



PRODUCT BULLETIN

Hydraulic Throttle Controls

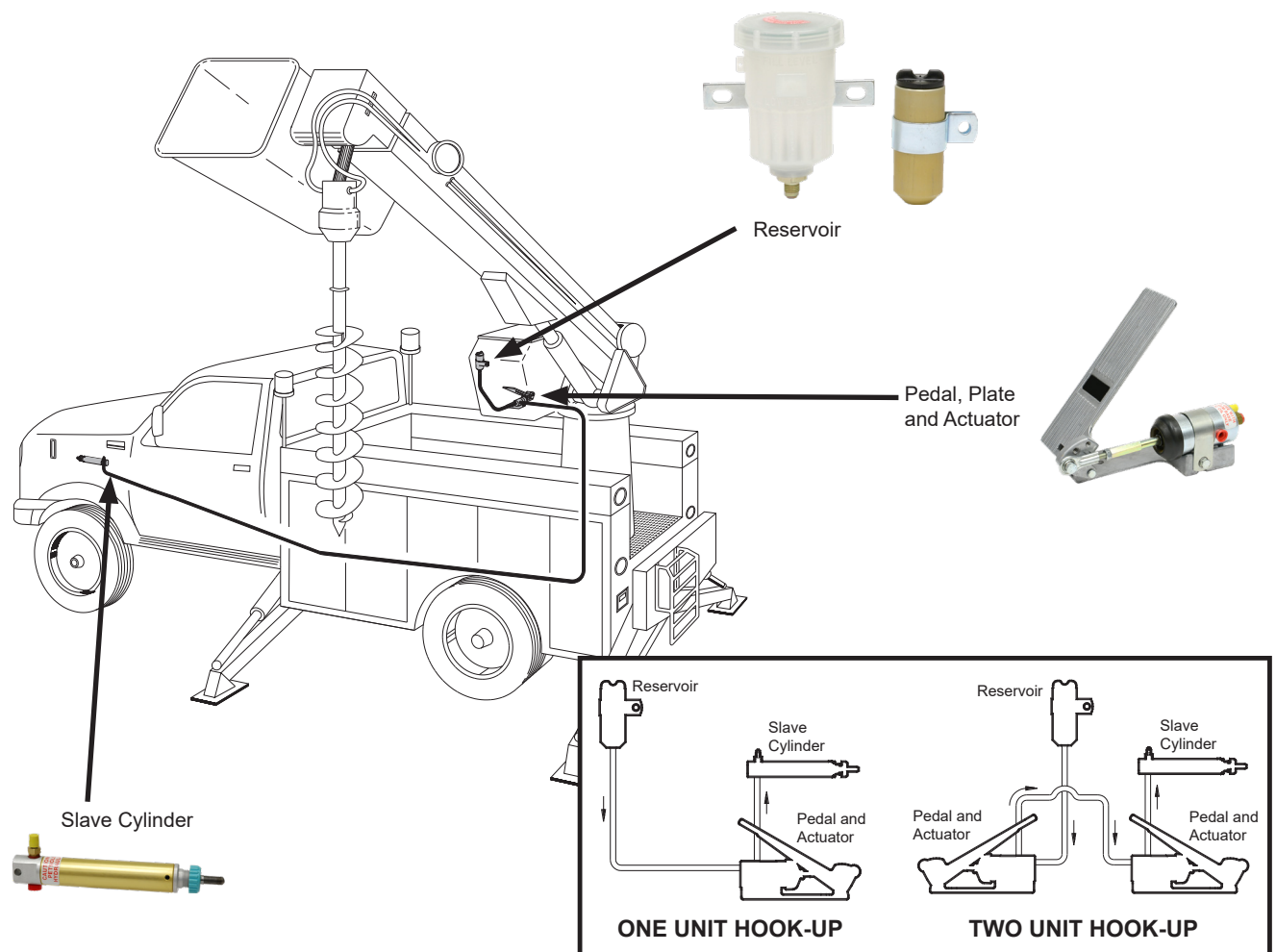
DESCRIPTION

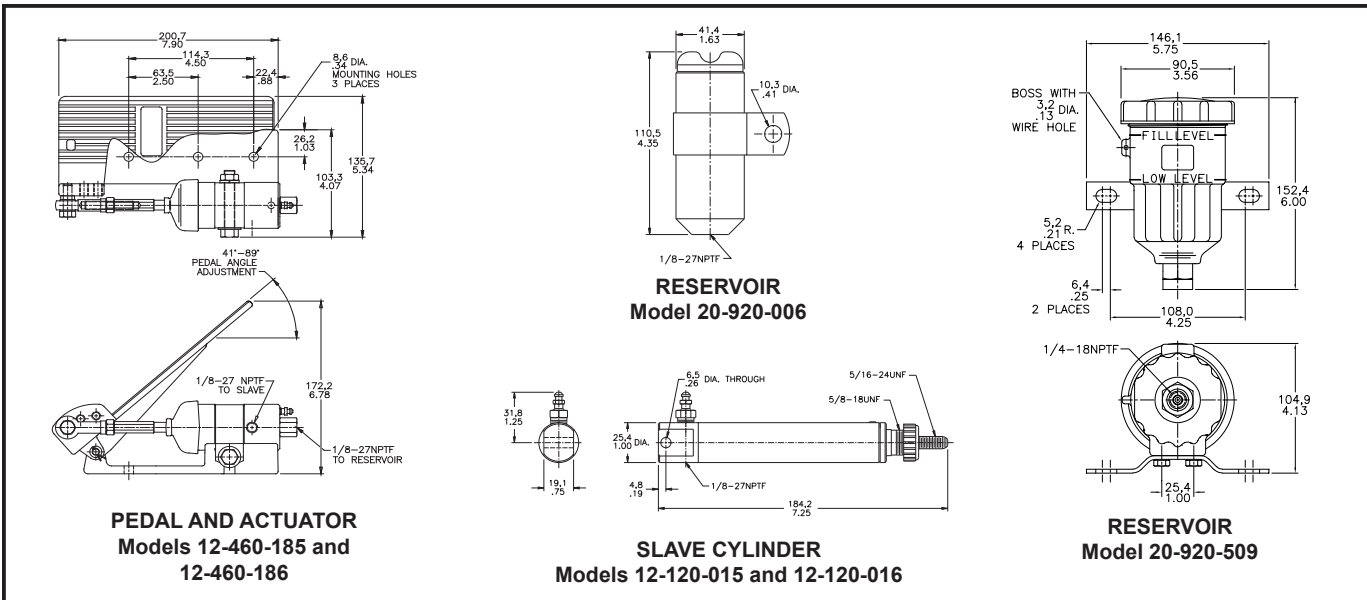
ZF Hydraulic Throttle Controls enable you to make a direct and simple hook-up to control engine RPM by eliminating the necessity for troublesome mechanical linkage.

ZF Throttle Controls incorporate return springs in all the actuators as well as some of the slave cylinders. The primary function of these springs is to return the pedal to its normal static position. We recommend that an external return spring be installed at the throttle control slave cylinder push rod location when compliance with Federal Motor Vehicle Safety Standards FMVSS-124 is necessary.

FEATURES

- Available in brake fluid or hydraulic oil models
- Utilizes flexible tubing for reduced installation cost
- Adjustable pedal angle maximizes operator control and comfort
- The low hydraulic pressure during operation gives the operator a natural pedal feel feed-back
- Rugged die cast aluminum construction ensures reliable and maintenance free operation





COMPLETE MODELS

Model Number	Fluid Type	Description	Repair Kit
**12-460-189	BF	Pedal and Actuator, Slave Cylinder and Reservoir	12-400-023
**12-460-190	HO	Pedal and Actuator, Slave Cylinder and Reservoir	12-400-024
*12-460-191	BF	Pedal and Actuator, Slave Cylinder and Reservoir	12-400-025
*12-460-192	HO	Pedal and Actuator, Slave Cylinder and Reservoir	12-400-012

NOTE: All complete models use reservoir 20-920-006.

PEDAL AND ACTUATOR

Model Number	Fluid Type	Bore	Stroke	Effective Stroke	Effective Displacement	Repair Kit	Actuator Only
12-460-185	BF	1.250 in	0.63 in	0.56	0.73 in ³	12-400-007	12-460-187
12-460-186	HO	1.250 in	0.63 in	0.56	0.73 in ³	12-400-002	12-460-188

SLAVE CYLINDER

Model Number	Fluid Type	Bore	Stroke	Fluid Volume Required for Full Stroke	Rod End Thread	Repair Kit
*12-120-007	BF	0.625 in	2.44 in	0.73 in ³	5/16 - 24	12-100-009
*12-120-010	HO	0.625 in	2.44 in	0.73 in ³	5/16 - 24	12-100-010
**12-120-015	BF	0.625 in	2.06 in	0.63 in ³	5/16 - 24	12-100-013
**12-120-016	HO	0.625 in	2.06 in	0.63 in ³	5/16 - 24	12-100-014

NOTE: 5° Effective Pedal Stroke - 0.48 inch movement of Slave Cylinder

RESERVOIR

Model Number	Fluid Type	Capacity
†20-920-006	BF or HO	3.3 in ³ - filler cap with baffle and breather
20-920-009	BF or HO	3.3 in ³ - filler cap with baffle and breather
•20-920-509	BF	14.5 in ³ - filler cap with diaphragm
•20-920-512	HO	14.5 in ³ - filler cap with diaphragm

- * Non-spring loaded slave cylinder.
- ** Spring loaded slave cylinder.
- † Includes two connectors - 1/8-27NPTF Male x 1/4 Plastic Tube.
- Includes 1/4-18NPTF (interval) adaptable fitting.
- BF = Brake Fluid HO = Hydraulic Oil

See form no. 80-920-001 for complete information regarding reservoirs.

This publication is not subject to any update service. Information contained in this publication was in effect at the time the publication was approved for printing and is subject to change without notice or liability. ZF Off-Highway Solutions Minnesota Inc. reserves the right to revise the information presented or to discontinue the production of parts described at any time.



ZF Off-Highway Solutions Minnesota Inc.
 1911 Lee Boulevard / North Mankato, MN U.S.A. 56003
Tel: +1 507 625 6426 **Fax:** +1 507 625 3212