DRIVE LINE RECOMMENDATIONS

APPARATUS BUILDER SUPPLIED DRIVE LINES SHALL BE OF APPROPRIATE SIZE TO MATCH THE CHASSIS AND PUMP REQUIREMENTS WITH INDIVIDUAL JOINT CANCELLATION AND PHASING BEFORE AND AFTER THE PUMP. DRIVE SHAFT BALANCE (INCLUDING YOKES) SHALL NOT EXCEED THE RECOMMENDED LIMIT OF EITHER THE DRIVE SHAFT OR CHASSIS TRANSMISSION MANUFACTURER'S SPECIFICATIONS. DRIVE SHAFT FULL RANGE OPERATING SPEEDS SHALL NOT EXCEED 42% OF ITS CRITICAL SPEED.

WARNING

EXCEEDING THESE LIMITS OR FAILURE TO FOLLOW THE RECOMMENDATIONS OUTLINED ON THIS DRAWING COULD DAMAGE THE GEARBOX AND RESULT IN PERSONAL INJURY.

SFGR MAXIMUM PUMP PRESSURE:
- HYDROSTATIC = 500 PSI
- HYDRODYNAMIC = 400 PSI

MAXIMUM POWER INPUT FOR PUMPING = 450 HP
MAXIMUM TORQUE ON PUMP SHAFT = 2300 LB-FT

PUMP ASSEMBLY PART NUMBERS

<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>501-00020-000</td>
<td>8FGR-15LG PTO, VERT GRBX</td>
</tr>
<tr>
<td>501-00020-010</td>
<td>8FGR-17LG PTO, VERT GRBX</td>
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<td>8FGR-21LG PTO, VERT GRBX</td>
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<tr>
<td>501-00020-013</td>
<td>8FGR-23LG PTO, VERT GRBX</td>
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NOTES:

1. SEE LIMIT CHART, HALE DOCUMENT F-72 FOR MAXIMUM ALLOWABLE PUMP PRESSURE, ENGINE HORSEPOWER AND TORQUE LIMITS FOR CENTRIFUGAL PUMPS.
2. APPLY LOCTITE #246 HIGH TEMPERATURE THREAD LOCKER OR EQUIVALENT TO SCREW THREADS AND TORQUE SCREWS PER HALE ENGINEERING STANDARD ES018-002.
3. UNLESS OTHERWISE INDICATED FASTENERS ARE GRADE 5 ZINC PLATED STEEL.

SCALE 1:6

MARINE 8FGR-LG PTO PUMP WITH VERTICAL GEARBOX

HORIZONTAL VOLUTE - POSITION #13 - CCW ROTATION

VERTICAL VOLUTE - POSITION #1 - CCW ROTATION

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NOT TO BE REPRODUCED OR USED TO MAKE OTHER DRAWINGS OR MACHINERY

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FSG-PL-01352
IMPELLER ASSEMBLY

SHIM NOTE:

USING 0.005" FEELER GAUGE, CHECK PUMP SHAFT FLOAT BETWEEN 409 BEARING AND GEARBOX HOUSING. IF FLOAT IS LESS THAN 0.005" SHIMS MUST BE REMOVED AS FOLLOWS:

1. REMOVE 7/16" X 1-1/4" CAP SCREWS THAT HOLD IMPELLER ASSEMBLY TO GEARBOX.
2. REMOVE RETAINING RING SECURING 409 BEARING TO PUMP SHAFT.
3. REMOVE 409 BEARING AND SHIM.
4. RE-INSTALL 409 BEARING ONTO SHAFT AND SECURE IN PLACE USING RETAINING RING.
5. RE-INSTALL 7/16" X 1-1/4" CAP SCREWS.

SECTION B-B
SCALE 1 : 2

MARINE 8FGR-LG PTO PUMP
WITH VERTICAL GEARBOX