NOTES:
1. PRIMING SYSTEM, DISCHARGE & SUCTION VALVES, PRESSURE RELIEF VALVES & CONTROLLERS AND THERMAL RELIEF VALVES ARE AVAILABLE.
2. USE SAE 50 LONG-LIFE SYNTHETIC MANUAL TRANSMISSION FLUID MEETING ONE OR MORE OF THE FOLLOWING SPECIFICATIONS:
   • API JL-1
   • EATON P6-164 Rev. 7
   • NAVISTAR / INTERNATIONAL TMS 6816
   • ZF FreedomLine

3. ALL METRIC FASTENERS TO HAVE A MINIMUM PROPERTY CLASS 8.8.
4. CAPACITY IS 1.5 QUART [1.4 LITER].
5. THIS PUMP IS FOR FURTHER USE.

INSTALLATION

GEARBOX MOUNTING: 5.
ALL SAE FASTENERS TO HAVE A MINIMUM GRADE 8 SPECIFICATION.
ALL METRIC FASTENERS TO HAVE A MINIMUM PROPERTY CLASS 8.8.

PUMP ASSEMBLY MOUNTING:
1. MOUNTING HOLES SHOULD BE FROM BOTH VOLUTE AND GEARBOX.
2. PUMP MOUNTING SUPPORT SHOULD BE VIA THE PUMP VOLUTE MOUNTING HOLES (3 MIN.).
3. GEARBOX MOUNTING SUPPORT SHOULD BE FROM THE STUDS PROVIDED (3 MIN.).
4. CONSIDERATION MUST BE TAKEN NOT TO TRANSMIT LOADS OR TWISTING MOMENTS TO OR THROUGH PUMP ASSEMBLY FROM CHASSIS, FRAME, BODY WORK, SUCTION AND DISCHARGE PIPING CONNECTIONS.

INPUT SHAFT - INERTIA WITH PUMPED WATER

CALCULATIONS FOR INPUT SHAFT DOES NOT INCLUDE RATING FACTORS FOR PUMP, DRIVE, COUPLERS, VONES, OR DRIVELINE. CUSTOMERS OR SUPPLIERS MUST PROVIDE MAE MOMENTS OF INERTIA FOR ADDITIONAL DRIVE COMPONENTS.

PUMP MODEL & SERIAL NUMBER

OPTIONS AND ACCESSORIES

PUMP MODELS

GEAR RATIO

PUMP MODEL

INPUT RPM

GEARBOX MODEL

WARNING

THE PUMP MUST BE MOUNTED WITH ULTRASONIC DRIVE RATIO TO ADAPT TO A WIDE VARIETY OF APPLICATIONS. THE RATING RATIO AND DRIVE UNIT TYPE ARE DETERMINED BY THE MODEL NUMBER. FOR EXAMPLE:

PUMP MODELS

MAXIMUM INPUT RPM

MAXIMUM ALLOWABLE HYDRODYNAMIC PRESSURE: 340 PSIG;
MAXIMUM ALLOWABLE HYDROSTATIC PRESSURE: 500 PSIG

MBP-11F 1.14
MBP-16F 1.64
MBP-37F 3.74

AP IDENTIFICATION (GPM) AP IDENTIFICATION (L/S)

MBP*-11F 1.14
MBP*-16F 1.64
MBP*-37F 3.74

MBP-11F 1.14
MBP-16F 1.64
MBP-37F 3.74

MBP-23F 2.64
MBP-26F 3.07
MBP-29F 3.54
MBP-37F 6.83

LBS-FT (kg-m)

MBP-23F 2.64
MBP-26F 3.07
MBP-29F 3.54
MBP-37F 6.83

MAXIMUM ALLOWABLE HYDRODYNAMIC PRESSURE: 340 PSIG;
MAXIMUM ALLOWABLE HYDROSTATIC PRESSURE: 500 PSIG
THE CAST "ARROW" ON PUMP HEAD TO POINT UP FOR ALL GEARBOX POSITIONS, EXCEPT INVERTED POSITION.

THE CAST "I" ON PUMP HEAD TO POINT UP FOR INVERTED GEARBOX POSITION.

POSITION 1  POSITION 2  POSITION 3  POSITION 4  POSITION 5  POSITION 6
POSITION 7  POSITION 8  POSITION 9  POSITION 10  POSITION 11  POSITION 12

GEARBOX POSITIONS

VIEW Y

VIEW Z

HORIZONTAL LH - 22.5°
(NOT AVAILABLE WITH ENGINE MOUNT)

HORIZONTAL LH

VERTICAL
(PUMP OVER INPUT)

INVERTED
(INPUT OVER PUMP)

HORIZONTAL RH

HORIZONTAL RH - 22.5°
(NOT AVAILABLE WITH ENGINE MOUNT)

GEARBOX AND DISCHARGE POSITIONS

VIEW Y

VIEW Z

HORIZONTAL LH - 22.5°
(NOT AVAILABLE WITH ENGINE MOUNT)

HORIZONTAL LH

VERTICAL
(PUMP OVER INPUT)

INVERTED
(INPUT OVER PUMP)

HORIZONTAL RH

HORIZONTAL RH - 22.5°
(NOT AVAILABLE WITH ENGINE MOUNT)
NOTE:

1. LEVEL 1 REPAIR KIT PROVIDES EVERYTHING NEEDED TO CHANGE SEALS.
2. LEVEL 2 REPAIR KIT PROVIDES LEVEL 1 AND ITEMS NEEDED FOR BEARINGS.
3. LEVEL 3 REPAIR KIT PROVIDES LEVEL 1 & 2 AND ITEMS TO REPLACE GEARS.
4. IMPELLER RENEW KIT PROVIDES LEVEL 1 REPAIR KIT AND ITEMS TO REPLACE IMPELLER.

### REPAIR PART KITS IDENTIFICATION

#### REPAIR KIT PART NUMBERS

<table>
<thead>
<tr>
<th>RATIO</th>
<th>GEAR RATIO</th>
<th>LEVEL 1 REPAIR KIT P/N</th>
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#### IMPELLER RENEW KIT PART NUMBERS

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PUMP ASSEMBLY
ALL RATIOS EXCEPT 3.74

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PUMP GEAR PART NUMBER

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<tr>
<th>RATIO</th>
<th>NAME</th>
<th>GEAR RATIO</th>
<th>PUMP GEAR PIN (GEAR TEETH)</th>
<th>MATE GEAR PIN (GEAR TEETH)</th>
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PARTS IDENTIFICATION
PUMP SHAFT GROUP

IF IN DOUBT ASK
HALE MBP FLEX SERIES PUMP

GEARBOX POSITION - INVERTED, DISCHARGE POSITION - 1, ENGINE ROTATION AND OPTIONAL GEARBOX COOLER SHOWN

OPTIONS AND ACCESSORIES

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<tr>
<th>OPTION</th>
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<td>MBP-GB COOLER</td>
<td>FSG-PL-01483</td>
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<td>MBP-GB GEARBOX</td>
<td>FSG-PL-01486</td>
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<td>MTR-081</td>
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<tr>
<td>ZF FreedomLine•</td>
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<td>FLEX SERIES GEARBOX</td>
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GEAR RATIOS & PUMP MODELS

<table>
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<tr>
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<th>GEAR RATIO</th>
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PUMP WEIGHT (DRY)

IRON VERSION: 295 LBS [134 KG]
BRONZE VERSION: 210 LBS [95 KG]

PUMP IDENTIFICATION:

THE HALE MBP-FLEX SERIES PUMP IS AVAILABLE WITH MULTIPLE DRIVE RATIOS TO ADAPT TO A WIDE RANGE OF APPLICATIONS. THE DRIVING RATIO AND DRIVE UNIT TYPE DETERMINE THE MODEL NUMBER. FOR EXAMPLE:

TO DETERMINE THE MODEL NUMBER, USE THE RATED CAPACITY AND DRIVE RATIO TO BE SURE TO INCLUDE THE MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING PARTS.

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