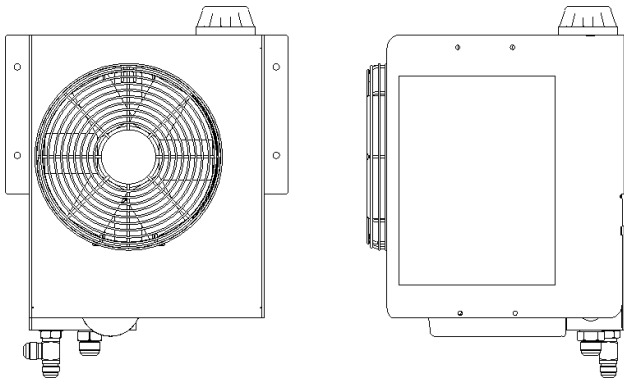




MH3 HYDRAPAK

40 G.P.M. • 3500 P.S.I.

OPERATION, MAINTENANCE and INSTALLATION INSTRUCTIONS



SAFETY PRECAUTIONS:

- ★ Do not work under the vehicle when the engine is running.
- ★ Do not work on hydraulic system when the engine is running.
- ★ Do not go near leaks when engine is running.
 - high pressure oil easily punctures skin causing serious injury, gangrene or death.
 - if injured, seek emergency medical help.
 - Immediate surgery is required to remove oil.
 - do not use finger or skin to check for leaks.
 - lower load or relieve hydraulic pressure before loosening fittings.
- ★ A serious or fatal injury can occur . . .
 - if you lack proper training.
 - if you fail to follow proper procedures.
 - if you do not use proper tools and safety equipment.
 - if you assemble components improperly.
 - if you use incompatible components.
 - if you use worn-out or damaged components.
- ★ Read, understand and follow this manual.
 - Get proper training.
 - Learn and follow safe operating procedures.
 - Use proper tools and safety equipment.
 - Use proper components in good condition.

INITIAL HYD. SYS. START UP : (2 people required)

1. Hydraulic oil: Non-foaming. We recommend Shell Tellus "T" series ISO 32 or equivalent.
2. Fill the Hydrapak with the above listed hydraulic oil. Use a paint filter as a strainer while filling.
3. After Hydrapak is filled, check for hydraulic system leaks.
4. Slowly raise the clutch while the engine is running to engage the P.T.O. and pump. Stop when level drops in the Hydrapak tank to just below the dip stick.
5. Disengage the P.T.O. (press clutch all the way in) Re-fill Hydrapak and repeat step 4 until oil level in tank does not drop while the P.T.O. is engaged.

MAINTENANCE:

1. Change hydraulic oil filter every 6 months*
 2. Change hydraulic oil every 6 months*
 3. Check oil level each week. Check with system off. (should be between the marks on the dip stick)
 4. Visually check the system each week - all fittings, hoses and Hydrapak mounting.
 5. Grease PTO / Pump spline every 3 months (grease every month for high duty cycle applications)
- * **An oil analysis program is recommended.**

NORMAL OPERATION:

VISUAL CHECKS BEFORE STARTING SYSTEM:

1. Check that the oil level is between the **marks** on the dipstick.
2. Remove any obstructions from radiator and fan.

STARTING SYSTEM:

1. Ensure brake is applied.
2. Ensure control valves are in neutral position.
3. Engage PTO per manufacturers instructions.
4. Oil level may drop if air is trapped in system. Stop the system and top off tank if necessary.
5. Operate the valving slowly
6. To stop the system, follow steps in reverse.

POWER TAKE OFF & HYDRAULIC PUMP:

1. Mount power take off, and brace hydraulic pump per manufacturers instructions.
2. Ensure that the female spline of power take off is filled with grease.
3. Mount hydraulic pump to P.T.O. using only capscrews provided.

Note : To avoid premature spline wear of the pump and PTO from torsional vibration consult the engine manufacturer for the correct engine speed (based on application) that will reduce torsional vibration.

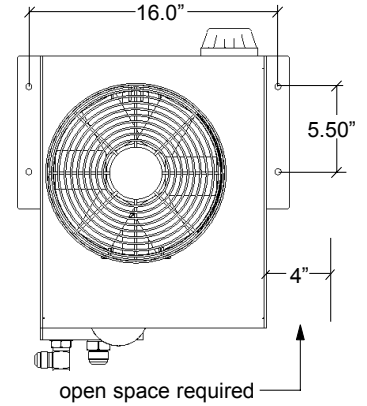
MOUNTING HYDRAPAK:

Behind the cab is the preferred mounting method.
Frame rail mount is the secondary choice.

1. Drill 7/16" dia. holes as shown in Fig.1. Use the capscrews, washers and nuts supplied to mount the Hydrapak.
2. Be sure to allow 4" of space between radiator and any solid obstruction that will effect air flow into radiator.
3. Radiator must be shielded from rocks and road debris.

HYDRAULIC HOSES & FITTINGS:

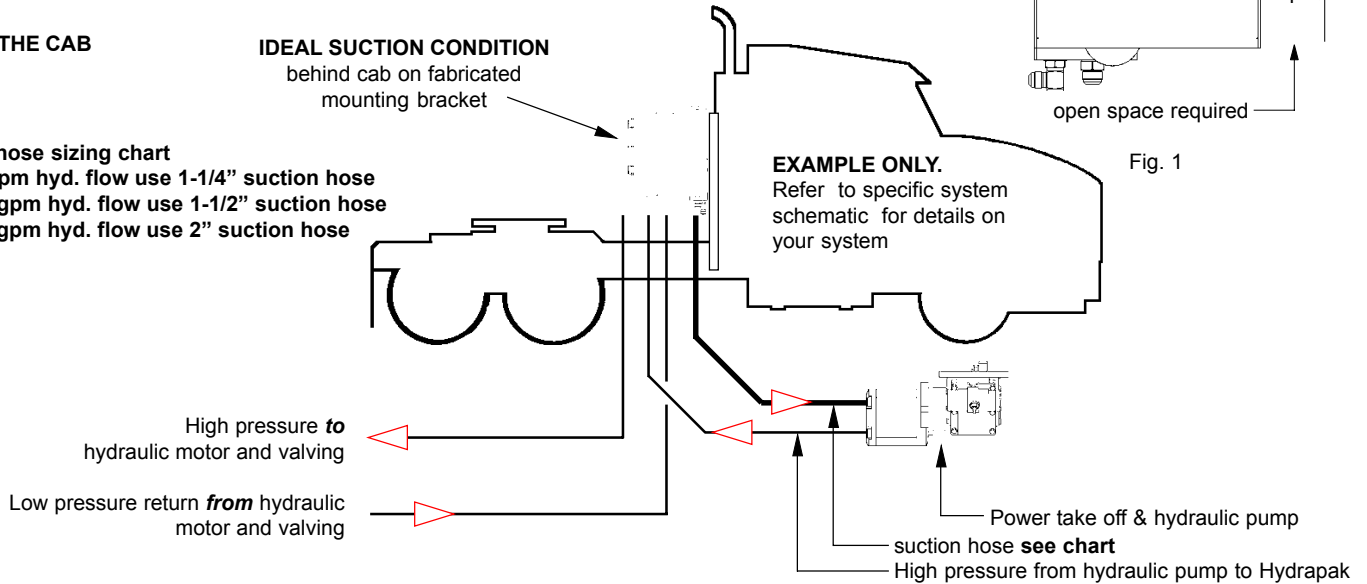
1. Do not use thread tape or pipe dope as this will contaminate the hydraulic system.
2. All hoses are customer supplied. Fit all hoses as per separate system drawings provided by Drum.
3. All high pressure hoses must have a working pressure rating equal to or higher than the hydraulic system relief valve setting.
4. The suction hose must be suitable for 28"Hg vacuum service.



BEHIND THE CAB MOUNT

IDEAL SUCTION CONDITION
behind cab on fabricated mounting bracket

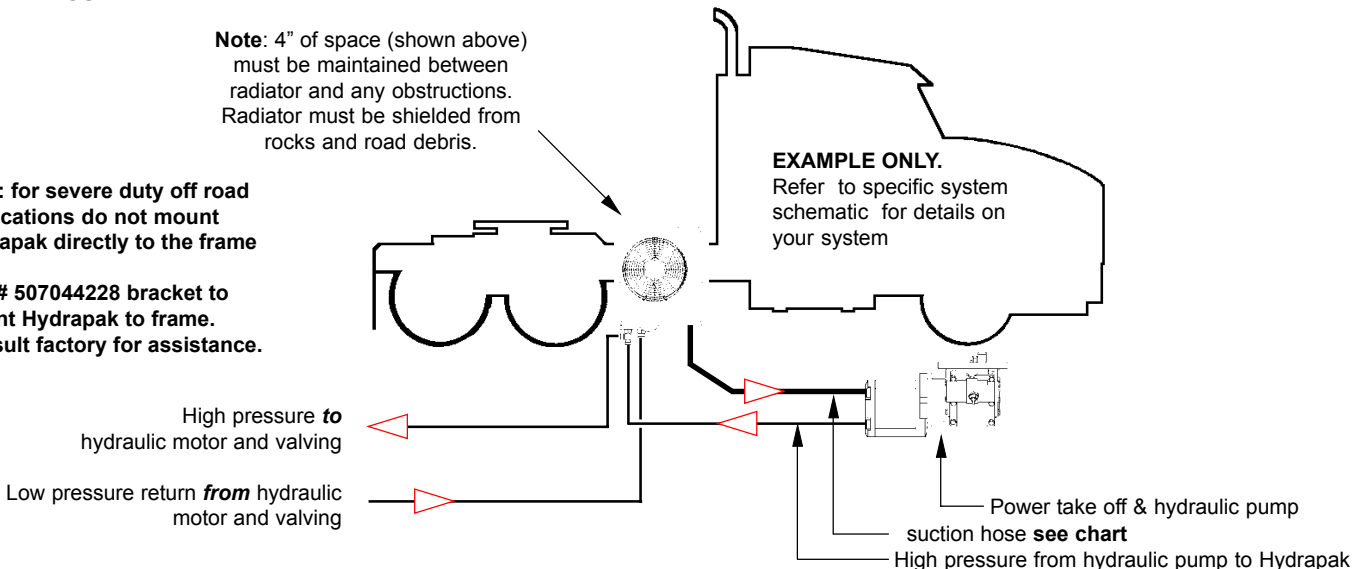
Suction hose sizing chart
0 to 19 gpm hyd. flow use 1-1/4" suction hose
20 to 25 gpm hyd. flow use 1-1/2" suction hose
26 to 40 gpm hyd. flow use 2" suction hose



FRAME RAIL MOUNT

Note: 4" of space (shown above) must be maintained between radiator and any obstructions. Radiator must be shielded from rocks and road debris.

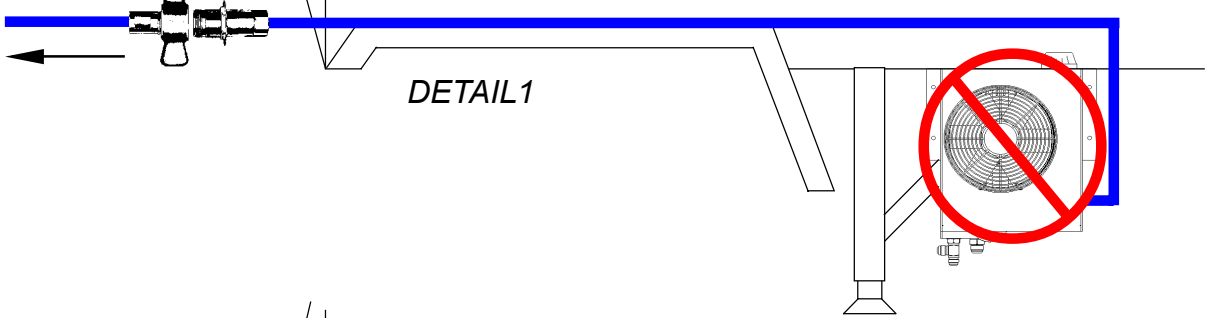
Note: for severe duty off road applications do not mount Hydrapak directly to the frame rail.
Use # 507044228 bracket to mount Hydrapak to frame.
Consult factory for assistance.



Note: See specific system circuit drawing for complete hydraulic plumbing information

TRAILER MOUNTED HYDRAPAK

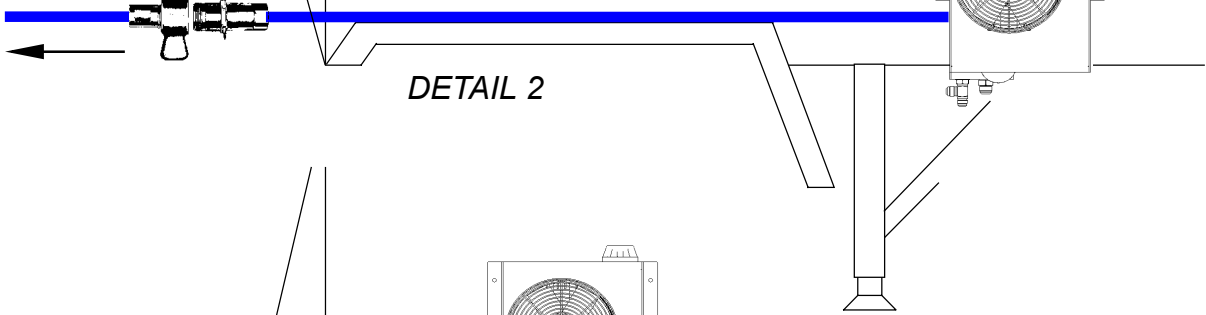
To hydraulic pump inlet



Detail 1 is the worst possible suction condition. This mounting may cause severe hydraulic pump cavitation which will reduce the hydraulic pump life. The hydraulic system as shown in this mounting configuration will operate very poorly or not at all.

DETAIL 1

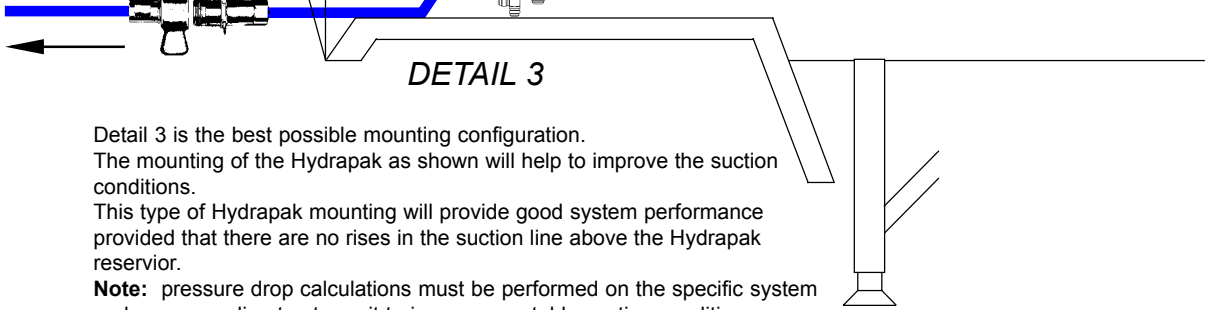
To hydraulic pump inlet



Detail 2 is a possible choice for hydraulic mounting. The straight line run on the suction line is acceptable. Caution must be taken with the routing of the suction line to insure that there are no rises in the suction line that are above the Hydrapak oil reservoir.
Note: pressure drop calculations must be performed on the specific system and corresponding tractor unit to insure acceptable suction conditions.
Consult factory for application assistance.

DETAIL 2

To hydraulic pump inlet



Detail 3 is the best possible mounting configuration. The mounting of the Hydrapak as shown will help to improve the suction conditions. This type of Hydrapak mounting will provide good system performance provided that there are no rises in the suction line above the Hydrapak reservoir.
Note: pressure drop calculations must be performed on the specific system and corresponding tractor unit to insure acceptable suction conditions.
Consult factory for application assistance.

DETAIL 3

SUCTION HOSE SIZING CHART:

0 to 15 gpm hyd. flow use 1-1/4" suction line on trailer and tractor.

15 to 23 gpm hyd. flow use 1-1/2" suction line on trailer and tractor.

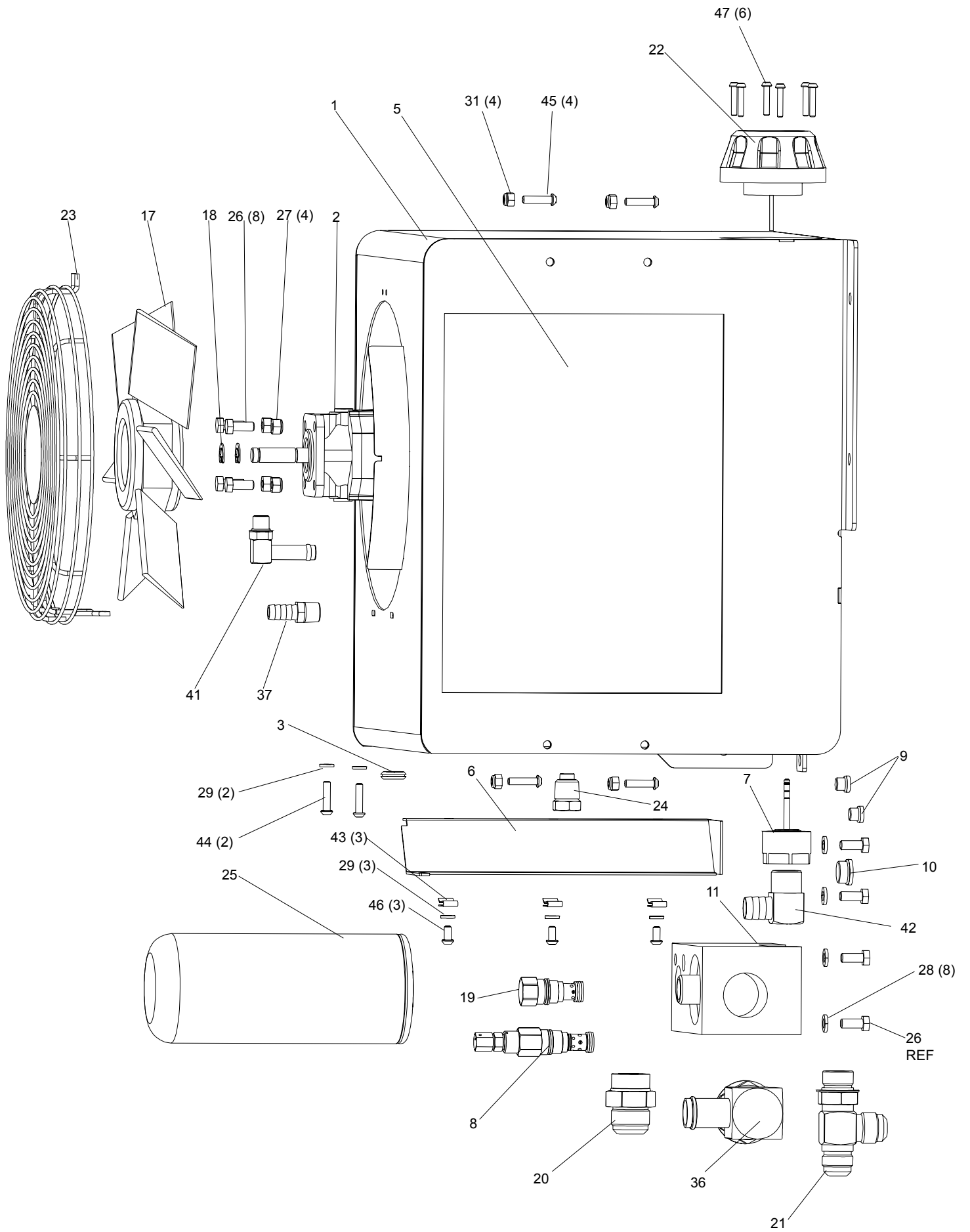
23 to 40 gpm hyd. flow use 2" suction line on trailer and tractor.

This hose sizing chart is based on mounting the Hydrapak as shown in "detail 3" and having an over-all suction line length of 15 feet. For suction lines that have an over-all length that is more than 15 feet Consult the factory for assistance.

The routing of the suction line must be done to avoid excessive pressure drop. Elbows, reducers, and line rises above the bottom of the Hydrapak reservoir will cause excessive pressure drop in the suction line.

The maximum recommended vacuum at the hydraulic pump inlet is 5" Hg for gear pumps and 2" Hg for piston pumps. Consult the factory for assistance.

ITEM LIST	DESCRIPTION	PART NO.	QTY.	PARTS
1	MAINFRAME	500080214	1	1-1/2 CODE 61 SUCTION
1	MAINFRAME	500080215	1	2" NPTF SUCTION
2	HYDRAULIC FAN MOTOR	300001228	1	
3	GROMMET	521070206	1	
4	HOSE ASSY. FAN TO MANIFOLD	407021216	1	NOT SHOWN
5	HYD. RADIATOR	308011209	1	
6	RADIATOR BLANKING PLATE	540063209	1	
7	RADIATOR BY-PASS CHECK	304059203	1	
8	HYD.RELIEF VALVE	303000208	1	2500 PSI
8	HYD.RELIEF VALVE	303000210	1	3000 PSI
9	HYDRAULIC PLUG SOCKET HEAD	302123206	2	# 4 ORBM
10	HYDRAULIC PLUG SOCKET HEAD	302123200	1	# 8 ORBM
11	HYDRAULICMANIFOLD	311003202	1	
12	#10-32 GR.5 PLATED NUT	236103000	1	
13	MANIFOLD CHECK VALVE DISC	532111202	1	NOT SHOWN
14	MANIFOLD CHECK VALVE SPRING	517000204	1	NOT SHOWN
15	MANIFOLD CHECK VALVE WASHER	532112200	1	NOT SHOWN
16	MANIFOLD CHECK VALV GUIDE BOLT	212103040	1	NOT SHOWN
17	FAN	506022203	1	
18	RETAINING RING FOR FAN	244010200	2	
19	FAN MOTOR FLOW CONTROL	304060209	1	
20	HYDRAULIC FITTING	302065207	1	# 16 ORBM X # 16 JICM
21	HYDRAULIC TEE FITTING	302005200	1	# 12 JICM X # 12 ORBM X # 12 JICM
22	FILLER / BREATHER CAP	309001205	1	
23	FAN GRILL / GUARD	521022201	1	
24	MAGNETIC DRAIN PLUG	258208208	1	# 8 NPTM
25	HYDRAULIC FILTER	306000206	1	SPIN ON STYLE
26	CAP SCREW	214005416	8	5/16-18 X 1 GR5 PLATED
27	NYLOCK NUT	236105400	4	5/16-18 PLATED
28	LOCK WASHER	240005400	8	5/16 GR 5 PLATED
29	LOCK WSHER	240004400	3	1/4 GR 5 PLATED
30	FLAT WAHER	240404000	4	1/4 GR 5 PLATED
31	NYLOCK NUT	236104400	4	1/4-20 GR 5 PLATED
32	HYDRULIC ELBOW FITTING	302095219	1	# 6 ORBM X # 4 JICM
33	HOSE CLAMP WORM TYPE	299070211	2	NOT SHOWN
34	HOSE CLAMP SLOTLESS WORM	299070207	4	NOT SHOWN
35	HOSE CLAMP CONSTANT TENSION	299070213	2	NOT SHOWN
36	HYDRAULIC ELBOW FITTING	302183203	1	# 16 HOSE BARB X # 20 ORBM
37	HYDRAULIC FITTING	302170205	1	# 8 HOSE BARB X # 6 NPTM
38	HYDRAULIC HOSE	310010208	1	1/2" FAN MTR. RETURN NOT SHOWN
39	HYDRAULIC HOSE	310030211	1	1" MANIFOLD TO RADIATOR NOT SHOWN
40	HYDRAULIC HOSE	310030212	1	1" RADIATOR TO TANK NOT SHOWN
41	HYDRAULIC ELBOW FITTING	302183202	1	# 8 HOSE BARB X # 6 ORBM
42	HYDRAULIC ELBOW FITTING	302180204	1	# 12 HOSE BARB X # 12 MPTM
43	SPEED NUTS	299120204	3	1/4-20
44	CAP SCREW	214004216	2	1/4-20 X 1 S.S. HEX HEAD
45	CAP SCREW	214304020	4	1/4-20 X 1-1/4 S.S. BTN HEAD
46	CAP SCREW	214304210	3	1/4-20 X 5/8 S.S. BTN HEAD
47	CAP SCREW	212303216	6	# 10-32 X 1 S.S. BTN HEAD
48	HYDRAULIC HOSE	310030217	1	RADIATOR CHECK TO TANK NOT SHOWN



WARRANTY

WARRANTY: The Seller warrants the goods sold hereunder against defects in workmanship or materials under normal and proper installation for a period of twelve (12) months from the date of delivery. BUYER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY IS FOR THE REPAIR OR REPLACEMENT AT SELLER'S OPTION, WITHOUT CHARGE TO BUYER EXCEPT FOR SHIPPING EXPENSES, AT THE OFFICE OF THE SELLER IN LOUISVILLE, KENTUCKY, OF ANY PART WHICH HAS PROVEN TO BE DEFECTIVE AT THE TIME IT WAS DELIVERED. ANY GOODS UNDER WARRANTY MUST BE RETURNED TO THE SELLER'S OFFICE FOR INSPECTION BY THE SELLER AND, IF ANY SUCH GOODS ARE FOUND TO BE DEFECTIVE, FOR REPAIR OR REPLACEMENT. ALL FREIGHT AND EXPENSES OF SHIPMENT TO AND FROM THE SELLER'S OFFICE SHALL BE BORNE BY THE BUYER. THE SELLER IS NOT RESPONSIBLE FOR ANY EXPENSES OF ANY NATURE INCURRED FOR ANY REPAIRS TO ALTERATIONS MADE BY OTHERS TO THE GOODS OR ANY OTHER EQUIPMENT WITHOUT THE PREVIOUS WRITTEN CONSENT OF THE SELLER. SHOULD THE GOODS BE PARTIALLY OR FULLY INSTALLED, ALTERED, STRIPPED, REPAIRED, SERVICED, OR MAINTAINED BY ANY PERSON OTHER THAN AUTHORIZED AGENTS AND EMPLOYEES OF THE SELLER, WITHOUT THE PREVIOUS CONSENT OF THE SELLER, OR MISUSED IN ANY WAY, THIS WARRANTY SHALL BE VOID. THIS WARRANTY CONSTITUTES THE ONLY WARRANTY BY THE SELLER OF THE GOODS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL SELLER BE LIABLE FOR BUYER'S ATTORNEY'S FEES.

NO CONSEQUENTIAL DAMAGES: UNDER NO CIRCUMSTANCES SHALL THE SELLER BE LIABLE FOR (A) ANY DAMAGE, INJURY, BREAKAGE OR LOSS OF ANY KIND WHATSOEVER, (B) ANY LOSS OF INCOME, OR (C) ANY CONSEQUENTIAL LOSS.

NO TORT LIABILITY: SELLER DISCLAIMS ANY LIABILITY FOR CLAIMS BASED ON SELLER'S NEGLIGENCE OR STRICT LIABILITY IN TORT.

PARTS: This Warranty and all disclaimers and limitations of liability shall apply to all parts sold to Buyer.

TRAINING AND SUPERVISION: The buyer hereby assumes the affirmative duty to properly educate, instruct and supervise its employees and all others, except employees of the Seller, in the safe, proper use and operation of the goods. The Buyer agrees to indemnify the Seller for any damages paid by the latter as a result of the Buyer's failure to perform this affirmative duty.

The goods are not designed or intended for use with every substance. If the material which the Buyer contemplates transferring with the goods has corrosive or polymerizing or other properties which may result in unsatisfactory or dangerous operations, the Seller has no liability or responsibility for performance of the goods.

RETURN OF GOODS: No goods supplied may be returned to the Seller for credit without the Seller's prior written authorization before transportation thereof commences and in such cases transportation must be prepaid and the Buyer's name, address, original order number and the Seller's invoice number must be clearly marked on the shipping tag.

If any goods are returned to the Seller for repair or under warranty and no instructions are received within two months after Seller receives the goods for repair or sends notice to Buyer of the disallowance of a warranty claim, the Seller reserves the right to scrap the goods returned, and no subsequent claim for any costs or losses will be accepted.

APPLICABLE LAW AND VENUE: The rights and obligations of the parties hereunder shall be governed in all respects, including all questions of construction and performance of this order, by the laws of Kentucky. All disputes concerning this order shall be resolved in an appropriate state or federal court located in Louisville, Kentucky.

MODIFICATION OR RESCISSION: This warranty can only be modified or rescinded by a written agreement signed by an officer of both the Buyer and the Seller.



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date: 11-19-01 Rev.C