MECHANICAL FLOW CONTROLS



| FLOW RESTRICTORS, ADJUSTABLE (NEEDLE VALVES) | . MF3 |
|--|--------|
| PRESSURE COMPENSATED FLOW REGULATOR VALVES | . MF21 |
| PRIORITY FLOW REGULATOR VALVES | . MF39 |
| VELOCITY FUSES | . MF47 |
| FLOW DIVIDER/COMBINER VALVES | . MF51 |

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TECNORD

MECHANICAL DIRECTIONAL CONTROL

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NEEDLE VALVES – FLOW RESTRICTORS

| | GPM | PSI | LPM | BAR | CAVITY | MODEL | PAGE |
|------------------|-----|------|-----|-----|-----------|--------|------|
| | 12 | 3500 | 45 | 241 | 7/8-14 | DE-FCH | MF4 |
| (2))) (1) | 6 | 3500 | 23 | 241 | 5/8-18 | MA-NVA | MF6 |
| | 6 | 3500 | 23 | 241 | 3/4-16 | PB-NVA | MF8 |
| | 10 | 3500 | 38 | 241 | 7/8-14 | DE-NVA | MF10 |
| | 35 | 5000 | 132 | 345 | 1 1/16-12 | HT-NVA | MF12 |
| | 40 | 3500 | 151 | 241 | 1 5/16-12 | SJ-NVA | MF14 |
| | 3 | 3500 | 11 | 241 | 3/4-16 | PB-NVB | MF16 |
| | 15 | 3500 | 57 | 241 | 7/8-14 | DE-NVB | MF18 |

TYPICAL SCHEMATIC

Typical application for an NVA/NVB is to meter flow to an actuator. In the example shown, the valve is used to allow a hydraulic motor to be manually unloaded, so that the vehicle can be towed.

Typical application for the FCH is to meter flow in one direction while allowing free flow in the opposite direction.





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TECNORD

DE-FCH ADJUSTABLE FLOW CONTROL VALVE, SPOOL TYPE, FREE REVERSE FLOW



DESCRIPTION

10 size, 7/8-14 thread, "Delta" adjustable needle flow control valve with free reverse flow.

OPERATION

The DE-FCH increases its orifice value from fully closed to fully open by turning screw counterclockwise. When adjusted open the valves regulates flow (1) to (2). When fully closed the valve restricts flow from (1) to (2).

FEATURES

- Hardened parts for long life.
- Industry common cavity.





| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Nominal Flow | 12 GPM (45 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .32 lbs (.15 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191200 |

PERFORMANCE

Actual Test Data (Cartridge Only)





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TECNORD





Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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TECNORD

MA-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, needle flow control valve.

OPERATION

The MA-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- · Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Nominal Flow | 6 GPM (23 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .24 lbs (.11 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 15 ft-lbs (20.3 Nm) |
| Cavity | MINI 2W |
| Cavity Form Tool (Finishing) | 40500003 |
| Seal Kit | 21191202 |

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Body Weight: .29 lbs (.13 kg)

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TECNORD

PB-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, needle flow control.

OPERATION

The PB-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow from (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Nominal Flow | 6 GPM (23 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .22 lbs (.10 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 25 ft-lbs (34 Nm) |
| Cavity | POWER 2W |
| Cavity Form Tool (Finishing) | 40500005 |
| Seal Kit | 21191102 |

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Body Weight: .39 lbs (.18 kg)

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Note: use screen only if flow direction is from (1) to (2).

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TECNORD

DE-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE, FINE ADJUST



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series fine adjust needle flow control valve.

OPERATION

The DE-NVA adjusts from fully open to fully closed by turning adjusting screw counterclockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

Hardened parts for long life.

Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

Flow (LPM)



| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Nominal Flow | 10 GPM (38 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .19 lbs (.09 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191202 |

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Body Weight: .47 lbs (.21 kg)

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direction is from (1) to (2).

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TECNORD

HT-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

"High Pressure" 12 size, 1 1/16-12 thread, "Tecnord" series, needle flow control valve.

OPERATION

The HT-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- · Industry common cavity.





PERFORMANCE

Actual Test Data (Cartridge Only)



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|----|----------|----|
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| | T | ~ |

Valves with the knob option are NOT to be adjusted under pressure.

VALVE SPECIFICATIONS

| Nominal Flow | 35 GPM (132 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 5000 PSI (345 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .72 lbs (.32 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 70 ft-lbs (95 Nm) |
| Cavity | TECNORD 2W |
| Cavity Form Tool (Finishing) | 40500032 |
| Seal Kit | 21191302 |
| | |

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Body Weight: 3.71 lbs (1.68 kg)

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Note: use screen only if flow direction is from (1) to (2).

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TECNORD

SJ-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE

DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, needle flow control valve.

OPERATION

The SJ-NVA adjusts from fully open to fully closed by turning the adjustment screw clockwise. When adjusted open the valves regulates flow (1) to (2) or (2) to (1). When fully closed the valve blocks flow from (1) to (2) or (2) to (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



| VALVE SPECIFICATIONS | |
|-------------------------------|----------------------------------|
| Nominal Flow | 40 GPM (151 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -35° to 200°F (-37.2° to 93.3°C) |
| Weight | .83 lbs (.37 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 90 ft-lbs (122 Nm) |
| Cavity | SUPER 2W |
| Cavity Form Tool (Finishing) | 40500017 |
| Seal Kit | 21191402 |
| | |

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Body Weight: 1.29 lbs (.58 kg)

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TECNORD

PB-NVB ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE, FINE ADJUST



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, fine adjust needle flow control.

OPERATION

The PB-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE



| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Nominal Flow | 3 GPM (11 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .13 lbs (.06 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | POWER 2W |
| Cavity Form Tool (Finishing) | 40500005 |
| Seal Kit | 21191102 |

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Body Weight: .39 lbs (.18 kg)

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Note: use screen only if flow direction is from (1) to (2).

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TECNORD

DE-NVB ADJUSTABLE FLOW CONTROL VALVE, COARSE ADJUST



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, course adjust needle flow control valve.

OPERATION

The DE-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Nominal Flow | 15 GPM (57 LPM) |
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .47 lbs (.21 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191202 |

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Body Weight: .47 lbs (.21 kg)

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Note: use screen only if flow direction is from (1) to (2).

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MECHANICAL DIRECTIONAL CONTROL

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PRESSURE COMPENSATED FLOW REGULATOR VALVES

| | GPM | PSI | LPM | BAR | CAVITY | MODEL | PAGE |
|---|-----|------|-----|-----|------------|--------|------|
| | 3 | 3000 | 11 | 207 | 5/8-18 | MA-FCA | MF22 |
| (1) | 4 | 3500 | 15 | 241 | 3/4-16 | PB-FCA | MF24 |
| He | 8 | 3500 | 30 | 241 | 7/8-14 | DE-FCA | MF26 |
| (2) | 20 | 5000 | 76 | 345 | 1 1/16 -12 | HT-FCA | MF28 |
| | 25 | 3500 | 95 | 241 | 1 5/16 -12 | SJ-FCA | MF30 |
| $\begin{pmatrix} 1 \\ \\ \\ \end{pmatrix} \begin{pmatrix} \\ \\ \\ \end{pmatrix} \begin{pmatrix} \\ \\ \end{pmatrix} \begin{pmatrix} \\ \\ \end{pmatrix} \begin{pmatrix} \\ \\ \end{pmatrix} \begin{pmatrix} \\ \\ \end{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix} \begin{pmatrix}$ | 8 | 3500 | 30 | 241 | 7/8-14 | DE-FCB | MF32 |
| (1))) (2) | 8 | 3500 | 30 | 241 | 7/8-14 | DE-FCC | MF34 |
| (1)) (2) | 8 | 3500 | 30 | 241 | 7/8-14 | DE-FCF | MF36 |

TYPICAL SCHEMATIC

Typical application for the FCA, FCB, FCC and FCF is for actuator speed control. The FCB and FCF valves have fixed, non-adjustable settings. The FCA and FCC versions are adjustable.





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TECNORD

FCB

FCF

MA-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, pressure compensated, flow control valve.

OPERATION

The cartridge maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control differential spring load can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1) greater than 200 PSI with accurate flow maintenance from 200 to 3000 PSI (14 to 207 bar). Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.



Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

| Nominal Flow | 3 GPM (11 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3000 PSI (207 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .29 lbs (.13 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 15 ft-lbs (20.3 Nm) |
| Cavity | MINI 2W |
| Cavity Form Tool (Finishing) | 40500003 |
| Seal Kit | 21191000 |

PERFORMANCE

Actual Test Data (Cartridge Only)





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Body Weight: .29 lbs (.13 kg)

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TECNORD

PB-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, pressure compensated, flow control valve.

OPERATION

The cartridge maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control differential spring load can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1), greater than 200 PSI (14 bar), with accurate flow maintenance from 200 to 3500 PSI (14 to 241 bar). Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

HYDRAULIC SYMBOL





Best stability is obtained with adjustment at highest flow.

PERFORMANCE

Actual Test Data (Cartridge Only)



| ALVE SPECIFICATIO | ٩S |
|-------------------|----|
|-------------------|----|

| Nominal Flow | 4 GPM (15 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .29 lbs (.12 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 25 ft-lbs (34 Nm) |
| Cavity | POWER 2W |
| Cavity Form Tool (Finishing) | 40500005 |
| Seal Kit | 21191100 |
| | |

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Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION



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Delta Power Company

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TECNORD

DE-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensated, flow control valve.

OPERATION

The DE-FCA maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control (see options for ranges) differential spring load can be set to customer flow specification. The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice greater than 100 PSI (6.9 bar), with accurate flow maintenance from 100 to 3500 PSI (6.9 to 241 bar). Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.



Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

| Maximum Flow | 8 GPM (30 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .49 lbs (.22 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191200 |



Actual Test Data (Cartridge Only)





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TECNORD

ł

1.38

[34.9]

2.50 [63.5]

STANDARD

WITH KNOB

3.19

[80.9]

1

1.25

[31.8]

1



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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TECNORD

HT-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

"High Pressure" 12 size, 1 1/16 -12 thread, "Tecnord" series, pressure compensated, flow control valve.

OPERATION

The HT-FCA maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings. Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the adjustment screw.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

HYDRAULIC SYMBOL





"Fully Adjustable" Valve can adjust down to leakage flow.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

| Max Regulated Flow | 20 GPM (76 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 5000 PSI (345 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .73 lbs (.33 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 70 ft-lbs (95 Nm) |
| Cavity | TECNORD 2W |
| Cavity Form Tool (Finishing) | 40500032 |
| Seal Kit | 21191300 |
| | |

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TECNORD





Body Weight: 3.7 lbs (1.7 kg)

ORDERING INFORMATION



Note: aluminum NOT durability rated for 4000 PSI. Consult factory for options.

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TECNORD

SJ-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

16 size, 1 5/16 -12 thread, "Super" series, pressure compensated, flow control valve.

OPERATION

The SJ-FCA maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings. Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the adjustment knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

HYDRAULIC SYMBOL





"Fully Adjustable," Valve can be adjusted down to leakage flow.

PERFORMANCE

Actual Test Data (Cartridge Only)



| ALVE SPECIFIC | ATIONS |
|---------------|--------|
|---------------|--------|

| Nominal Flow | 25 GPM (95 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .89 lbs (.40 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 90 ft-lbs (122 Nm) |
| Cavity | SUPER 2W |
| Cavity Form Tool (Finishing) | 40500017 |
| Seal Kit | 21191400 |
| | |

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TECNORD

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Body Weight: 1.29 lbs (.59 kg)





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TECNORD

DE-FCB FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, fixed pressure compensated, flow control valve.

OPERATION

The DE-FCB maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice, in excess of the spring load. Consult chart for regulation performance. Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL





Low pressure drop version for low differential circuits.

PERFORMANCE



VALVE SPECIFICATIONS

| Max Regulated Flow | 8 GPM (30 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .29 lbs (.13 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191204 |
| | |

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TECNORD





Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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TECNORD

DE-FCC ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensated, flow control valve.

OPERATION

The DE-FCC maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings. Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.



Lowest pressure drop is obtained with adjustment at lowest setting.

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

| Max Regulated Flow | 8 GPM (30 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .51 lbs (.23 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191200 |
| | |

PERFORMANCE

Actual Test Data (Cartridge Only)





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Body Weight: .47 lbs (.21 kg)

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TECNORD

DE-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, fixed pressure compensated, flow control valve.

OPERATION

The DE-FCF maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice, in excess of the spring load. Consult chart for regulation performance. Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL





Best stability version for high differential circuits.

PERFORMANCE

Actual Test Data (Cartridge Only)



| VALVE SPECIFICAT | IONS |
|------------------|------|
|------------------|------|

| Maximum Flow | 8 GPM (30 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .32 lbs (.15 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191204 |
| | |

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TECNORD





Body Weight: .47 lbs (.21 kg)

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TECNORD

MECHANICAL DIRECTIONAL CONTROL

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PRIORITY FLOW REGULATOR VALVES

| GPM | PSI | LPM | BAR | CAVITY | MODEL | PAGE |
|-----|------|-----|-----|-----------|--------|------|
| 10 | 3000 | 38 | 207 | 7/8-14 | DF-FCP | MF40 |
| 10 | 3000 | 38 | 207 | 7/8-14 | DF-FCQ | MF42 |
| 25 | 3000 | 95 | 207 | 1 5/16-12 | SK-FCQ | MF44 |

TYPICAL SCHEMATIC

Typical application for the FCP and FCQ is to provide pressure compensated, priority flow control to the main circuit, with the balance of the flow going to tank or power beyond. The bypass port can be pressurized, as long as it is less than the priority port load.



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TECNORD

DF-FCP FIXED PRIORITY FLOW CONTROL VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, fixed priority flow control valve.

OPERATION

The DF-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.





| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Maximum Flow | 10 GPM (38 LPM) |
| Rated Operating Pressure | 3000 PSI (207 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .26 lbs (.12 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 3W |
| Cavity Form Tool (Finishing) | 40500001 |
| Seal Kit | 21191206 |

PERFORMANCE

Actual Test Data (Cartridge Only)





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Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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TECNORD

DF-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, adjustable priority flow control valve.

OPERATION

The DF-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2).

FEATURES

- Hardened parts for long life.
- Industry common cavity.



Test data shown on this sheet, for condition of port (2) to tank. Data on next page, for condition of port (3) to tank.

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

| Nominal Flow | 10 GPM (38 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3000 PSI (207 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .56 lbs (.25 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 3W |
| Cavity Form Tool (Finishing) | 40500001 |
| Seal Kit | 21191206 |
| | |

PERFORMANCE

Actual Test Data (Cartridge Only)





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TECNORD

MECHANICAL DIRECTIONAL CONTROL



DIMENSIONS





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TECNORD

SK-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, adjustable priority flow control valve.

OPERATION

The SK-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

- Hardened cage and spool for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



| VALVE SPECIFICATIONS | |
|-------------------------------|---------------------------------|
| Max Regulated Flow | 25 GPM (95 LPM) |
| Rated Operating Pressure | 500-3000 PSI (34-207 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .96 lbs (.44 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 90 ft-lbs (122 Nm) |
| Cavity | SUPER 3W |
| Cavity Form Tool (Finishing) | 40500018 |
| Seal Kit | 21191404 |

PERFORMANCE

Actual Test Data (Cartridge Only)





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TECNORD







Body Weight: 2.46 lbs (1.11 kg)

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MECHANICAL DIRECTIONAL CONTROL

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VELOCITY FUSES

| GPM | PSI | LPM | BAR | CAVITY | MODEL | PAGE |
|-----|------|-----|-----|--------|--------|------|
| 10 | 3500 | 38 | 241 | 7/8-14 | DE-CVF | MF48 |

TYPICAL SCHEMATIC

Typical application for the CVF is to prevent cylinder free fall in the event of a hose or plumbing failure. The valve is usually mounted directly in the bottom of the cylinder, and sized 1-2 GPM higher than the normal lowering speed. The valve will not re-open until pressure is bled off of port #1.



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TECNORD

DE-CVF VELOCITY FUSE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, velocity fuse valve.

OPERATION

The DE-CVF allows flow to pass from (1) to (2). When velocity exceeds the flow setting the valve shifts and blocks flow from (1) to (2). Valve acts like a fixed orifice when passing flow from (2) to (1).

FEATURES

- Hardened parts for long life.
- · Industry common cavity.



Curves identify pressure drop in port (2) to (1) direction (non-fuse). Fuse pressure drop is similar at fuse flow, until fuse takes effect (~75-100 PSID).

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

| Nominal Flow | 10 GPM (38 LPM) |
|-------------------------------|---------------------------------|
| Rated Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .25 lbs (.11 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 30 ft-lbs (40.6 Nm) |
| Cavity | DELTA 2W |
| Cavity Form Tool (Finishing) | 40500000 |
| Seal Kit | 21191200 |
| | |

PERFORMANCE

Actual Test Data (Cartridge Only)





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TECNORD





Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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MECHANICAL DIRECTIONAL CONTROL

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FLOW DIVIDER/COMBINER VALVES

| | GPM | PSI | LPM | BAR | CAVITY | MODEL | PAGE |
|-----------|-----|------|-----|-----|-----------|--------|------|
| r) ([) (| 12 | 3500 | 45 | 241 | 7/8-14 | DG-FDA | MF52 |
| | 40 | 3500 | 151 | 241 | 1 5/16-12 | SN-FDA | MF54 |
| | 12 | 3500 | 45 | 241 | 7/8-14 | DG-FDB | MF56 |
| | 12 | 3500 | 45 | 241 | 7/8-14 | DG-FDH | MF58 |
| | 12 | 3500 | 45 | 241 | 7/8-14 | DG-FDT | MF60 |

TYPICAL SCHEMATIC

Typical application for the FDA and FDH is to synchronize two independent cylinders or hydraulic motors in both directions. The FDB is a flow divider only. It cannot be used in combine mode.

Typical application for the FDT is to provide positive traction for vehicle drive systems. If one leg loses load, the valve insures flow to the other leg.







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TECNORD

DG-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

10 size, 7/8-14 thread "Delta Series", spool type, flow divider/combiner.

OPERATION

In the dividing mode, the DG-FDA will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The DG-FDA will combine input flows from ports (3) and (1), to port (2) by the same ratio. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.



VALVE SPECIFICATIONS

Media Operating Temp. Range

Cavity Form Tool (Finishing)

Accuracy on Flow Splits Maximum Operating Pressure

Operating Fluid Media Cartridge Torque Requirements

Maximum Flow

Viscosity Range

Filtration

Weight

Cavity

Seal Kit

DO NOT EXCEED MAXIMUM FLOW PER MODEL For higher accuracy flow ratio, use DG-FDH.

12 GPM (45 LPM)

3500 PSI (241 bar)

ISO 18/16/13

.21 lbs (.10 kg)

DELTA 4W

40500002

21191214

30 ft-lbs (40.6 Nm)

±10% of Max Rated Inlet Flow

36 to 3000 SSU (3 to 647 cSt)

-40° to 250°F (-40° to 120°C)

General Purpose Hydraulic Fluid

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)





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Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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TECNORD

SN-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

16 size, 1 5/16-12 thread "Super Series," spool-type flow divider/combiner valve.

OPERATION

In the dividing mode, the SN-FDA will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The SN-FDA will combine input flows from ports (3) and (1), to port (2) by same ratio. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.





DO NOT EXCEED MAXIMUM FLOW PER MODEL.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

| Nominal Flow | 40 GPM (151 LPM) |
|-------------------------------|---------------------------------|
| Accuracy on Flow Splits | ±10% of Max Rated Inlet Flow |
| Maximum Operating Pressure | 3500 PSI (241 bar) |
| Viscosity Range | 36 to 3000 SSU (3 to 647 cSt) |
| Filtration | ISO 18/16/13 |
| Media Operating Temp. Range | -40° to 250°F (-40° to 120°C) |
| Weight | .95 lbs (.43 kg) |
| Operating Fluid Media | General Purpose Hydraulic Fluid |
| Cartridge Torque Requirements | 90 ft-lbs (122 Nm) |
| Cavity | SUPER 4W |
| Cavity Form Tool (Finishing) | 40500019 |
| Seal Kit | 21191413 |
| | |

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TECNORD



Body Weight: 3.21 lbs (1.46 kg)

ORDERING INFORMATION



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TECNORD

DG-FDB FLOW DIVIDER VALVE, SPOOL TYPE



DESCRIPTION

10 size, 7/8-14 thread "Delta Series", spool type, flow divider.

OPERATION

The DG-FDB will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.



HYDRAULIC SYMBOL



Flow (LPM)

15

4

20

40

35

30

25

20

15

10

5

0

6

Pressure Drop (bar)

10

2

PERFORMANCE

0

600

500

400

300

200

100

0

0

Pressure Drop (PSI)

Actual Test Data (Cartridge Only)

5





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Flow (GPM)

3

-6

TECNORD



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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TECNORD

DG-FDH FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

"High Accuracy" 10 size, 7/8-14 thread "Delta Series", spool type, flow divider/combiner.

OPERATION

In the dividing mode, the DG-FDH will divert input flow from port (2) to ports (3) and (1), based on the ratio specified with a high degree of accuracy, regardless of operating pressure. The DG-FDH will combine input flows from ports (3) and (1), to port (2) by the same ratio. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.



VALVE SPECIFICATIONS

Media Operating Temp. Range

Cavity Form Tool (Finishing)

Accuracy on Flow Splits Maximum Operating Pressure

Operating Fluid Media Cartridge Torque Requirements

Maximum Flow

Viscosity Range

Filtration

Weight

Cavity

Seal Kit

DO NOT EXCEED MAXIMUM FLOW PER MODEL. The DG-FDH should be considered if the DG-FDA does not provide the required accuracy.

12 GPM (45 LPM)

3500 PSI (241 bar)

ISO 18/16/13

.21 lbs (.10 kg)

DELTA 4W

40500002

21191214

30 ft-lbs (40.6 Nm)

±4% of Max Rated Inlet Flow

36 to 3000 SSU (3 to 647 cSt)

-40° to 250°F (-40° to 120°C)

General Purpose Hydraulic Fluid

N9/2016

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)





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Body Weight: .99 lbs (.45 kg)





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TECNORD

DG-FDT FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

10 size, 7/8-14 thread "Delta Series", spool type, flow divider/combiner, positive traction valve.

OPERATION

In the dividing mode, the DG-FDT will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The DG-FDT will combine input flows from ports (3) and (1). Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

VALVE SPECIFICATIONS

Media Operating Temp. Range

Cavity Form Tool (Finishing)

Accuracy on Flow Splits Maximum Operating Pressure

Operating Fluid Media Cartridge Torque Requirements

FEATURES

- Hardened parts for long life.
- Industry common cavity.



Maximum Flow

Viscosity Range

Filtration

Weight

Cavity

Seal Kit

Use where wheel slip (or "drag") needs to be accomplished. TRACTION FLOW W/1 LEG UNLOADED 2-3 GPM VALVE - 0.4 GPM

12 GPM (45 LPM)

3500 PSI (241 bar)

ISO 18/16/13

.22 lbs (.10 kg)

DELTA 4W

40500002

21191214

30 ft-lbs (40.6 Nm)

±10% of Max Rated Inlet Flow

36 to 3000 SSU (3 to 647 cSt)

-40° to 250°F (-40° to 120°C)

General Purpose Hydraulic Fluid

DO NOT EXCEED MAXIMUM FLOW PER MODEL.

2-36 GPM VALVE - 0.7 GPM 6-9 GPM VALVE - 1.1 GPM 9-12 GPM VALVE - 1.5 GPM

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)





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Page MF60

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MECHANICAL DIRECTIONAL CONTROL

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