



OPERATION, SERVICE AND PARTS OF HYDRAULIC KIT W/ PUMP

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 is clear of any moving parts of the railgear. Be aware of all pinch points.
- Ensure the hydraulic pump has been de-energized before starting road or rail travel.
- 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:

The railgear hydraulic system consists of a hydraulic pump, a front control box and a rear control box.

1. The railgear hydraulic pump must be energized prior to use by turning on the respective dash switch. At this point the dash switch light should come on but the pump should not run and the railgear should not move until a control button is depressed.
2. The direction of the front or rear railgear movement is selected by pushing the “Up” or “Down” button on the respective control box located near the railgear. At this point the pump should start and the railgear should move in the selected direction.
3. To stop the movement of the railgear, release the depressed button.
4. The pump must be de-energized after use by turning off the respective dash switch. At this point the pump should not be able to run and the control buttons should be in-active.



SERVICE OF HYDRAULIC KIT

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

The recommended oil for the railgear hydraulic system is **ESSO Univis Extra** or equivalent. In extremely cold weather areas/seasons, **ESSO Univis J13** 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		✓	✓	✓
Check oil in hydraulic reservoir (fill with railgear raised if req'd)				✓

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

This system is equipped with one relief valve located on the railgear pump body. This relief valve protects the entire hydraulic system from over pressurization. The relief valve will require adjustment at installation and if ever there appears to be inadequate hydraulic pressure to operate the railgear.

1. Disconnect the hydraulic hose from the upper “B” port on the pump.
2. Install a hydraulic pressure gauge (up to 3000 PSI) between the disconnected hydraulic hose and the pump port. The pressure gauge will indicate the relief valve setting when the pump is loaded.
3. Following the procedure in the Railgear Kit Operation, Service and Parts manual, raise the front railgear completely and continue to raise the railgear so that the hydraulic cylinder creates a load on the pump by trying to “dead-head”. The pressure reading on the pressure gauge should climb to 1800 PSI.
4. If the pressure is not correct, release the railgear controls and adjust the relief valve on the pump accordingly. Loosen the lock nut and turn the setscrew in to increase the pressure or out to decrease the pressure. Re-check the pressure.
5. Once the correct pressure on the pump relief valve is obtained, ensure the lock nut on the relief valve is tightened. Release the pressure in the system and remove the pressure gauge. Re-connect all hydraulic hoses.
6. Ensure the railgear is properly raised as per the Railgear Kit Operation, Service and Parts manual.



ELECTRICAL SYSTEM TROUBLESHOOTING

The following basic test can be performed to check the integrity of the railgear electrical system.

Should the railgear pump fail to operate, first check the fuse or the circuit breaker and all wiring for shorts. Then the following test can be performed to verify the integrity of the pump motor and pump solenoid.

1. Pump motor test:
 - a) Connect one end of a 14-gauge shunt wire to the pump motor power terminal and touch the other end to the battery positive terminal.
 - b) The pump motor should run upon touching the shunt wire.
 - c) If the pump does not run, the pump is not properly grounded or the pump motor is defective.
 - d) If the pump motor runs, test for a defective solenoid.
2. Solenoid test:
 - a) Connect one end of a 14-gauge shunt wire to the switching terminal on the solenoid and touch the other end to the battery positive terminal. If the pump does not operate the solenoid is not properly grounded or it is defective. If the pump operates, the problem lies with the fuse/circuit breaker, wiring and/or switches.

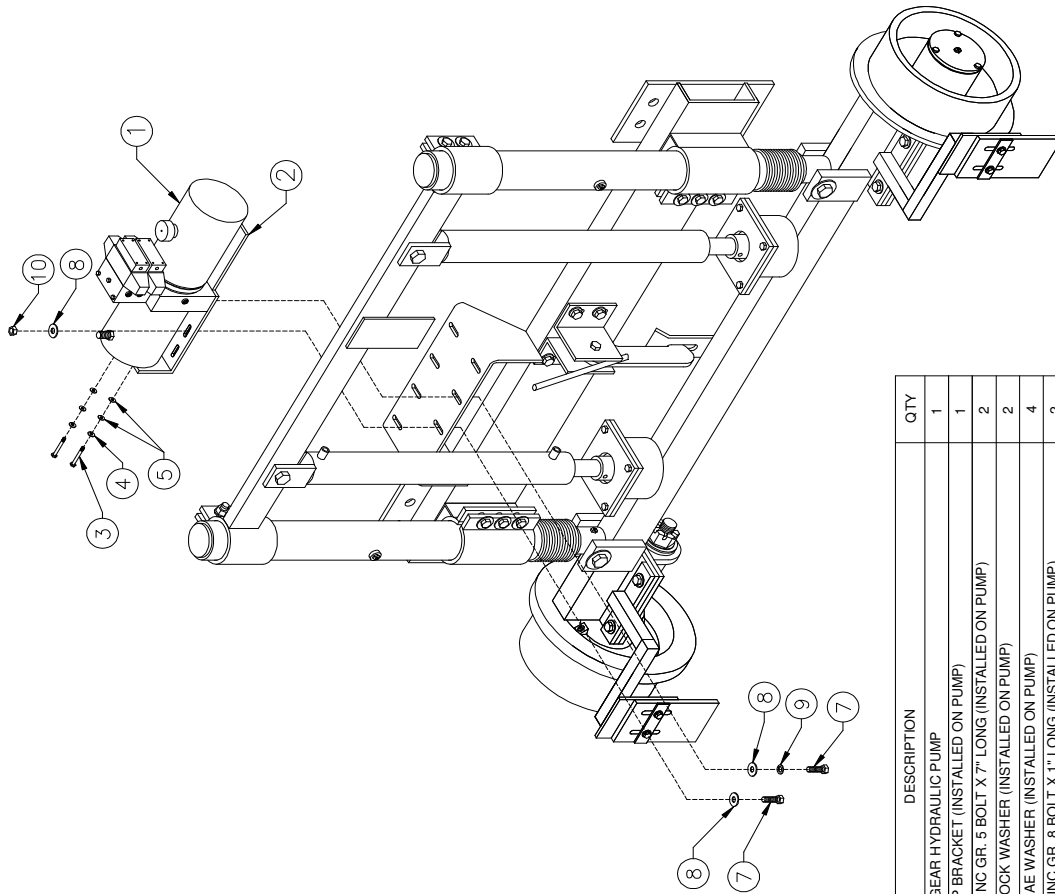
Should the pump start running immediately following turning on the respective dash switch, the following tests can be performed to help locate the problem.

1. Disconnect the wire from the switching terminal on the solenoid. If the pump continues to run, then the solenoid is defective.
2. Check all wiring and switches for shorts and / or loose terminals.



PARTS OF HYDRAULIC KIT

NOTE:
IDENTICAL FASTENERS ARE NOT
SHOWN FOR CLARITY.



RAFNA INDUSTRIES LTD. 19300 CLARK-GRAHAM BAIE D'URFEE, QUEBEC (514) 457-4373	
DESCRIPTION:	HYDRAULIC KIT FOR PUMP APPLICATION AND MANUAL FRONT AXLE LOCK
REFERENCE:	PUMP INSTALLATION
P/N:	DATE: NOV/22/04
DRAWN: LE	APPR:
DIM: INCHES	SCALE: 1:1
SHEET: 1 OF 4	DWG#: K-H45VRF004

ITEM	PART NO.	DESCRIPTION	QTY
1	R-060	RAILGEAR HYDRAULIC PUMP	1
2	R-060-2	PUMP BRACKET (INSTALLED ON PUMP)	1
3	-	1/4" UNC GR. 5 BOLT X 7" LONG (INSTALLED ON PUMP)	2
4	-	1/4" LOCK WASHER (INSTALLED ON PUMP)	2
5	-	1/4" SAE WASHER (INSTALLED ON PUMP)	4
6	-	3/8" UNC GR. 8 BOLT X 1" LONG (INSTALLED ON PUMP)	2
7	-	3/8" UNC GR. 8 BOLT X 1.25" LONG	4
8	-	3/8" SAE WASHER (2 INSTALLED ON PUMP)	10
9	-	3/8" LOCK WASHER (INSTALLED ON PUMP)	2
10	-	3/8" UNC GR. 3 NYLOCK NUT	4

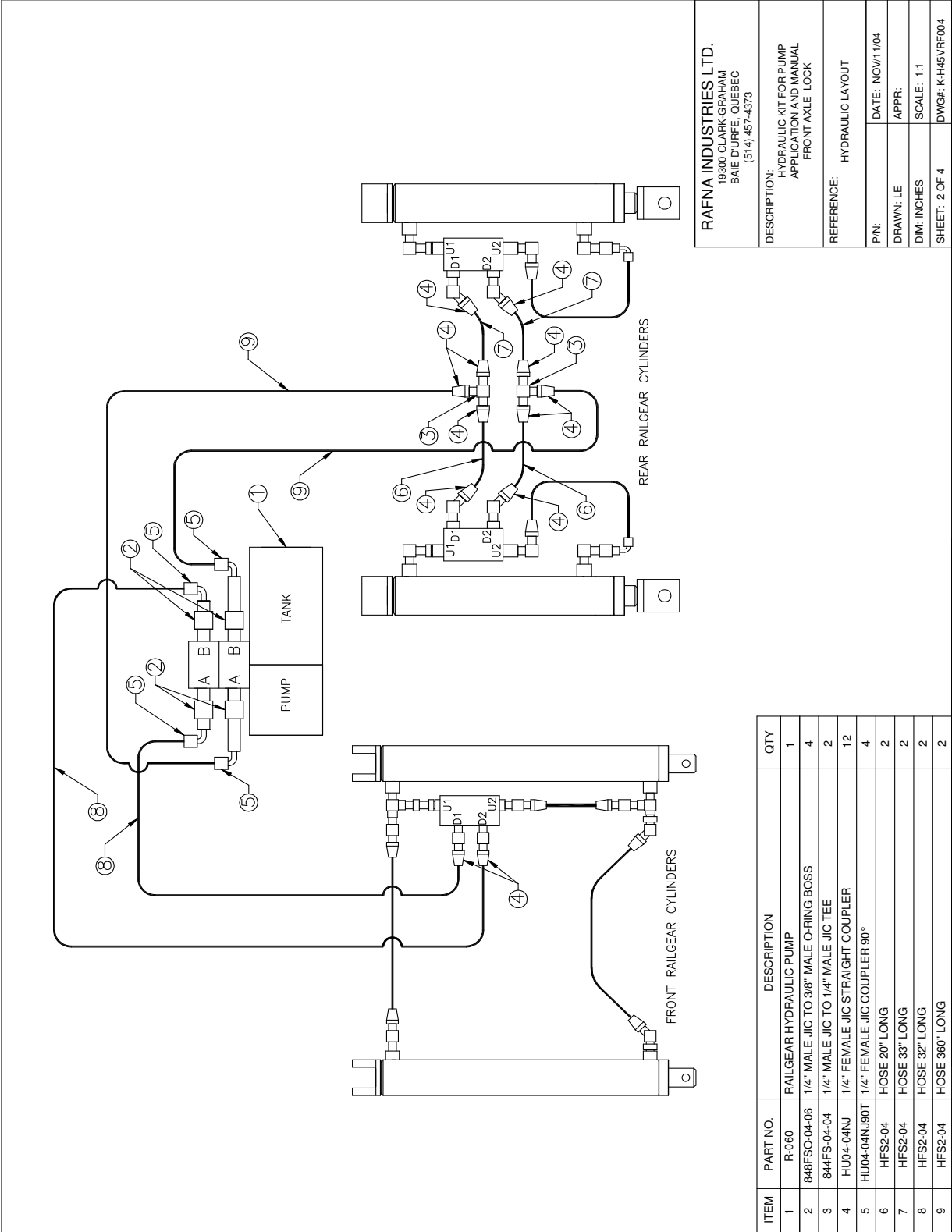


G&B Specialties, Inc.

A Global Railway Industries Company



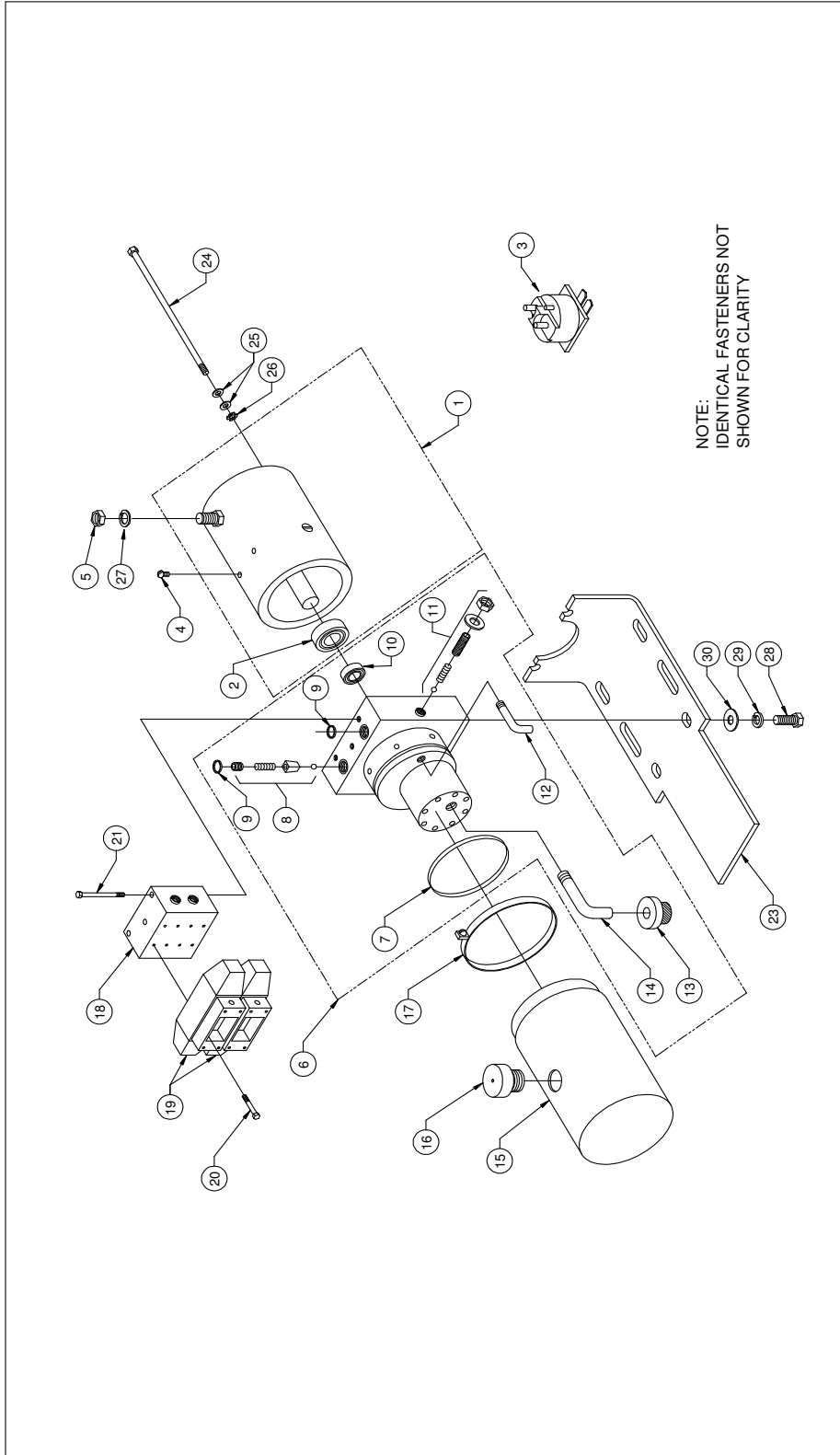
Bulletin MO-H45VRF004 (Rev A)



RAFNA INDUSTRIES LTD. 19300 CLARK-GRAHAM BAIE D'URFEE, QUEBEC (514) 457-4373	
DESCRIPTION:	HYDRAULIC KIT FOR PUMP APPLICATION AND MANUAL FRONT AXLE LOCK
REFERENCE:	HYDRAULIC LAYOUT
P/N:	DATE: NOV/11/04
DRAWN: LE	APPR:
DIM: INCHES	SCALE: 1:1
SHEET: 2 OF 4	DWG#: K-H45VRF004

ITEM	PART NO.	DESCRIPTION	QTY
1	R-060	RAILGEAR HYDRAULIC PUMP	1
2	848FSO-04-06	1/4" MALE JIC TO 3/8" MALE O-RING BOSS	4
3	844FS-04-04	1/4" MALE JIC TO 1/4" MALE JIC TEE	2
4	HU04-04NJ	1/4" FEMALE JIC STRAIGHT COUPLER	12
5	HU04-04NJ90T	1/4" FEMALE JIC COUPLER 90°	4
6	HFS2-04	HOSE 20" LONG	2
7	HFS2-04	HOSE 33" LONG	2
8	HFS2-04	HOSE 32" LONG	2
9	HFS2-04	HOSE 360" LONG	2

G&B Specialties Inc. 535 West 3rd Street, Berwick, PA, USA Tel: (570) 752-5901 Fax: (570) 752-6397



ITEM	PART NO.	PART DESCRIPTION	QTY/ASSEMBLY				
1	R-061-1	ELECTRIC MOTOR ASSEMBLY	1	15	R-061-15	RESERVOIR	1
2	R-061-2	BEARING	1	16	R-061-16	VENT PLUG	1
3	R-061-3	SOLENOID SWITCH (MOUNTED UNDER HOOD)	1	17	R-061-17	CLAMP	1
4	R-061-4	SCREW	2	18	R-061-18	VALVE ASSEMBLY	1
5	R-061-5	5/16" GR. 3 UNF NUT (SUPPLIED WITH MOTOR)	2	19	R-061-19	SOLENOID VALVE	2
6	R-061-6	PUMP ASSEMBLY	1	20	R-061-20	SCREW	8
7	R-061-7	O-RING	1	21	R-061-21	SCREW	3
8	R-061-8	POPPET CHECK VALVE KIT	1	22	R-060-1	DUAL PUSH BUTTON CONTROL (NOT SHOWN)	2
9	R-061-9	O-RING	2	23	R-080-2	MOUNTING BRACKET	1
10	R-061-10	SEAL	1	24	-	1/4" UNC GR. 5 BOLT x 7" LONG	2
11	R-061-11	RELIEF VALVE KIT	1	25	-	1/4" WASHER	4
12	R-061-12	RETURN TUBE	1	26	-	1/4" EXTERNAL TOOTH LOCK WASHER (W/ PUMP)	2
13	R-061-13	FILTER SCREEN	1	27	-	5/16" LOCK WASHER (SUPPLIED WITH MOTOR)	2
14	R-061-14	SUCTION TUBE	1	28	-	3/8" UNC GR. 8 BOLT x 1" LONG	2
				29	-	3/8" LOCK WASHER	2
				30	-	3/8" SAE WASHER	2

RAFNA INDUSTRIES LTD.
19300 CLARK GERRARD
BAIE D'URFEE, QUEBEC
(514) 457-4973

DESCRIPTION:
HYDRAULIC KIT FOR PUMP
APPLICATION AND MANUAL
FRONT AXLE LOCK

REFERENCE:
R-060 PUMP PARTS

PIN: DATE: NOV/16/04
DRAWN: LE APPR:
DIM: INCHES SCALE: 1:1
SHEET: 3 OF 4 DWG#: K-H45VRF004

