DC-CH
Compact Directional Valves
Compact Directional Valves
Product Portfolio

The complete range of Product
NG4 and NG6
Flow Diverters
Modular valves
Stand alone valves
Complete assembled units

EDC flow sharing directional valve
- Modular system to fit for gear or LS pump
- Flow sharing directional valve (post compensated)
- Solution of flow saturation problems seen in load sensing circuits
- Any possible Mobile and Industrial applications when simultaneous movements are required (AWP, TMC, Drilling, Agri...).

EDD on/off directional valve
- Q. max 80lpm
- P. max 310bar
- Direct acting
- Secondary relief valves are integrated
- Same interface of others ED valves
- Available w/wo LS signal

Steering Mode Valve
- Compact design.
- Higher performance.
- Mechanical detent integrated.
- Redundant system: the steering mode selected, remains in position even in case of coil burned. The position is always guaranteed by the detent.

Garbage Truck Compactor Block
- Q. 200 lpm
- P. max. 320bar
- Weight 24 Kg only
- Unloading valve included
- Low noise (smooth spool shifting)
- Option: add ED valves for auxiliary function

EDD on/off directional valve
- Q. max 80lpm
- P. max 310bar
- Direct acting
- Secondary relief valves are integrated
- Same interface of others ED valves
- Available w/wo LS signal

Steering Mode Valve
- Compact design.
- Higher performance.
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- Redundant system: the steering mode selected, remains in position even in case of coil burned. The position is always guaranteed by the detent.
Compact Directional Valves
Product Explanation

From CETOP Concept....

...to ED Concept

Common mounting interface

The Rod

End Plate

Inlet Plate

I/min

80 l/min
50 l/min
30 l/min
15 l/min

EDB  ED1  ED2  EDC  EDD

15 l/min
30 l/min
50 l/min
80 l/min
Compact Directional Valves
Fixed displacement pump - single movements (On-Off / Prop.)

1 - Inlet elements

2 - Intermediate elements
Compact Directional Valves
Fixed displacement pump - single movements (On-Off / Prop.)

3 - Outlet elements

**TC-00**
Data sheet 18301-60
Technical Data

- End element basic
- Max pressure for aluminum version: 250 bar / 3600 psi
- Max pressure for cast iron version: 310 bar / 4500 psi

**TC-03**
Data sheet 18301-63
Technical Data

- Outlet element with additional inlet port P1 and tank port T1
- Max pressure for aluminum version: 250 bar / 3600 psi
- Max pressure for cast iron version: 310 bar / 4500 psi
- Max flow in P and T: 50 l/min / 13 gpm
- Port connections: G 3/8-G1/2

**TC-04**
Data sheet 18301-64
Technical Data

- Outlet element with pressure relief valve and with P, T and M ports for downstream operators
- Max pressure: 250 bar / 3600 psi
- Max flow in P and T: 35 l/min / 9 gpm
- Material: Aluminum
- Port connections: G 3/8

Some examples of:
- 1 - Inlet elements
- 2 - Intermediate elements
- 3 - Outlet elements
- 4 - Directional valve elements
- 5 - Flangeable elements
Compact Directional Valves
Fixed displacement pump - single movements (On-Off / Prop.)

4 - Directional valve elements - On-Off
Compact Directional Valves

Fixed displacement pump - single movements (On-Off / Prop.)

4 - Directional valve elements - Proportional
Compact Directional Valves
Fixed displacement pump - single movements (On-Off / Prop.)

5 - Flangeable elements
Compact Directional Valves
Fixed displacement pump - Simult. Movements (On-Off / Prop.)

1 - Inlet elements

TE-13
Data sheet 18300-13

Technical Data

Max pressure: 310 bar 4500 psi
Max inlet flow: up to 120 l/min 32 gpm
Port connections: G 1/2-G3/4
Material: Cast iron

2 - Intermediate elements

EPM-DE-18 Data sheet 18301-30

Technical Data

Intermediate element with double acting hand pump
Max resistance pressure: 310 bar 4500 psi
Max generated pressure: 250 bar 3600 psi
Total displacement: 18 cc 1 cn
Opening displacement: 8.5 cc 0.5 l
Closing displacement: 9.5 cc 0.5 l
Material: Cast iron

3 - Outlet elements

TC-00 Data sheet 18301-60

Technical Data

Max pressure for aluminum version: 250 bar 3600 psi
Max pressure for cast iron version: 310 bar 4500 psi
Port connections: G 3/8-G1/2

TC-03 Data sheet 18301-63

Technical Data

Outlet element with additional inlet port P1 and tank port T1
Max pressure for aluminum version: 250 bar 3600 psi
Max pressure for cast iron version: 310 bar 4500 psi
Max flow in P and T: 50 l/min 1.3 gpm
Port connections: G 3/8-G1/2

Some examples of:
- 1. Inlet elements
- 2. Intermediate elements
- 3. Outlet elements
- 4. Directional valve elements
- 5. Flangeable elements
Compact Directional Valves

Fixed displacement pump - Simult. movements (On-Off / Prop.)

4 - Directional valve elements - On-Off

4 - Directional valve elements Proportional
Compact Directional Valves
Fixed displacement pump - Simult. movements (On-Off / Prop.)

5 - Flangeable elements

EDCM/EDCMF-VR Data sheet 18301-46 Technical Data
Flangeable element with single or double acting cross plowed check valves

- Size 6
- Max pressure 310 bar 4500 psi
- Max flow 70 l/min 19 gpm
- Port connections G 3/8 G1/2 SAE
- Material Cast Iron

EDCM/EDCMF-VM Data sheet 18301-47 Technical Data
Flangeable element with single or double secondary pressure relief valves

- Size 6
- Max pressure 310 bar 4500 psi
- Max flow 50 l/min 13 gpm
- Port connections G 3/8 G1/2
- Material Cast Iron

EDCMF Data sheet 18301-48 Technical Data
Flangeable elements with different type of parts

- Size 6
- Max operating pressure 310 bar 4500 psi
- Max flow 60 l/min 16 gpm
- Port connections G 3/8 G1/2- M20x1,5 JIS SAE9/SAE10
- Material Cast Iron

Some examples of:

1 - Inlet elements
2 - Intermediate elements
3 - Outlet elements
4 - Directional valve elements
5 - Flangeable elements
Compact Directional Valves
Variable displacement pump - Simult. movements (On-Off / Prop.)

1 - Inlet elements
- TE-16 Data sheet 18300-14
- Technical Data:
  - Max pressure: 310 bar (4500 psi)
  - Max inlet flow: 120 l/min (32 gpm)
  - Material: Cast iron
  - Port connections: G1/2-G3/4-5A10

2 - Intermediate elements
- EPM-DE-18 Data sheet 18301-30
- Technical Data:
  - Intermediate element with double acting hand pump:
    - Max resistance pressure: 310 bar (4500 psi)
    - Max generated pressure: 250 bar (3600 psi)
    - Total displacement: 1 l
    - Opening displacement: 0.5 l
    - Closing displacement: 0.6 l
    - Material: Cast iron

3 - Outlet elements
- TC-00 Data sheet 18301-60
- Technical Data:
  - Outlet element with additional inlet port P1 and tank port T1:
    - Max pressure for aluminum versions: 250 bar (3600 psi)
    - Max pressure for cast iron versions: 310 bar (4500 psi)
    - Max flow in P and T: 50 l/min 13 gpm
    - Port connections: G1/8-G1/2

Some examples of:
- 1 - Inlet elements
- 2 - Intermediate elements
- 3 - Outlet elements
- 4 - Directional valve elements
- 5 - Flangeable elements
Compact Directional Valves
Variable displacement pump - Simult. movements (On-Off / Prop.)

4 - Directional valve elements - On-Off

4 - Directional valve elements Proportional
Compact Directional Valves
Variable displacement pump - Simult. movements (On-Off / Prop.)

5 - Flangeable elements

EDCM/EDCMF-VR: Data sheet 18301-46
Technical Data
- Size: 6
- Max pressure: 310 bar (4500 psi)
- Max flow: 70 l/min (19 gpm)
- Port connections: G3/8"G1/2" 3/4"NPT
- Material: Cast iron

EDCM/EDCMF-VM: Data sheet 18301-47
Technical Data
- Size: 6
- Max pressure: 310 bar (4500 psi)
- Max flow: 56 l/min (15 gpm)
- Port connections: G3/8"G1/2"
- Material: Cast iron

EDCMF: Data sheet 18301-48
Technical Data
- Flangeable elements with different type of ports
- Size: 6
- Max operating pressure: 310 bar (4500 psi)
- Max flow: 60 l/min (16 gpm)
- Port connections: G3/8"G1/2", M18x1.5, M22x1.5
- Material: Cast iron

Some examples of:
- 1 - Inlet elements
- 2 - Intermediate elements
- 3 - Outlet elements
- 4 - Directional valve elements
- 5 - Flangeable elements
EDC Overview
EDC Details

Technical Details

- Modular system control block
- Simultaneous movements at different pressure work
- Size 06 - max flow 78 lpm single section - pmax 350 bar
- Proportional or on-off control valve
- Close center (variable displacement pump with LS)
- Open center (fixed displacement pump)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>18301-11</td>
<td>EDC-DZ</td>
<td>L8511...</td>
<td></td>
<td>310 (4500)</td>
<td>up to 55 (15)</td>
<td>G 3/8 - SAE8</td>
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<tr>
<td>18301-14</td>
<td>EDC-IP</td>
<td>L85P5...</td>
<td></td>
<td>310 (4500)</td>
<td>up to 58 (15)</td>
<td>G 3/8 - G 1/2 - SAE8</td>
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<tr>
<td>18301-17</td>
<td>EDC-LV</td>
<td>L85L1...</td>
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<td>350 (5000)</td>
<td>up to 78 (21)</td>
<td>G 3/8 - G 1/2 - SAE8</td>
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<tr>
<td>18301-15</td>
<td>EDC-P1</td>
<td>L85P81...</td>
<td></td>
<td>310 (4500)</td>
<td>up to 65 (17)</td>
<td>G 3/8 - G 1/2 - SAE8</td>
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<tr>
<td>18301-10</td>
<td>EDC-Z</td>
<td>L8510...</td>
<td></td>
<td>310 (4500)</td>
<td>up to 26.5 (7)</td>
<td>G 1/2 - SAE8</td>
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</tbody>
</table>
## EDC Overview

### Features / Advantages / Benefits

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern ED series</td>
<td>Match to all slice ED</td>
<td>Flexibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost reduction</td>
</tr>
<tr>
<td>Flow sharing</td>
<td>Simultaneous movements</td>
<td>Height performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Simplification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy saving</td>
</tr>
<tr>
<td>Direct acting</td>
<td>No pilot line low pressure</td>
<td>Energy saving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very precise movement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vibration free movement</td>
</tr>
<tr>
<td>Compact solution</td>
<td>Installation everywhere</td>
<td>Saves space</td>
</tr>
<tr>
<td>Modular system</td>
<td>Standard components</td>
<td>Reduction of delivery time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flexibility</td>
</tr>
</tbody>
</table>
EDC Overview

EDC-P - Proportional modular directional valves

<table>
<thead>
<tr>
<th>Port</th>
<th>SAE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal flow</td>
<td>l/min (gpm)</td>
</tr>
<tr>
<td>Maximum flow</td>
<td>l/min (gpm)</td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>P, A and B bar (psi)</td>
</tr>
<tr>
<td></td>
<td>T bar (psi)</td>
</tr>
<tr>
<td>Maximum number of directional valves</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actuation</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Override</td>
<td>Push button, screw type, lever type</td>
</tr>
<tr>
<td>Voltage supply</td>
<td>Volt DC: 12, 13, 24, 27, 48, 110 RAC: 24, 110, 230</td>
</tr>
<tr>
<td>Current max.</td>
<td>Ampere 1.76 (12 DC) - 0.88 (24 DC)</td>
</tr>
<tr>
<td>Electrical connections</td>
<td>Type DIN EN 175301-803, AMP-J, Deutsch DT04-2P</td>
</tr>
<tr>
<td>Stacking module</td>
<td>Port relief, Port relief with anti-cavitation, PO Check</td>
</tr>
</tbody>
</table>
EDC Overview
EDC-Z and DZ - On-off modular directional valves

<table>
<thead>
<tr>
<th>Port</th>
<th>SAE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum flow</td>
<td>l/min (gpm)</td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>bar (psi)</td>
</tr>
<tr>
<td>Maximum number of directional valves</td>
<td>10</td>
</tr>
<tr>
<td>Actuation</td>
<td>Electrical</td>
</tr>
<tr>
<td></td>
<td>Push button, screw type, lever type</td>
</tr>
<tr>
<td>Voltage supply</td>
<td>Volt</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Watt</td>
</tr>
<tr>
<td>Electrical connections</td>
<td>Type</td>
</tr>
<tr>
<td>Stacking module</td>
<td>Port relief, Port relief with anti-cavitation, PO Check</td>
</tr>
</tbody>
</table>

Maximum flow: 54 (14.3) l/min
Maximum pressure:
- P, A and B: 310 (4500) bar
- T: 210 (3000) bar

Voltage supply:
- DC: 12, 13, 24, 27
- RAC: 24, 110, 230

Power consumption:
- DC: 26, 31, 33
- RAC: 29, 33, 35

Electrical connections: DIN EN 175301-803, AMP-J, Deutsch DT04-2P
EDC Overview
Inlet plates: TE-13 / TE-16

**TE-13**  
Data sheet 18300-13

*Inlet element with by-pass compensator, LS relief for open center control block and solenoid operated unloading*

- **Technical Data**
  - Max pressure: 310 bar (4500 psi)
  - Max inlet flow: up to 120 l/min (32 gpm)
  - Port connections: G 1/2-G3/4 SAE 10
  - Material: Cast iron

**TE-16**  
Data sheet 18300-14

*Inlet element with LS connection and double pressure relief valve (P and LS line)*

- **Technical Data**
  - Max pressure: 310 bar (4500 psi)
  - Max inlet flow: 120 l/min (32 gpm)
  - Material: Cast iron
  - Port connections: G1/2-G3/4- SAE10
EDC Overview
EDCMF - stacking modules: relief, relief/anti-cavitation, pilot operated check Valves

EDCM/EDCMF-VM5
- Pressure relief valves with screw setting:
  - Single (0A, 0B) or Double (AB)
  - Data sheet RE 18301-47

EDCM/EDCMF-VM
- Pressure relief valves pre-setting with anticavitation valves:
  - Single (0A, 0B) or Double (AB)
  - Data sheet RE 18301-45

EDCM/EDCMF-VR
- Cross piloted check valves:
  - Single (0A, 0B) or Double (AB)
  - Data sheet RE 18301-46

EDM-VB
- Counterbalance valves:
  - Single (0A) or Double (AB)
  - Data sheet RE 18301-43
EDC Overview
Flow sharing System - LUDV

**Open center**
- Standard: The simultaneous movements are allowed only in case of load pressures balanced. In case an operation needs a higher pressure the movement is stopped.

**Load sensing**
- Load Sensing: Load Sensing The simultaneous movements are allowed till the saturation of the system; then the movement which needs the higher pressure will stop.

**LUDV**
- Flow sharing: The simultaneous even in case of saturation condition, the simultaneous movements are assured at different pressure range.
DC-CH
EDG Slices
EDG Overview

DC-CH - EDG compact/flexible pre-compensated directional valve

Coming from our strong experience/know-how on EDC Flow Sharing **direct acting** valve, we have now been developing a more compact and configurable pre-compensated valve. The new EDG with **electrohydraulic actuation** is a new technology evolution with interesting improvements (respect to main competitors)

**Main Benefits/Achievements:**

- Compact / low weight and highly configurable solution. Auxiliary valve integrated in the housing for direct acting and piloted version.
- Suitable for different application AWP FKL TMC MUC AG
- Same interface for EH and DA (Direct Acting) versions.
- EH version: more compact housing with integrated auxiliary valves, cast iron version → better Δp performance for internal channels; no need for plugs (Compared to Main Competitor Solution)
- Special Medium Body version with integrated Counterbalance valve for Forklift application
- Interface plate for existing valve from ED line

- EH Actuation
- 60 LPM
- 350 bar working pressure
- **14mm** main spool diameter
- 12mm compensator diam
- Spool sensor option

- Direct Actuation
- 40 LPM
- 350 bar working pressure
- **12mm** main spool diameter
- 12mm compensator diam
- Spool sensor option
EDG Overview

Main components

- LS signal press regulation (A,B ports)
- Aux valve A,B: Antis hock, Anticavitation or Plug
- Common flange pattern with “double T line”
- Direct Acting Solenoid Actuation with Optional Manual Override
  Connector Options: Deutsch/AMP-Junior/DIN
- One side Pilot Operated actuation Module
Overall dimension/comparison

EDC

Overall dimension: l 263 [mm] x h 112 [mm] x w 46 [mm]
Unit slice weight: under 3.9kg

EDG

Overall dimension: l 240 [mm] x h 75 [mm] x w 40 [mm]
Unit slice weight: under 2.5kg

EDG Direct Actuation

EDG EH

Overall dimension: l 172 [mm] x h 75 [mm] x w 40 [mm]
Unit slice weight: ~2kg

Significant Dimension and Weight reduction compared to existing valve platforms

DC-CH | 2018
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EDG Overview
Slice-group overview/variants

EDG full assembly example

High body version with Spool Sensor

High body version with Counterbalance valve
- For Forklift
## EDG Overview

### Main Features Chart 1/2

<table>
<thead>
<tr>
<th>Feature</th>
<th>DIRECT ACTUATION</th>
<th>EH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX PRESSURE</td>
<td>350 bar (P/T) 380 bar (A/B)</td>
<td>350 bar (P/T) 380 bar (A/B)</td>
</tr>
<tr>
<td>Max Flow</td>
<td>40 LPM (@ 6 BAR)</td>
<td>60 LPM (@ 6 BAR)</td>
</tr>
<tr>
<td>Solenoids /drivers</td>
<td>Direct operated</td>
<td>Pilot operated</td>
</tr>
<tr>
<td>Compensation</td>
<td>Pre compensated /or without compensation</td>
<td>Pre compensated /or without compensation</td>
</tr>
<tr>
<td>Unit Slice weight</td>
<td>Under 2,5 KG</td>
<td>Under 2,0 Kg</td>
</tr>
<tr>
<td>Main Spool diameter/ compensator diamater</td>
<td>12/12</td>
<td>14/12</td>
</tr>
<tr>
<td>ANTISHOCK non settable Pressure Relief on A and/or B ports</td>
<td>integrated in the valve housing</td>
<td>integrated in the valve housing</td>
</tr>
<tr>
<td>Double PO check valve module</td>
<td>integrated in the valve housing</td>
<td>integrated in the valve housing</td>
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<tr>
<td>Feature</td>
<td>DIRECT ACTUATION</td>
<td>EH</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-----------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>LS signal</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LS signal bleed</td>
<td>When spool is in neutral position</td>
<td>When spool is in neutral position</td>
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<td>Other actuators:</td>
<td>Emergency lever, Hydraulic actuation</td>
<td>Emergency lever, Hydraulic actuation, pure lever</td>
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<tr>
<td>Emergency on solenoids</td>
<td>yes</td>
<td>optional</td>
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<tr>
<td>Spool sensor</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Flange / interface</td>
<td>New double „T“ flange interface</td>
<td>New double „T“ flange interface</td>
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<tr>
<td>Flange interface with other CDV valves (such as EDC)</td>
<td>Through adaptor valve</td>
<td>Through adaptor valve</td>
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<tr>
<td>Flow rate Delta P calculation through the main spool</td>
<td>6-12 bar</td>
<td>6-12 bar</td>
</tr>
<tr>
<td>Spool stroke limiter</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>
EDG Overview
Forklift Main Control Valve

Modular - Smart - Compact

- Very modular flexible design for different hydraulic configurations.
- Additional hydraulic functions can be incorporated with special block (priority valve for steering, brake, ecc)
- Compact design in compliance with market demand.
- Different EDG versions available depending on the required flow rate (direct version up to 40 l/min, piloted version up to 60 L/min)
- Auxiliary secondary valves incorporated in each slices on demand.
**EDG Overview**

**Inlet Plate / KSVS Proportional eCV**

---

**Features**

- New KSVS proportional valves
  - Low deltaP and hysteresis
  - Leak-free (5 drops/min leakage)
  - 350 bar for 2 million cycles
  - Suitable for aggressive environment up to 90°C and 720h salt spray test

- LS Cut off
  - Safety Redundancy

- Lowering compensator
  - Lowering speed independent from load. Fine control with any load

- Main double pressure compensator
  - Low energy consumption in standby or in travelling

- Priority inlet
  - Compactness and customization
EDG Overview
EDG: Direct Operated

Nominal flow up to 40 l/min
Nominal Max Pressure: 350 bar.
Secondary Relieve Valve, pilot operated check – anti-cavitation valves and CBV can be integrated in each section.
Pre-Compensated, proportional control
LS Pressure Cut Off
Port types: Schafer / Metric / BSPP
EDG Overview
EDG: Pilot Operated

Available Soon

Direct Operated

Slices / Sections:
- Nominal flow up to 60 l/min
- Nominal Max Pressure: 350 bar.
- Secondary Relieve Valve, pilot operated check –anti-cavitation valves and CBV can be integrated in each section.
- Pre-Compensated, proportional control
- LS Pressure cut off
- Port types: Schafer / Metric / BSPP
- Dual Hyd. Pilot Reducing Proportional Valve
DC-CH
CDV: APPLICATIONS
EXAMPLES
CDV Applications Example

Main block for boom control in AWP machine with constant power LS pump.
CDV Applications Example
Block to control utilities in Drilling machine with LS pump

Main Block

Winch  Jaws/Clamps Up  Jaws/Clamps Down  Jaws/clamps Rotation  Option
CDV Applications Example
Hybrid Block with priority valve for Harvester application

HER5, proportional element to control Lift and lower single acting cylinder

Special Inlet plate with priority valve

Standard EDB elements
CDV Applications Example
Block for Vibration and Screed on Paver Machine
CDV Applications Example
Block for boom control Grape Harvester Machine

Main block

2 blocks for each machine
CDV Applications Example
Block to control the function of Garbage Truck

- Application: Garbage truck
- Fixed pump inlet 80 lpm 310 bar
- 6 Element EDC-P + 2 ED4-P
THANKS FOR YOUR ATTENTION