

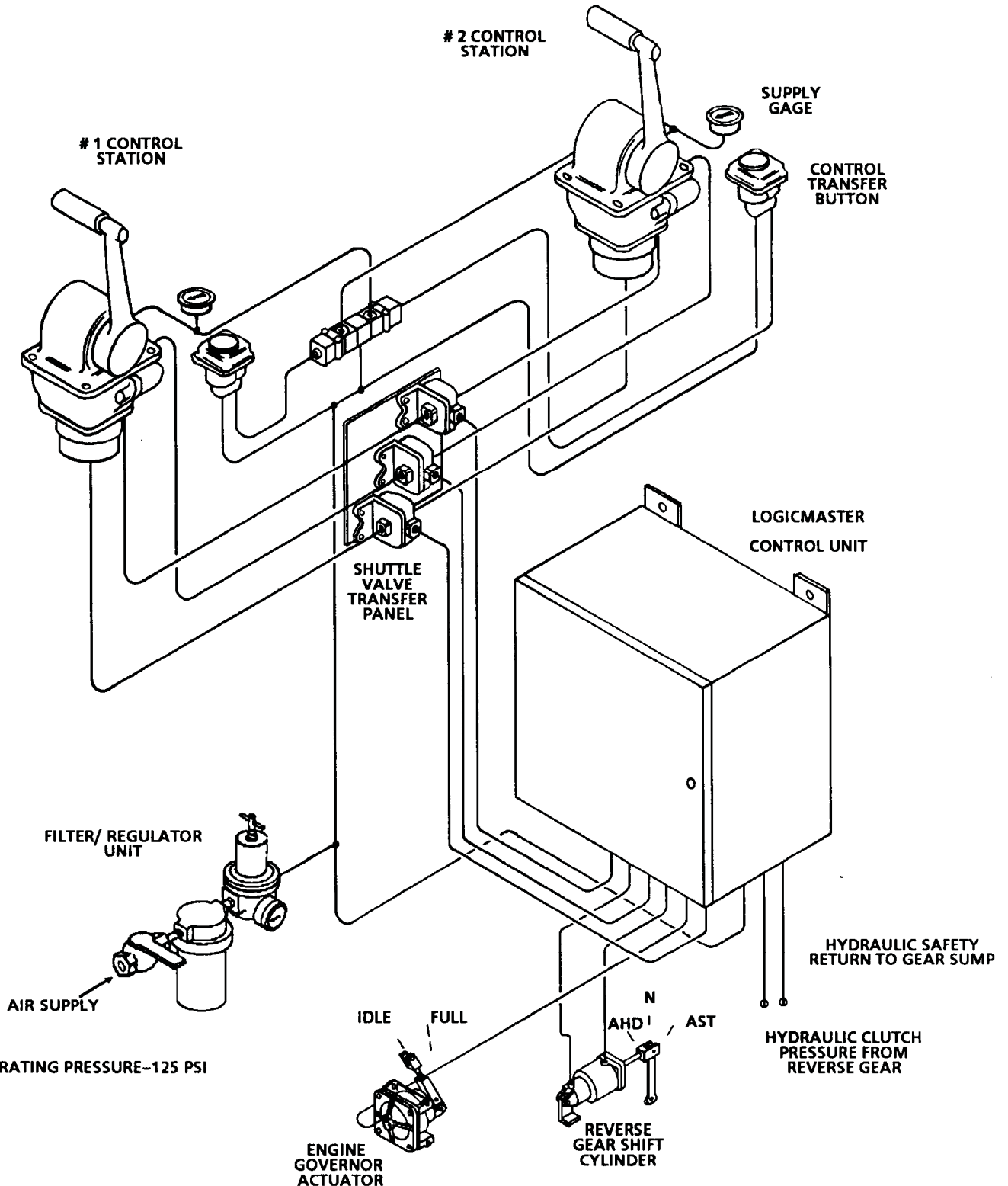


1074 Kenran Industrial Dr.
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HUMCO ENGINE CONTROLS

Rexroth LogicMaster® Hydraulic Clutch Control Units

LOGICMASTER® HYDRAULIC CLUTCH CONTROL SYSTEM SINGLE ENGINE—TWO CONTROL STATIONS



6



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HUMCO ENGINE CONTROLS

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LOGICMASTER® HYDRAULIC CLUTCH CONTROL UNITS & CONTROL SYSTEMS

- 800 TO 2,000 H.P
- OFFSHORE SUPPLY BOATS, CREW BOATS, TUGS, FISHING & GENERAL SERVICE BOATS

LOGICMASTER Hydraulic Clutch Control Units combine proven, high-performance pneumatic components into factory assembled, tested and pre-timed units ready for shipboard installation and operation. All operating valves are subbase mounted for simplified service, maintenance and troubleshooting.



FEATURES...

- Compact arrangement —permits simplified shipboard installation
- Rugged, service proven operating valves
- Integral circuit manifold eliminates piping, fittings and potential leakage problems
- Standard circuit layout simplifies field maintenance and troubleshooting
- Factory performance tested—100% pressure tested for operational performance and timing
- Enclosure protects equipment and minimizes tampering
- Operates on standard 125 psi shipboard air supply

Both systems include the standard interlock features of timed reversing interlock, governor power boost on clutch engagement and clutch pressure — throttle control interlock. The LM2 system **offers the additional** clutch pressure-shaft brake in coordination with the clutch operation.

CONTROL SYSTEM SEQUENCE OF OPERATION...from FULL AHEAD to FULL ASTERN

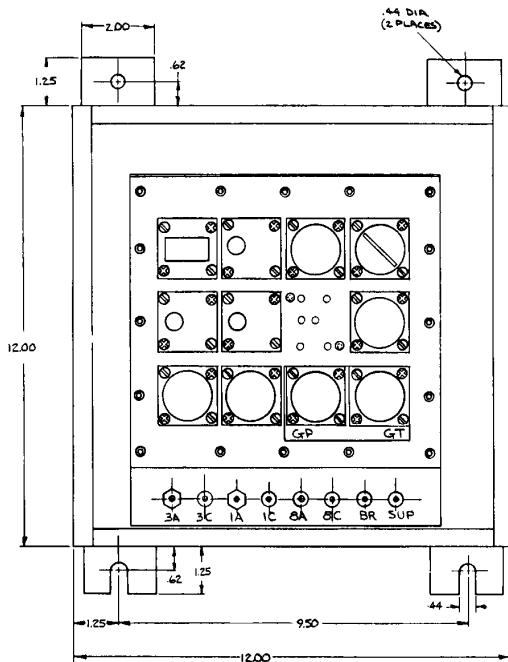
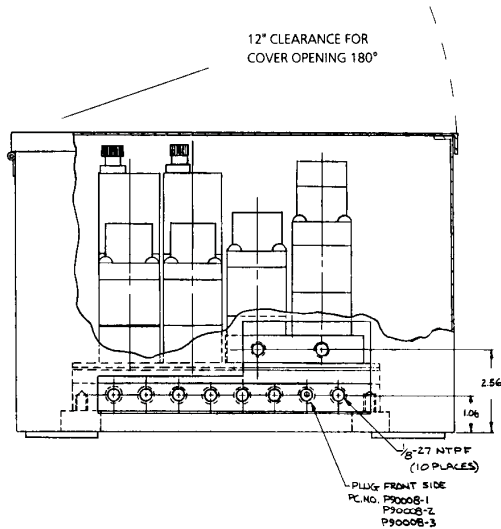
- | | | |
|--|---|---|
| • Operator moves control handle from FULL AHEAD to FULL ASTERN | • Timed interlock holds reverse gear in neutral | • Governor power boost applied |
| • Governor goes to the IDLE position | • Engine & Shaft speed to IDLE or SHAFT STOP | • Clutch pressure reaches lock-up |
| • Reverse gear to NEUTRAL | • Reverse gear shifts ASTERN | • Governor power boost terminates; governor advances to FULL SPEED. |
| • Shaft Brake applied (if used) | • Shaft brake releases (if used) | |



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LOGICMASTER® Hydraulic Clutch Control systems are specifically designed for the hydraulic clutch type of marine reverse gears and include these service proven interlocks and features:

POWER BOOST...Advances governor setting during clutch engagement to provide increased engine torque and prevent stalling as the propeller load is applied. On completion of clutch engagement, the boost drops off and the governor is positioned to the setting called for by the pilothouse control lever. Governor power boost can be adjusted for desired magnitude and duration.

CLUTCH PRESSURE—THROTTLE CONTROL INTERLOCK...Monitors the buildup of hydraulic pressure in the clutch during engagement. Clutch pressure must reach preset engagement level before engine speed can be advanced from the remote control station to prevent high engine speed during clutch engagement and resultant clutch wear. This feature also protects the reverse gear if clutch pressure drops during operation. Loss of clutch pressure releases the interlock and engine speed is reduced to idle, preventing clutch damage.

TIMED REVERSING INTERLOCK...Holds the clutch control in neutral position for a preset time on reversals even though the remote control lever is shifted directly through neutral. This allows engine and propeller speeds to decrease to an acceptable level before reversal is initiated. When a shaft brake is used, the neutral timing is long enough for the brake to apply and stop the propeller before reversing. Timing is adjustable.

CLUTCH PRESSURE—SHAFT BRAKE INTERLOCK...Prevents the shaft brake from being applied when either clutch is engaged. As the clutch pressure is applied, the shaft brake control valve is actuated to release the brake. This clutch pressure interlock prevents simultaneous engagement of the clutch and brake.

Port Numbers

- 1A - Ahead Out
- 1C - Ahead In
- 3A - Astern Out
- 3C - Astern In
- 8A - Speed Out
- 8C - Speed In
- GP - Gear Pressure
- GT - Hydraulic Safety Return
- BR - Shaft Brake Signal
- SUP - Supply

Ordering Information

Model	Part No.	Old Part No.	Description
LM1	R431007529	P -090008-00001	Unit less shaft brake control
LM2	R431007528	P -090008-00000	Unit with shaft brake control signal
	R431006452	P -064517-00000	Maintenance kit for R431007529 (Old Part No. P -090008-00001)
	R431006454	P -064518-00000	Maintenance kit for R431007528 (Old Part No. P -090008-00000)

Weight: 31 lbs. (14.1kg.)

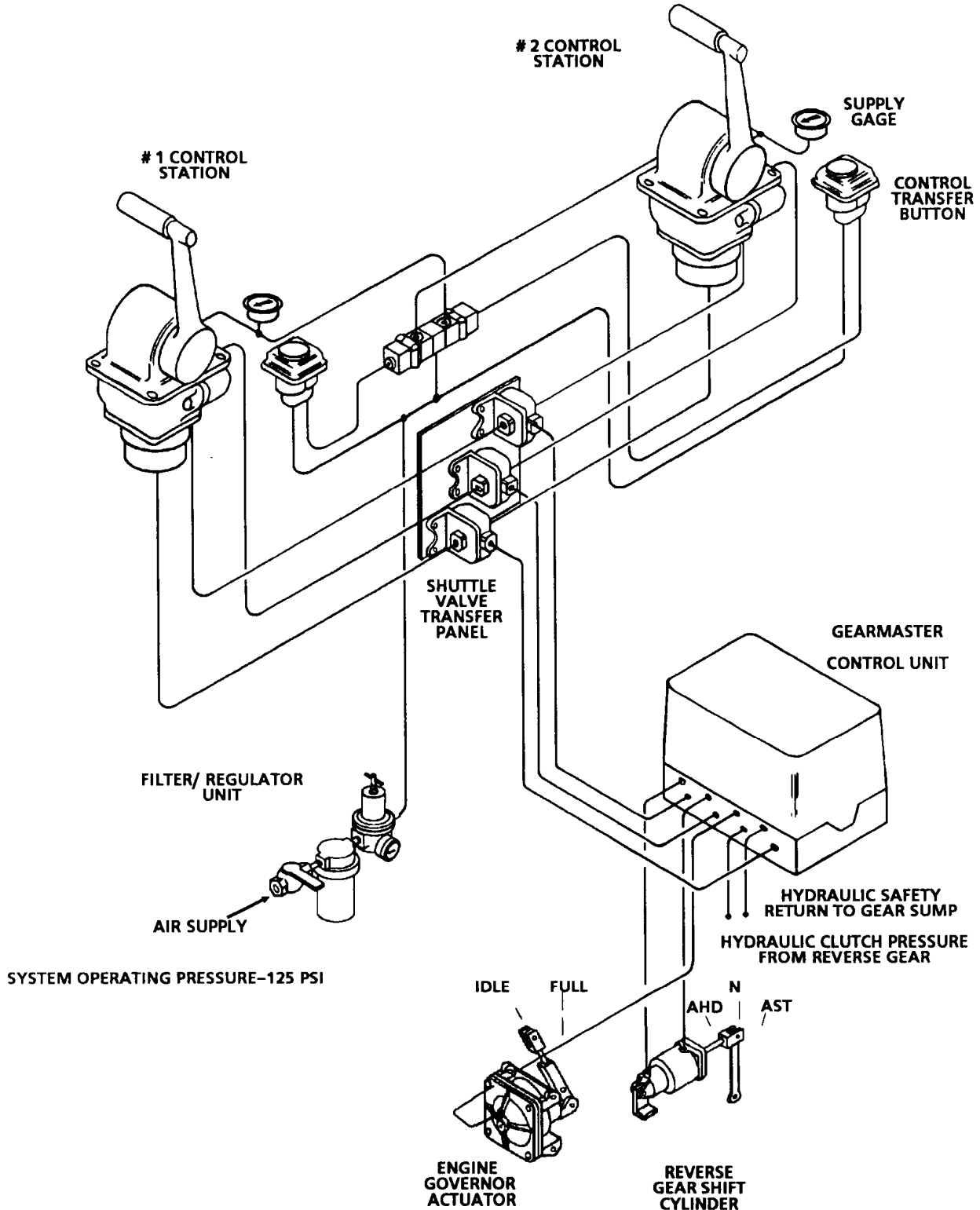


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HUMCO ENGINE CONTROLS

Rexroth GearMaster® Hydraulic Clutch Control System

GEARMASTER® HYDRAULIC CLUTCH CONTROL SYSTEM SINGLE ENGINE—TWO CONTROL STATIONS





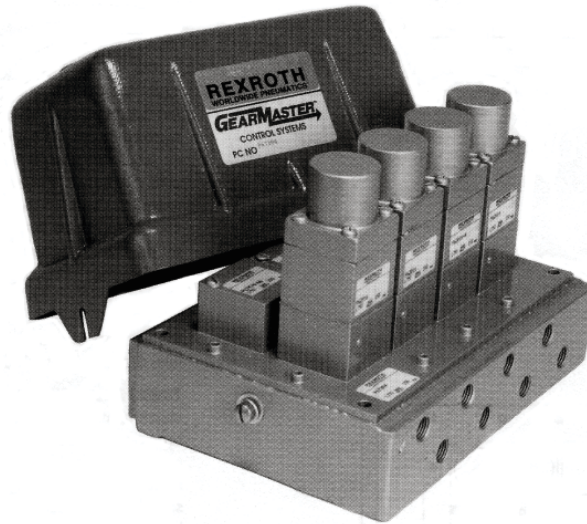
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HUMCO ENGINE CONTROLS

Rexroth GearMaster® Propulsion Control Systems

GEARMASTER® MARINE PROPULSION CONTROL SYSTEMS

- **HYDRAULIC CLUTCH REVERSE GEARS**
- **200 TO 1200 H.P.**
- **TOWBOATS, TUGS, TRAWLERS, SEINERS**



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GEARMASTER® Controls incorporate the necessary interlock and protective circuits for proper engine and reverse gear operation without relying on operator judgement to time or anticipate propulsion machinery functions. With GEARMASTER controls, the propulsion machinery responds to maneuvering demands without wear or damage from high speed clutch engagement or engine stalling.

Part Numbers of Control Units—

- R431007068 - with pneumatic clutch/throttle interlock (Old Part No. P-067393-00000)
- R431007069 - with hydraulic clutch/throttle interlock (Old Part No. P-067394-00000)

FEATURES...

- Compact size...simplified installation
- Simplicity...minimum number of components
- Serviceability...manifold mounted components
- Service proven...components and control circuit
- Minimum piping connections with manifolded circuit
- Timed reversing interlocks
- Clutch engagement/ throttle interlock
- Controlled engine acceleration
- Shaft brake timing



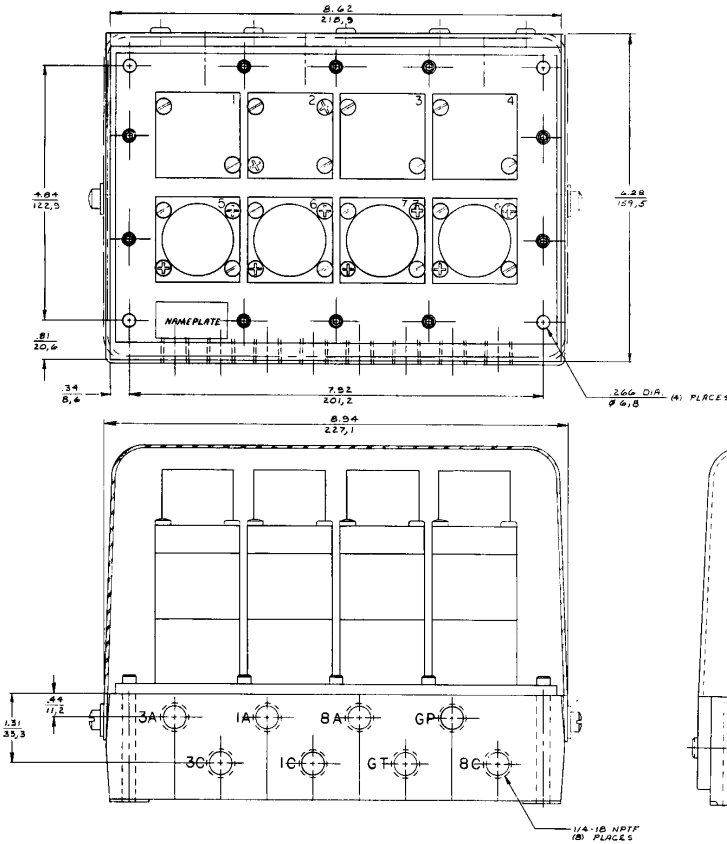
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HUMCO ENGINE CONTROLS

Rexroth GearMaster® Propulsion Control Systems

Ordering Information		
Part No.	Old Part No.	Description
R431007068	P -067393-00000	Pneumatic throttle interlock unit
R431007069	P -067394-00000	Hydraulic throttle interlock unit
R43100806	P -027493-00000	Maintenance kit for R431007068 (Old Part No. P -067393-00000)
R43100807	P -027494-00000	Maintenance kit for R431007069 (Old Part No. P -067394-00000)

Weight: 15 lbs. (6.8 kg.)



Port Numbers

- 1A - Ahead Clutch Out
- 1C - Ahead Signal In
- 3A - Astern Clutch Out
- 3C - Astern Signal In
- 8A - Speed Signal Out
- 8C - Speed Signal In
- GP - Gear Pressure
- GT - Hydraulic Safety Return

Dimensions = $\frac{IN}{mm}$