



**SMART** DAYS

**WEBINAR**  
Alternated P/Q Control

atos   
the smart electrohydraulics

# AGENDA – part 1

**1** P/Q  
DESCRIPTION

**2** P/Q  
SOLUTIONS

**3** APPLICATION  
EXAMPLES

**4** E-SW-\*/PQ  
SOFTWARE

**5** ATOS  
RANGE

**6** DESIGN  
GUIDELINES

**7** Q & A

# AGENDA – part 2

8 E-SW-\*/PQ SOFTWARE  
ADVANCED INFO

9 Q & A  
SOFTWARE SESSION

1

**P/Q DESCRIPTION**  
Smart Electrohydraulics

## P/Q DESCRIPTION

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The advantage offered by P/Q control is the high dynamic and accurate control of the machine actuator in terms of:

**Direction**

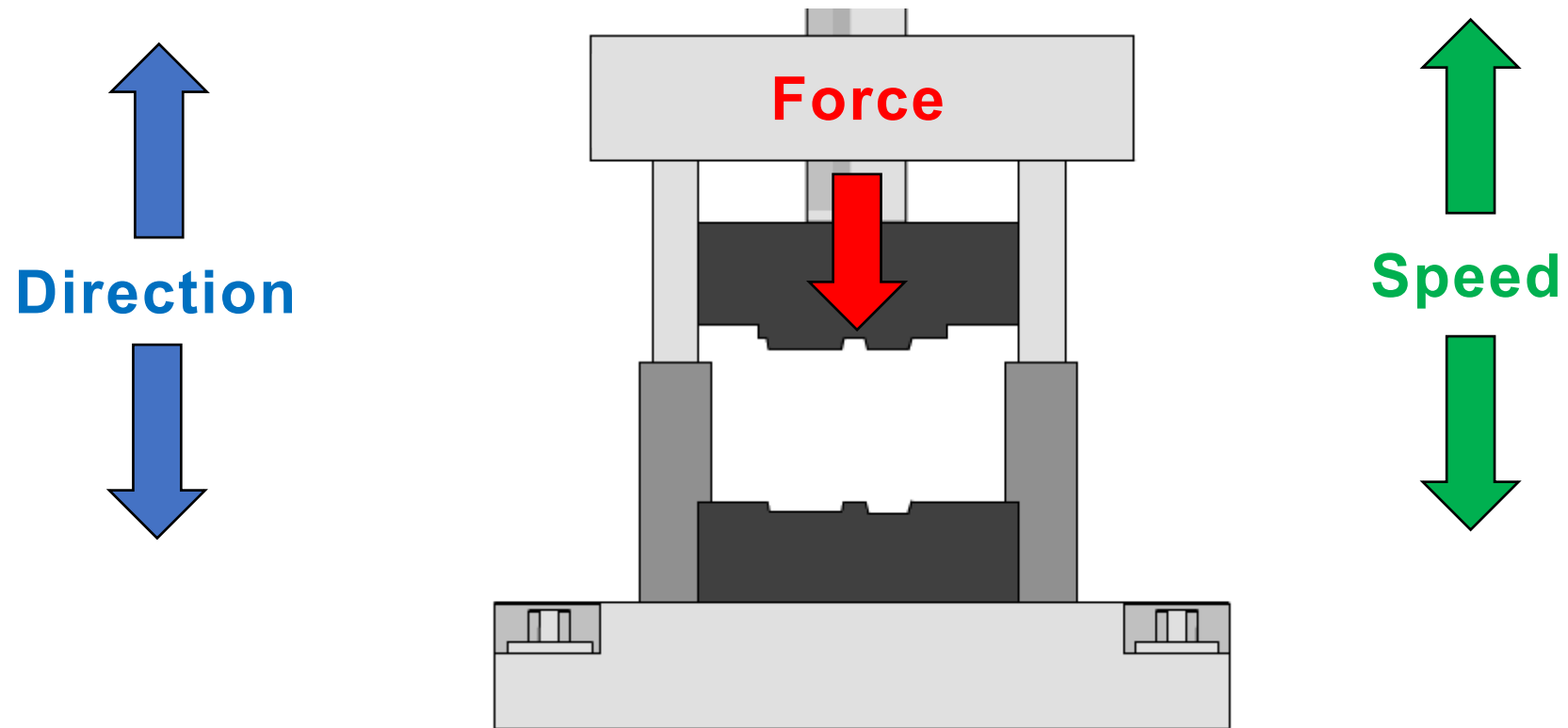
**Speed**

**Force**

all performed by a single hydraulic component

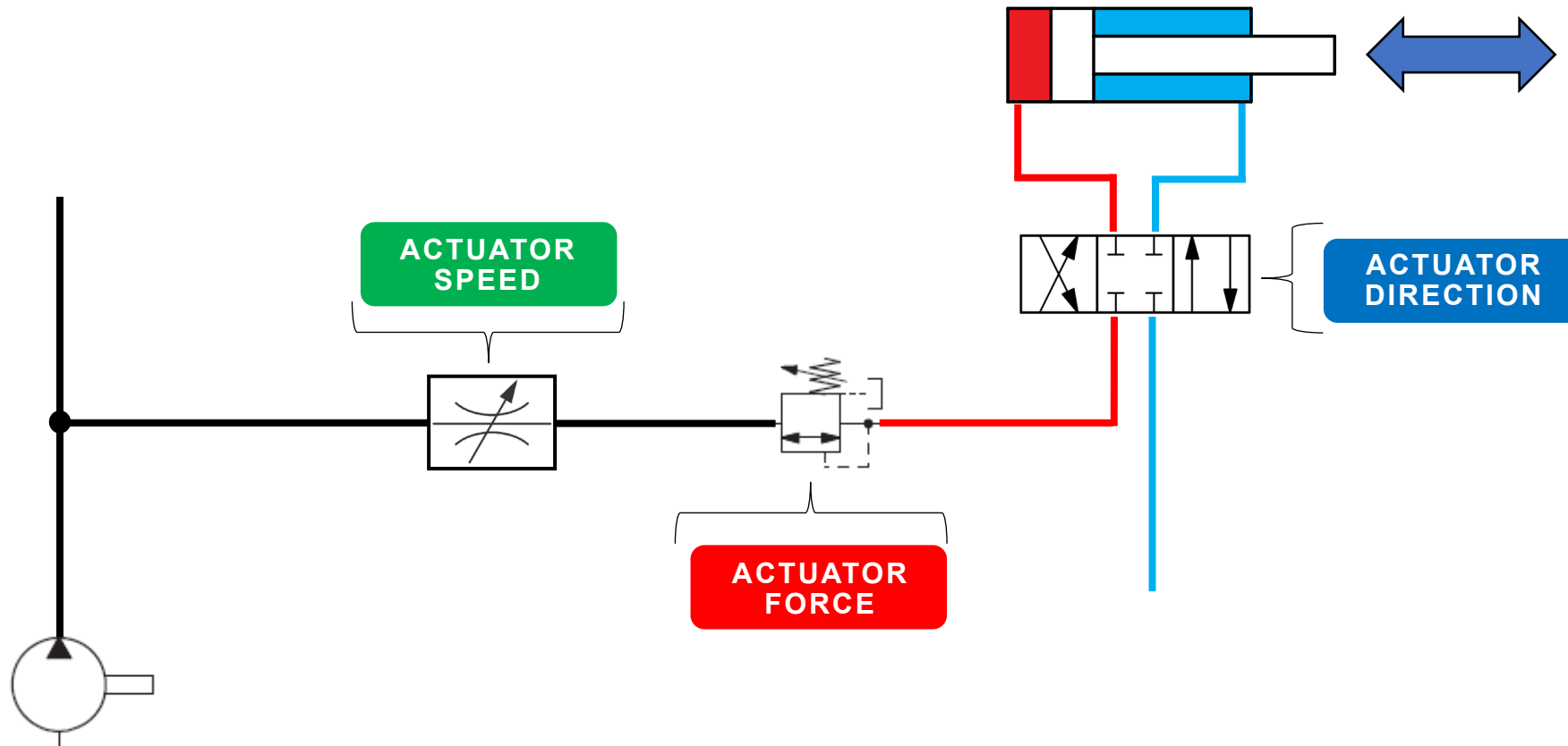


# P/Q DESCRIPTION



# P/Q DESCRIPTION

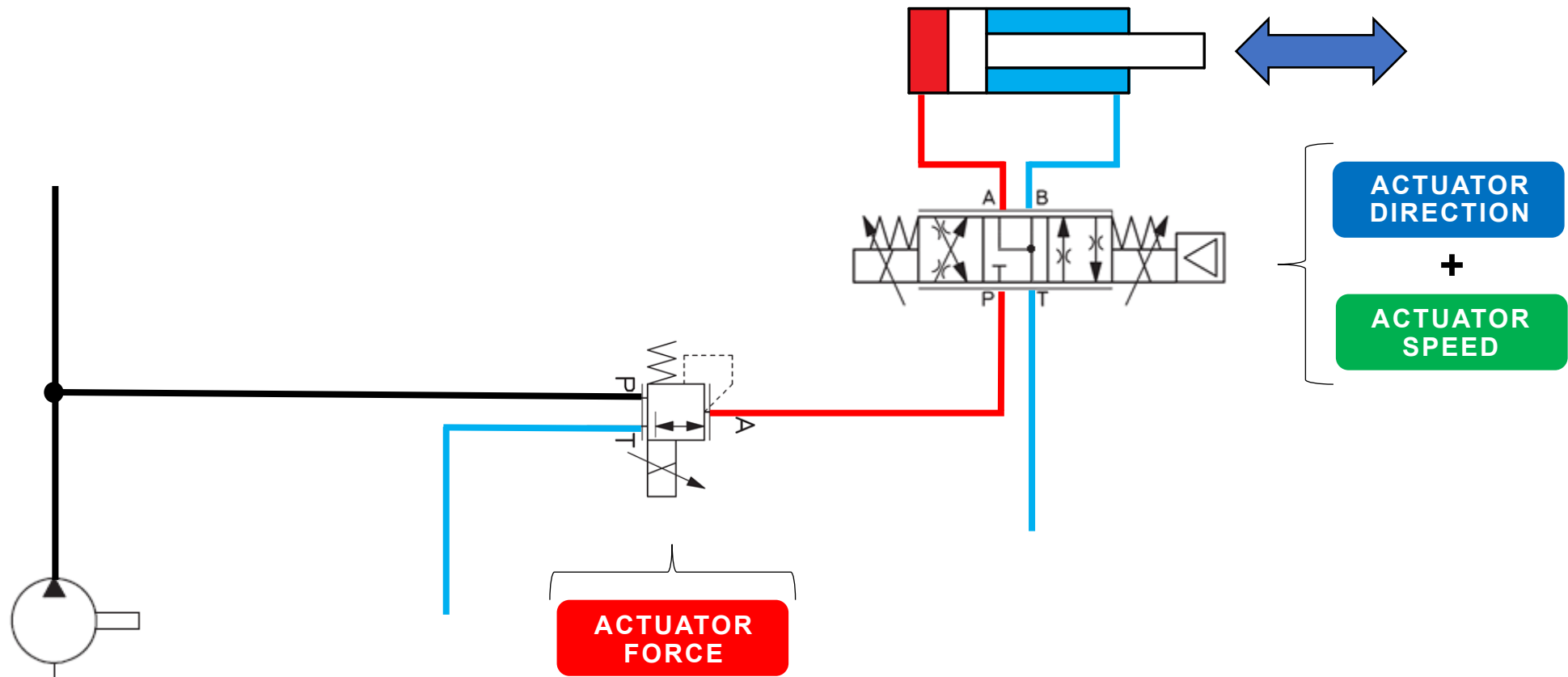
- ON-OFF valves = 3 different valves





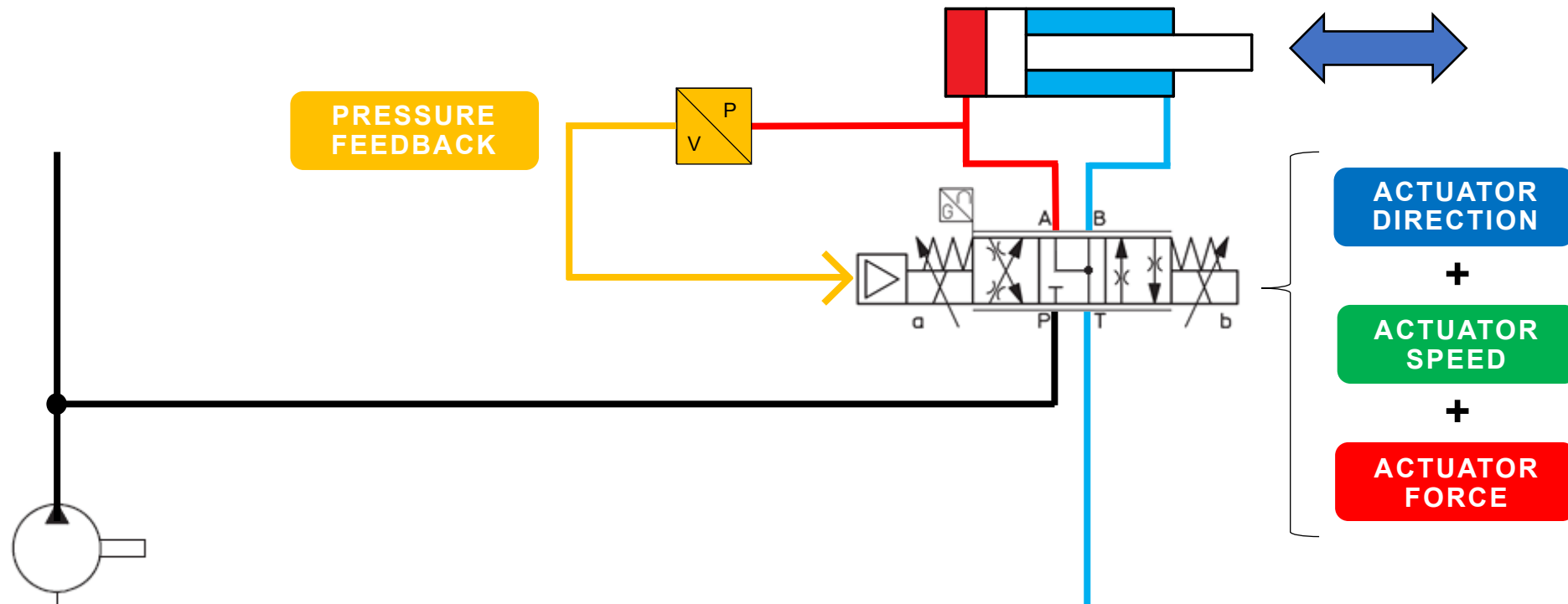
# P/Q DESCRIPTION

Proportional valves = 1 pressure valve + 1 directional valve



# P/Q DESCRIPTION

Proportional P/Q valve = 1 digital valve with P/Q control



# P/Q DESCRIPTION

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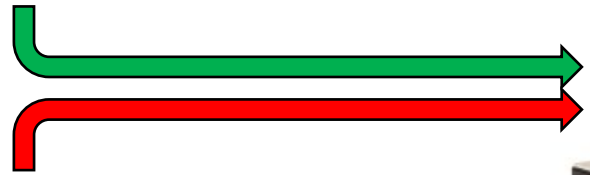
## ADVANTAGES OF P/Q DIGITAL CONTROLS

- **SYSTEM SIMPLIFICATION** – one valve controls force (pressure) / direction / speed
- **HIGH ACCURACY** – closed loop control of force (pressure)

# WHY WE SAY «ALTERNATED» P/Q CONTROL?

# P/Q DESCRIPTION – control logics

**Q**  
Flow reference signal  
( $\pm 10V$  or  $4\div 20mA$ )



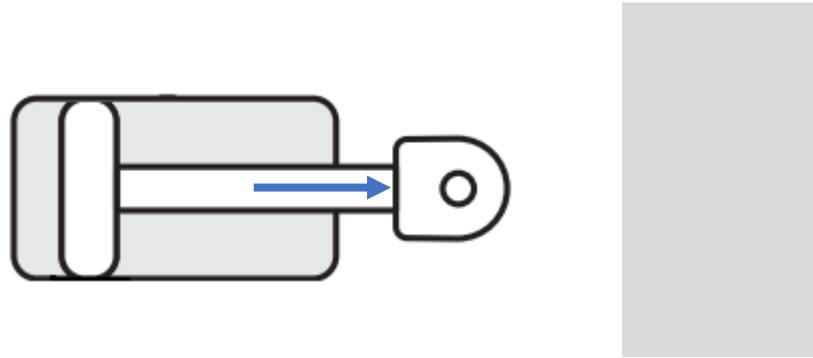
**P**  
Force (pressure)  
reference signal  
( $0\div 10V$  or  $4\div 20mA$ )



**P**  
Force (pressure) actual  
( $0\div 10V$  or  $4\div 20mA$ )

# P/Q DESCRIPTION – control logics

## DYNAMIC condition



**P**  
actual < **P**  
reference



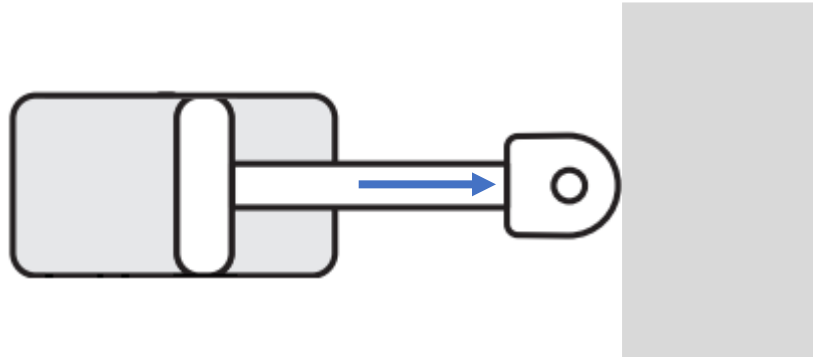
**Q CONTROL  
ACTIVE WITH  
P LIMITATION**



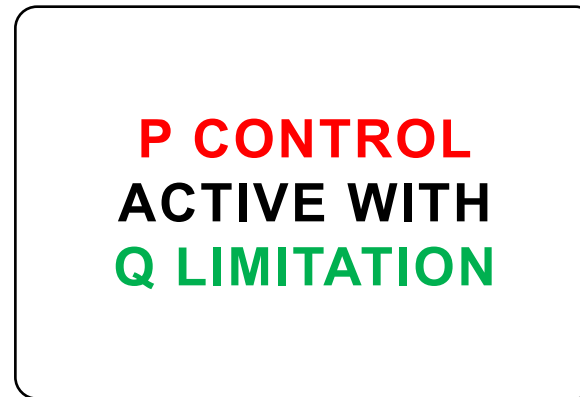
**Q**  
actual = **Q**  
reference

# P/Q DESCRIPTION – control logics

## STATIC condition

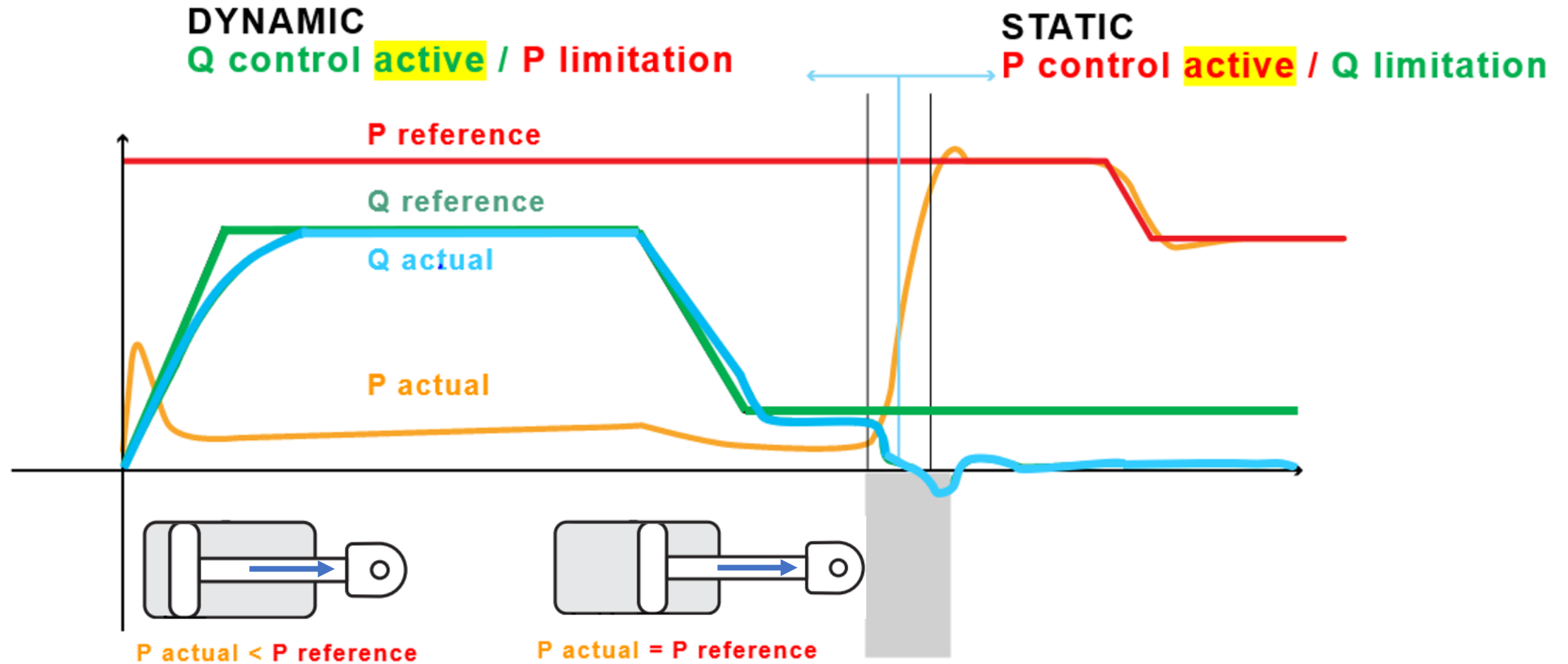


**P**  
actual = **P**  
reference



**Q**  
actual < **Q**  
reference

# P/Q DESCRIPTION – control logics







# P/Q DESCRIPTION – control logics

**Control logic through a sophisticated algorithm**



**SMOOTH changeover**

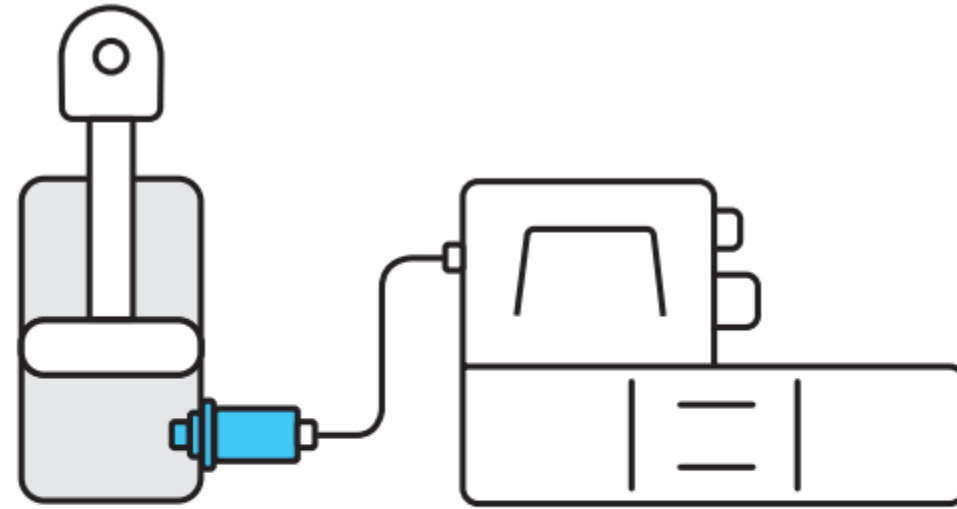
**P → Q**

**Q → P**

2

**P/Q SOLUTIONS**  
Smart Electrohydraulics

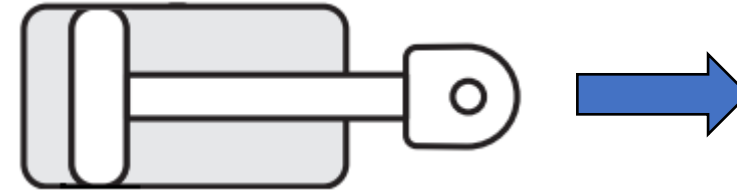
# P/Q SOLUTIONS



**SP = pressure control**  
1 pressure transducer

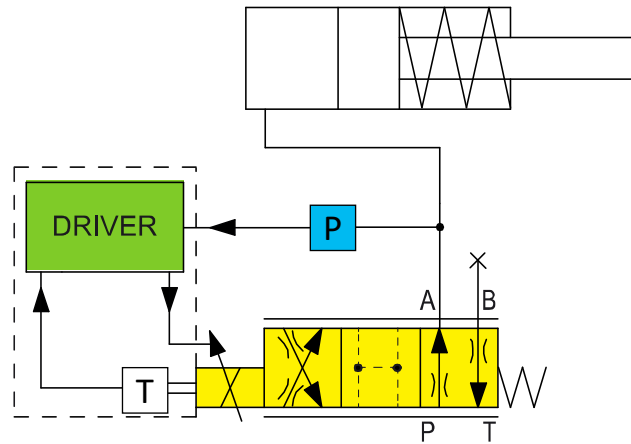
# P/Q SOLUTIONS

SP pressure control only in **one** direction



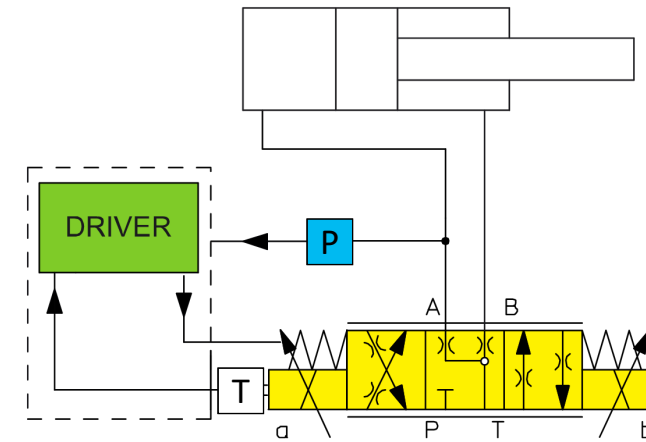
**Zero overlap**

3-way valves or 4-way “used as” 3-way



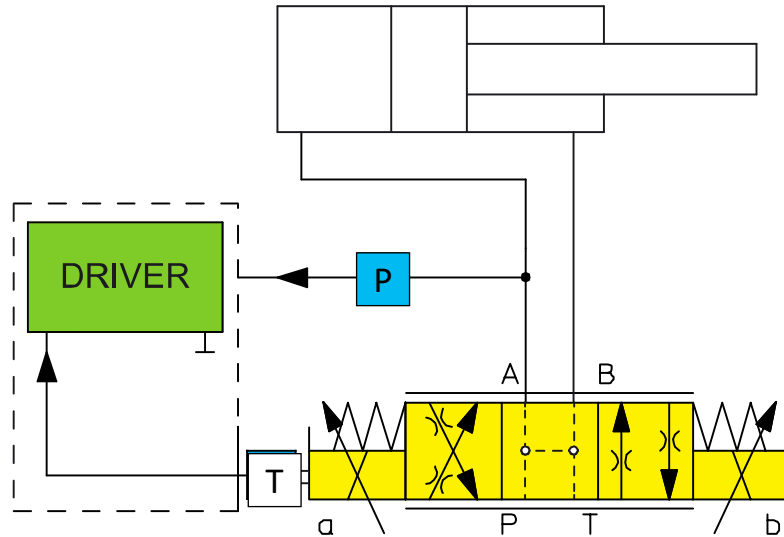
**Positive overlap**

4-way valves

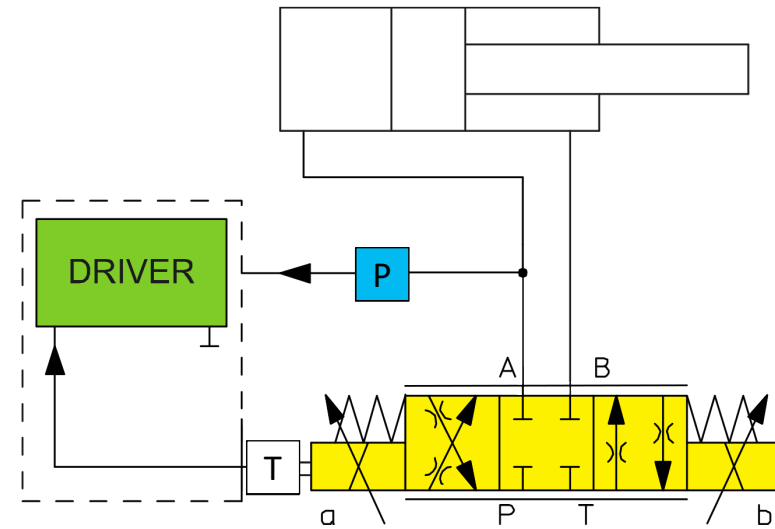


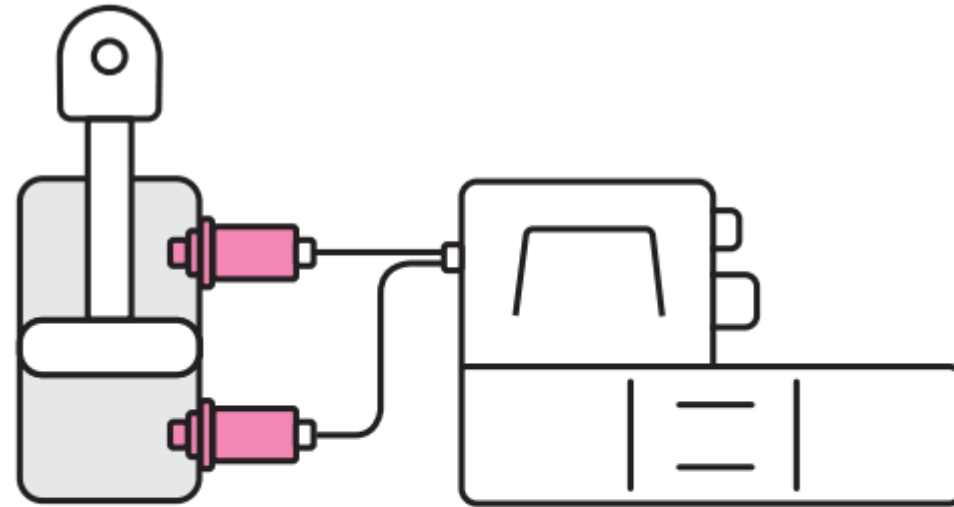
Valve configurations **NOT TO BE USED** for **SP**

**Zero overlap** with A & B ports connected to the actuator



**Positive overlap** with closed centers



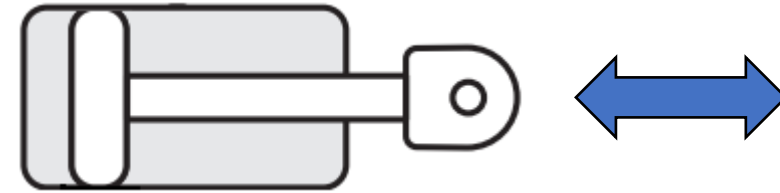


**SF = force control**  
2 pressure transducers



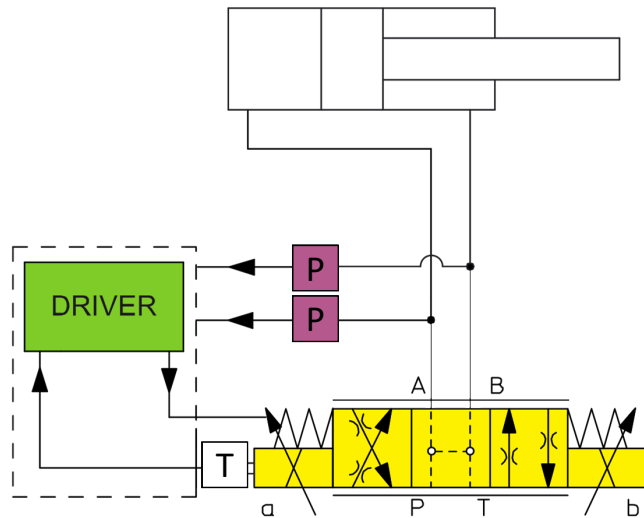
# P/Q SOLUTIONS

SF force control in **two** directions



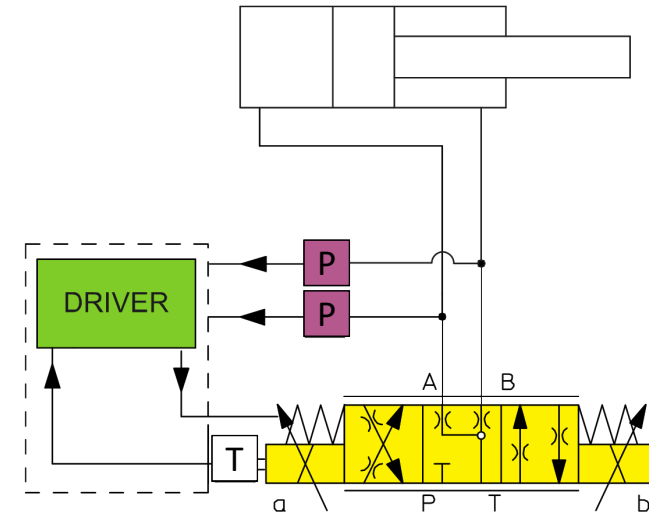
**Zero overlap**

4-way valves



**Positive overlap**

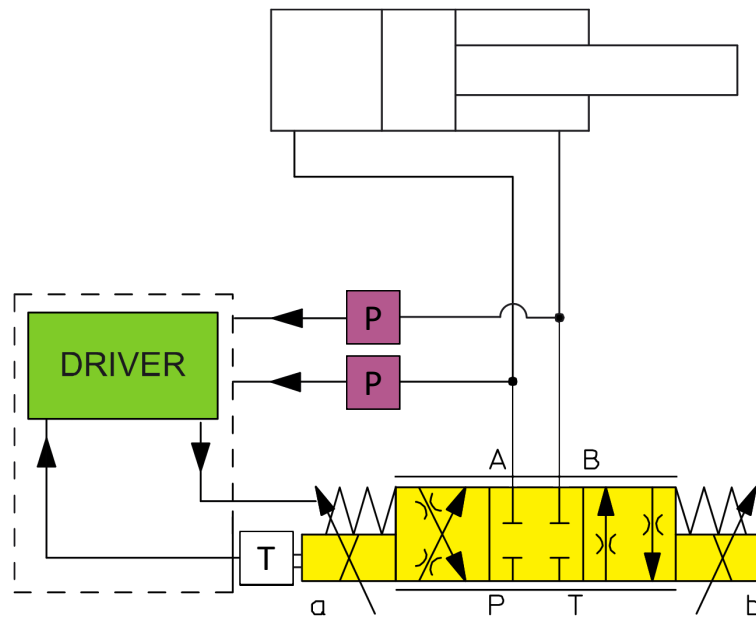
4-way valves



# P/Q SOLUTIONS

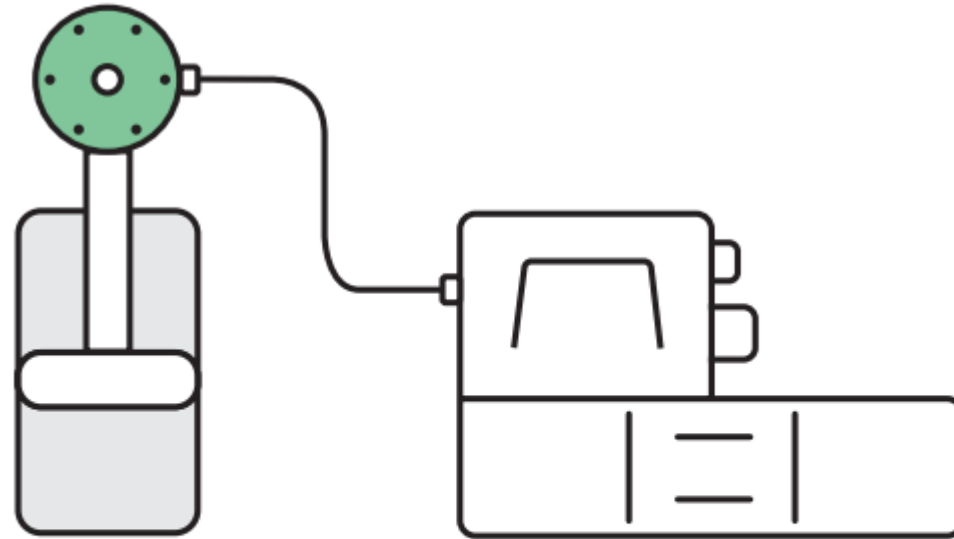
Valve configurations **NOT TO BE USED** for SF

**Positive overlap with closed centers**





# P/Q SOLUTIONS

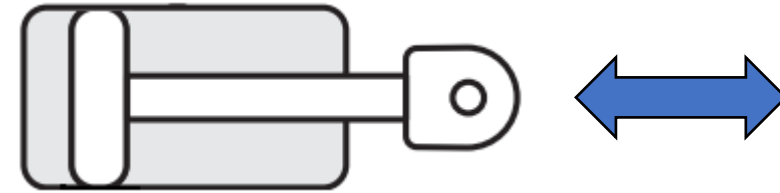


**SL = force control**  
load cell

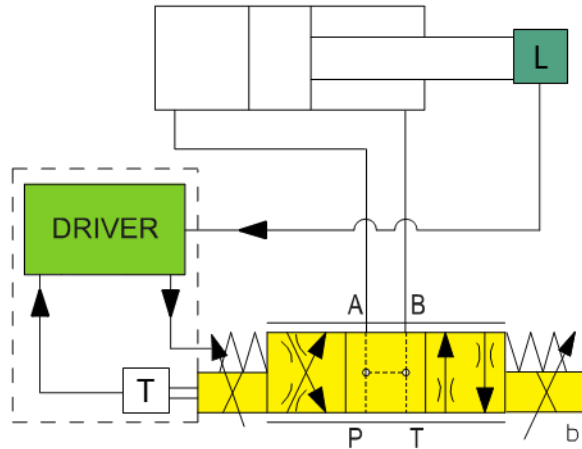


# P/Q SOLUTIONS

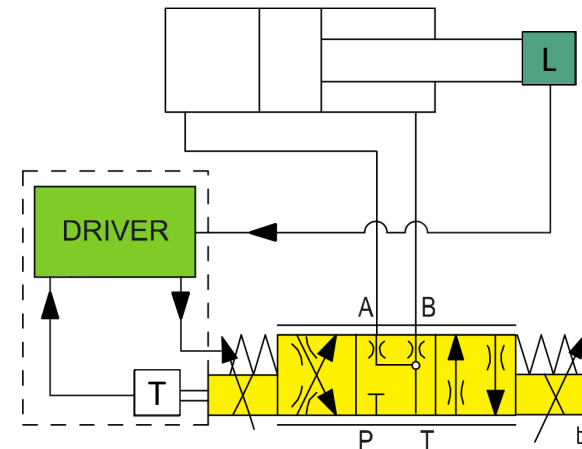
SL Force control in **two** directions



**Zero overlap**  
4-way valves



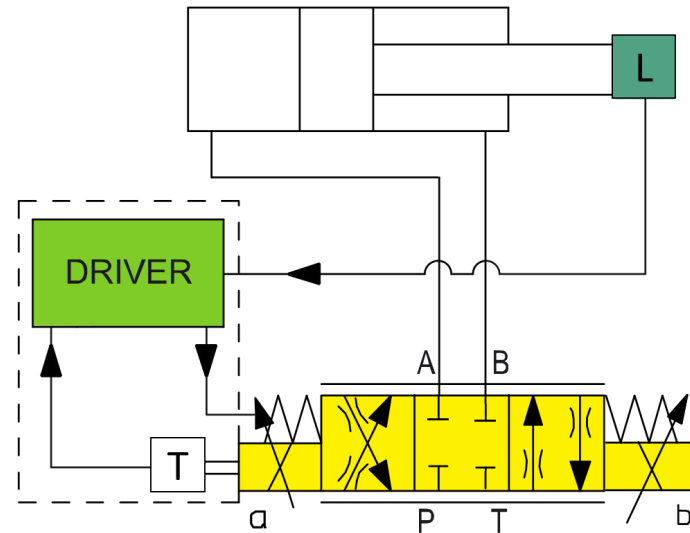
**Positive overlap**  
4-way valves



# P/Q SOLUTIONS

Valve configurations **NOT TO BE USED** for SL

**Positive overlap with closed centers**



3

# APPLICATION EXAMPLES

Smart Electrohydraulics

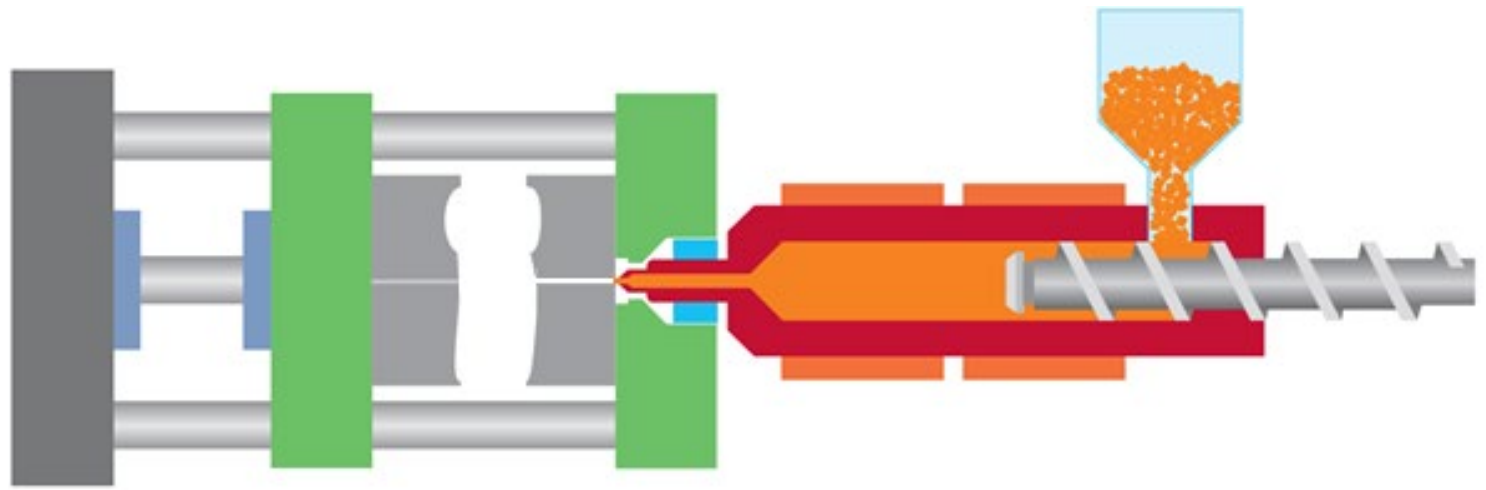


# APPLICATION EXAMPLES – Plastic injection molding machine

Plastic injection molding machine

CLAMP CONTROL

INJECTION CONTROL

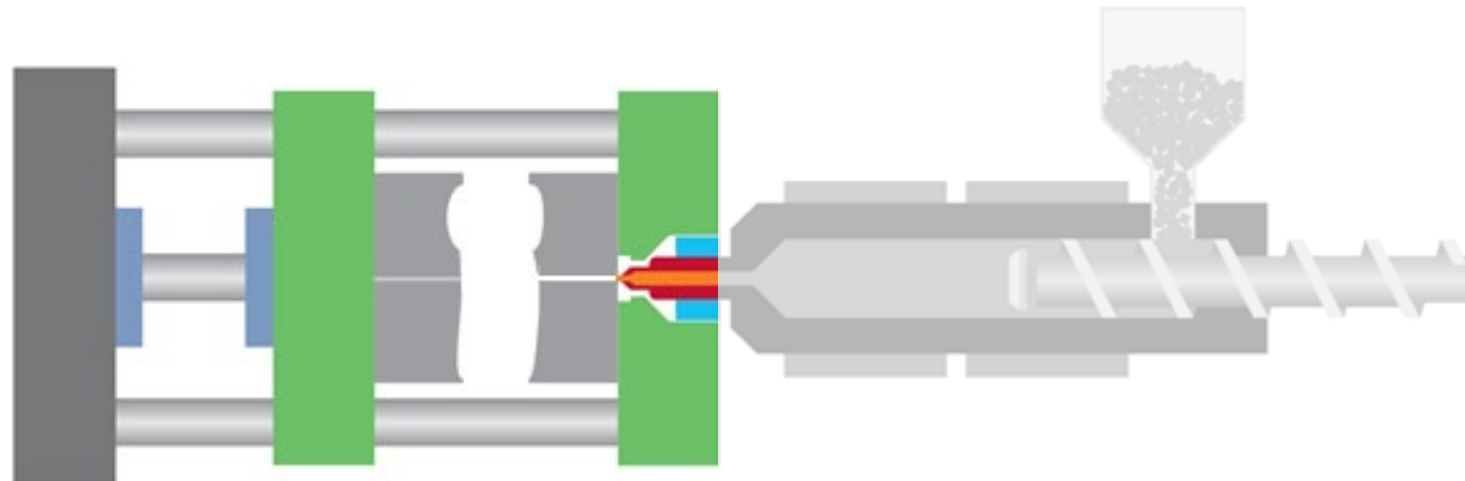




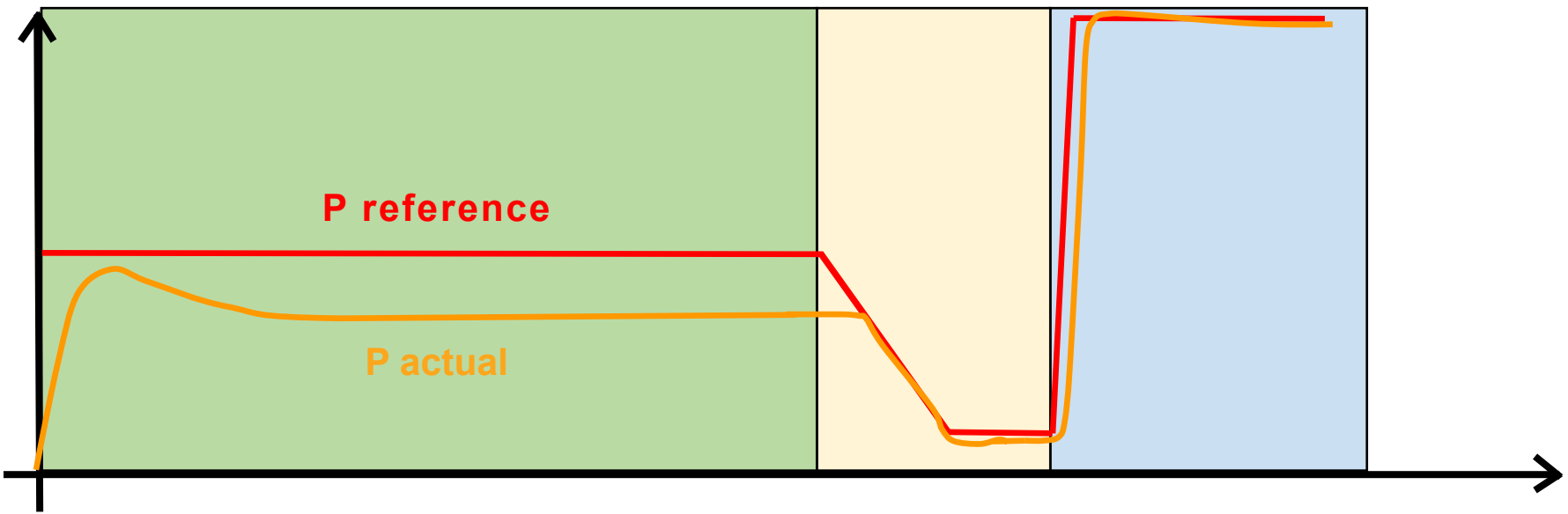
# APPLICATION EXAMPLES – Plastic injection molding machine

## CLAMP CONTROL

**SP pressure control** allows to **reduce the clamping force** at very low value to minimize the risk of mold damage



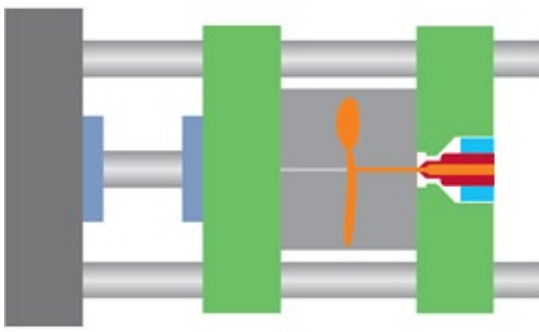
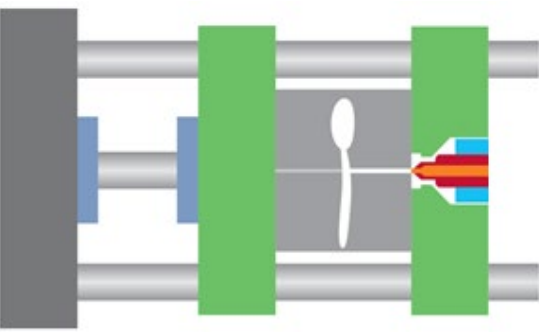
# APPLICATION EXAMPLES – Plastic injection molding machine



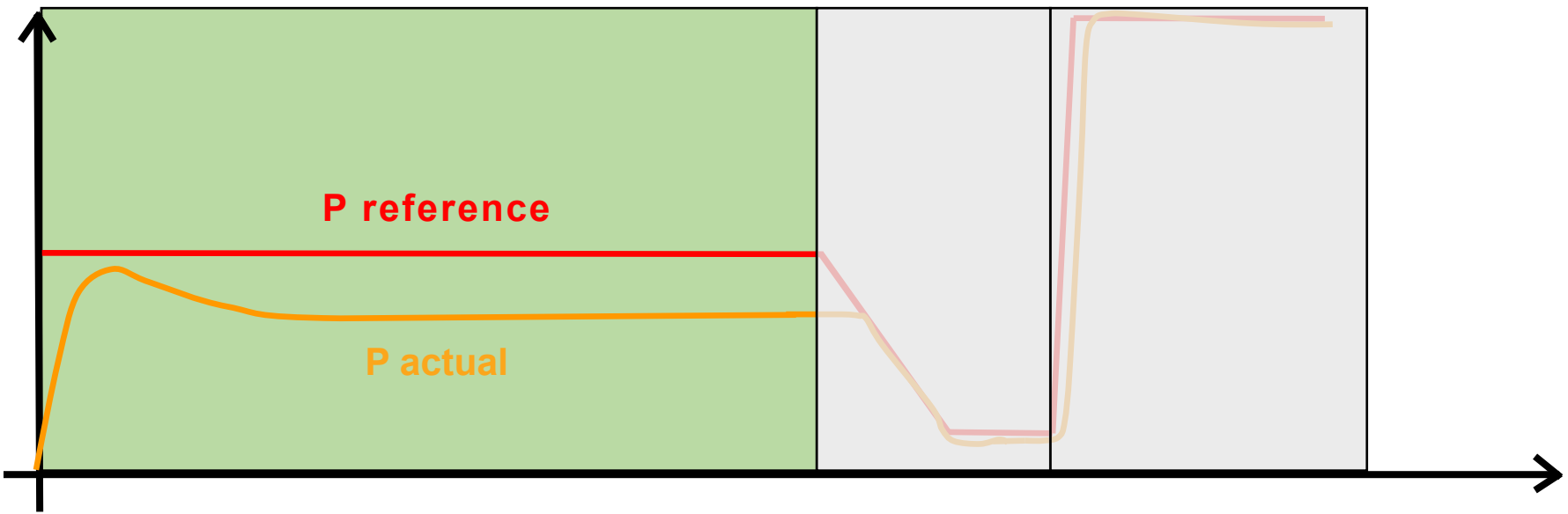
Approaching

Mold safe

Pressing



# APPLICATION EXAMPLES – Plastic injection molding machine



Approaching 

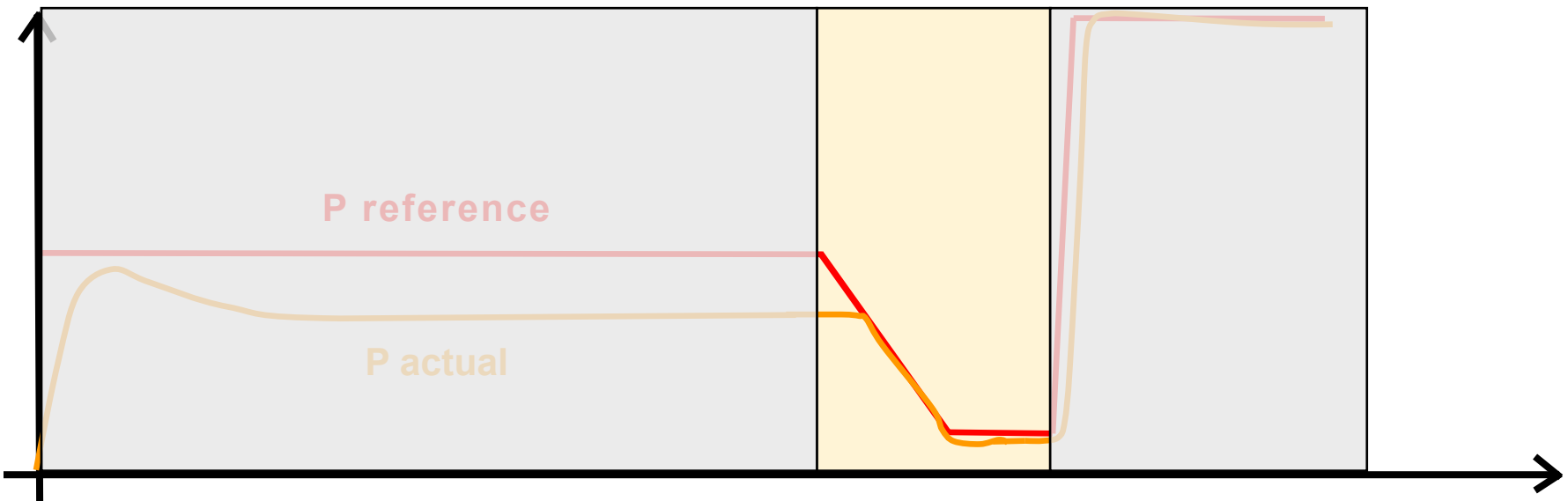
Mold safe 

Pressing 





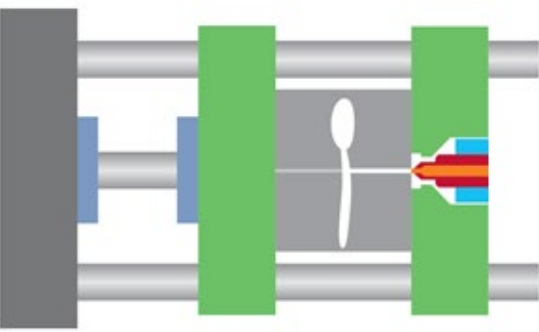
# APPLICATION EXAMPLES – Plastic injection molding machine



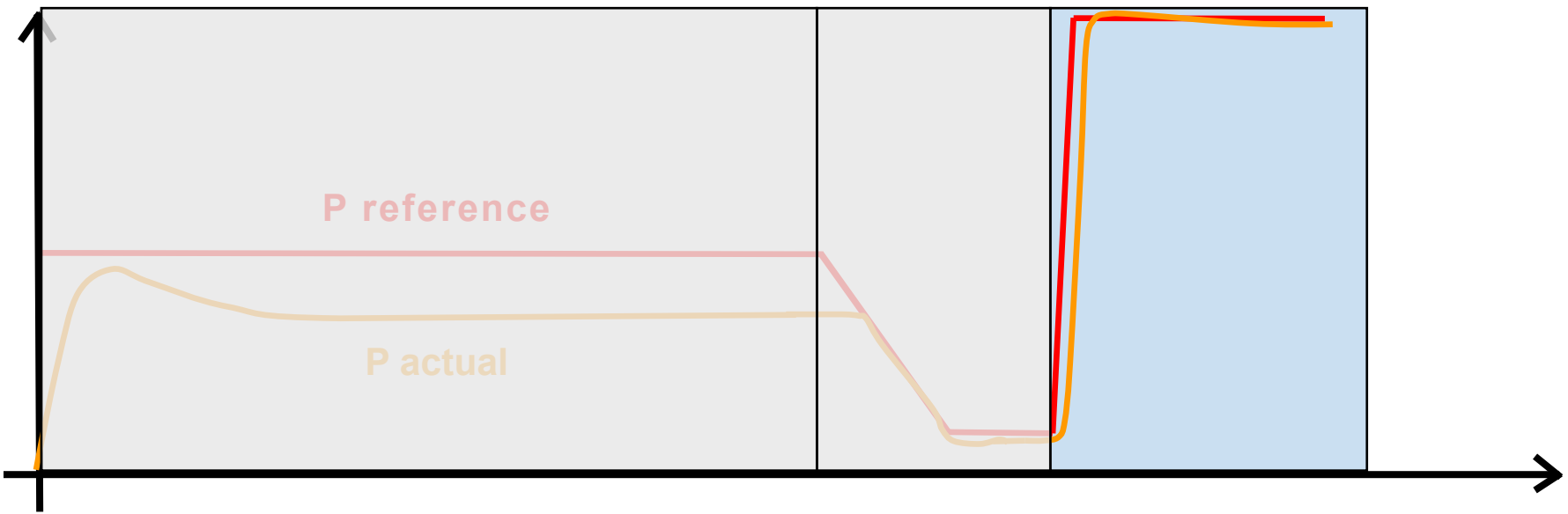
Approaching

Mold safe

Pressing



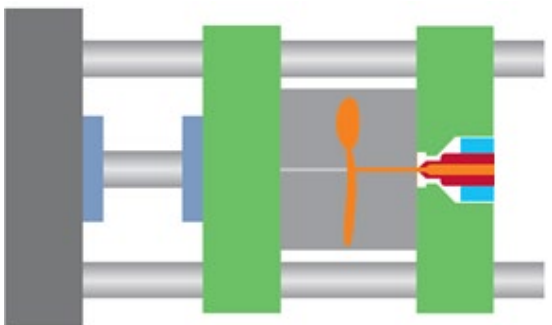
# APPLICATION EXAMPLES – Plastic injection molding machine



Approaching

Mold safe

Pressing

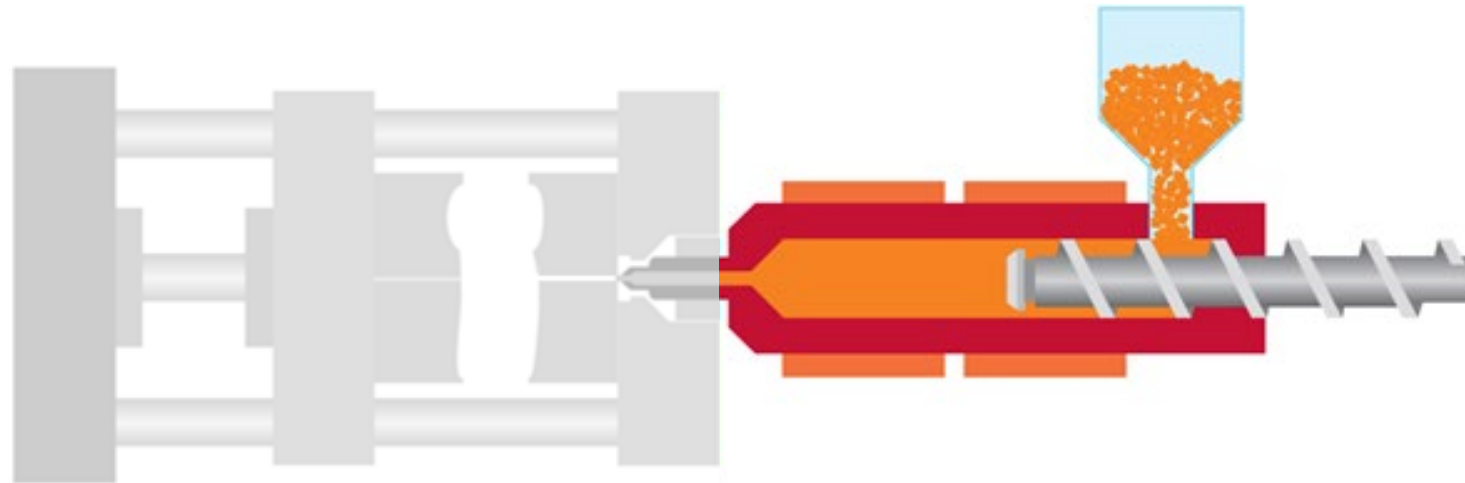




# APPLICATION EXAMPLES – Plastic injection molding machine

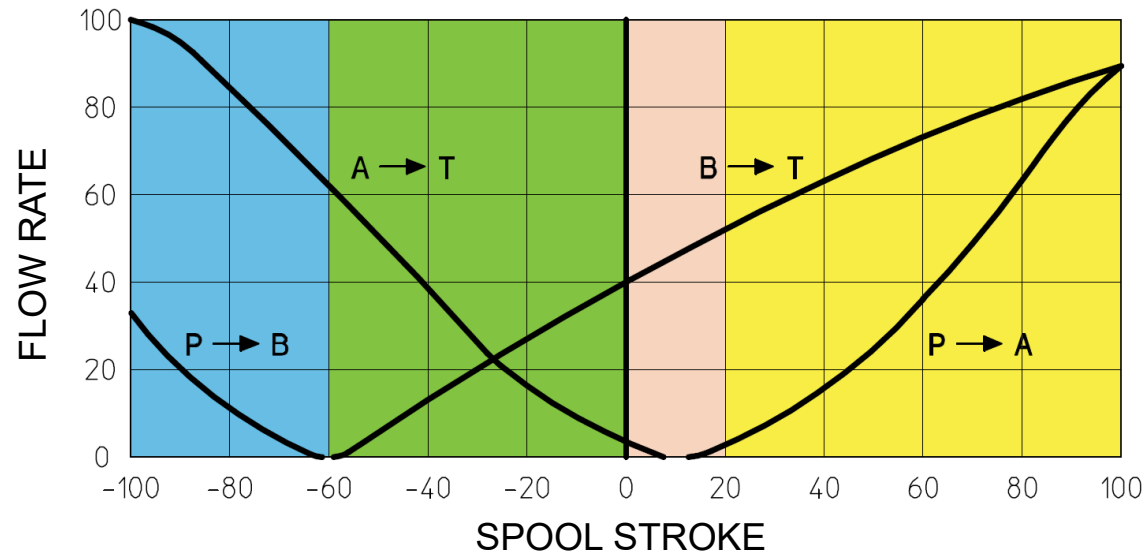
## INJECTION CONTROL

SP pressure control allows to control all the steps of the injection molding machine

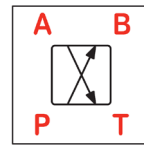


# APPLICATION EXAMPLES – Plastic injection molding machine

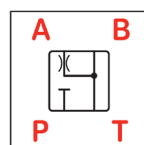
A single dedicated spool **V9** can perform all the phases of the **INJECTION CONTROL**



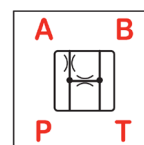
**Return**



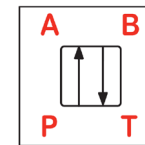
**Back pressure**



**Holding**

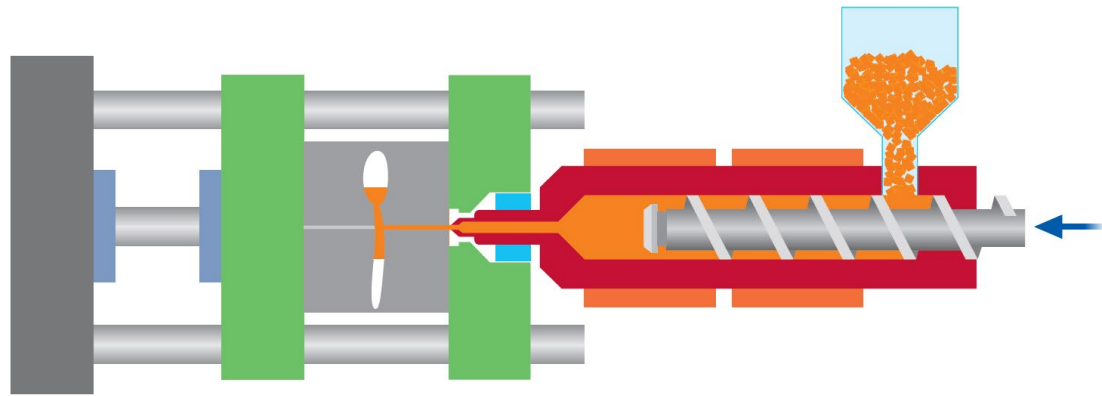


**Injection**

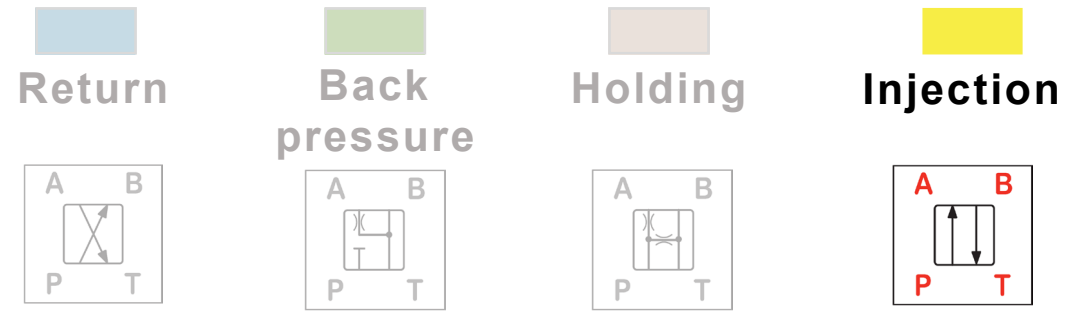
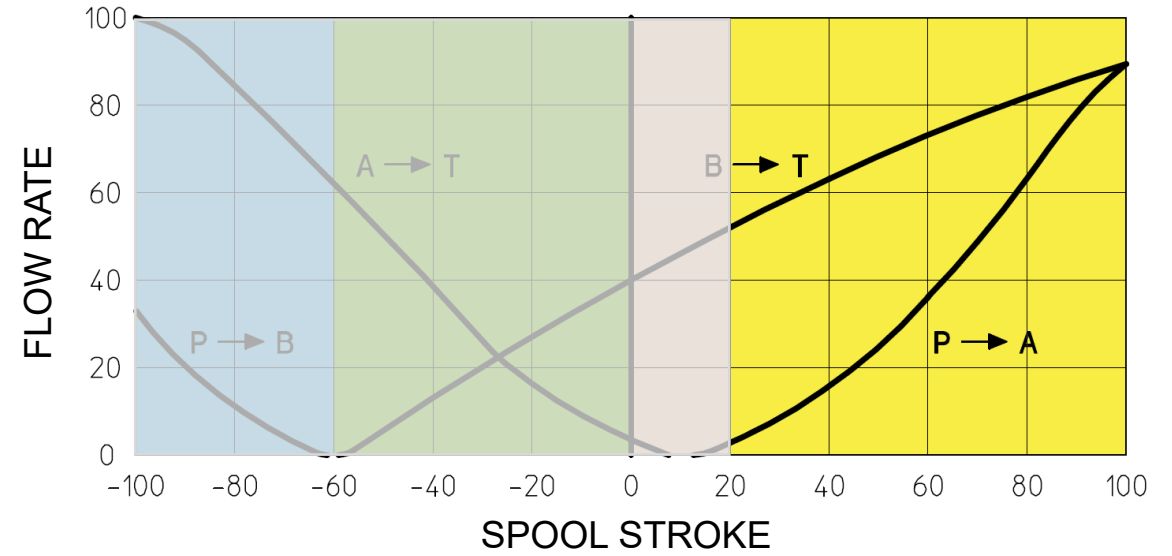


# APPLICATION EXAMPLES – Plastic injection molding machine

Injection

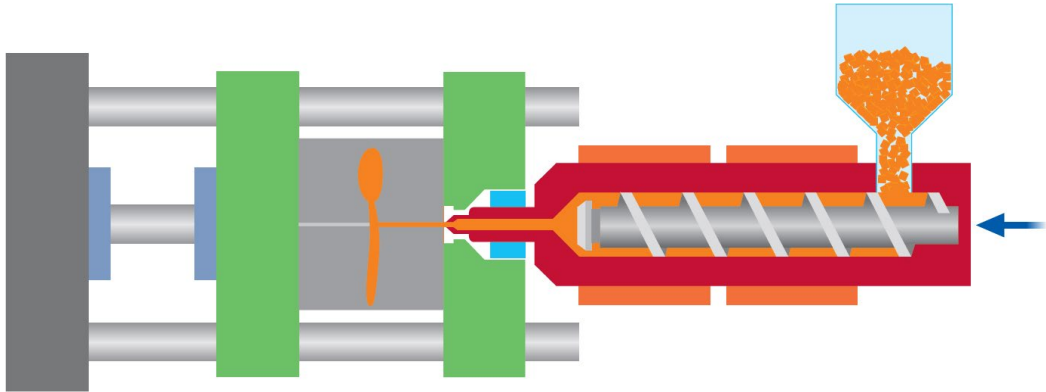


Dedicated spool : **V9**

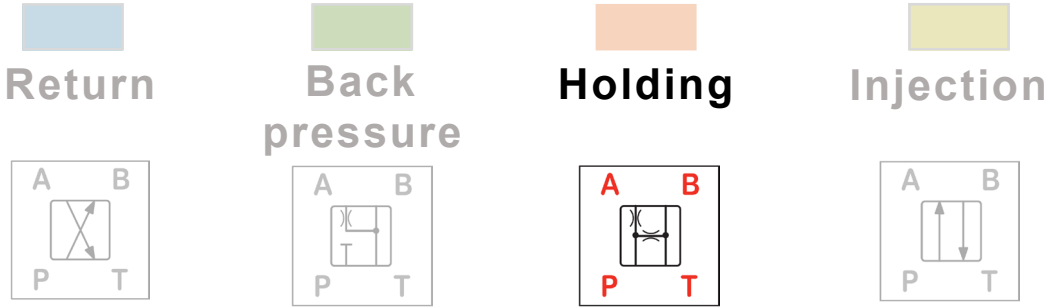
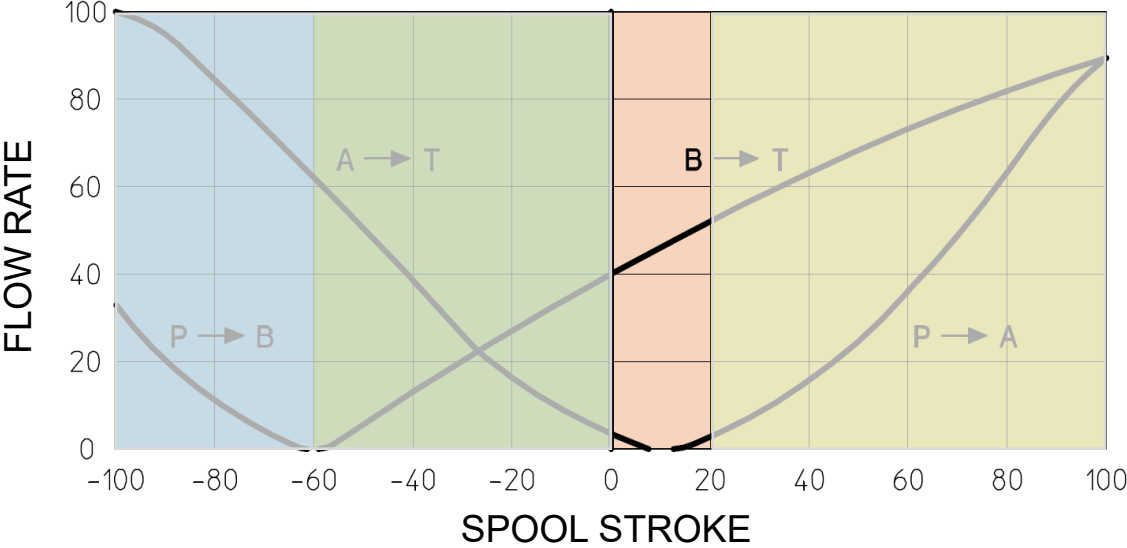


# APPLICATION EXAMPLES – Plastic injection molding machine

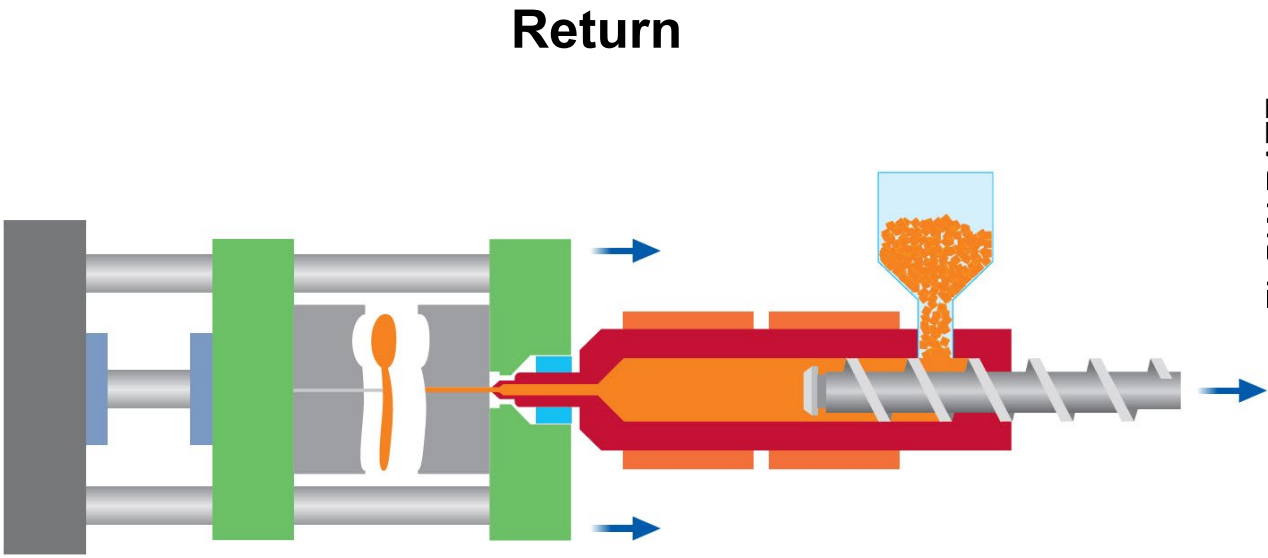
**Holding**



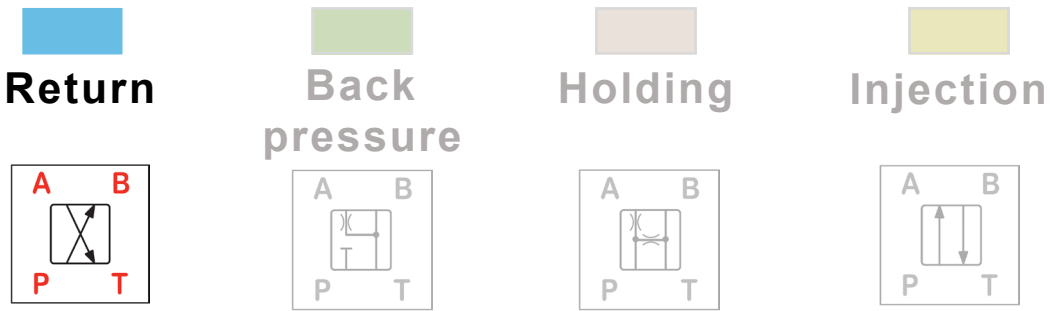
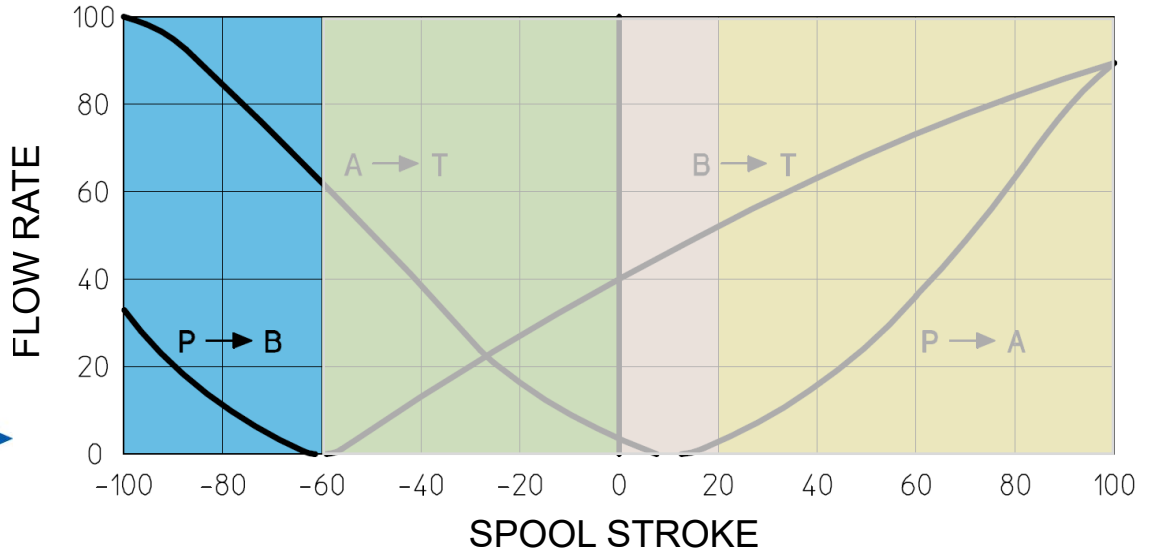
Dedicated spool : **V9**



# APPLICATION EXAMPLES – Plastic injection molding machine

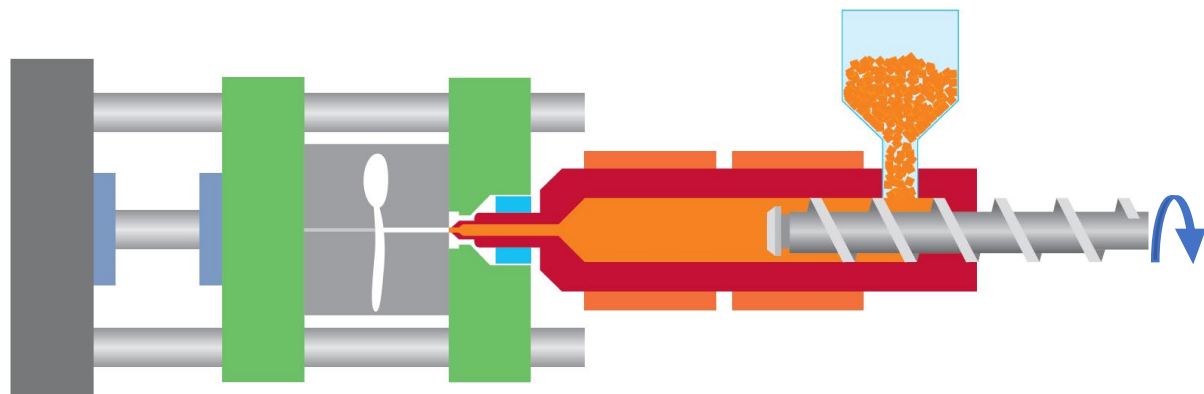


Dedicated spool : **V9**

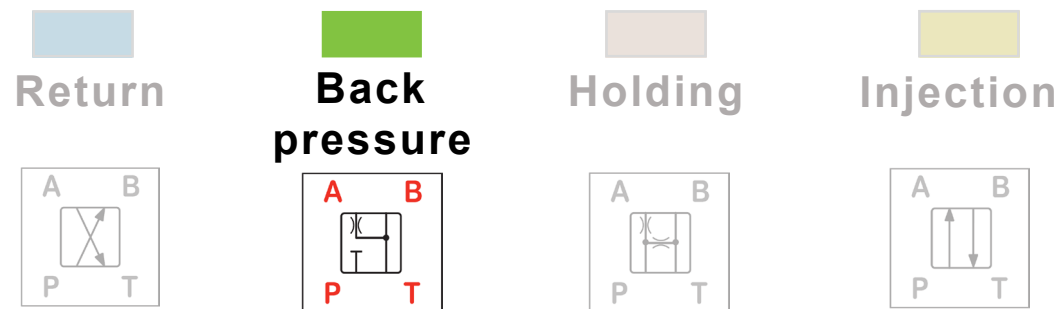
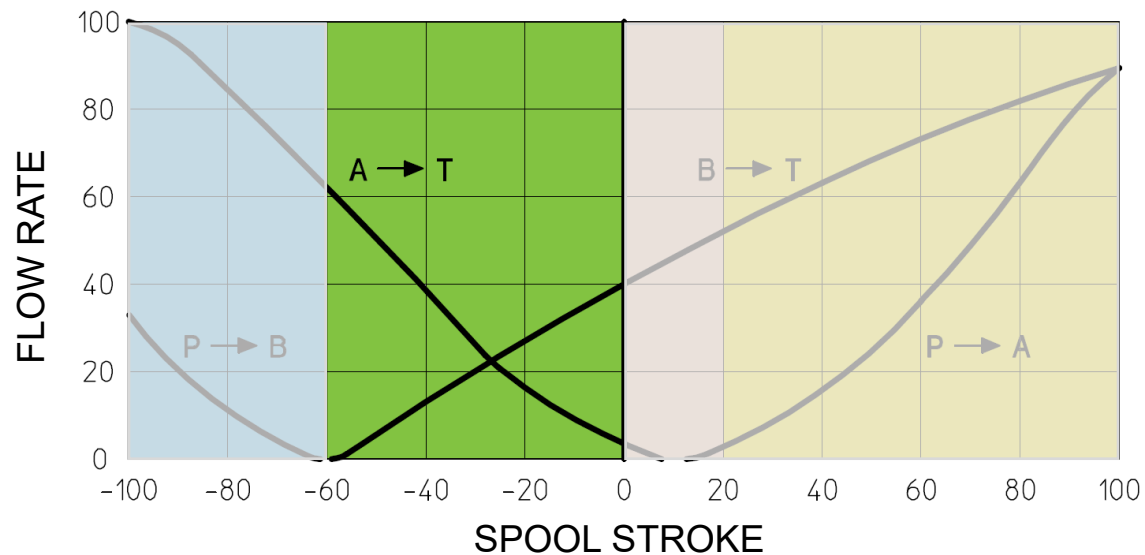


# APPLICATION EXAMPLES – Plastic injection molding machine

Back pressure



Dedicated spool : **V9**

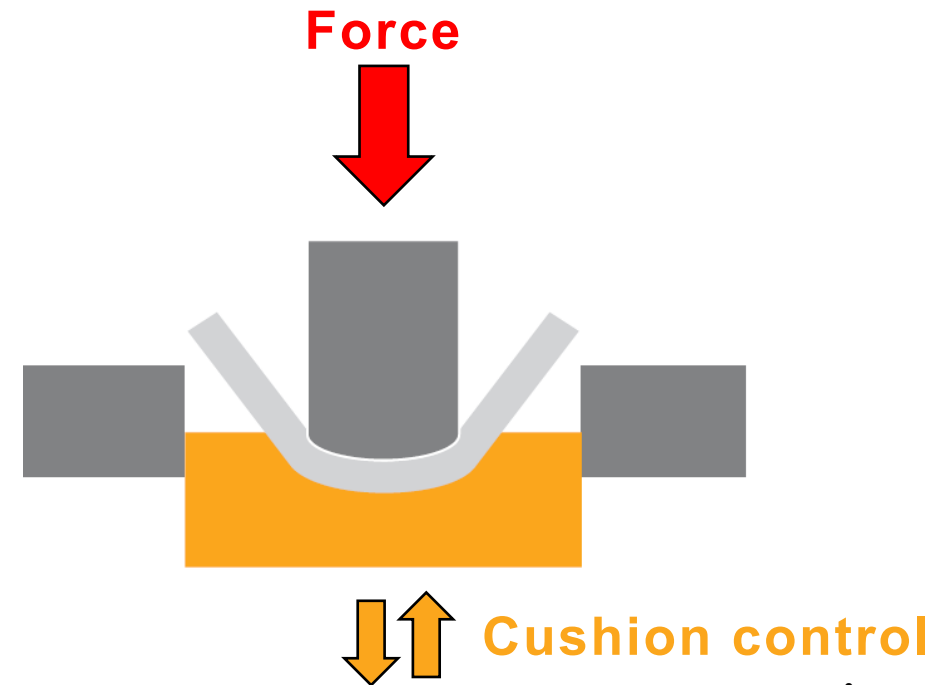
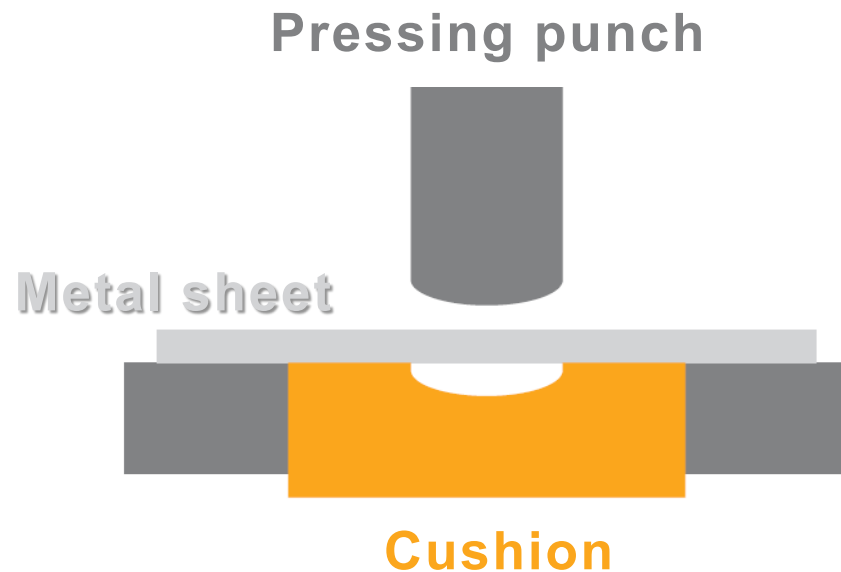




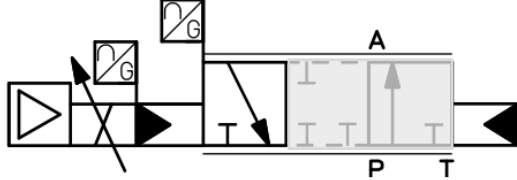
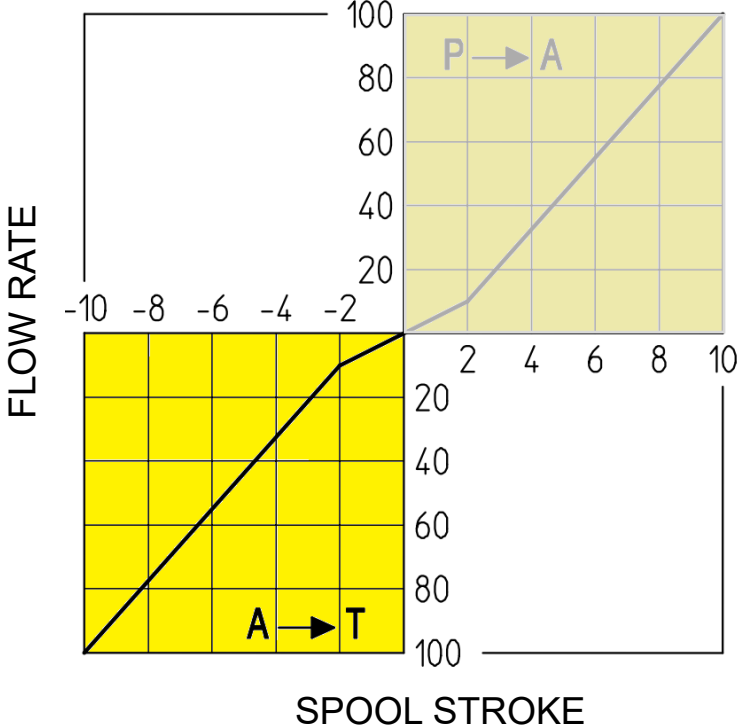
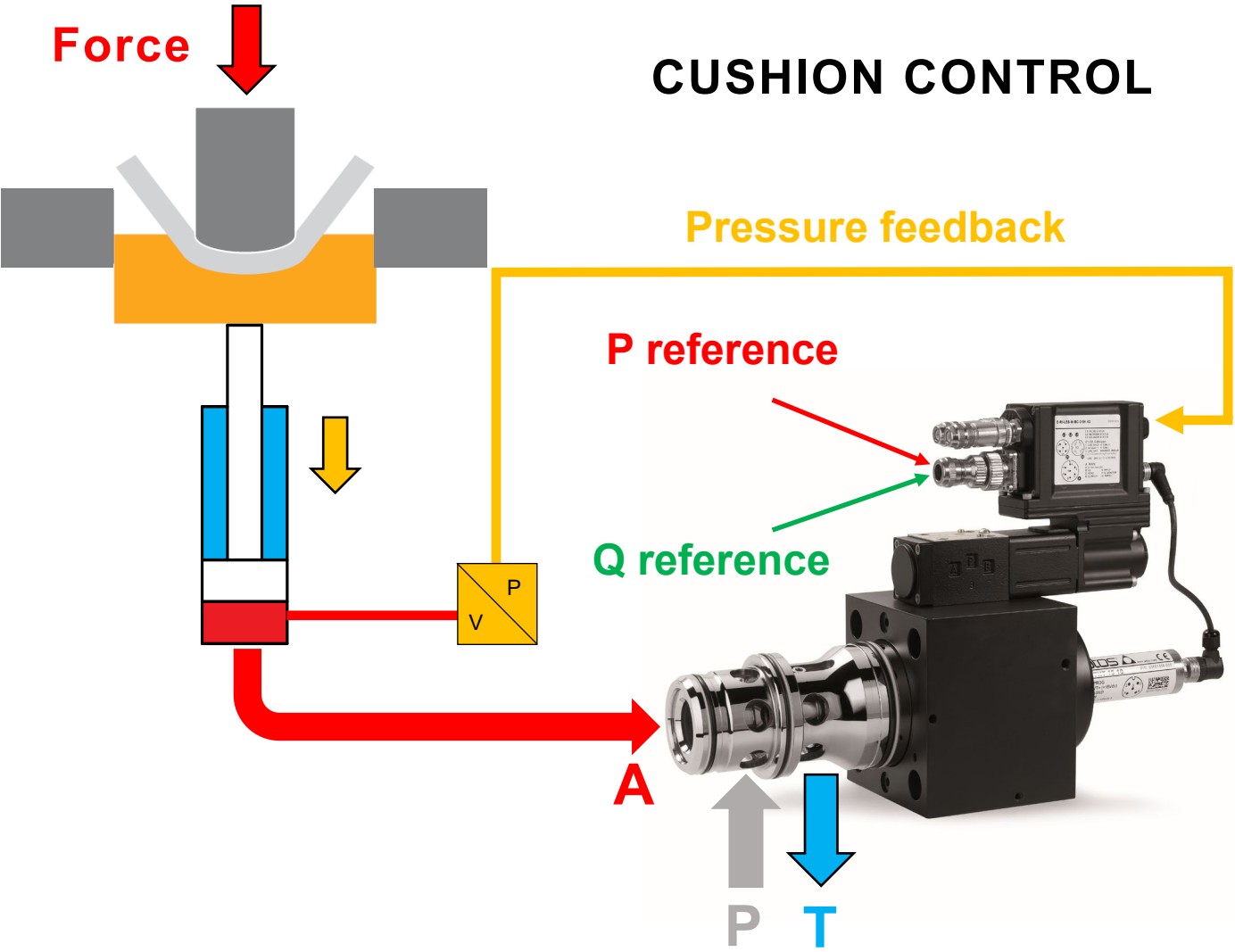
# APPLICATION EXAMPLES – Metalforming presses

## CUSHION CONTROL

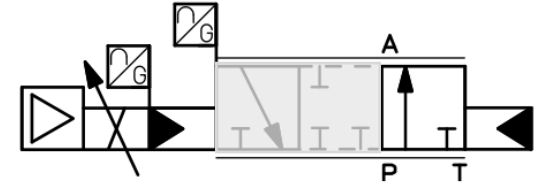
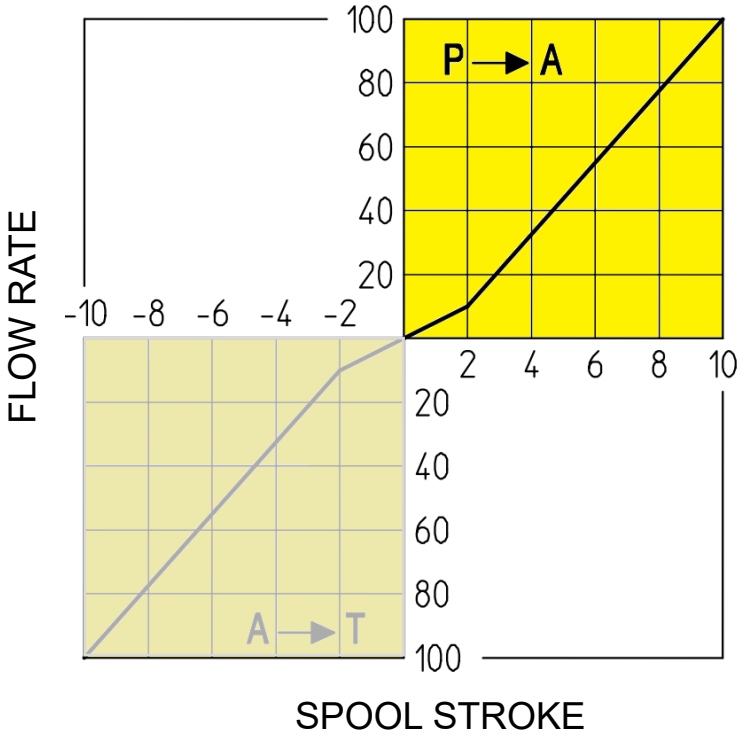
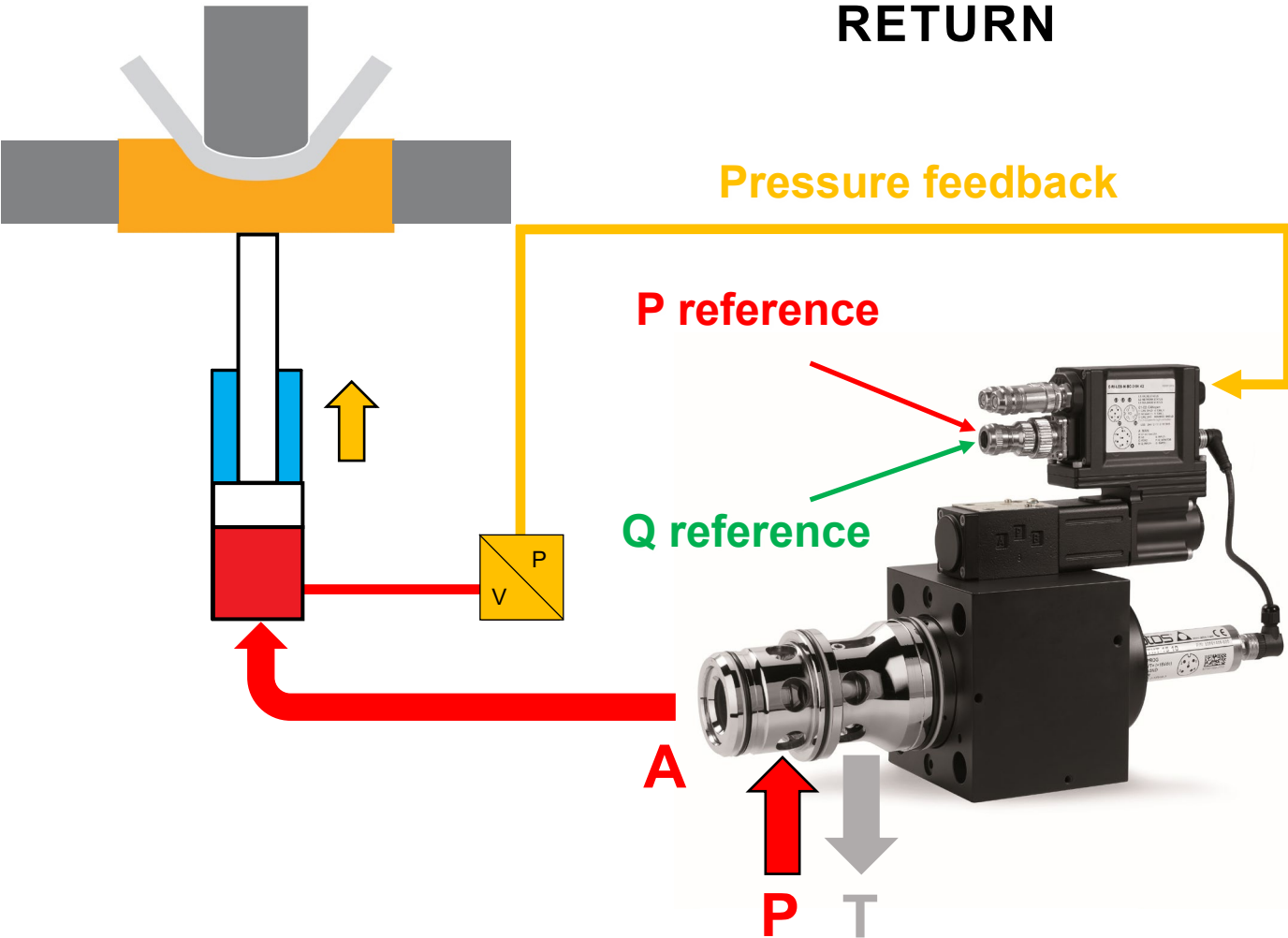
The **Cushion control** is performed in **metalforming applications** to avoid material tearing with **SP pressure control**



# APPLICATION EXAMPLES – Metalforming presses

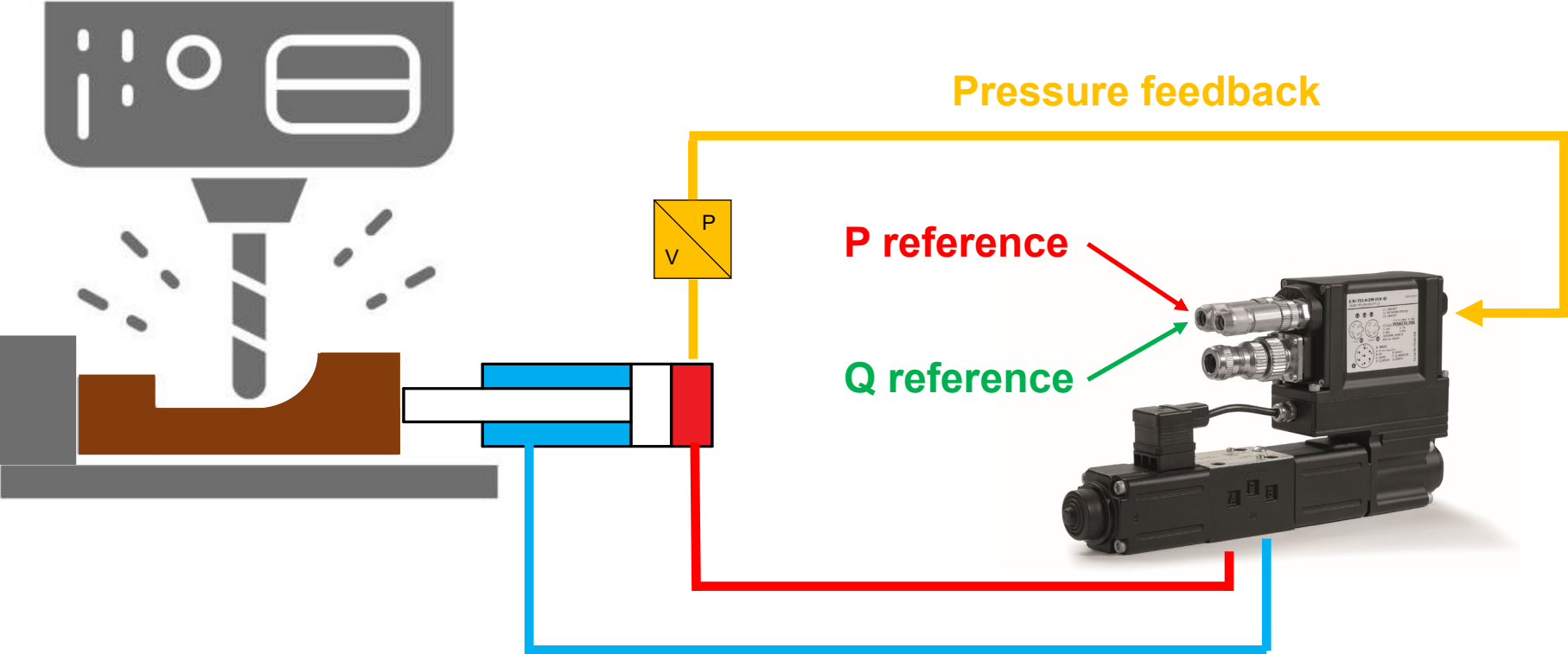


# APPLICATION EXAMPLES – Metalforming presses



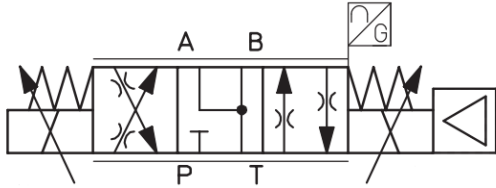
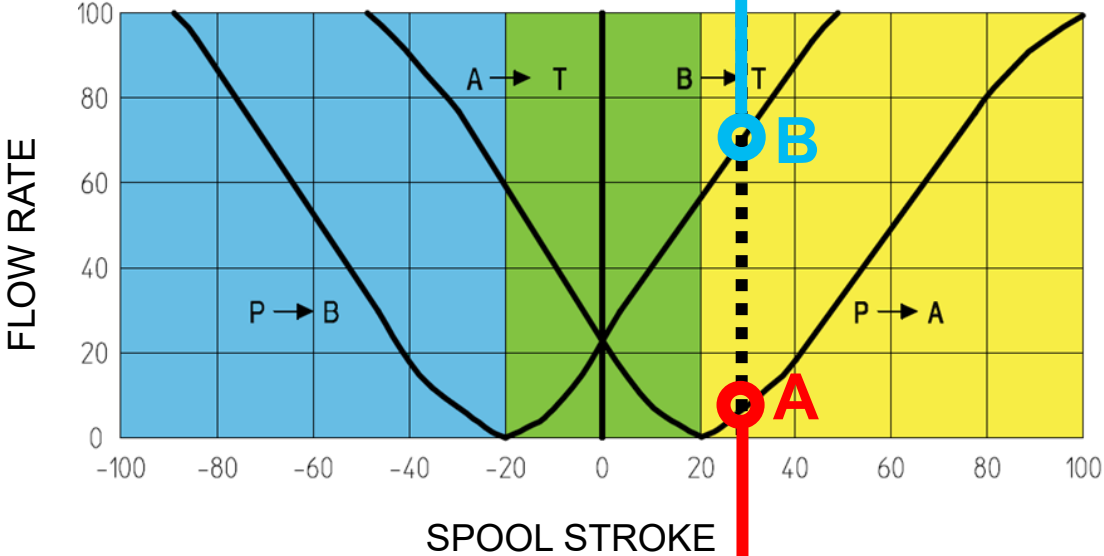
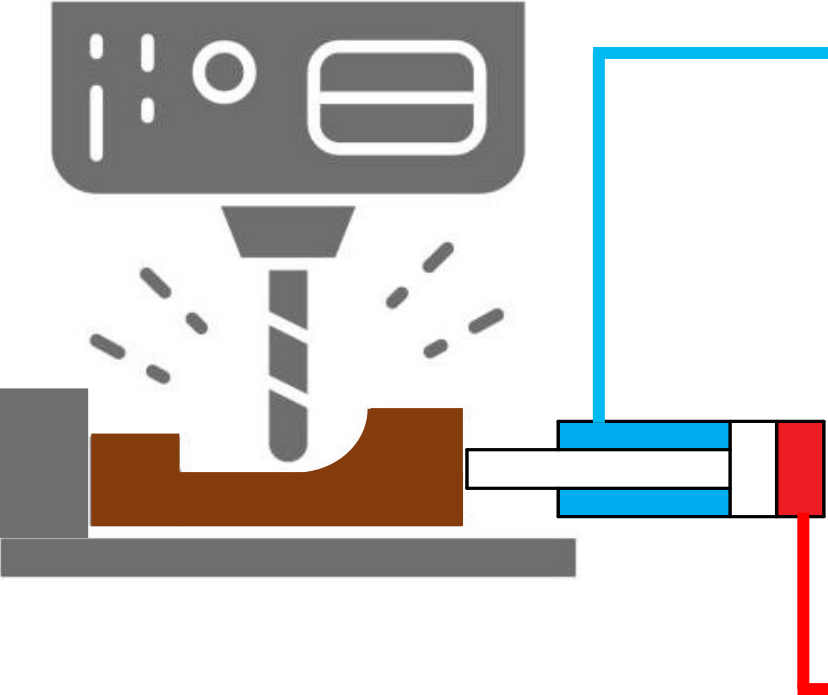
# APPLICATION EXAMPLES – Clamping unit

SP pressure control for clamping unit in machining center



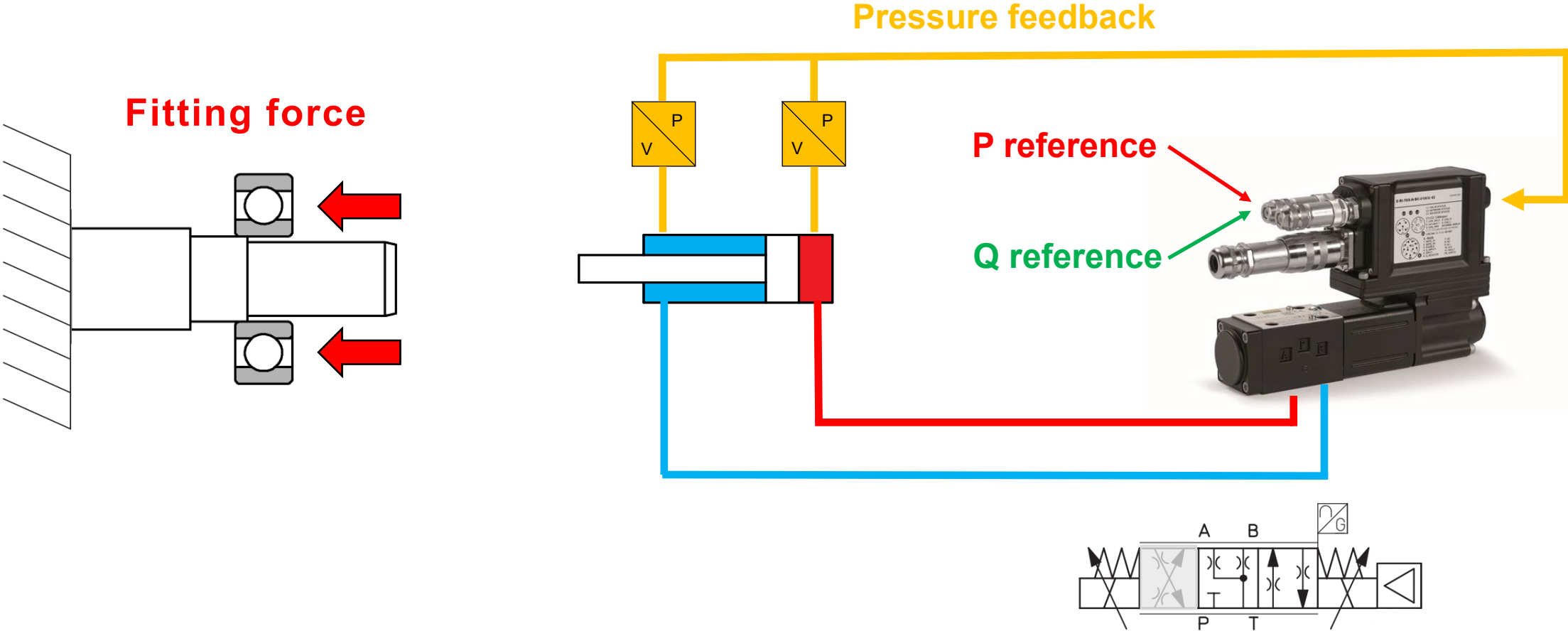
# APPLICATION EXAMPLES – Clamping unit

Dedicated spool **Q5** with **strong meter-in** characteristic



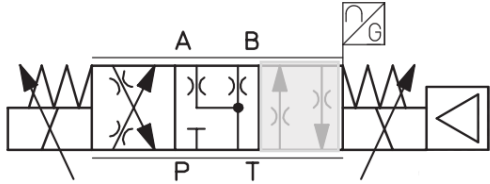
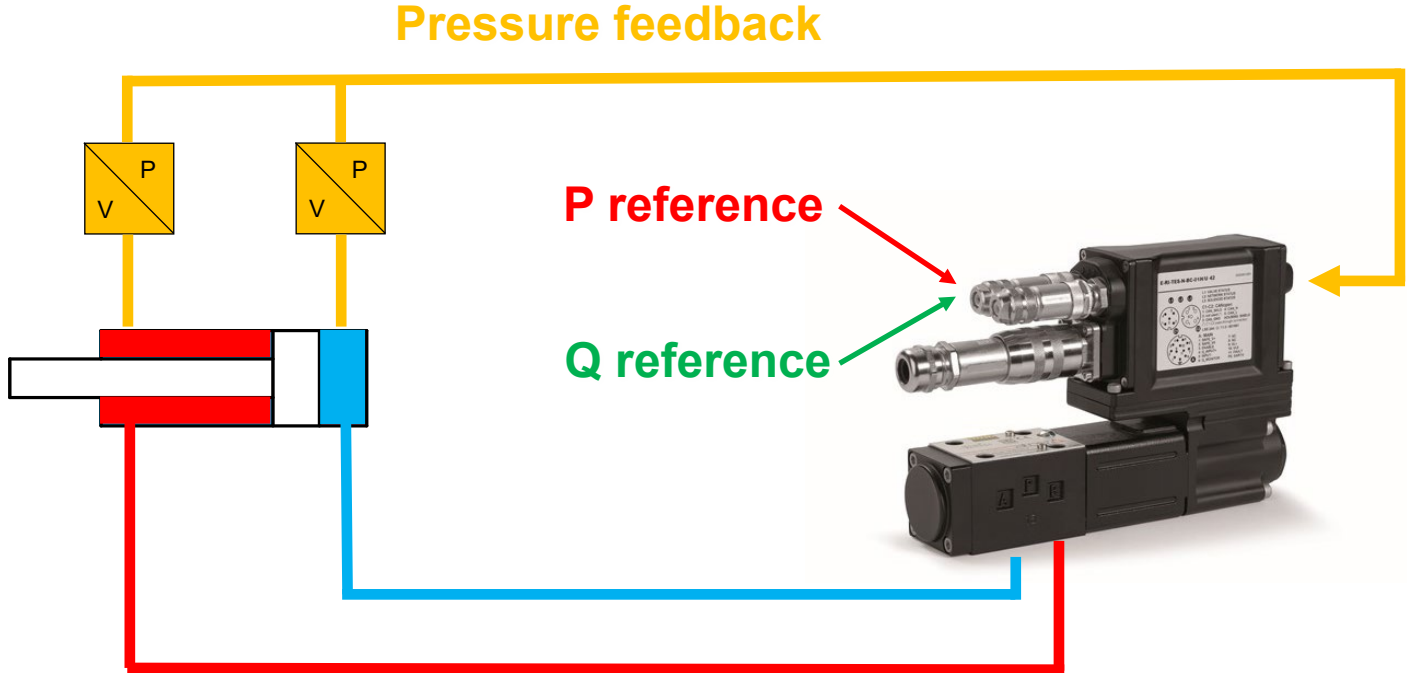
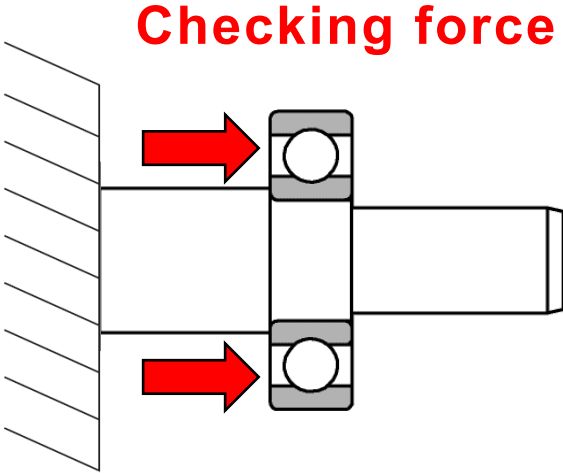
# APPLICATION EXAMPLES – Bearing fitting automotive example

## SF force control for bearing fitting



# APPLICATION EXAMPLES – Bearing fitting automotive example

## SF force control for bearing fitting





# 4

## **E-SW-\*\*/PQ SOFTWARE – BASIC INFO** Smart Electrohydraulics



# E-SW-\*/PQ SOFTWARE

**Signals**

	Flow	Force
Reference	Analog	Analog
Setpoint	-30,9 %	19,71 kN
Demand	-30,9 %	-19,71 kN
Actual	-30,8 %	-0,59 kN
PID Out	-1,6 %	-41,0 %

**Force PID**: PID1

**Driver Memories**

Valve	Fieldbus
User	User

**Digital I/O**

- Enable (pinA3)
- DOut (pinA11)

**Driver Status**

Status: Active

Alarm: No Alarm

Stored Alarms: 2 **Alarms...**

**Home Page**

- Home Page
- Component Data
- Settings
- E-SW Configuration
- Documentation
- Support
- About

**Component Code**

DLHZO-TES-SF-040-L03

**Driver Code**

E-RI-TES-S-BC-01H

**Driver S/N**    **Firmware**

000000    S21.00

**Factory Setting Code**

DH04SA\_----\_FLOA\_--\_BC\_--

**Driver**

Memory Store    Restart

**Computer SW Archive**

Save    Load

**Flow Reference**: Analog

**Flow PID Out**: -1,6 %

**Flow Demand**: -30,9 %

**Flow Actual**: -30,8 %

**Pressure Force**

**Force Reference**: Analog

**Force Setpoint**: 19,71 kN

**Force Actual**: -0,59 kN

**Force PID Output**: -41,0 %

**DLHZO-TES-SF-040-L03**

**Monitor Output**    **Alarm Management**

OFF-LINE    Level 2 - Advanced    0 CANopen -> Serial-USB

# E-SW-\*/PQ SOFTWARE

The screenshot displays the Atos E-SW V.9.2 software interface. A red box highlights the 'Signals' section, which contains the following data:

Reference	Setpoint	Demand	Actual	PID Out
Analog	-30,9 %	-30,9 %	-30,8 %	-1,6 %
Analog	19,71 kN	-19,71 kN	-0,59 kN	-41,0 %

The main interface shows a control diagram for 'DLHZO-TES-SF-040-L03'. It includes a 'Flow' block (Q) with a setpoint of -30,9% and a 'Pressure Force' block (P/F) with a setpoint of 19,71 kN. The diagram shows the flow of signals between these blocks and a 'DLHZO-TES-SF-040-L03' valve, including PID controllers (PID 1, PID 2, PID 3) and an 'Alternated control' block. The status bar at the bottom indicates 'OFF-LINE' and 'Level 2 - Advanced'.

# E-SW-\*/PQ SOFTWARE

The screenshot displays the Atos E-SW V.9.2 software interface. At the top left is the Atos logo. The main area is titled "Home Page" and contains a control loop diagram. The diagram shows a "Flow" block (Q) receiving a "Flow Reference" (Analog) and a "Setpoint" (-30,9 %). Its output is "Flow Output" (0,0 %). This output goes to an "Alternated control" block, which also receives "Force Actual" (-0,59 kN). The "Alternated control" block outputs "Flow Demand" (-30,9 %) to "PID 2" and "PID 3". "PID 2" and "PID 3" outputs go to "PID 1". "PID 1" also receives "Flow Smart Tuning" and outputs "Flow PID Out" (-1,6 %). "PID 1" also outputs "Flow Actual" (-30,8 %) to a valve symbol. The valve symbol is connected to a hydraulic cylinder labeled "DLHZO-TES-SF-040-L03". The cylinder has ports A, B, P, and T. The "Flow Actual" signal is also fed back to the "Flow" block. Below the cylinder is a "Pressure Force" block (P/F) receiving "Force Reference" (Analog) and "Setpoint" (19,71 kN). It outputs "Force Actual" (-0,59 kN) to a pressure sensor symbol (P/F IN). The status panel at the top right, highlighted with a red box, shows "Driver Memories" (Valve: User, Fieldbus: User), "Digital I/O" (Enable (pinA3), DOut (pinA11)), "Driver Status" (Status: Active), "Alarm" (No Alarm), and "Stored Alarms" (2). A left sidebar contains navigation options: Home Page, Component Data, Settings, E-SW Configuration, Documentation, Support, and About. Below the sidebar are fields for Component Code (DLHZO-TES-SF-040-L03), Driver Code (E-RI-TES-S-BC-01H), Driver S/N (000000), Firmware (S21.00), and Factory Setting Code (DH04SA\_----\_FL0A\_--\_BC\_--). At the bottom, there are buttons for "Memory Store", "Restart", "Save", and "Load". The status bar at the bottom shows "OFF-LINE", "Level 2 - Advanced", and "0 CANopen -> Serial-USB".

# E-SW-\*/PQ SOFTWARE

Up to 20 alarms can be stored in the driver permanent memory

The screenshot shows a window titled "Stored Alarms History" with a close button (X) in the top right corner. The window contains a table with the following structure:

Alarm	Alarms storage configuration	Life Timer
	Enabled	3h 0m
1 - Last	+24VL Logic Too Low	40m 0s
2	+24VL Logic Too Low	20m 0s
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

At the bottom right of the window, there is a button labeled "X Clear History".

# E-SW-\*/PQ SOFTWARE

The screenshot displays the E-SW V.9.2 software interface. At the top, there are several data tables and status indicators:

Signals	Flow	Force	Force PID
Reference	Analog	Analog	PID1
Setpoint	-30,9 %	19,71 kN	
Demand	-30,9 %	-19,71 kN	
Actual	-30,8 %	-0,59 kN	
PID Out	-1,6 %	-41,0 %	

Driver Memories: Valve (User), Fieldbus (User)  
Driver Status: Status (Active), Alarm (No Alarm)  
Stored Alarms: 2, Alarms...

Digital I/O: Enable (pinA3), DOut (pinA11)

The main area shows a control diagram titled "Home Page". The diagram includes:

- Flow Reference:** Setpoint -30,9 %
- Flow Control:** A block labeled "Q" (Flow) with a "Flow Output" of 0,0 %.
- Pressure Force Reference:** Setpoint 19,71 kN
- Pressure Force Control:** A block labeled "P/F" (Pressure Force) with a "Force Actual" of -0,59 kN.
- Alternated control:** A central block that receives "Flow Demand" (-30,9 %) and "Force Actual" (-0,59 kN) and outputs "Flow Demand" (-30,9 %) and "Force PID Output" (-41,0 %).
- PID Control:** Three PID blocks (PID 1, PID 2, PID 3) with "PID1 Dynamic" tuning. PID 1 receives "Flow Actual" (-30,8 %) and outputs "Flow PID Out" (-1,6 %).
- DLHZO-VALVE:** A valve block labeled "DLHZO-VALVE" with ports A, B, P, and T. It receives "Flow PID Out" (-1,6 %) and "Flow Actual" (-30,8 %).
- Monitor Output:** A block labeled "OUT".
- Alarm Management:** A block with a warning icon.

On the left side, there is a navigation menu with the following items:

- Home Page
- Component Data
- Settings
- E-SW Configuration
- Documentation
- Support
- About

Below the menu, there are fields for:

- Component Code: DLHZO-VALVE-SF-040-L03
- Driver Code: E-RI-VALVE-S-BC-01H
- Driver S/N: 000000, Firmware: S21.00
- Factory Setting Code: DH04SA\_...\_FL0A\_...\_BC\_...

At the bottom, there are buttons for "Memory Store", "Restart", "Save", and "Load". The status bar shows "OFF-LINE", "Level 2 - Advanced", and "0 CANopen -> Serial-USB".

# E-SW-\*/PQ SOFTWARE

**atos** | E-SW V.9.2

**Signals**  
Reference: Analog  
Setpoint: -30,9 %  
Demand: -30,9 %  
Actual: -30,8 %  
PID Out: -1,6 %

**Force**  
Reference: Analog  
Setpoint: 19,71 kN  
Demand: -19,71 kN  
Actual: -0,59 kN  
PID Out: -41,0 %

**Force PID**  
PID1

**Driver Memories**  
Valve: User  
Fieldbus: User

**Driver Status**  
Status: Active  
Alarm: No Alarm  
Stored Alarms: 2

**Digital I/O**  
Enable (pinA3)  
DOut (pinA11)

**Home Page**

Home Page  
Component Data  
Settings  
E-SW Configuration  
Documentation  
Support  
About

Component Code: DLHZO-TES-SF-040-L03  
Driver Code: E-RI-TES-S-BC-01H  
Driver S/N: 000000 | Firmware: S21.00  
Factory Setting Code: DH04SA\_...\_FL0A\_...\_BC\_...

Memory Store | Restart  
Computer SW Archive  
Save | Load

OFF-LINE | Level 2 - Advanced | 0 CANopen -> Serial-USB

# E-SW-\*/PQ SOFTWARE

**Signals**

	Flow	Force
Reference	Analog	Analog
Setpoint	-30,9 %	19,71 kN
Demand	-30,9 %	-19,71 kN
Actual	-30,8 %	-0,59 kN
PID Out	-1,6 %	-41,0 %

**Force PID**: PID1

**Driver Memories**: Valve: User, Fieldbus: User

**Driver Status**: Status: Active, Alarm: No Alarm

**Digital I/O**: Enable (pinA3), DOut (pinA11)

**Home Page**

**Component Data**

- Home Page
- Component Data
- Settings
- E-SW Configuration
- Documentation
- Support
- About

**Component Code**

DLHZO-TES-SF-040-L03

**Driver Code**

E-RI-TES-S-BC-01H

**Driver S/N**    **Firmware**

000000    S21.00

**Factory Setting Code**

DH04SA ---- FLOA - BC --

**Driver**

- Memory Store
- Restart
- Computer SW Archive
- Save
- Load

**Flow Reference**: Analog, Setpoint: -30,9 %

**Flow PID Out**: -1,6 %

**Flow Demand**: -30,9 %

**Flow Actual**: -30,8 %

**Pressure Force**: Reference: Analog, Setpoint: 19,71 kN

**Force Actual**: -0,59 kN

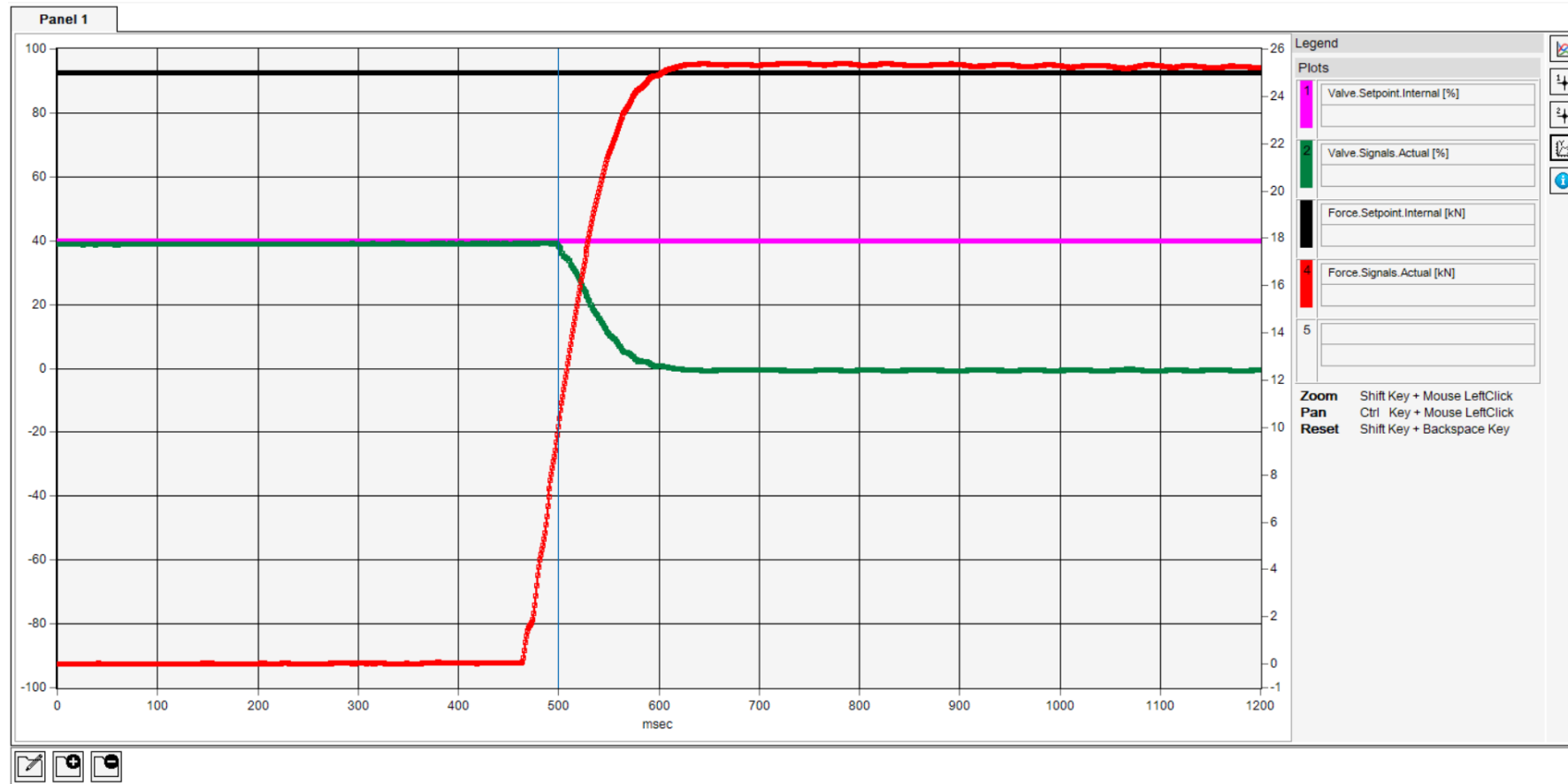
**Force PID Output**: -41,0 %

**DLHZO-TES-SF-040-L03**

**Monitor Output**    **Alarm Management**

**OFF-LINE**    **Level 2 - Advanced**    0 CANopen -> Serial-USB

## Oscilloscope function



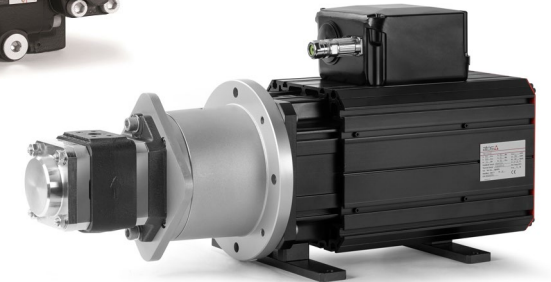
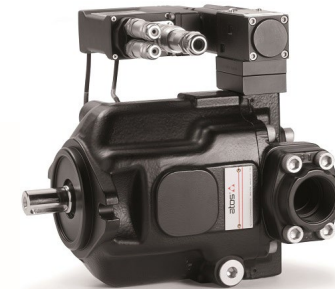
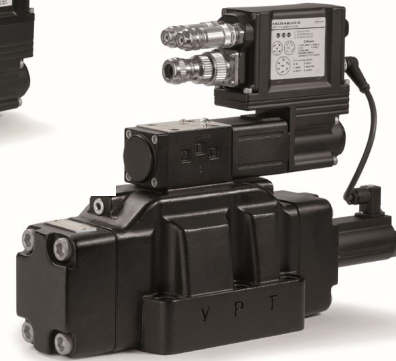
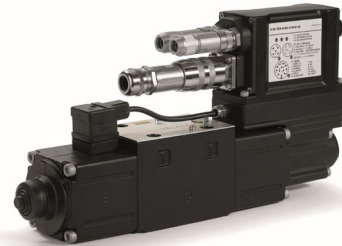


5

**ATOS RANGE**  
Smart Electrohydraulics

# ATOS RANGE

The “alternated P/Q control” adds the **Force / Pressure (P)** closed loop regulation to the **Flow control (Q)** performed by:



Servoproportional directional valves & cartridges

High performance directional valves

Servopumps and variable displacement piston pumps

# ATOS RANGE – P/Q proportional valves

## DIRECT OPERATED:

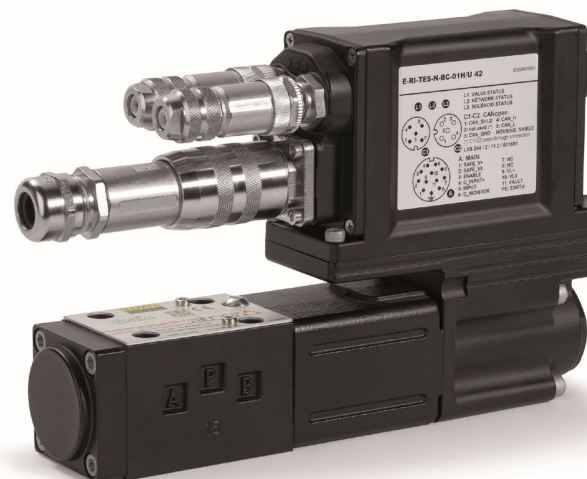
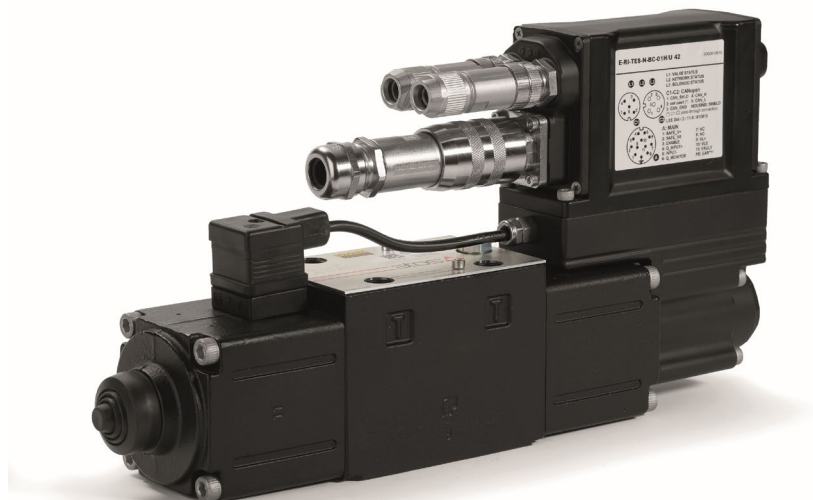
Servoproportional directionals - zero spool overlap

High performance directionals - positive spool overlap

Size ISO 4401: **6 ÷ 10**

Q max: **80 ÷ 180 l/min**

P max: **350 bar**



# ATOS RANGE – P/Q proportional valves

## PILOT OPERATED:

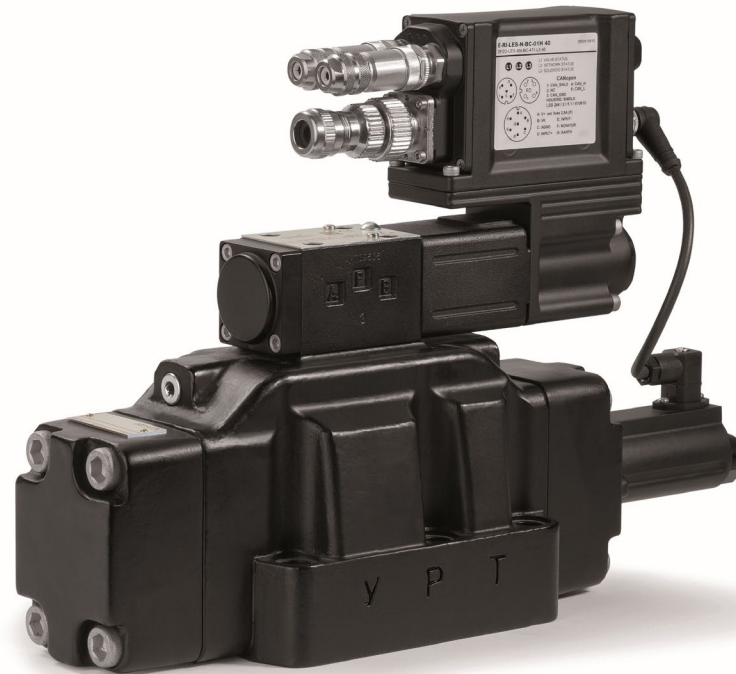
**Servoproportional directionals** - zero spool overlap

**High performance directionals** - positive spool overlap

Size ISO 4401: **10 ÷ 35**

Q max: **180 ÷ 3500 l/min**

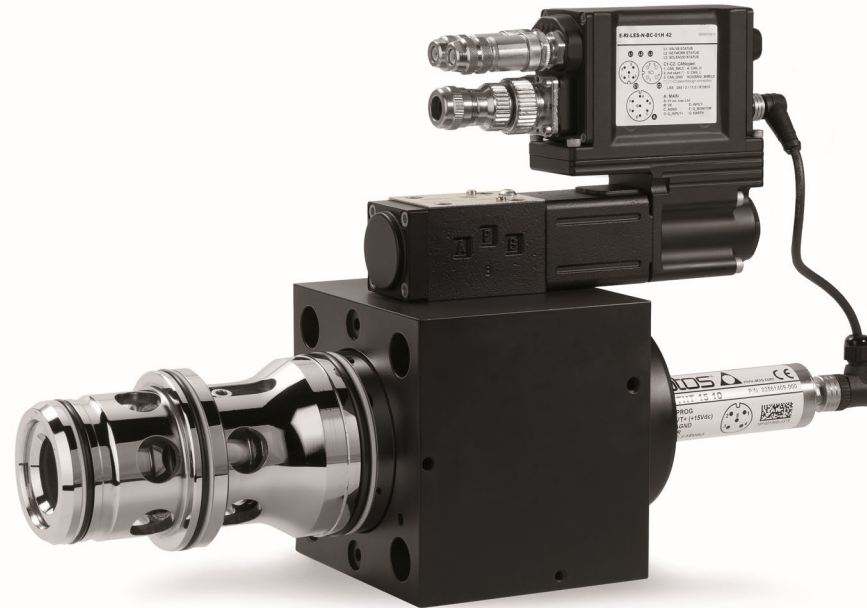
P max: **350 bar**



# ATOS RANGE – P/Q proportional valves

**PILOT OPERATED:**

**Servoproportional 3-way cartridges**



**Size: 25 ÷ 80**

**Q max: 500 ÷ 5000 l/min**

**P max: 420 bar**

# ATOS RANGE – P/Q proportional valves with Safety Functions

## SAFETY OPTIONS (/U, /K)

**Servoproportional and High performance directionals** integrating **Safety Functions**

Conforming to Machine Directive 2006/42/EC, certified by **TÜV**

ISO EN 13849 up to **category 4, PL e**

IEC 61508 up to **SIL2 / SIL3**



Size ISO 4401: **06 ÷ 35**

Q max: **80 ÷ 3500 l/min**

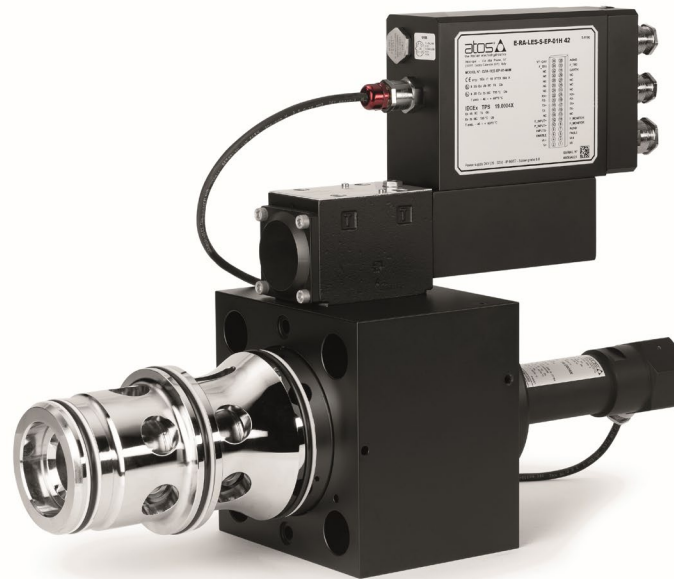
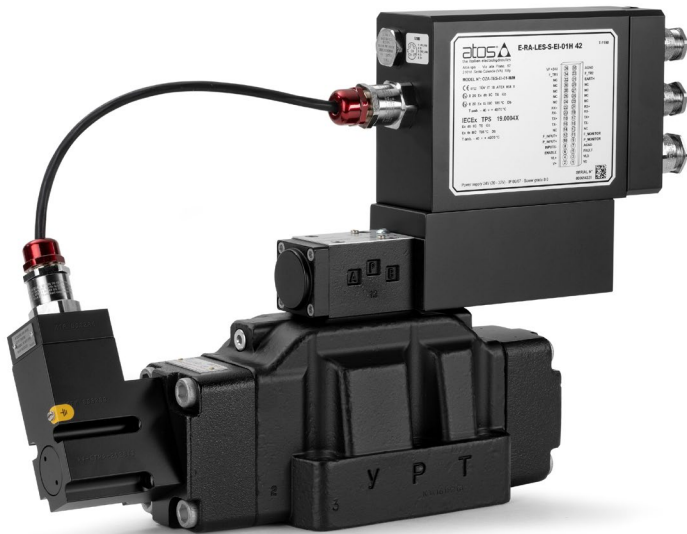
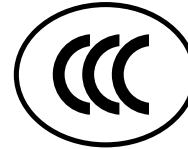
P max: **350 bar**

# ATOS RANGE – Ex-proof P/Q proportional valves

Servoproportional and High performance directionals

Certified to international standards

Ex-d, Ex-t protection mode



## Subplate

Size ISO 4401: **06 ÷ 27**

Q max: **60 ÷ 800 l/min**

P max: **350 bar**

## Cartridges

Size : **25 ÷ 80**

Q max: **500 ÷ 5000 l/min**

P max: **420 bar**

# ATOS RANGE – P/Q servopumps



Energy saving up to 80%

## SSP Servopumps

Q max: 350 l/min

P max: 250/330 bar



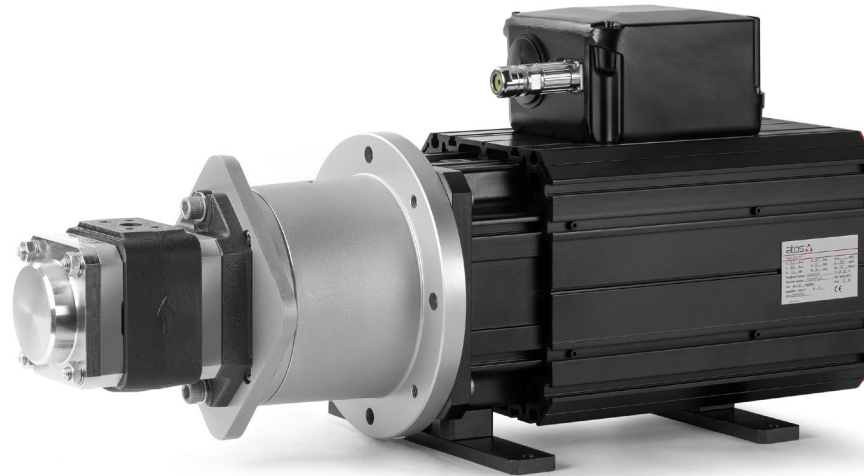
Smart Start-up to quick perform commissioning & autotuning

CANopen

EtherCAT

PROFINET

PROFIBUS



SMART DAYS

Alternated P/Q control

atos 



# ATOS RANGE – P/Q pumps

## PVPC-PERS variable displacement, axial pistons



Max displacement: **29, 46, 73, 88, 140 cc/rev**

P max: **280/350 bar**

**CANopen**

**PROFI<sup>®</sup>  
BUS**

**EtherCAT<sup>®</sup>**

**EtherNet/IP<sup>®</sup>**

**PROFI<sup>®</sup>  
NET**

ETHERNET   
**POWERLINK**

# ATOS RANGE – On-Board drivers with PQ control

CANopen

PROFI  
BUS

EtherCAT

EtherNet/IP

PROFI  
NET

ETHERNET  
POWERLINK

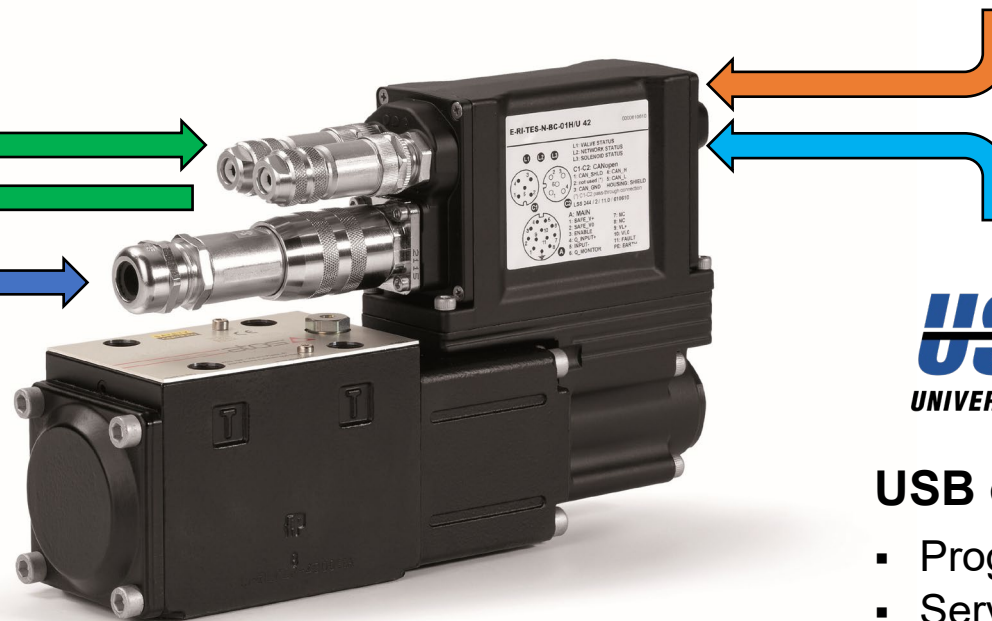
Connector for  
Pressure/Force transducers

Input / output fieldbus connectors



Main connector 12 pin

- Double power supply
- Reference signals
- Monitor signals
- Enable
- Fault



USB  
UNIVERSAL SERIAL BUS



USB or Bluetooth connection

- Programming
- Service / monitoring
- Firmware updating

SMART  
DAYS

Alternated P/Q control

atos 

# ATOS RANGE – Off-Board drivers with PQ control

## Mini-USB or Bluetooth connection

- Programming
- Service / monitoring
- Firmware updating



## Plug-in connectors

- Power supply
- Reference signals
- Monitor signals
- Solenoid command
- Analog input / output
- Transducers signals

## Fieldbus connector

CANopen

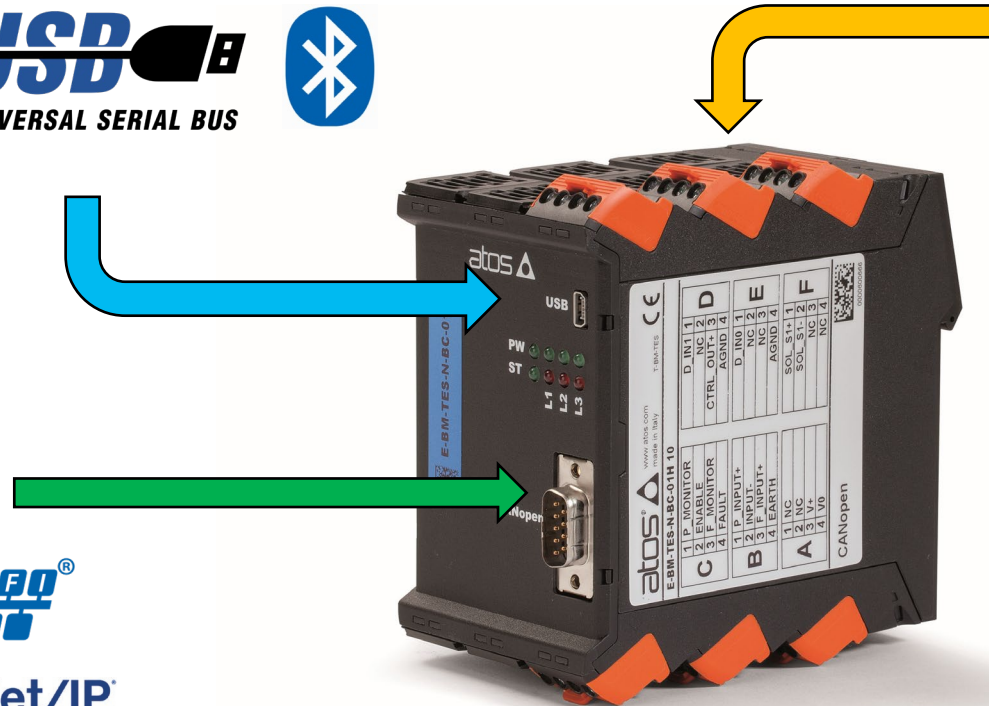
PROFI<sup>®</sup>  
BUS

EtherCAT<sup>®</sup>

EtherNet/IP<sup>®</sup>

PROFI<sup>®</sup>  
NET

ETHERNET  
POWERLINK



SMART<sup>®</sup>  
DAYS

Alternated P/Q control

atos 

# ATOS RANGE – The Atos Difference

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- **INTEGRATION INTO FIELDBUS NETWORK** – for valves with fieldbus interface
- **DIAGNOSTICS** – Industry 4.0
- **SAFETY FUNCTIONS** – certified to ISO EN 13849 & IEC 61508 standards

**SAFETY**  
**CERTIFIED**

# 6

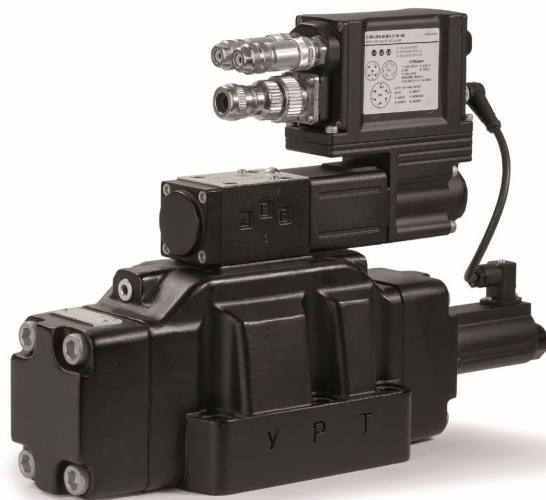
## **DESIGN GUIDELINES** Smart Electrohydraulics

# DESIGN GUIDELINES

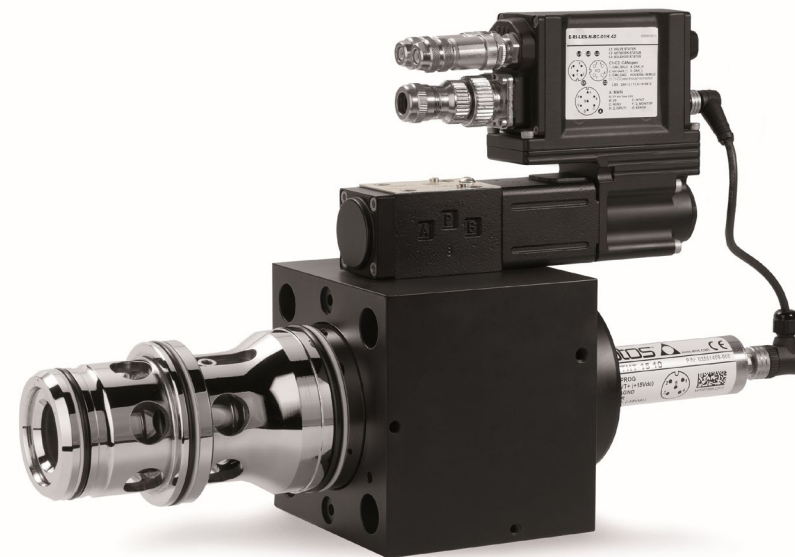
Select **valve size** according to actuator maximum **flow rate**



Q max: **80 ÷ 180 l/min**



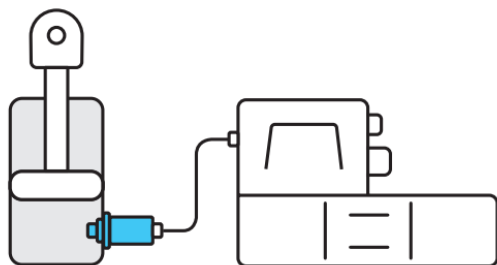
Q max: **180 ÷ 3500 l/min**



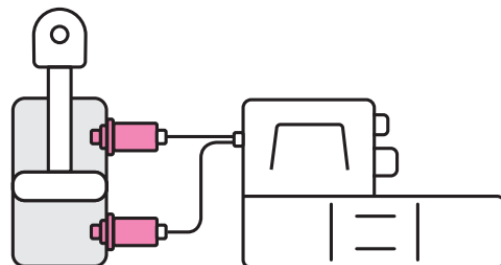
Q max: **500 ÷ 5000 l/min**

# DESIGN GUIDELINES

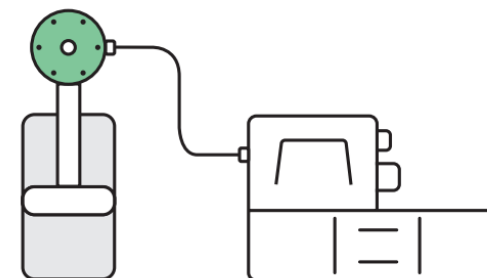
Select **control type** according to application requirements



**pressure control**  
1 pressure transducer



**force control**  
2 pressure transducers

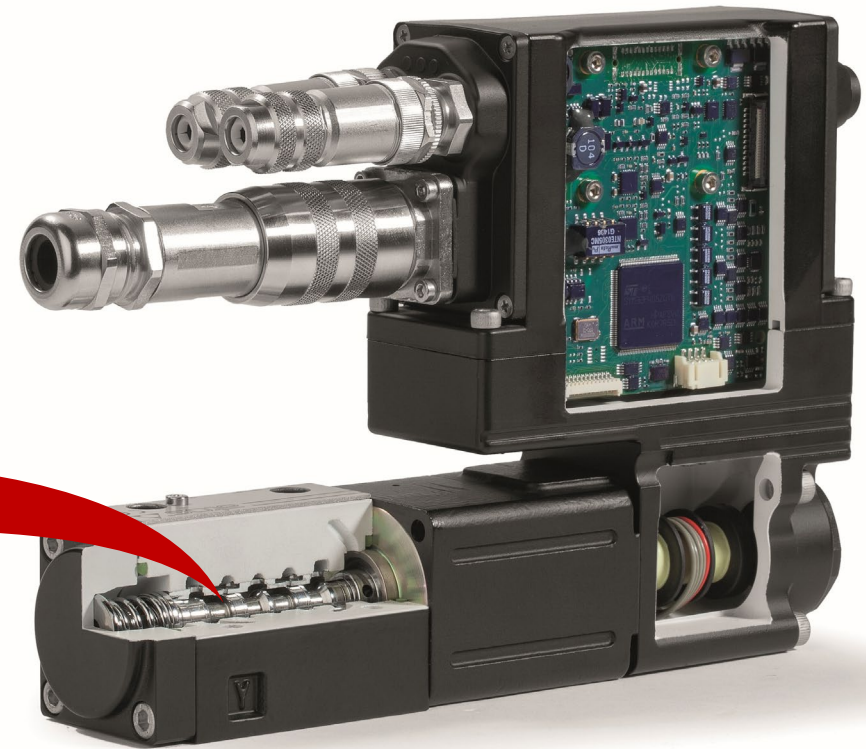
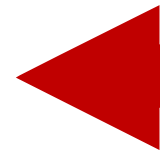
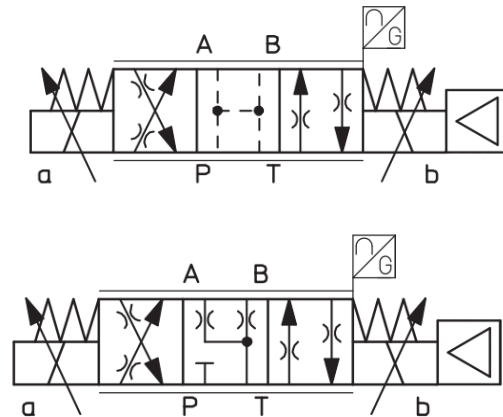


**force control**  
load cell

# DESIGN GUIDELINES

Select the valve configuration:

- Spool **type** → Application & Control type
- Spool **size** → Flow rate

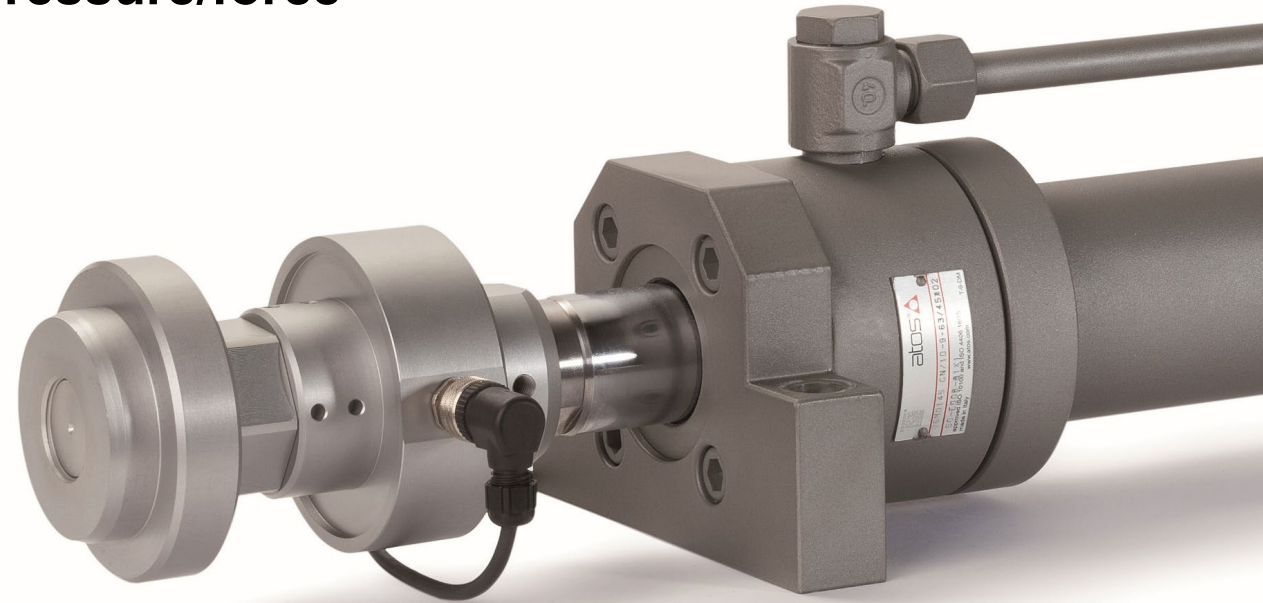




# DESIGN GUIDELINES

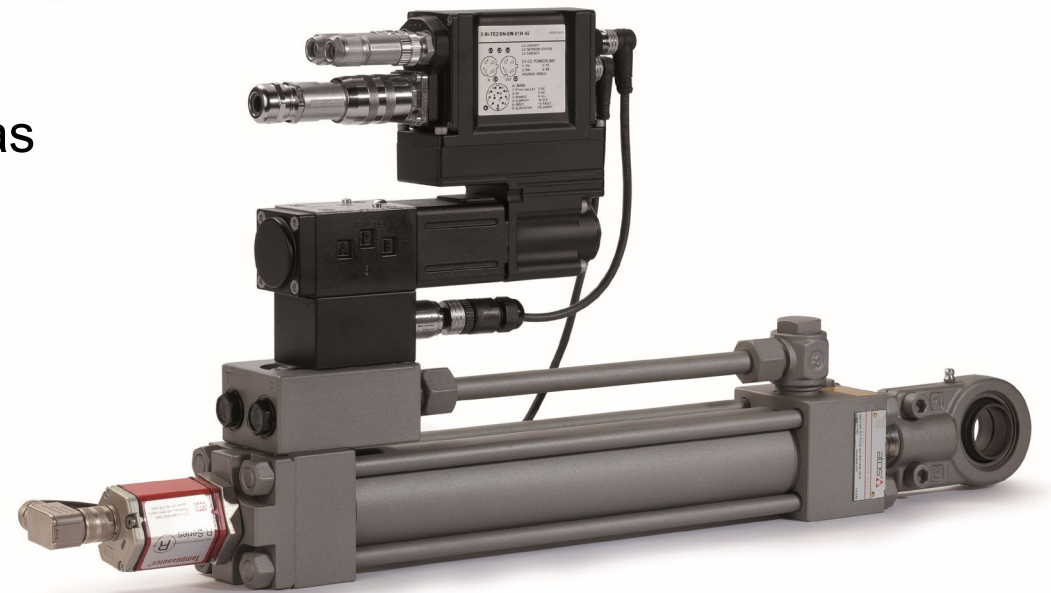
Select transducers according to:

- Transducer scale slightly over the **max working pressure/force**
- **Precision** requested



# HYDRAULIC RECOMMENDATIONS

- Install the **pressure transducers** and **valve** as close as possible to the actuator chambers
- Use **rigid pipe connections** to increase the hydraulic stiffness of the system



# DISCOVER THE NEW ONLINE CONFIGURATOR



**ATOS.** THE SMART ELECTROHYDRAULICS



[info@atos.com](mailto:info@atos.com)

[www.atos.com](http://www.atos.com)

7

Q & A

Smart Electrohydraulics



# 8

## **E-SW-\*\*/PQ SOFTWARE – ADVANCED INFO** Smart Electrohydraulics

9

**Q & A – SOFTWARE SESSION**  
Smart Electrohydraulics



# SMART DAYS

**Thank you for your participation!**

**We are looking forward to seeing you  
in the next webinar!**