

## INSTALLATION OF HYDRAULIC KIT ALL R-890 RAILGEAR UNITS - VF, VFBC, VR-NON SLEW

### SAFETY PRECAUTIONS

If any installation problems are encountered, please call G&B Specialties, Inc. for technical assistance before continuing with the installation process.

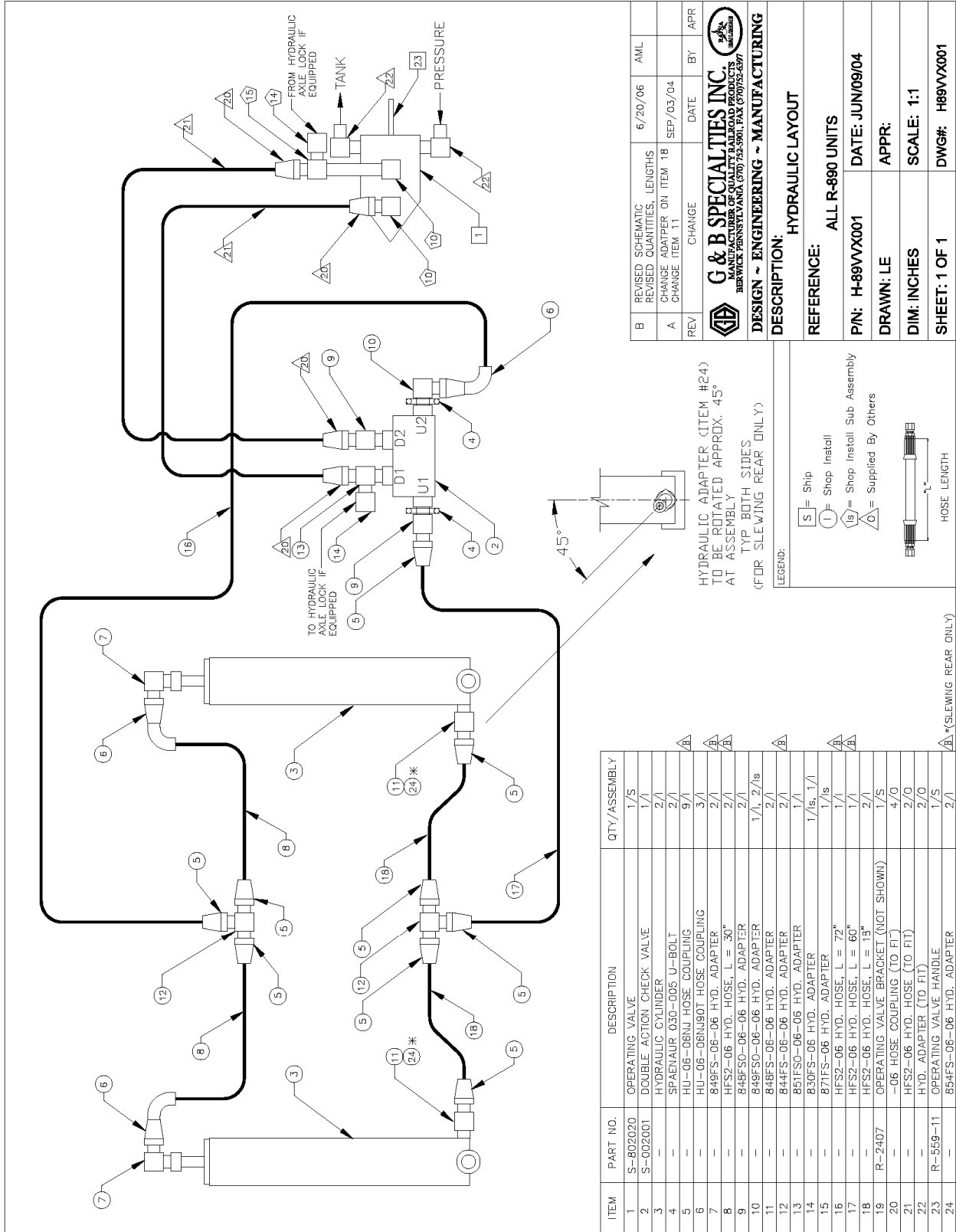


- Failure to heed to any of the following warnings could result in severe bodily injury and/or equipment damage.
- Read and understand this manual completely before attempting installation of the equipment.
- Installation instructions provided below only address the Rafna railgear equipment. Applicable railway company procedures and policies must be adhered to.
- Before performing any work under the vehicle or railgear, ensure the engine is turned off and the parking brake is set.
- Beware of all pinch points on the railgear and keep all parts of the body clear.
- When routing hydraulic hoses, ensure that the hoses do not contact any sharp edges or hot surfaces.
- The railgear's hydraulic system should be on a separate circuit dedicated to the railgear.
- A relief valve should be installed on the railgear hydraulic circuit.
- For vehicles operating more than just the railgear from the PTO pump, a main relief valve should be installed just after the PTO pump to protect the PTO pump.

## INSTALLATION OF HYDRAULIC KIT

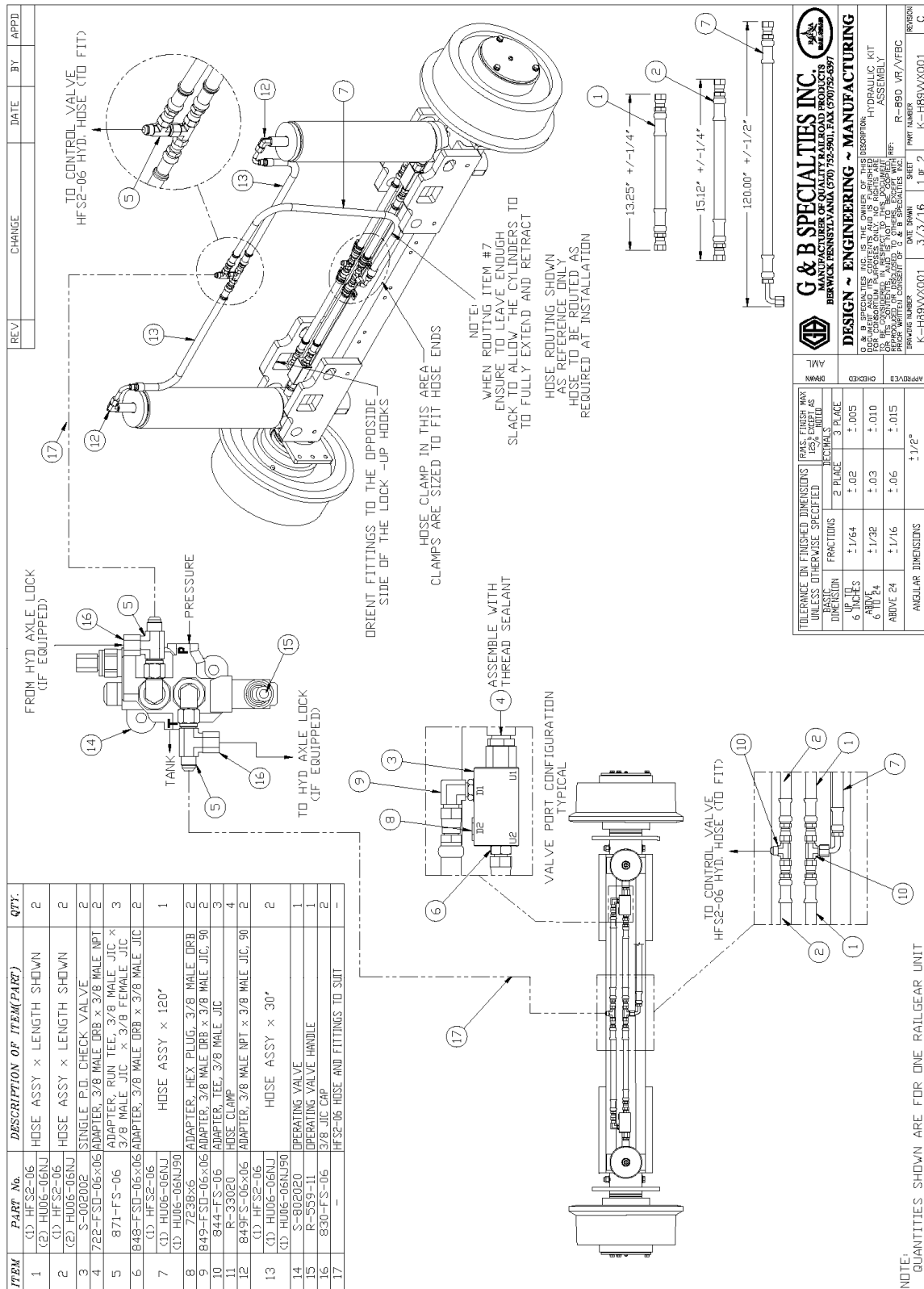
Part Number	Description	Qty
R-2407	Operating Valve Bracket	2
R-559-11	Operating Valve Handle (Pre-Installed on Valve)	2
S-802020	Operating Valve	2
S-001033	Operating Decal - For Front Railgear	1
S-001031	Operating Decal - For Rear Railgear	1
-	¼" UNC Gr. 8 Bolt x 2.25" Long	6
-	¼" SAE Washer	12
-	¼" UNC Gr. 3 Nylock Nut	6
Not Supplied	Hydraulic Hoses, Couplers and Fittings	As Req'd

1. The vehicle's PTO pump should be selected to supply 3-5 gallons per minutes (GPM) of oil at 2500 PSI at the front and rear railgear operating valves. A main relief valve should be installed just after the PTO pump to protect it. For vehicles operating more than just the railgear from the PTO pump, the railgear's hydraulic system should be on a separate circuit dedicated to the railgear. A relief valve should be installed on the railgear hydraulic circuit.
2. Choose a suitable location on the vehicle to mount the two railgear operating valves using the supplied weld-on operating valve brackets. Ensure that there will be sufficient room for the operator to stand safely out of the way of moving parts. One operating valve should be installed near the front railgear and the other near the rear railgear within reach of their respective railgear lock system handles. Weld the operating valve brackets in place.
3. Fasten the operating valves to the operating valve brackets using the supplied ¼" fasteners. Torque to 12 ft-lbs dry. Do not over-torque.
4. Install hydraulics per hydraulic schematic
5. Ensure that none of the hoses contact any sharp edges or hot surfaces. Secure these hoses in place with tie-wraps. Ensure that there is enough slack in the hoses for the railgear to function. Where necessary, fasten the hoses to the frame with installer-supplied 'P' hose clips and hardware.
6. Affix the supplied front and rear railgear operation decals in suitable locations adjacent to their respective operating valves.
7. Adjust the operating valve relief valve pressure as per the procedure in the Hydraulic Kit Operation, Service and Parts manual.
8. Test the operation of the controls. Refer to the operation procedure in the Railgear Kit and Hydraulic Kit Operation, Service and Parts manuals.



(All Units - Prior to 4/1/16)

G&B Specialties Inc. 535 West 3<sup>rd</sup> Street, Berwick, PA, USA Tel: (570) 752-5901 Fax: (570) 752-6397  
US Field Service: 570-441-6988; CAN Field Service 570-854-0482; [www.rafna.com](http://www.rafna.com)



ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	(1) HFS2-06 (2) HU06-06NJ	HOSE ASSY x LENGTH SHOWN	2
2	(1) HFS2-06 (2) HU06-06NJ	HOSE ASSY x LENGTH SHOWN	2
3	S-002002	SINGLE P.O. CHECK VALVE	2
4	722-FSD-06x06	ADAPTER, 3/8 MALE DRB x 3/8 MALE NPT	2
5	871-FS-06	ADAPTER, RUN TEE, 3/8 MALE JIC x 3/8 MALE JIC	3
6	848-FSD-06x06	ADAPTER, 3/8 MALE DRB x 3/8 MALE JIC	2
7	(1) HFS2-06 (1) HU06-06AL90	HOSE ASSY x 120"	1
8	723B76	ADAPTER, HEX PLUG, 3/8 MALE DRB	2
9	849-FSD-06x06	ADAPTER, 3/8 MALE DRB x 3/8 MALE JIC, 90	2
10	844-FS-06	ADAPTER, TEE, 3/8 MALE JIC	3
11	R-33020	HOSE CLAMP	4
12	849FS-06x06	ADAPTER, 3/8 MALE NPT x 3/8 MALE JIC, 90	2
13	(1) HFS2-06 (1) HU06-06NJ	HOSE ASSY x 30"	2
14	(1) HU06-06NJ90	OPERATING VALVE	1
15	R-559-II	OPERATING VALVE HANDLE	1
16	830-FS-06	3/8 JIC CAP	2
17	-	HFS2-06 HOSE AND FITTINGS TO SUIT	-

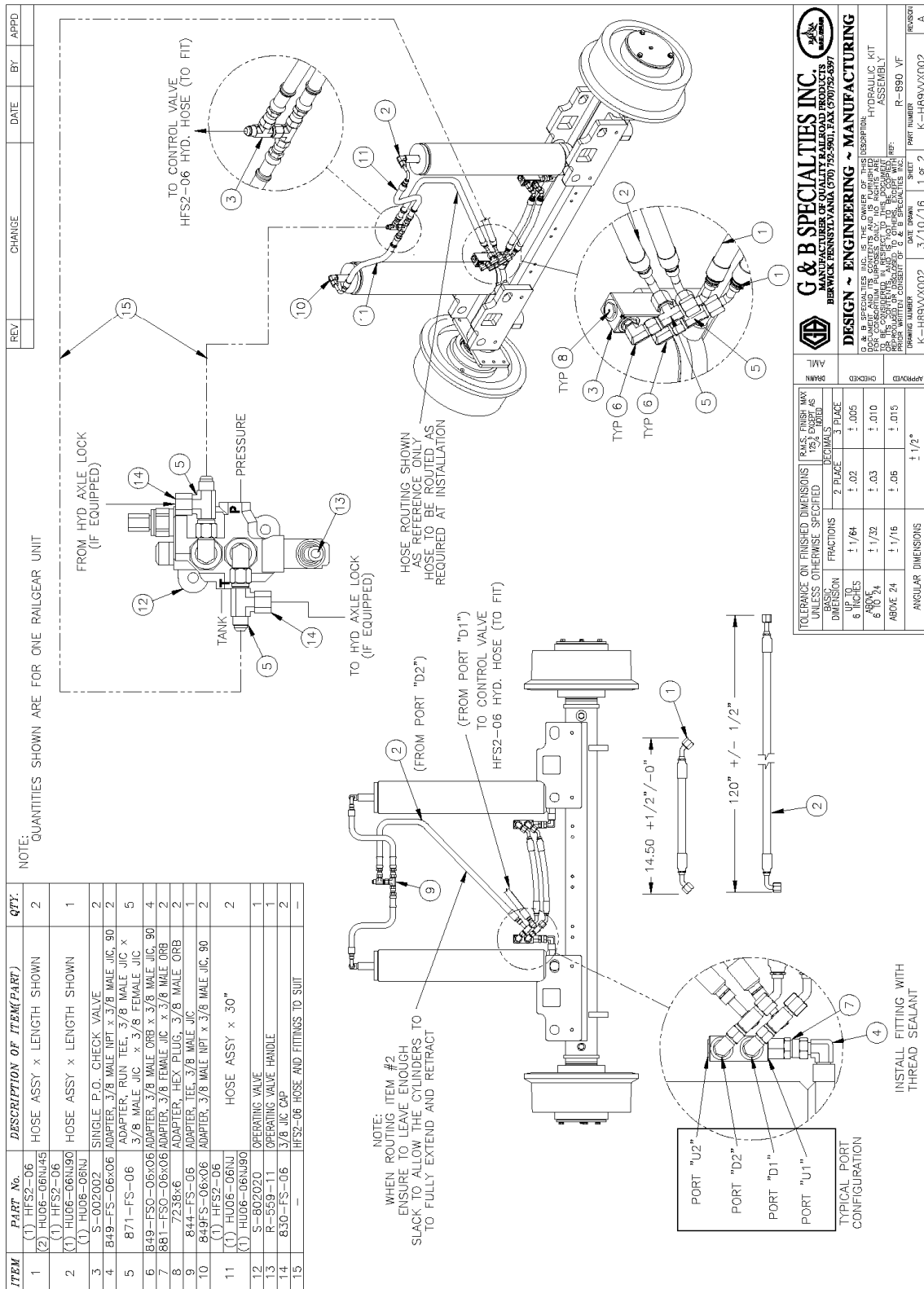
APPROVED	CHECKED	DATE	BY	APPD
		3/3/16	1 of 2	K-H89VX001


**G & B SPECIALTIES INC**  
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 PRICE SUBJECT TO CHANGE WITHOUT NOTICE.

HYDRAULIC KIT ASSEMBLY  
 R-890 VP/AFBC  
 PART NUMBER  
 SHEET NUMBER  
 K-H89VX001 3/3/16 1 of 2 K-H89VX001

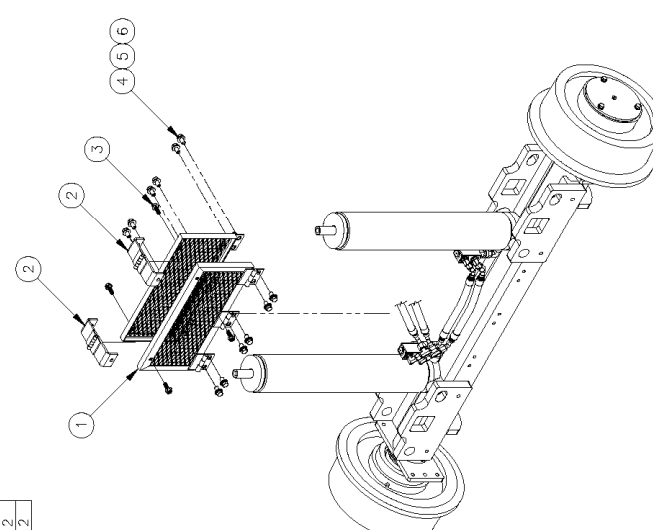
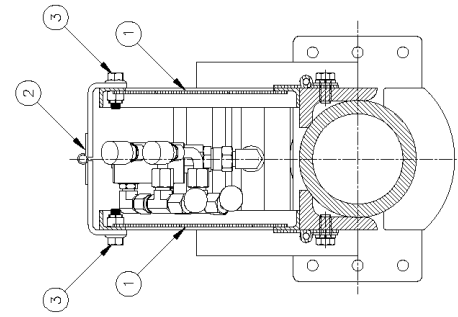
**REF: VERTICAL FRONT BEHIND CAB & VERTICAL REAR (AFTER 4/1/16)  
EXTERNAL PORT MOUNTED CHECK VALVE**



**REF: VERTICAL FRONT (AFTER 4/1/16)**  
**EXTERNAL PORT MOUNTED CHECK VALVE**

REV	CHANGE	DATE	BY	APPD

NOTES:  
1. QUANTITIES SHOWN ARE FOR ONE RAILGEAR UNIT

SECTION A-A

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	R-33033	GUARD	2
2	P-33030	HINGE CLAMP ASSY	2
3	H-00042	FLANGED HEX CAP SCREW 3/8" x 1"	4
4	H.H.C.S.	3/16" UNC GR.8 x 7/8"	12
5	F.WASHER	7/8" SAE GR.8	12
6	L.WASHER	7/8" GR.8	12

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRACTIONS	DECIMALS	PLACES	MAX. PERMISSIBLE VARIATION AS % TOLER.
UP TO 6 INCHES	± 1/64	± .02	± .005	
6 TO 10 INCHES	± 1/32	± .03	± .010	
ABOVE 10 INCHES	± 1/16	± .06	± .015	
ANGULAR DIMENSIONS	± 1/2°			

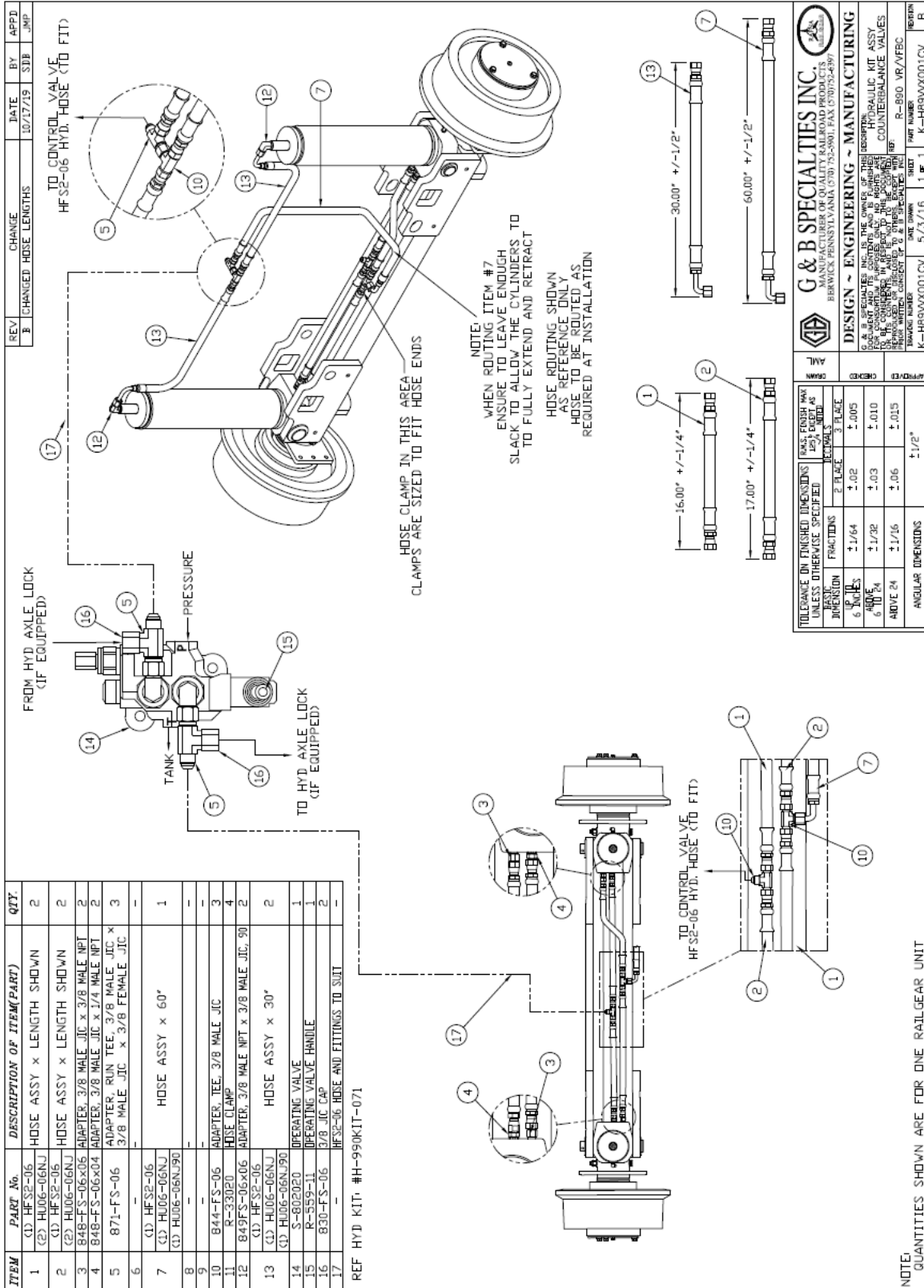
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DRAWING NUMBER: K-H89VX002 SHEET: 1 OF 2 PART NUMBER: R-890 VF  
DATE DRAWN: 3/10/16 K-H89VX002  
REVISION: A

**REF: VERTICAL FRONT GUARDING (AFTER 4/1/16)**  
**EXTERNAL PORT MOUNTED CHECK VALVE**



ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	(1) HF S2-06	HOSE ASSY x LENGTH SHOWN	2
2	(2) HU06-06NJ	HOSE ASSY x LENGTH SHOWN	2
3	(2) HF S2-06	HOSE ASSY x LENGTH SHOWN	2
4	848-FS-06x06	ADAPTER, 3/8 MALE JIC x 3/8 MALE NPT	2
5	871-FS-06	ADAPTER, 3/8 MALE JIC x 3/8 MALE NPT	2
6	871-FS-06	ADAPTER, RUN TEE, 3/8 MALE JIC x 3/8 MALE JIC	3
7	(1) HF S2-06	HOSE ASSY x 60"	1
8	(3) HU06-06NJ		
9	(3) HU06-06NJ		
10	844-FS-06	ADAPTER, TEE, 3/8 MALE JIC	3
11	R-33020	HOSE CLAMP	4
12	849FS-06x06	ADAPTER, 3/8 MALE NPT x 3/8 MALE JIC, 90	2
13	(1) HF S2-06	HOSE ASSY x 30"	2
	(1) HU06-06NJ		
14	S-602020	OPERATING VALVE	1
15	R-559-11	OPERATING VALVE HANDLE	1
16	830-FS-06	3/8 JIC CAP	2
17		HF S2-06 HOSE AND FITTINGS TO SUIT	

REF HYD KIT, #H-990KIT-071

**REF: VERTICAL FRONT BEHIND CAB & VERTICAL REAR (AFTER 6/1/16)**  
**INTERNAL CHECK VALVE**

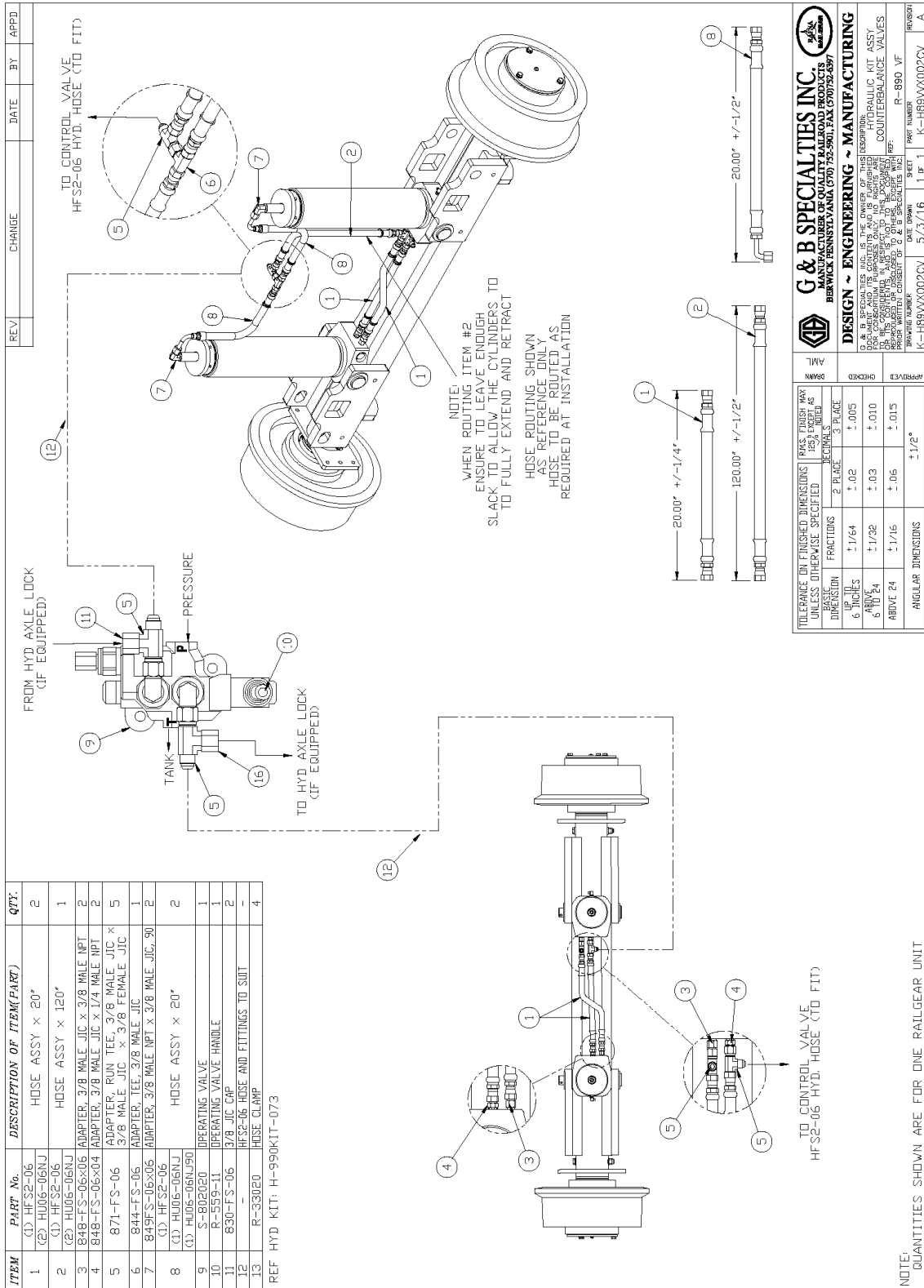
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DRAWING NUMBER: K-H89VX001CV    DATE DRAWN: 5/3/16    SHEET: 1 of 1    PART NUMBER: K-H89VX001CV    REVISION: B





**REF: VERTICAL FRONT (AFTER 6/1/16)**  
**INTERNAL CHECK VALVE**



## OPERATION, SERVICE AND PARTS OF HYDRAULIC KIT

### SAFETY PRECAUTIONS

If any operating, service or parts problems are encountered, please call G&B Specialties, Inc. for technical assistance.



- Failure to heed to any of the following warnings could result in severe bodily injury and/or equipment damage.
- Read and understand this manual completely before attempting operation of the railgear-equipped vehicle.
- Operating instructions provided below only address the Rafna railgear equipment. Applicable railway company procedures and policies must be adhered to.
- Railway company rules governing rail travel must be observed at all times.
- Before performing any work under the vehicle or railgear, ensure the engine is turned off and the parking brake is set.
- Ensure all body parts and loose clothing are clear of any moving parts of the railgear. Be aware of all pinch points.
- Never operate the vehicle if the Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating Front or Rear (GAWR), or the wheel or tire load ratings are exceeded.

## OPERATION OF HYDRAULIC KIT

With the hydraulic kit installed on this vehicle, it may be operated as normal.

Never operate the vehicle if the Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating Front or Rear (GAWR), or the wheel or tire load ratings are exceeded.

Refer to the Railgear Kit Operation, Service and Parts manual for information on the mechanical operation, service and parts of the railgear.

### Location And Operation Of The Railgear Hydraulic System Controls:

1. The PTO must be engaged following the manufacturer's instructions. The railgear should not move until the operating valve is actuated.
2. Each railgear is equipped with an operating valve. The direction of motion (up or down) of the railgear is selected by actuating the operating valve handle. The railgear should move only in the selected direction.
3. To stop the movement of the railgear, bring the handle on the respective railgear operating valve to the center position.
4. Disengage the PTO following the manufacturer's instructions.

## SERVICE OF HYDRAULIC KIT

The hydraulic kit must be serviced regularly to avoid damage to the equipment. Table 1 provides the Recommended Service Schedule and table 2 provides Standard Fastener Torque Values.

The recommended oil for the railgear hydraulic system is **DEXRON III** or equivalent. In extremely cold weather areas/seasons, Tellus S4 VX32 or equivalent may be used.

**Table 1: Recommended Service Schedule**

Service Required	Initial 100 km (62 Miles) of road and/or rail use	Daily	Weekly	Monthly
Inspect hydraulic kit fasteners (re-torque if required)		✓	✓	✓
Inspect all hydraulic fittings and hoses for leaks and wear.		✓	✓	✓

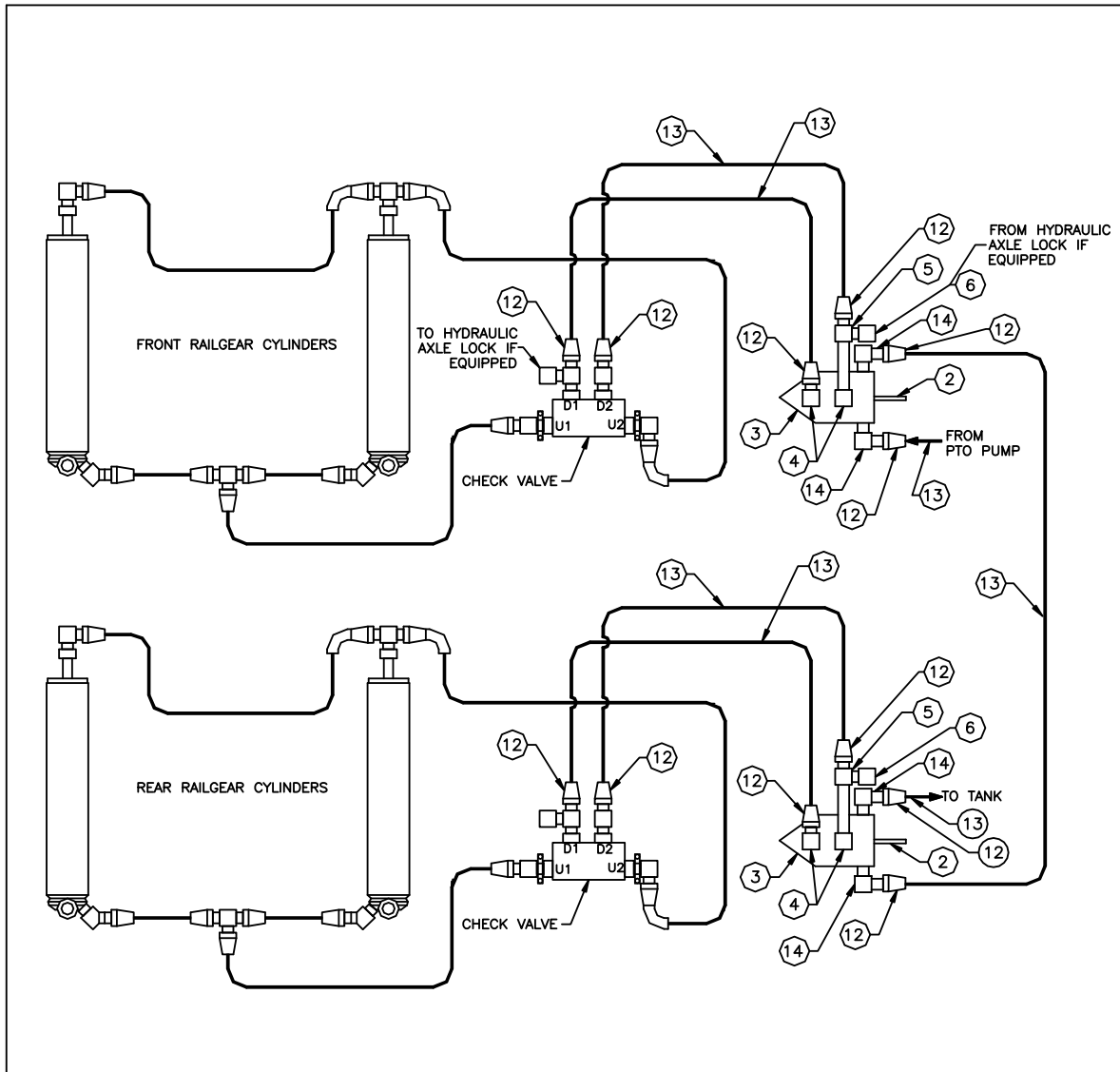
**Table 2: Standard Fastener Torque Values**

Fastener Size	Fastener Torque Value (ft-lbs) Dry
1" UNC Gr. 8 Fasteners	250
3/4" UNC Gr. 8 Fasteners	175
5/8" UNC Gr. 8 Fasteners	150
1/2" UNC Gr. 8 Fasteners	100
3/8" UNC Gr. 8 Fasteners	40
1/4" UNC Gr. 8 Fasteners	12

## HYDRAULIC SYSTEM RELIEF VALVE SETTING

The following procedure details how to adjust the railgear pressure relief valve settings. One relief valve is located on each operating valve and there may be one or more additional relief valves in the railgear hydraulic system. An adjustment of the relief valve settings should be carried out at installation and/or if ever there appears to be inadequate hydraulic pressure to operate the railgear.

1. Locate the hydraulic hose that connects the front railgear operating valve to the railgear hydraulic system pressure line. Release the pressure in the railgear hydraulic system and disconnect this hose from the front railgear operating valve.
2. Install a combination test gauge (up to 3000 PSI) and shutoff valve between the disconnected hydraulic hose and the front operating valve. The pressure gauge will indicate the relief valve setting, while the shutoff valve will enable a false load to be put on the hydraulic pump. Ensure that the shutoff valve is installed between the test gauge and front operating valve.
3. Engage the hydraulic pump.
4. Close the shutoff valve to enable the railgear hydraulic system relief valve to start releasing pressure. The pressure reading on the test gauge should indicate 2000 PSI. If this reading is incorrect, adjust the railgear hydraulic system relief valve accordingly.
5. Once the correct pressure on the railgear hydraulic system relief valve is obtained, open the shutoff valve.
6. Proceed to adjust each operating valve relief valve setting as follows:
  - a) Have an assistant watch the test gauge pressure reading while adjusting the relief valve settings.
  - b) Ensure the shutoff valve has been completely opened.
  - c) With the railgear fully raised in road position, select "UP" on the operating valve. Hold in this position until the hydraulic oil passes over the relief valve and a reading is taken on the test gauge.
  - d) The pressure should be 1800 PSI on the front and rear operating valves. Adjust the relief valve setting accordingly.
  - e) Proceed to adjust the second operating valve relief valve setting.
7. Release the pressure in the railgear hydraulic system and remove the test gauge and shutoff valve.
8. Reconnect and tighten all hydraulic hoses.

**PARTS OF HYDRAULIC KIT**


ITEM	PART NO.	DESCRIPTION	QTY
1	R-2407	OPERATING VALVE BRACKET (NOT SHOWN)	2
2	R-559-11	OPERATING VALVE HANDLE	2
3	S-802020	OPERATING VALVE	2
4	HY-849FSO-06	HYDRAULIC FITTING	4
5	HY-871FS-06	HYDRAULIC FITTING	2
6	HY-830FS-06	HYDRAULIC FITTING	2
7	S-001033	OPERATING DECAL (NOT SHOWN)	1
8	S-001031	OPERATING DECAL (NOT SHOWN)	1
9	-	1/4" UNC GR. 8 BOLT X 2.25" LONG (NOT SHOWN)	6
10	-	1/4" SAE WASHER (NOT SHOWN)	12
11	-	1/4" UNC GR. 3 NYLOCK NUT (NOT SHOWN)	6
12	-	HYDRAULIC COUPLER TO FIT (SUPPLIED BY INSTALLER)	N/A
13	-	HYDRAULIC HOSE TO FIT (SUPPLIED BY INSTALLER)	N/A
14	-	HYDRAULIC FITTING TO FIT (SUPPLIED BY INSTALLER)	N/A

<b>RAFNA INDUSTRIES LTD.</b> 19300 CLARK-GRAHAM BAIE D'URFE, QUEBEC (514) 457-4373	
DESCRIPTION:	
HYDRAULIC KIT	
P/N: K-H89VX001	DATE: JUN/09/04
DRAWN: LE	APPR:
DIM: INCHES	SCALE: 1:1
SHEET: 1 OF 1	DWG#: K-H89VX001