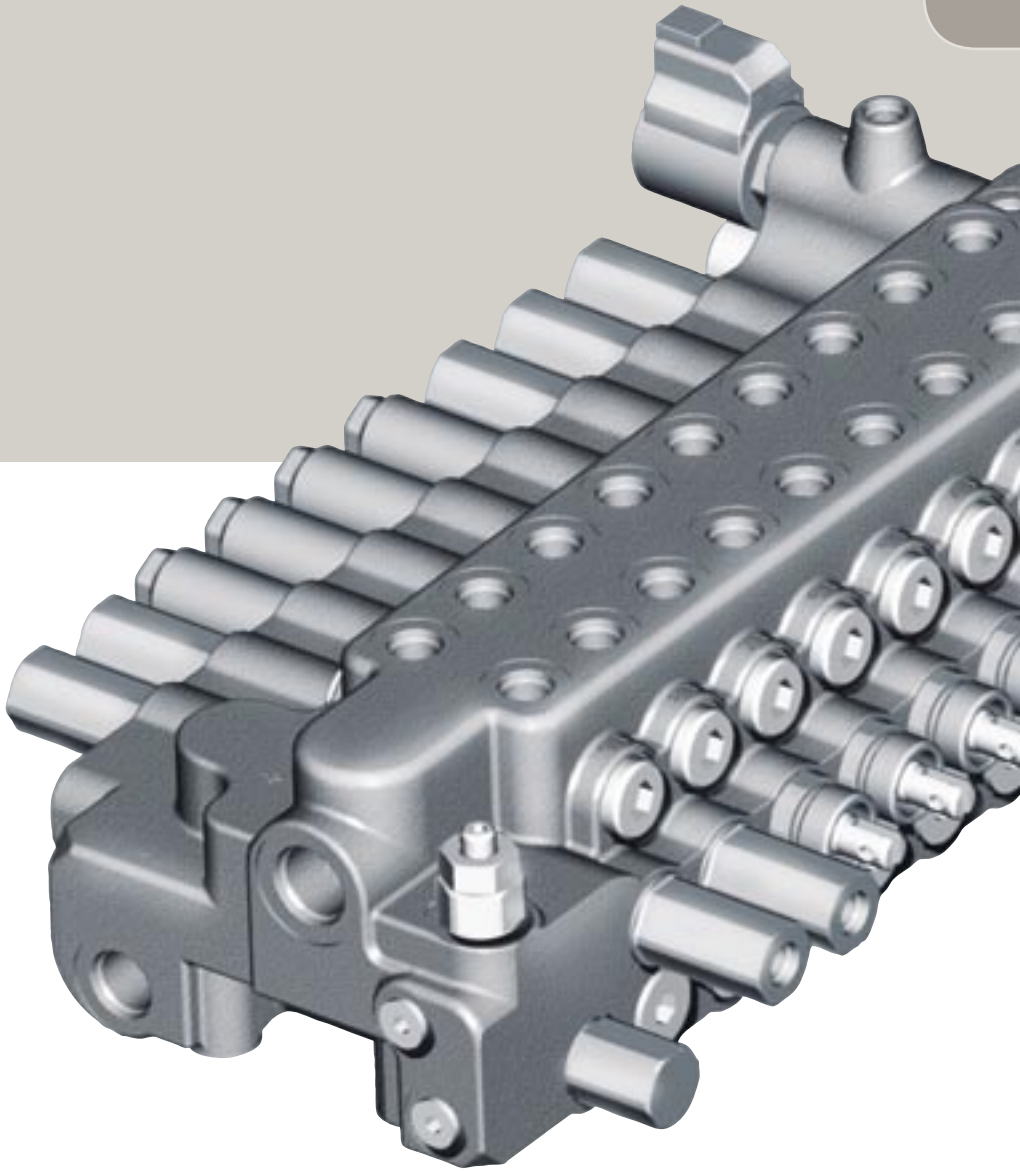


SOLUTIONS

MINI-EXCAVATORS

CONTROL



MINI-EXCAVATORS

**HUSCO**  
**INTERNATIONAL**  
*control focused - technology driven*



## Custom controls that make a big difference in mini-excavators.

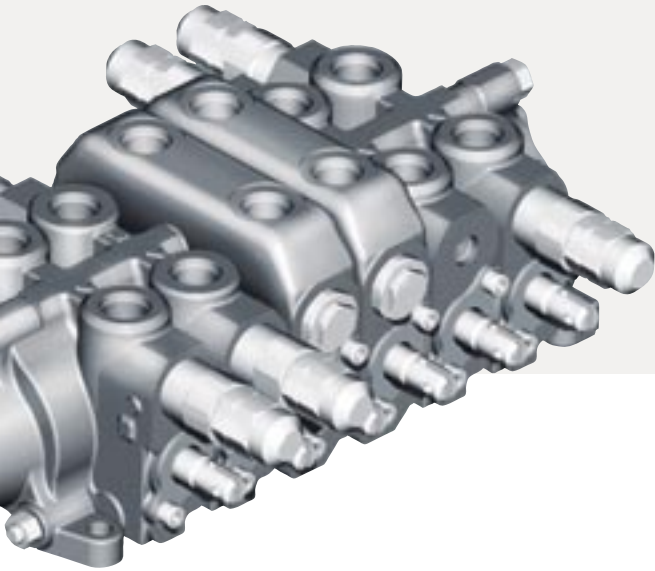
For over 50 years, HUSCO International has been designing and producing some of the most important custom hydraulic and electrohydraulic products in the construction industry. Today you'll find HUSCO products on a variety of premier off-highway equipment all over the world.

Leading the way in the construction market, HUSCO engineers design customized, cost-effective solutions to maximize the efficiency, productivity, controllability and reliability of mini-excavators. We invest heavily in tools and processes that ensure quality designs and reduced development time. And our vehicle fit-up testing capabilities enable us to design, install and test control solutions at HUSCO facilities.

With manufacturing facilities in North America, Europe and Asia — and international partners in South America, Korea, Japan, India, South Africa and Australia — we're positioned to bring you any product you need, anywhere in the world.



Series	Type	Flow max lpm (gpm)	Pressure rating max bar (psi)	Actuation			Page
				Manual	Pilot	E-H	
<b>Valves</b>							
<b>5000</b>	Open-center	100 (25)	250 (3625)	X	X	X	2
<b>5000CC</b>	PC/LS-CompChek	100 (25)	250 (3625)	X	X	X	3
<b>9910</b>	PC/LS-IsoComp Monoblock	115 (30)	250 (3625)	X	X	X	4
<b>9500</b>	Open-center	130 (33)	220 (3200)	X	X	O	5
<b>Controllers</b>							
<b>Force Feedback</b>	Electrohydraulic	n/a	n/a	n/a	n/a	n/a	6
<b>HVD-808</b>	8-PWM Driver	n/a	n/a	n/a	n/a	n/a	7
<b>HEC-808</b>	8-PWM Controller	n/a	n/a	n/a	n/a	n/a	8
<b>E406</b>	Electrical Joystick	n/a	n/a	n/a	n/a	n/a	9
<b>PPC</b>	Pilot-Operated Controllers	n/a	n/a	n/a	n/a	n/a	10



## 5000 Open-Center Valve Series

### SPECIFICATIONS:

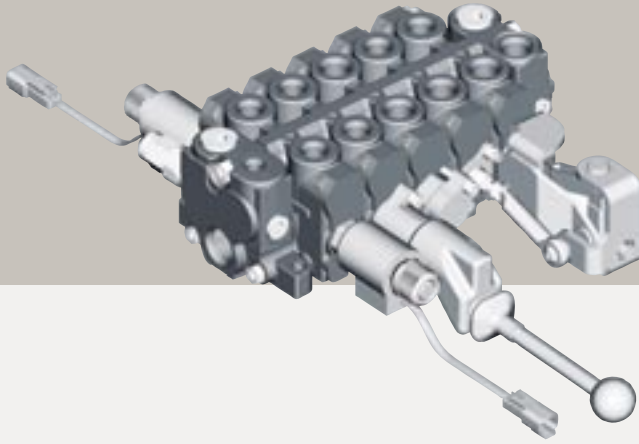
- Flow rate – 100 lpm (25 gpm)
- Max pressure – 250 bar (3,625 psi)
- Configuration – sectional and open-center
- Circuitry – parallel, tandem and series
- Actuation – manual, pilot and electrohydraulic (including Force Feedback)

### OPTIONS:

- Mid-inlet for multi-pump systems
- Work port relief with vented anti-void capability
- Detent float position
- Integrated low-leak checks
- Electronic spool locks
- Ability to generate pilot supply
- Hall effect sensor to measure spool position
- Microswitches

### ADVANTAGES:

- Compact, cost-effective valve series
- Low spool efforts
- Low spool leakage — reduced cylinder drift
- Fits zero swing tail designs
- Customized precision metering
- Flexible circuitry in a common package
- Proven design
- Integrated features, such as priority steering, reduce external plumbing



## 5000CC CompChek® Valve Series

### SPECIFICATIONS:

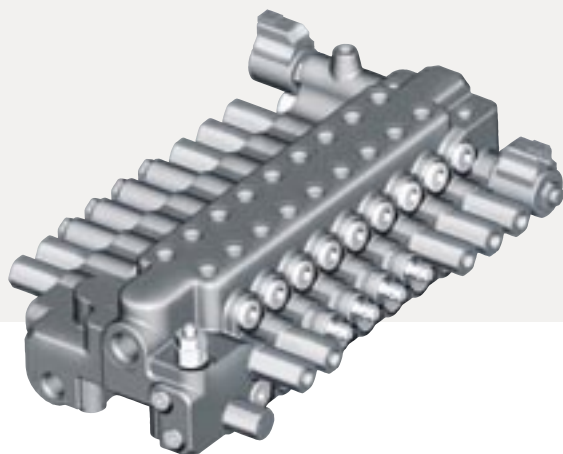
- Flow rate – 100 lpm (25 gpm)
- Max pressure – 250 bar (3,625 psi)
- Configuration – sectional, closed-center and load sensing
- Circuitry – parallel
- Actuation – manual, pilot and electrohydraulic (including Force Feedback)

### OPTIONS:

- Unloading valve used with fixed displacement pumps
- Load sense relief
- Work port relief with anti-void capability
- Detent float position
- Integrated low-leak checks
- Ability to generate pilot supply
- Electronic spool locks
- Hall effect sensor to measure spool position
- Microswitches

### ADVANTAGES:

- Function speeds are independent of work port load (pressure compensated)
- Excellent multi-function flow sharing even when demand exceeds pump capacity (post-compensation)
- Compatible with fixed or variable displacement pump systems
- Straight travel
- Fits zero tail swing designs
- Low spool efforts
- Low spool leakage — reduced cylinder drift
- Customized precision metering
- Flexible circuitry in a common package
- Proven design



## 9910 MX IsoComp® Valve Series

### SPECIFICATIONS:

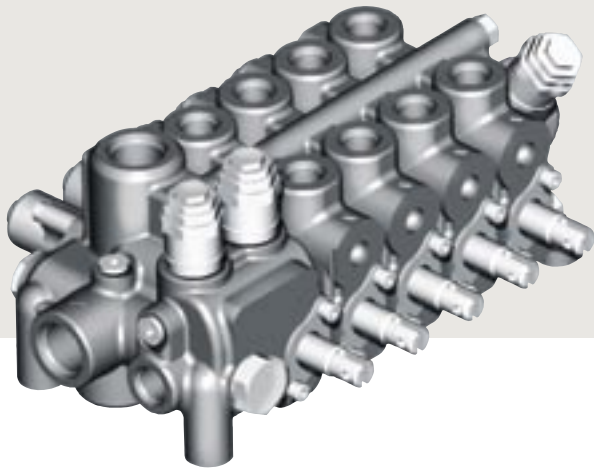
- Inlet flow rate – 150 lpm (40 gpm)
- Max single service flow rate – 90 lpm (24 gpm)
- Max pressure – 250 bar (3,625 psi)
- Configuration – 9-spool monoblock with 10<sup>th</sup> spool add-a-stack
- Circuitry – parallel, closed-center and load-sensing
- Actuation – manual, pilot and electrohydraulic

### OPTIONS:

- Unloading valve used with fixed displacement pumps
- 2<sup>nd</sup> pump unloader (HP Control)
- Solenoid valve to enable two-speed travel
- Solenoid valve to disable movement (disables both pilot supply and pump pressure)
- Work port relief with anti-void capability
- 4<sup>th</sup> position float spool for Dozers
- Pressure reducing valve for pilot supply
- Accumulator port with integral check valve

### ADVANTAGES:

- Compact, cost-effective design
- Integrated valve features reduce ancillary valves and plumbing
- Function speeds are independent of work port load (pressure compensated)
- Excellent multi-function flow sharing even when demand exceeds pump capacity (post-compensation)
- Compatible with fixed or variable displacement pump systems
- Straight travel
- Fits zero tail swing designs
- System disabling function
- Low spool efforts
- Low spool leakage – reduced cylinder drift
- Low heat generation
- Customized precision metering
- Monoblock design reduces intersectional leakage
- Ability to attach additional sections



## 9500 Open Center Valve Series

### SPECIFICATIONS:

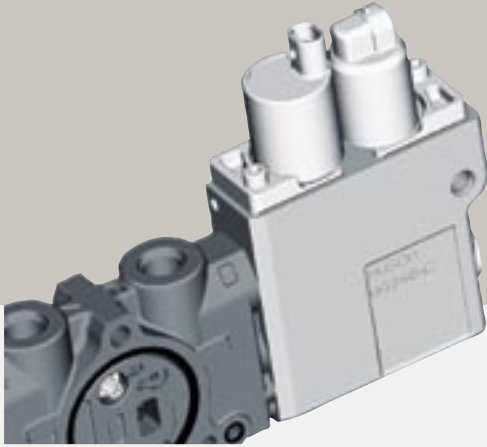
- Flow rate – 130 lpm (33 gpm)
- Max pressure – 220 bar (3,200 psi)
- Configuration – sectional and open-center
- Circuitry – parallel and tandem
- Actuation – manual, pilot and electrohydraulic

### OPTIONS:

- Main relief valve and load checks
- Work port relief with anti-void capability
- Electronic spool locks
- Ability to generate pilot supply

### ADVANTAGES:

- Compact, cost-effective valve series
- Low spool efforts
- Low heat generation
- Customized precision metering
- Flexible circuitry in a common package
- Integrated pilot supply and priority steer reduce plumbing

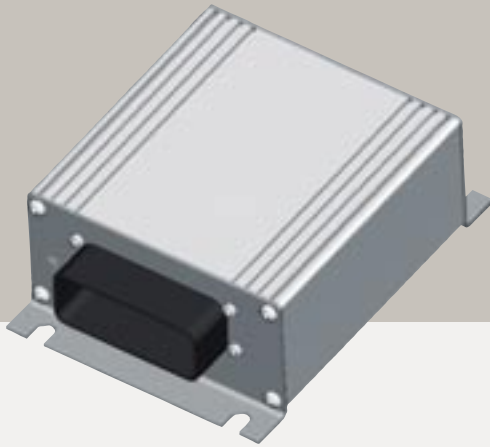


## Force Feedback Electronic Valve Actuation

Force Feedback is an electrohydraulic actuation for hydraulic control valves. This technology incorporates closed-loop mechanical spool positioning which provides high performance in a cost-effective package. Force Feedback can be used on HUSCO open-center or closed-center valve series.

### ADVANTAGES:

- Improved Performance
  - Closed-loop spool positioning
  - Reduced hysteresis
  - Improved valve resolution
  - Dynamic valve response
  - Precision fine metering
- Cost-Effective
  - No additional electronics for closed-loop spool control
  - Requires only 1 PWM signal and one on/off signal per section
  - Does not require a spool position transducer (LVDT)
- Flexible
  - Compatible with majority of HUSCO's valve range
  - Can be used on open-center or closed-center valves
  - Manual overrides can be added without performance reduction
- Durable
  - Proven technology
  - High servo force to position spool
  - Less sensitive to contamination and silting
  - Less spool leakage than traditional E-H



## HVD-808

### Hydraulic Valve Driver

The Hydraulic Valve Driver is a cost-effective, rugged, electronic driver with the capability of driving up to 8 coils. This compact driver can be used in a variety of agricultural, construction, forestry and material handling applications.

#### SPECIFICATIONS:

- IP67 rated
- Rugged aluminum housing
- 8-18 VDC operating voltage
- 6 analog inputs (8-bit resolution)
- 8 current controlled PWM signals with current feedback
- Integrated 5 VDC supply to drive external sensors

#### ADVANTAGES:

- Compact, cost-effective valve series
- Robust, IP67 rated design
- Current feedback will maintain consistency regardless of coil temperature



## HEC-808 Electronic Controller

### SPECIFICATIONS:

- CAN 2.0B capable
- 8 bit processor
- IP67 rated
- Rugged aluminum housing
- 8-18 VDC operating voltage
- 4 analog inputs (8-bit resolution)
- 3 digital inputs
- 8 current controlled PWM signals with current feedback
- Integrated 5 VDC supply to drive external sensors

### ADVANTAGES:

- Flexible – CAN capable
- Can be used in combination with CAN joystick to control valve
- Compact, cost-effective valve series
- Robust, IP67 rated design
- Current feedback will maintain consistency regardless of coil temperature
- Designed to optimize valve performance



## E406 Electronic Joystick

### SPECIFICATIONS:

- 2- and 3-axis versions
- CAN 2.0B output according to J1939 standards
- Optional handle configurations
- 73mm below panel
- Operation voltage – 10 VDC to 36 VDC
- 8 software configuration analog/digital inputs/outputs
- 12 inch flying leads (Deutsch is default connector)

### ADVANTAGES:

- Robust/ Durable
  - Long life – greater than 5 million cycles
  - Hall effect sensor for long life
  - All steel upper mechanism
  - High temperature range (-40°C to 85°C)
  - IP67 rated electronics
- Safety
  - Redundant sensing (two sensors per axis)
  - EMC protect
    - ESD > 25kV
    - RFI > 100 V/m
- Performance
  - Smooth proportional control
  - Electromagnetic and mechanical detents
  - 8 configuration analog/ digital inputs/outputs to drive lights or read a switch



## PPC

### Pilot-Operated Controller Series

#### SPECIFICATIONS:

- Single-axis pilot-operated controllers
- Dual-axis pilot-operated controllers
- Three-axis pilot operated controllers
- Pilot-operated foot pedals
- 150 bar (2,175 psi) inlet pressure
- 35 bar (0-500 psi) outlet pressure

#### OPTIONS:

- 4 mechanical detent positions
- 4 electromagnetic detent positions
- 4 feel detent positions
- Ability to link a dual-axis and single-axis

#### ADVANTAGES:

- Low lever efforts
- Compact, cost-effective series
- Compatible with a variety of grips including the HUSCO Integrated Handle Driver
- Unique detent technology
- Designed to optimize valve performance
- Customized pressure curves

# MINI-EXCAVATORS



### EUROPE

HUSCO International, Ltd.  
6 Rivington Road  
Whitehouse Industrial Estate  
Runcorn, Cheshire WA7 3DT England  
Telephone +44-1928-701888 | Fax +44-1928-710813

### AMERICA

HUSCO International  
W239 N218 Pewaukee Road  
Waukesha, Wisconsin 53188 USA  
Telephone +01-262-513-4200 | Fax +01-262-513-4427  
[www.huscointl.com](http://www.huscointl.com)

### ASIA

HUSCO-Kayaba Hydraulics (Shanghai) Ltd.  
No. 235 Jiangtian Road East  
Song Jiang Industrial Zone  
Shanghai 201600 China  
Telephone +86-21-5774-6468 | Fax +86-21-3774-0186