

# CUSTOM INNOVATIVE HYDRAULIC SYSTEMS THAT POWER THE WORLD.

For over 50 years, FEMA has been an industry leader in innovative electro-hydraulic solutions with world-class quality and performance. We partner with customers to ensure system success by matching the right products to their performance and cost requirements.



## INDUSTRIES

Proven record across multiple markets:

- Off Road
- Agriculture
- Construction
- Automotive
- Marine
- Mining
- Transportation
- Military

## APPLICATIONS

- Transmission Controls
- Autonomous Braking
- Fan Drives
- Semi-Active Suspension Systems
- PTOs
- Fuel Controls
- Industrial Equipment Controls
- Actuators
- Many More

## AWARDS

FEMA has been recognized by industry leaders for its world class quality and customer support. Examples from the past decade include:

- 2x John Deere Supplier of the Year
- 9x John Deere Partner
- 10x Caterpillar Platinum/Excellent Supplier
- ISO 9001/ISO 14001/ ISO 17025 Registered



FEMA stands for

**FORCE EQUALS MASS times ACCELERATION.**

This serves as a constant reminder that sound products are always based on sound fundamental engineering principles.



FEMA Corporation Headquarters and Manufacturing, Portage, MI – 200,000 ft<sup>2</sup>



1716 Vanderbilt Avenue, Portage, MI 49024

555 Washington St, Otsego, MI 49078

PH: 269-323-1369 • [fema-corp.com](mailto:fema-corp.com)

[sales@fema-corp.com](mailto:sales@fema-corp.com)



WE DON'T JUST SUPPLY  
HYDRAULIC PARTS,  
**WE DESIGN  
SOLUTIONS**  
THAT OTHERS CAN'T, OR WON'T.







SMALL PARTS

# BIG INNOVATIONS.

FEMA Corporation maintains an extensive portfolio of production solutions that will fit a wide variety of applications. But that is just the beginning. FEMA is first and foremost a team of custom hydraulic valve, manifold, product development, and manufacturing experts. Our Applications Engineering team works one on one with your Product Development team to bring innovative ideas to reality. Our solutions have enabled industry firsts, differentiated equipment, and class-leading performance. In addition to our hydraulic expertise, FEMA Component Manufacturing is an IATF-16949 certified component manufacturing facility with the capabilities below, and more.



Cartridge Bodies



Spools



Valve Housings



Precision Turned Components



Machined Manifolds

## CONTROL BY WIRE APPLICATIONS

**Advantages:** Whether it be steering or braking systems, FEMA is a leader in this field with 20+ years of production experience. Our systems are capable of supplementary, or full control-by-wire performance, enabling differentiating features up to and including Full Autonomy.



### FULL STEER-BY-WIRE

**Applications:**

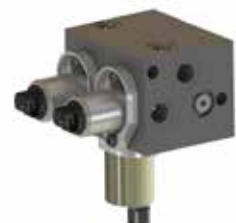
- Agriculture, Construction, or other off-highway vehicle steer by wire control, including joystick based steering systems.
- Autonomous vehicle steering



### AUTOMATED GUIDANCE

**Applications:**

- Agriculture vehicle and row guidance
- Trailer guidance



### BRAKE-BY-WIRE

**Applications:**

- ABS
- Autonomous Vehicle Brake Control
- Full Vehicle Brake-by-Wire Control
- Tracked/skid steer emergency steering control



### VARIABLE/AUX STEERING ASSIST

**Applications:**

- EH boost of orbital steering flow
- Variable rate steering
- Rear wheel/auxiliary steering

## PROPORTIONAL VALVE APPLICATIONS

**Advantages:** FEMA Corporation is an expert in clutch control. Our products contain a variety of features including frictionless pilots, patented damping, and CFD optimized flow paths. Our engineering team works closely with our customers to model and optimize system level performance for every application.



### ZERO-FRICTION PROPORTIONAL PILOT

**Applications:**

- Hydrostat & IVT Control
- Pilot for EH Steering, Brake, System Pressure Regulation
- Fan Clutch Modulation
- Pump Compensator Control



### DIRECT DRIVE PROPORTIONAL

**Applications:**

- Power-Shift Transmissions
- Power-Shuttle Transmissions
- Directional Flow Control Pilot
- Cooler Flow Regulation



### TWO-STAGE PROPORTIONAL

**Applications:**

- Power-Shift Transmissions
- Power-Shuttle Transmissions
- PTO Clutch Engagement / Disengagement



### PTO / DUAL PROPORTIONAL

**Applications:**

- Large / High Inertia Power Take Offs



## ON/OFF VALVE APPLICATIONS

**Advantages:** FEMA has a variety of standard and specialty on/off valves to fit your application. Our products feature integrated coil designs with optimized magnetics for maximum force output and reliability. Many parts are available in multiple configurations, including filters, diodes, o-rings, electrical connectors, coils and more.



### "ZERO-LEAK" SOLENOID

**Applications:**

- Park Brake circuits
- Fan Drive circuits



### PRECISION FLOW PILOT

**Applications:**

- Regulated clutch spool control
- Enable spool control



### DIRECT DRIVE 2/2, 3/2, 4/2, 5/2

**Applications:**

- On/Off element actuation including PTO, 4WD clutches, differential locks, braking systems
- Park Brake enable circuits



### TWO-STAGE ON/OFF

**Applications:**

- Enable flow for large elements or circuits



## SPECIALTY VALVE & SOLENOID APPLICATIONS

**Advantages:** FEMA is first and foremost a custom valve designer and manufacturer. The applications below are just an example of our experience designing bespoke solutions to meet a customer's unique requirements. We work 1:1 with your product and engineering teams to deliver the innovative solutions you need.



### HIGH PRESSURE VALVES

**Applications:**

- EH brake control applications in off-highway equipment
- Suitable for integrated trailer brake control
- Enables precise EH element modulation



### SEMI-ACTIVE SUSPENSION SYSTEMS

**Applications:**

- Dynamic damping control of performance shock absorber
- Potential applications including adjust damping of suspended axles, ride height adjustment, roll stabilization, etc.



### MICRO-VALVE

**Applications:**

- Two-state variable flow restriction / adjustable damping
- Proportional flow restriction / adjustable damping



### EH VARIABLE PRESSURE REGULATOR

**Applications:**

- Allows for dynamic system pressure control for fixed displacement pumps

