cylinder Bracket Arm**

To support the weight of the hydraulic cylinder locate the turnbuckle bracket. A single ½-13 bolt is used to joint the two parts together the radius end of the turnbuckle simply rest in the angle bracket of the leg frame. **(See figure on page 13)**

### **7.3 Two inch Accessories**

The 2" Accessories are designed to allow you to extrude 2" O.D. tubes. The kit consists of a 2" **Adapter Plate**, 2" **Holding Clamp**, 2" **Piston**, four 1-1/2" **long screws**, and four 5/16" **lock washers**.

To install these accessories, you must first remove the 5/16"-18 **Socket head cap screws** from the 3" piston. Remove the 3" piston and install the 2" piston. Insert the 2-5/16"-18 screws and tighten them. Remove the two 1" **long screws** and the two 5/16" lock washers holding the front support (Fig 1 #10) in place. Pull the front support from the tie rods. It is not necessary to remove the 3" holding clamp, simply slide it toward the cylinder and out of the way. Slide the 2" holding clamp onto the tie rods.

Replace the front support back onto the tie rods and replace the screws and washers holding it in place. Place the 2" adapter plate on the cylinder side of the front support and line up the four holes on each of them. Make sure that the shoulder on the 2" adapter plate faces the hydraulic cylinder. Put the 5/16" lock washers on the 1-1/2" screws and insert the screws through the four holes in the front support and tighten them.

# MAINTENANCE

## 8.0 Machine Maintenance

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### 8.1 Maintenance

The S-240 is designed to be virtually maintenance free. The hydraulic cylinder rod should be kept clean and the oil reservoir might have to be topped up occasionally.

**CAUTION:**

Never use a wedge or any other type of stop when retracting the piston. Use of a wedge can result in a potentially hazardous situation that could cause damage to personnel or equipment. If you are having difficulty retracting the piston from the sample tube, check the following items:

1. Check that the tube is in line with the end of the extruder and that the piston is not in a bind due to misalignment. Correct any misalignment.
2. Check that the tube is free from damage that will prevent the piston from freely retracting. If your tubes are damaged, cylinder retraction may be facilitated by letting the piston float free in the tube by removing the retaining bolts that attach the piston to the piston rod. You will then need to manually remove the ram.
3. Be sure that you have the appropriate clamp in place and that the clamp is tight against the tube. Be careful not to over tighten the clamp, as this might damage the tube and prevent retraction.

If you have any questions concerning the extruder, contact Durham Geo -Enterprises, Inc. @ 770-465-7557 OR 1-800-837-0864.

## LIMITED WARRANTY

Durham Geo-Enterprises, Inc. / Slope Indicator (“DGSi”) warrants the products manufactured by DGSi to be free of defects of workmanship and material on a product basis. The products accompanied by this Warranty Statement are warranted for a period of ONE (1) YEAR from the date of delivery to the customer. If the customer is an authorized distributor of DGSi’s products, the warranty shall be for a period of ONE (1) YEAR from the date of delivery to the authorized distributor’s customer.

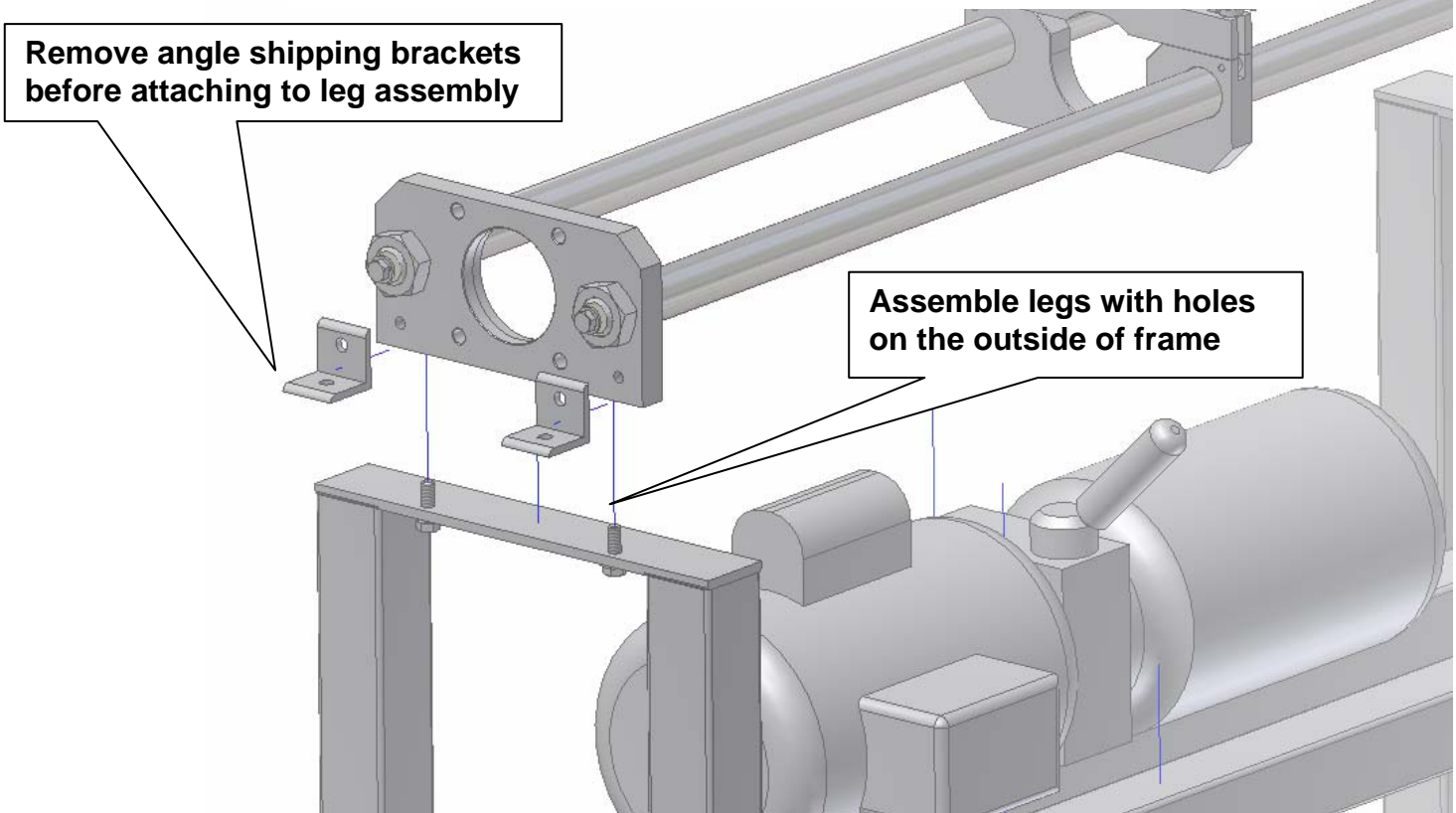
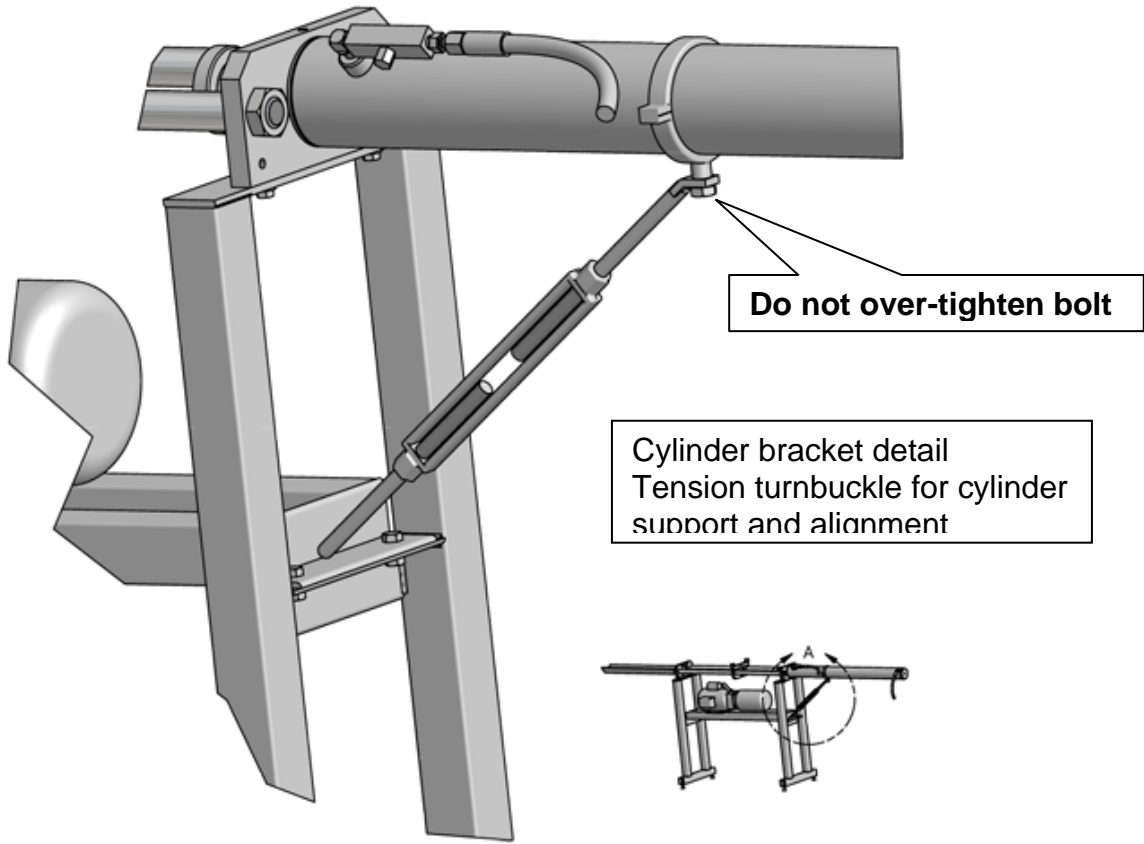
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Any products, components or accessories that are not manufactured by DGSi and are supplied by other manufacturers are subject to their respective warranties. Certain products will carry their own warranties.

For further assistance:

Call 1-800-837-0864 (toll free) or +1 (770) 465-7557

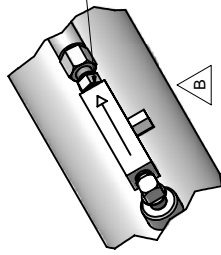
E-mail [info@durhamgeo.com](mailto:info@durhamgeo.com)



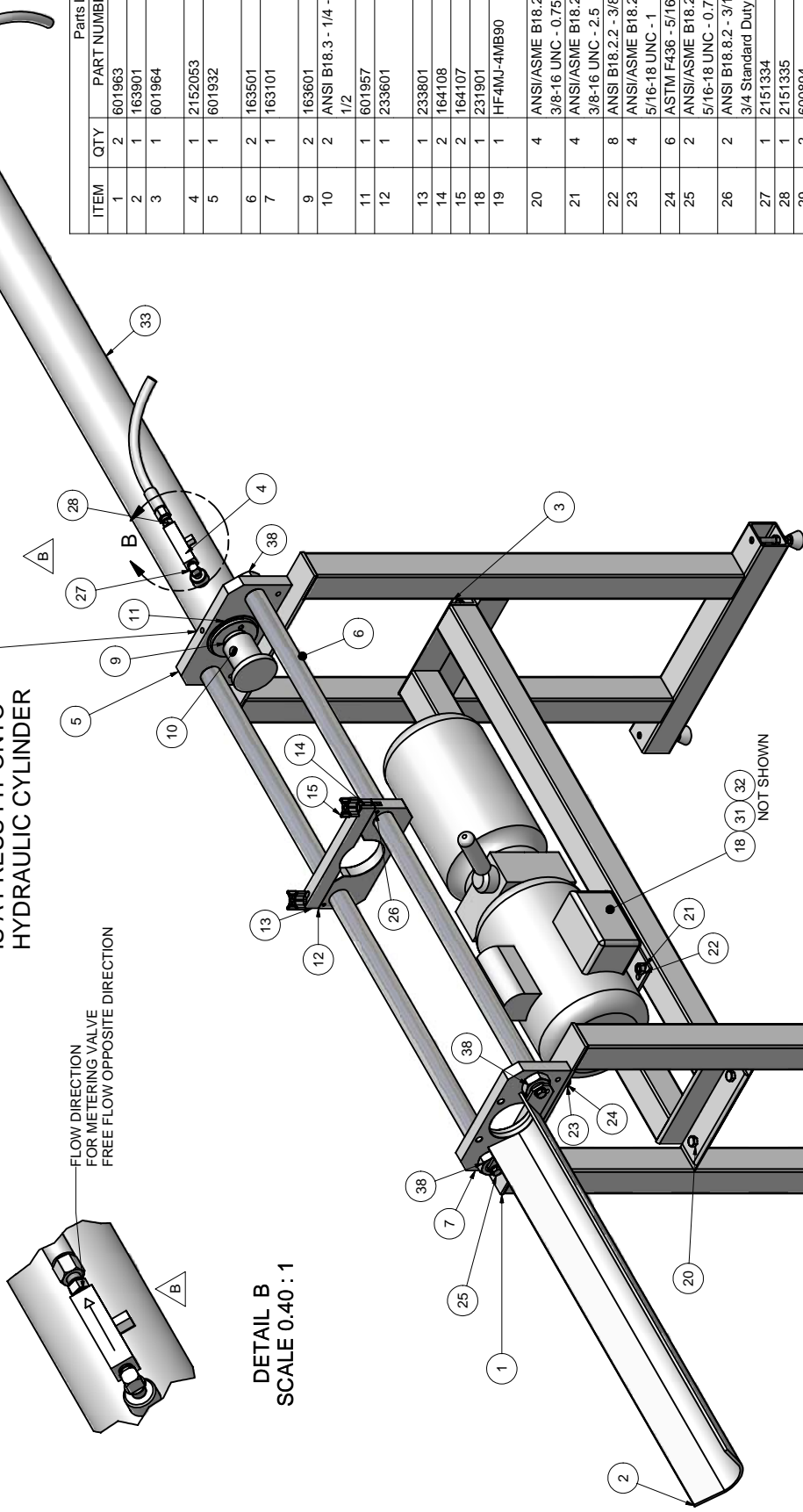
REVISION HISTORY			
REV	DESCRIPTION	DATE	
A	DESIGNED	1/27/2006	
B	CHNG'D FLOW METER TO CORRECT SIDE	7/5/2006	

ITEM 5 MOUNTING PLATE IS A PRESS FIT ONTO HYDRAULIC CYLINDER

FLOW DIRECTION FOR METERING VALVE FREE FLOW OPPOSITE DIRECTION



DETAIL B  
SCALE 0.40 : 1



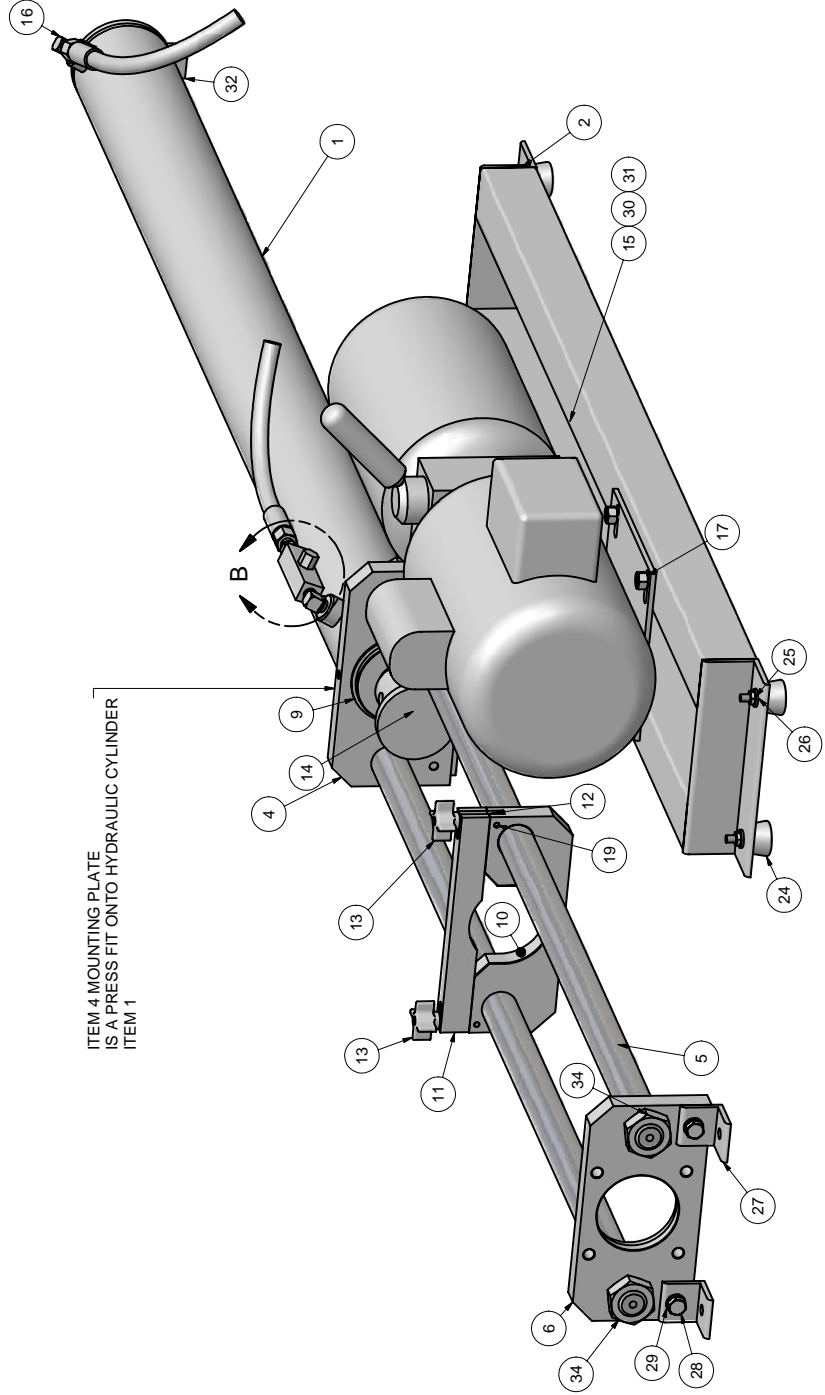
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	601963	LEG WELDMENT
2	1	163801	TRAY WELDMENT
3	1	601964	PUMP MOUNTING WELDMENT
4	1	2152063	METERING VALVE
5	1	601932	CYLINDER MOUNTING PLATE
6	2	163501	TIE ROD
7	1	163101	TUBE END SUPPORT PLATE
9	2	163801	3" PISTON
10	2	ANSI B18.3 - 1/4 - 20 - 1/2	Hexagon Socket Head Cap Screw
11	1	601957	SPIRAL RING
12	1	233601	2336 LOWER CLAMP
13	1	233801	HALF UPPER CLAMP
14	2	164108	EYE BOLT
15	2	164107	KNOB
18	1	231901	HYDRAULIC PUMP
19	1	HF-4MJ-4MB90	# 4 HYDRAULIC FITTING ORING X JIC
20	4	ANSI/ASME B18.2.1 - 3/8-16 UNC - 0.75	Hex Bolt - UNC (Regular Thread - Inch)
21	4	ANSI/ASME B18.2.1 - 3/8-16 UNC - 2.5	Hex Bolt - UNC (Regular Thread - Inch)
22	8	ANSI B18.2.2 - 3/8 - 16	Hex Nut
23	4	ANSI/ASME B18.2.1 - 5/16-18 UNC - 1	Hex Bolt - UNC (Regular Thread - Inch)
24	6	ASTM F436 - 5/16	Washer A
25	2	ANSI/ASME B18.2.1 - 5/16-18 UNC - 0.75	Hex Bolt - UNC (Regular Thread - Inch)
26	2	ANSI B18.8.2 - 3/16 x 3/4 Standard Duty	Pin - Coiled Spring
27	1	2151334	FITTING #4 MB X #4 MP
28	1	2151335	FITTING 1/4 MP X #4 MJ
29	2	600894	FITTING #6 MB X #4 MJ
30	2	250707	67" HOSE ASSEMBLY
31	1	2153075	POWER CORD
32	1	2153147	TOGGLE SWITCH
33	1	601935	HYDRAULIC CYLINDER
36	4	601982	LEVELING FOOT
37	8	ANSI B18.2.2 - 5/16 - 18	Hex Nut
38	4	ANSI B18.2.2 - 1 - 8	Hex Jam Nut

**NOTES:**  
 BOLTED ASSEMBLY-LEGS SHIPPED UNBOLTED  
 HYDRAULIC LOAD SET FOR 10K IBS/FORCE  
 SET PRESSURE RELIEF AT 1425 PSI  
 UNIT PAINTED SEMI-GLOSS BLACK  
 HYDRAULIC FLUID, AW 42 USED IN PUMP

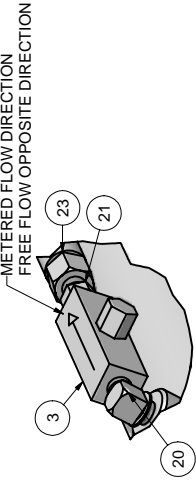
DRAWN aphillips	1/27/2006	TITLE <b>DGSI</b>		
CHECKED	1/27/2006			
QA		S-240 WITH S-24010 LEG ASSEM.		
MFG				
APPROVED				
	1/27/2006	SIZE <b>C</b>	DWG NO <b>601981</b>	REV
		SCALE		SHEET 1 OF 1

REVISION HISTORY		
REV	DESCRIPTION	DATE
A	DRAWN AND RELEASED	2/2/2006
B	CHGD HYD FLOW VALVE TO CORRECT SIDE.	7/5/2006

Parts List		
ITEM	QTY	DESCRIPTION
1	1	HYDRAULIC CYLINDER
2	1	PUMP MOUNTING
3	1	WELDMENT
4	1	METERING VALVE
5	1	CYLINDER MOUNTING PLATE
6	2	TIE ROD
7	1	TUBE END SUPPORT PLATE
8	2	Hexagon Socket Head Cap Screw
9	1	SPIRAL RING
10	1	2336 LOWER CLAMP HALF
11	1	UPPER CLAMP
12	2	EYE BOLT
13	2	164108
14	1	164107
15	1	3" PISTON
16	1	HYDRAULIC PUMP
17	4	Hex Bolt - UNC (Regular Thread - Inch)
18	4	Hex Nut
19	2	Pin - Coiled Spring
20	1	FITTING #4 MB X #4 MP
21	1	FITTING 1/4 MP X #4 MJ
22	2	FITTING #6 MB X #4 MJ
23	2	67" HOSE ASSEMBLY
24	4	VIBRATION ISOLATOR
25	4	Hex Jam Nut
26	4	Washer A
27	4	ANGLE FOOT BRACKET
28	5	Hex Bolt - UNC (Regular Thread - Inch)
29	4	Helical Spring Lock Washer Regular. Carbon Steel
30	1	POWER CORD
31	1	TOGGLE SWITCH
32	1	CYLINDER MOUNTING BRACKET
33	1	Washer A
34	4	Hex Jam Nut



ITEM 4 MOUNTING PLATE IS A PRESS FIT ONTO HYDRAULIC CYLINDER ITEM 1



B

DETAIL B  
SCALE 0.60 : 1

**NOTES:**  
 BOLTED ASSEMBLY  
 HYDRAULIC LOAD SET FOR 10K LBS/FORCE  
 SET HYDRAULIC PRESSURE RELIEF AT 1425 PSI  
 UNIT PAINTED SEMI GLOSS BLACK  
 AW 42 HYDRAULIC FLUID USED IN PUMP

DRAWN aphillips	2/2/2006	DGS
CHECKED	2/2/2006	
QA		S-240 TOP LEVEL
MFG		
APPROVED		
	2/2/2006	SIZE C
		DWG NO 601996
		SCALE
		SHEET 1 OF 1