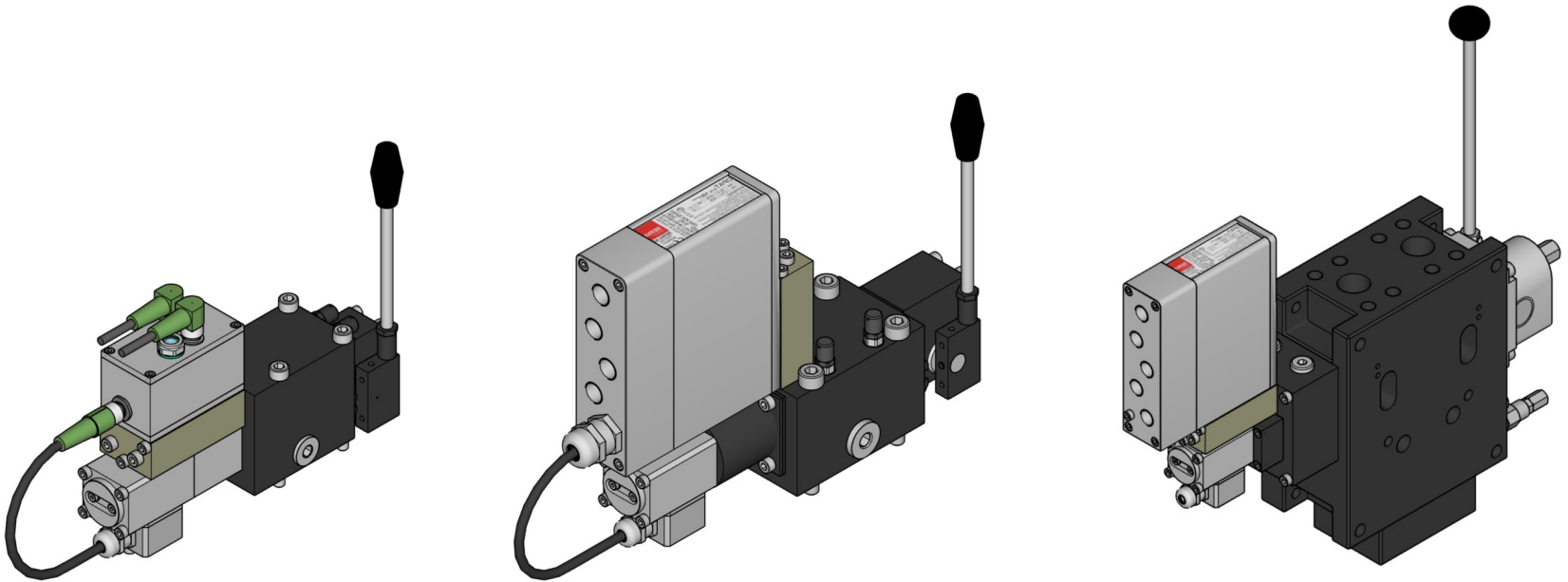
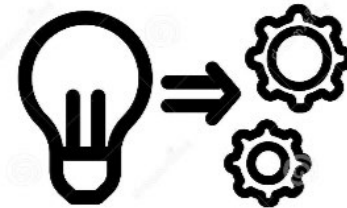


Servi **Addon** Components



Servi **Addon** Components

At Servi we strive to innovate...



IMPLEMENTATION

Servi **Addon** Components

Demand for automatization and efficiency accelerates.

Controlling elements must have required properties

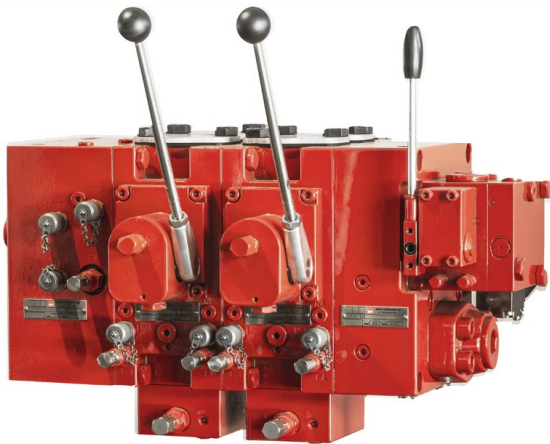
Degree of integration

Cost impact – exchange or upgrading

User friendliness – easy installation

Servi **Addon** Components

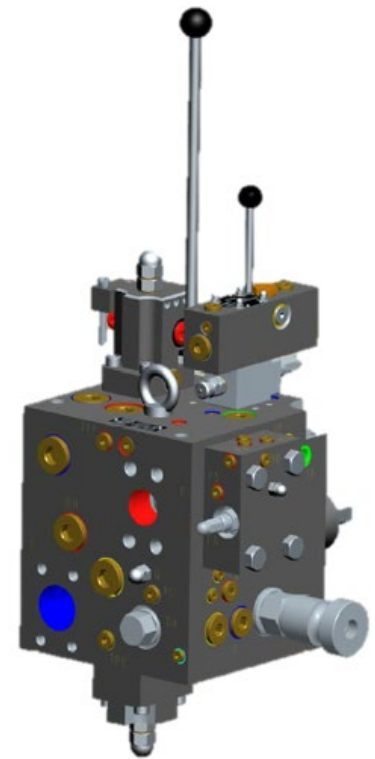
Upgrading already great valves...



[Datasheet HSV600](#)



[Datasheet PSL/PSV](#)



[Datasheet 6MB](#)

Servi **Addon** Components

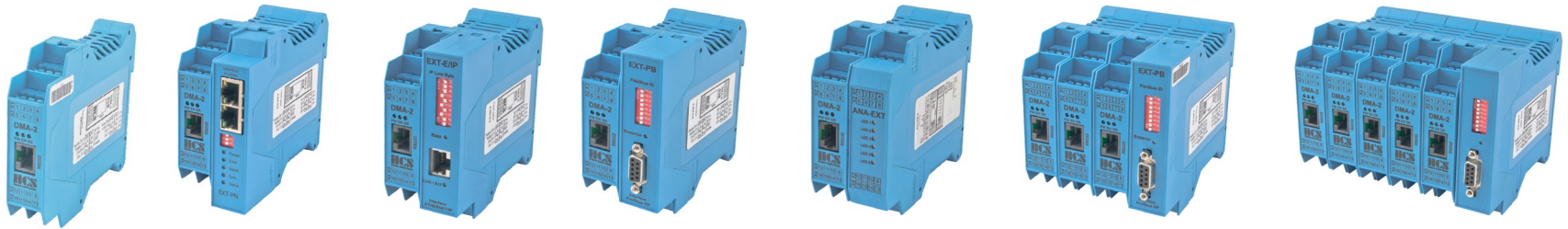
Improved electronics...

- HCS, the partner since 2005 for developing SAC electronics.
HCS has more than 30 years experience and among the first ones to develop digital control for hydraulic systems
- In focus is the key competence in development and production of *
electronic control systems, mainly for hydraulic and pneumatic valves
but also embedded machine control
- Basis are the DAC-4 and DMA-22 series of digital amplifiers, specially
developed for advanced control of hydraulic valves.
- Many projects has been developed and realized through Servi and
HCS partnership

Servi Addon Components

Communication interfaces...

[DMA type overview](#)



Analogue

CANOpen

Ethernet IP

EtherCat

Profibus

Profidrive

Profinet

Servi **Addon** Components

Control structures...

Mode 1 (open loop):

Valve controlled by current proportional to input command

Mode 3 (closed loop valve):

Valve controlled by a regulator and spool position feedback.

Mode 4 (closed loop process):

Process controlled via the valve and with regulator and process feedback.

Mode 6 (closed loop valve and process):

Process controlled via the valve, controlled by a (“inner”) regulator and a spool feedback, and with (“outer”) regulator and process feedback

Mode 8 (Two independent closed loop processes):

Two independent branches with regulator and feedback input

Servi **Addon** Components

Modular design...

Hawe Twinsolenoid 27 Ohm

Fit all valves prepared for this type pilotcontrol

Unified interfaces

Same version adapterplate for all actuation versions

Symmetric design

Allows connections in multiple orientations

Easy build for all control structures

Electronic and housings prepared for all versions

Stand alone versions

Arbitrary installation independent from the valve

Servi **Addon** Components

Usage in Ex zones...

Certified for Ex, zone 1

Atex and IECEx approvals

For ambient temperatures -40.. up to +70 deg C

Terminal box for local installation of the cable

Up to 5 cables can be connected at the same unit

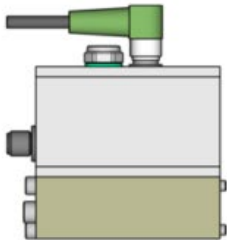
Servi Addon Components

Easy installation...

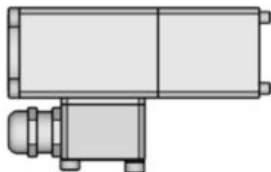
Unified mechanical interfaces

Allows upgrade of valves

ODC (Onboard Digital Controller)

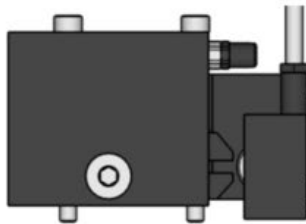


HPRS
(High Performance Range Sensor)

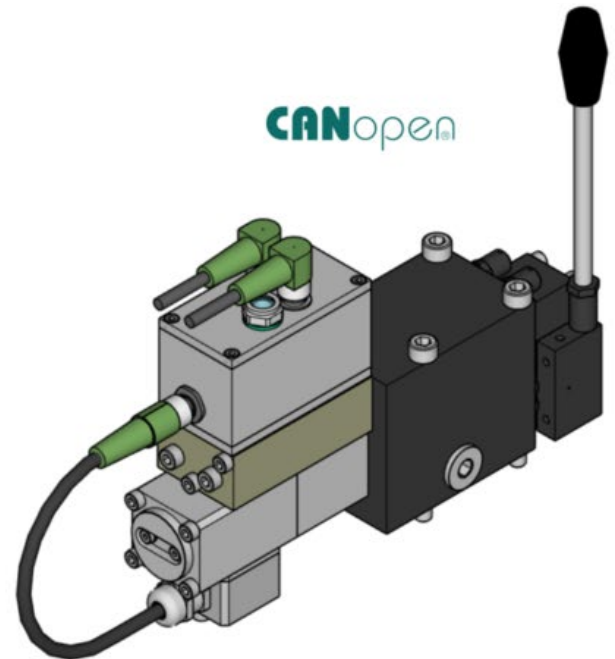


SLF3

Hawe standard prop valve



CANopen

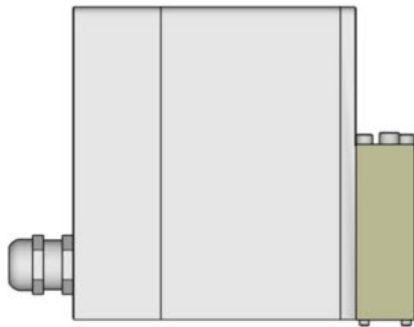


Servi Addon Components

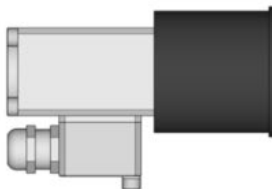
Easy installation...

Unified mechanical interfaces
Allows upgrade of valves

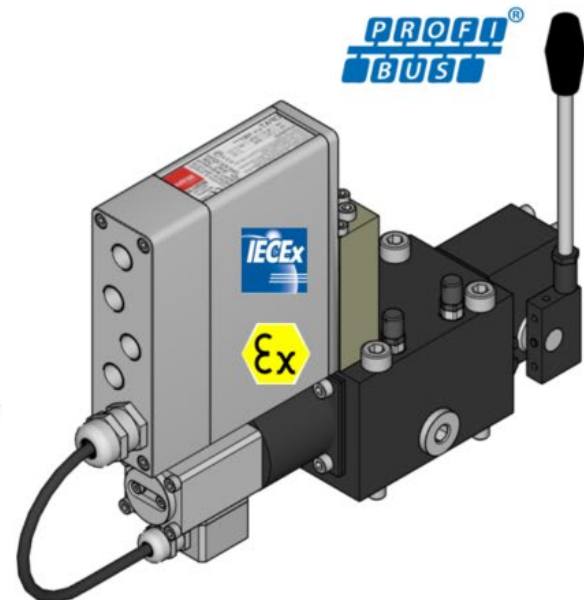
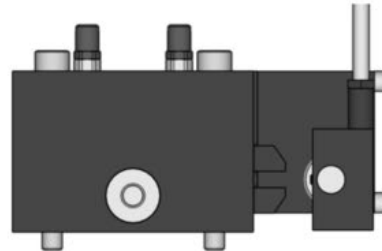
OPAT (Onboard Profibus Atex Twinsolenoid)



HPRS
(High Performance Range Sensor)



SLF5
Hawe standard prop valve



Servi Addon Components

Easy installation...

Electronic adaptation

Calibration and tuning by HCSTool or via BUS interface

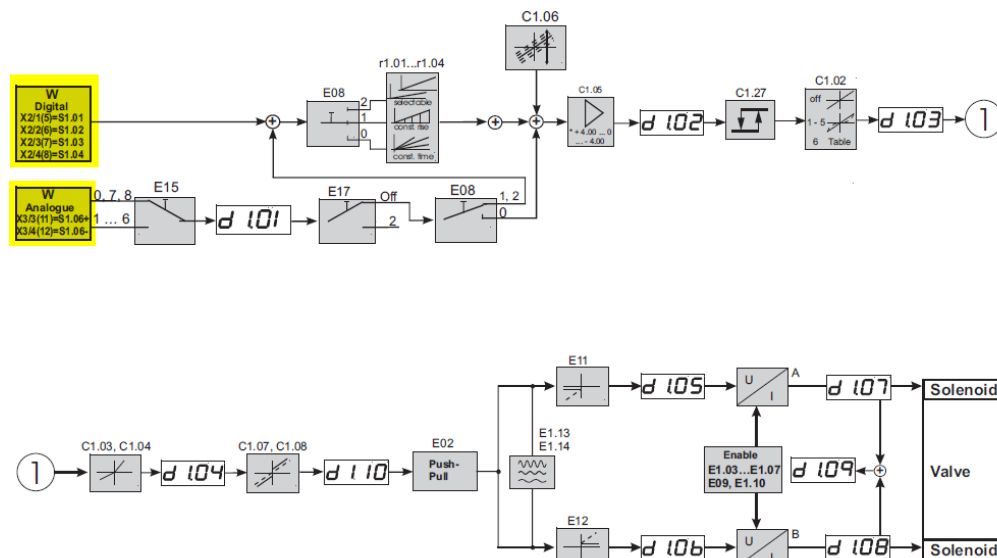


- ❖ A tool for all HCS products DAC / DMA / ODC etc.
- ❖ Easy to use - intuitive handling
- ❖ With parameter description for the application
- ❖ Upload and download of complete parameter sets
- ❖ Easy backup of parameter sets
- ❖ Comments in plain text can be stored for description
- ❖ **Monitor function for the display of application values**
- ❖ Parameter alterable „on-the-fly“
- ❖ German/English/French version in one installation
- ❖ Running on WINDOWS 7 and higher
- ❖ Supporting RS232 and USB interface
- ❖ **NEW: now with oscilloscope function**
- ❖ Customized adaptations possible
- ❖ Free [Download](#)

SAC Servi Addon Components

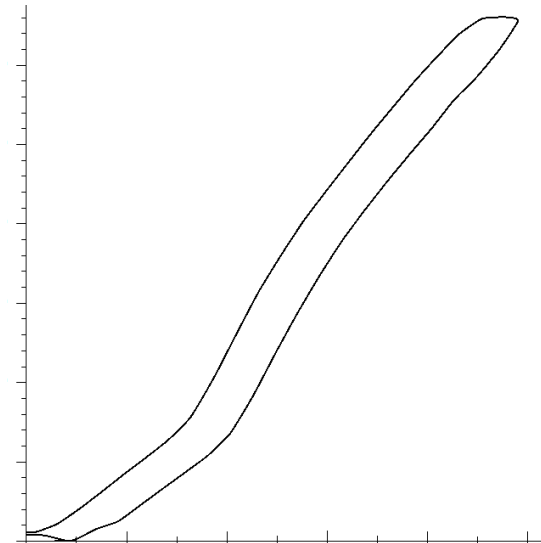
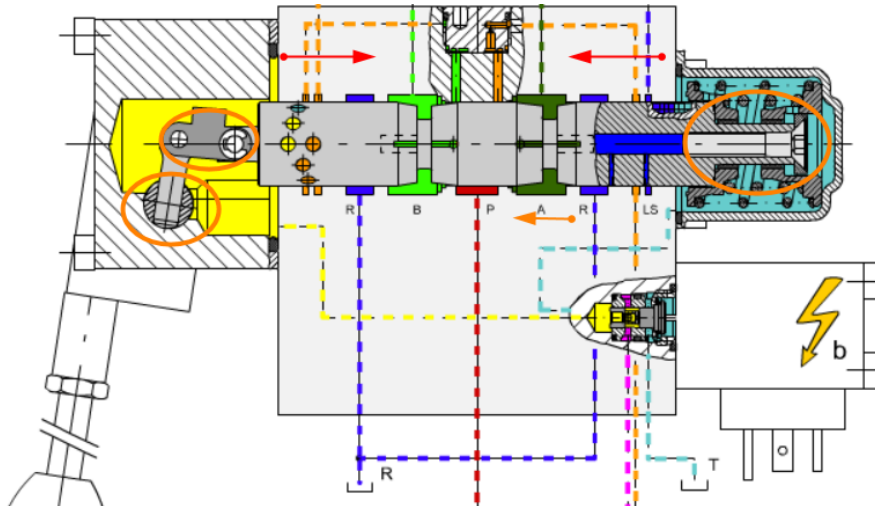
1. Demand for better performance, automatization and safe operations

- Machines with a human controller is replaced by more advanced and self-regulating controls systems, demand for accuracy, higher speeds and repeating movements.
- The safety regulations are getting more complex and need for sensors and safety control are introduced.
- Mode 1: Open loop – regulation errors are corrected by human controller



SAC Servi Addon Components

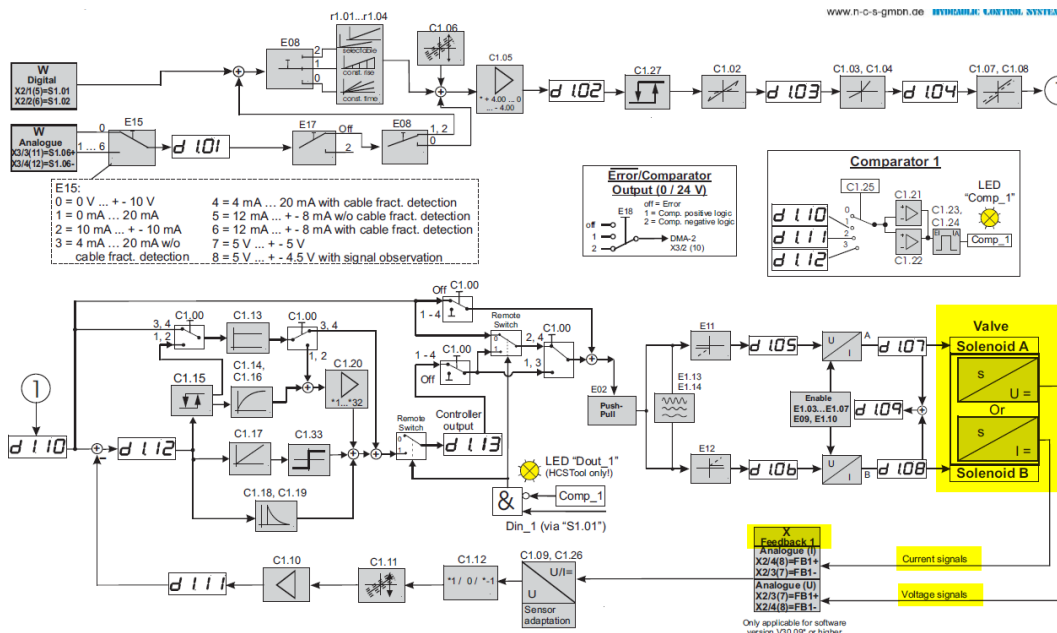
1. Demand for better performance, automatization and safe operations
 - Mode 1: Open loop – regulation errors are corrected by human controller



SAC Servi Addon Components

1. Demand for better performance, automatization and safe operations

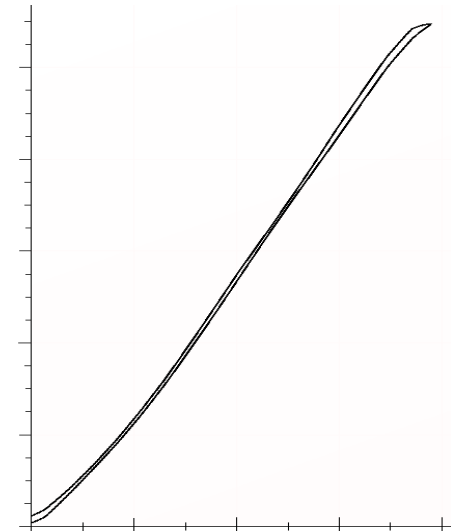
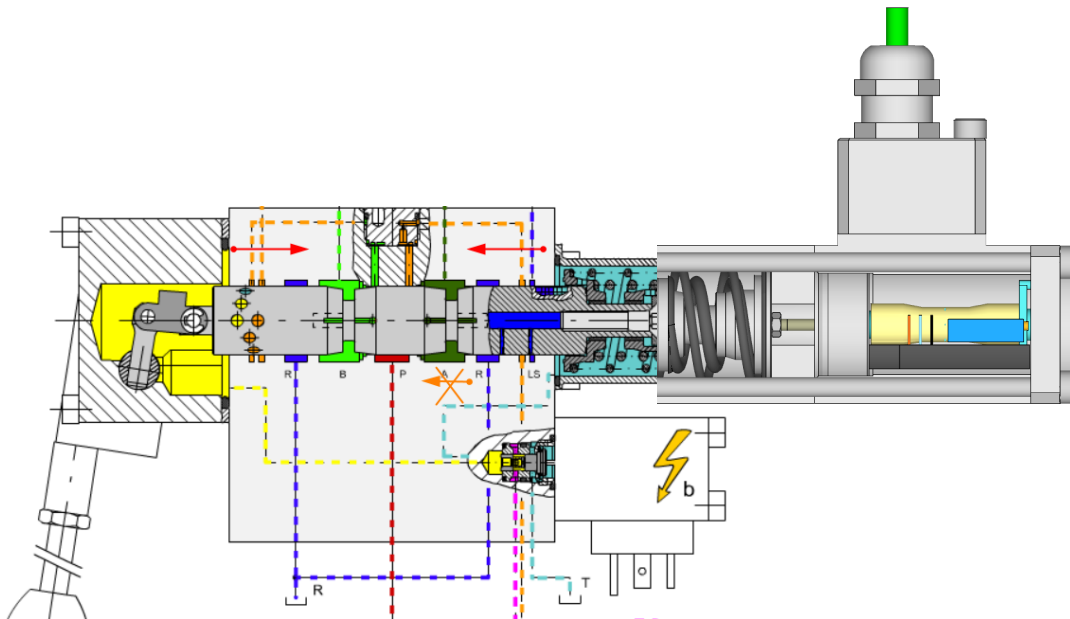
- Mode 3: Closed loop – regulation errors are corrected by the machine controller and spool position feedback



SAC Servi Addon Components

1. Demand for better performance, automatization and safe operations

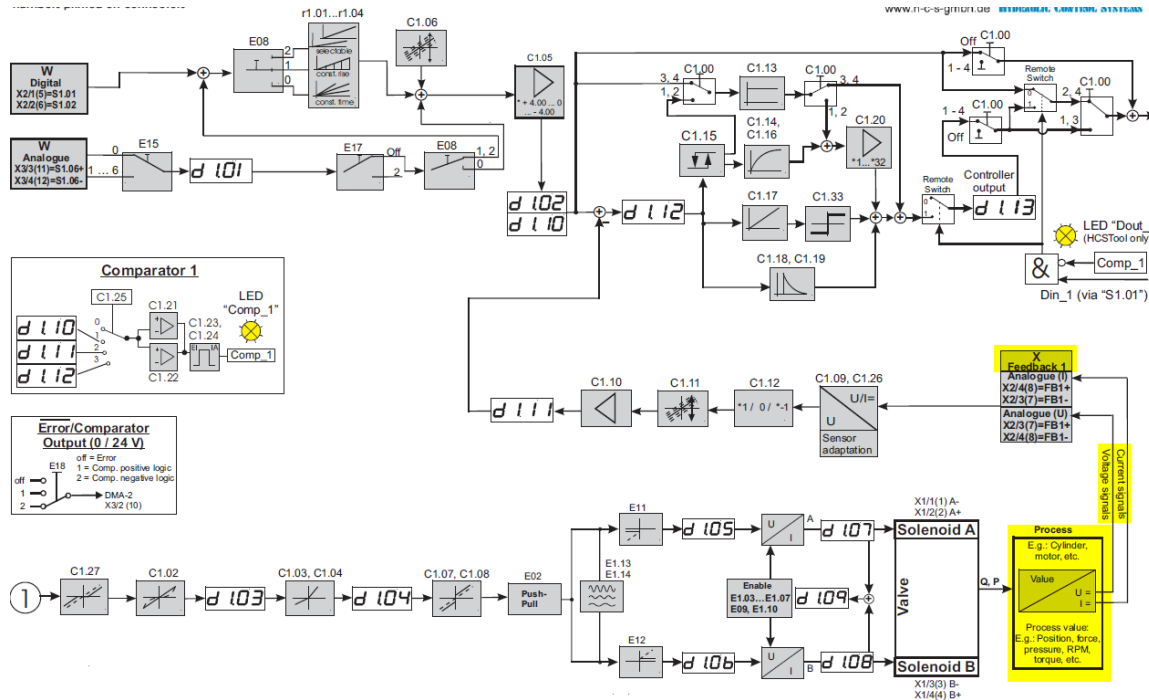
- Mode 3: Closed loop – regulation errors are corrected by the machine controller and spool position feedback



SAC Servi Addon Components

1. Demand for better performance, automatization and safe operations

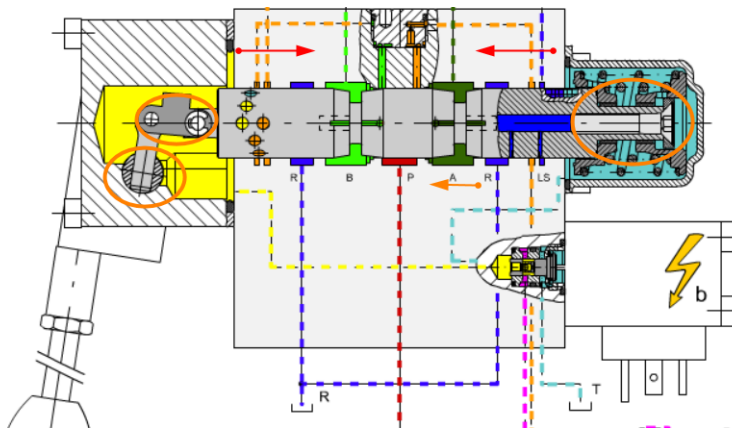
- Mode 4: Closed loop – regulation errors are corrected by the machine controller and feedback from the process – the open loop valve can be a limiting factor in regulation performance of the process



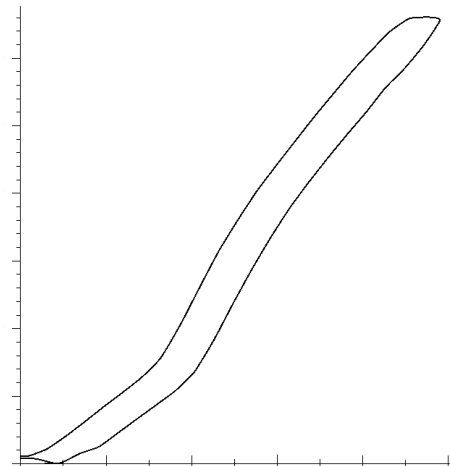
SAC Servi Addon Components

1. Demand for better performance, automatization and safe operations

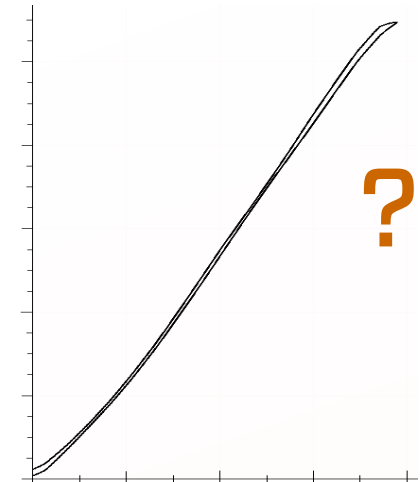
- Mode 4: Closed loop – regulation errors are corrected by the machine controller and feedback from the process – the open loop valve can be a limiting factor in regulation performance of the process



Valve



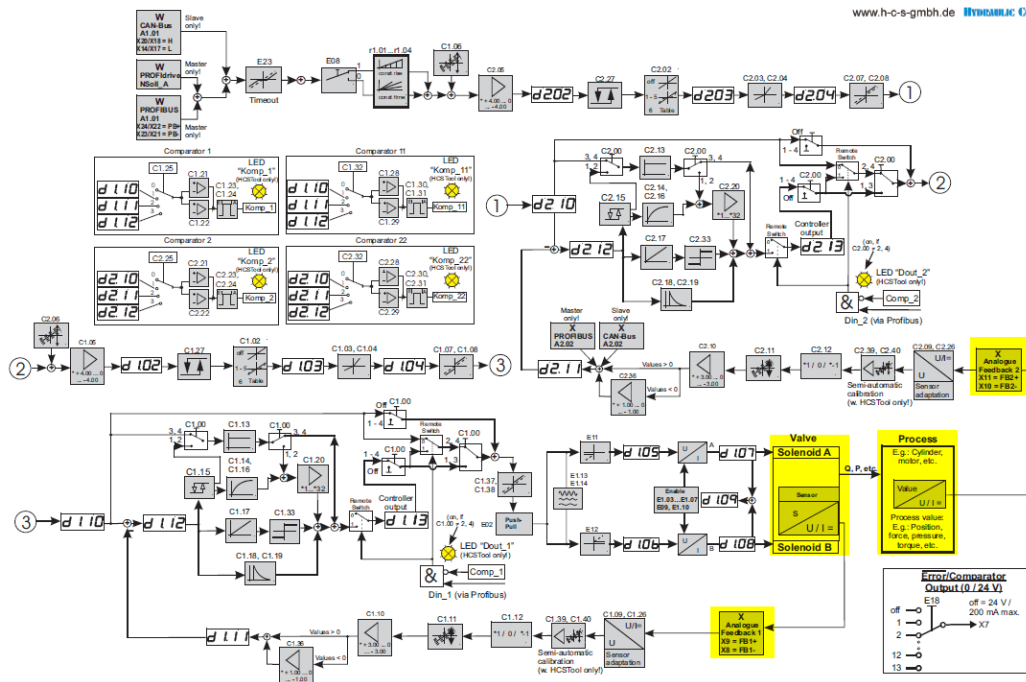
Process



SAC Servi Addon Components

1. Demand for better performance, automatization and safe operations

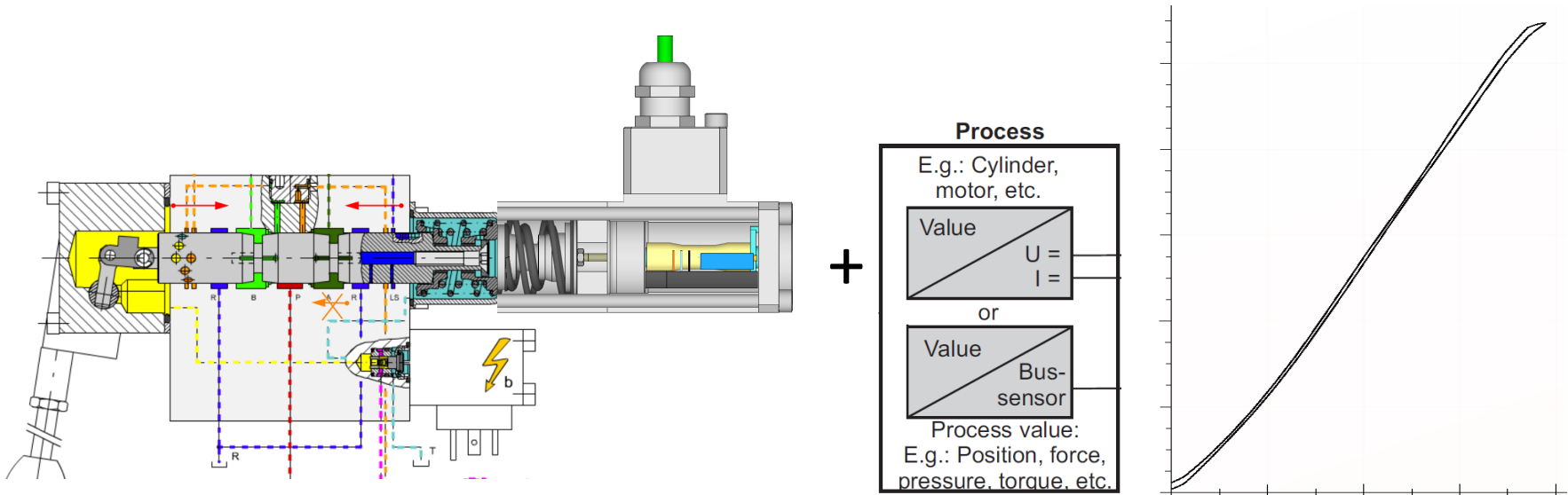
- Mode 6: Closed loop – regulation errors are corrected by the machine controller with valve and process feedback.



SAC Servi Addon Components

1. Demand for better performance, automatization and safe operations

- Mode 4 Closed loop – regulation errors are corrected by the machine controller and process feedback

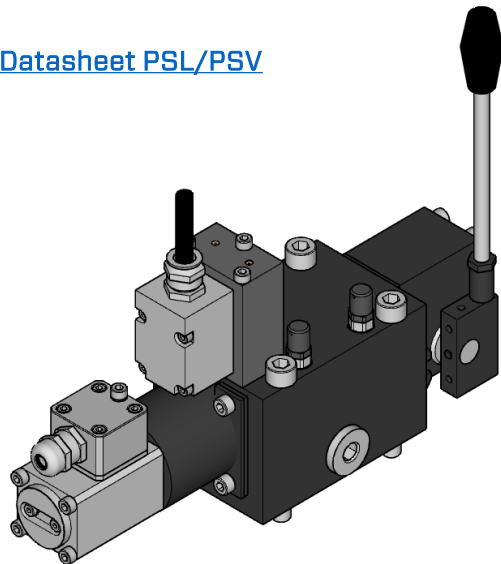


SAC Servi Addon Components

2. Degree of integration

- SAC open for individual integration thus optimal cost effectiveness
- Valve + sensor

[Datasheet PSL/PSV](#)



[Manual Sensor - HPRS](#)

+

[Datasheet DMA](#)

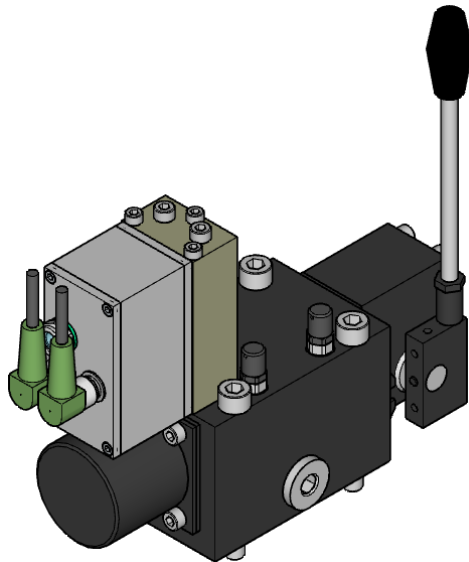


SAC Servi Addon Components

2. Degree of integration

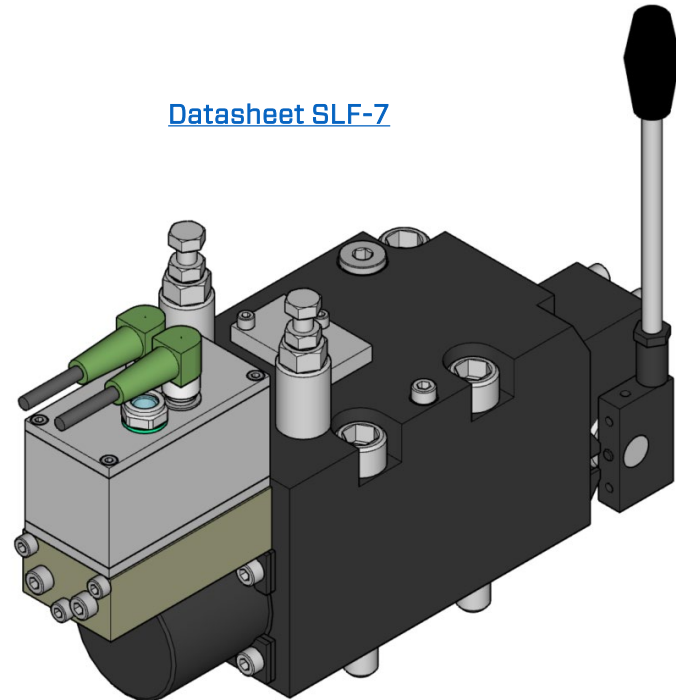
- Valve + Onboard electronic:

[Datasheet PSL/PSV](#)



[Information SAC](#)

[Datasheet SLF-7](#)

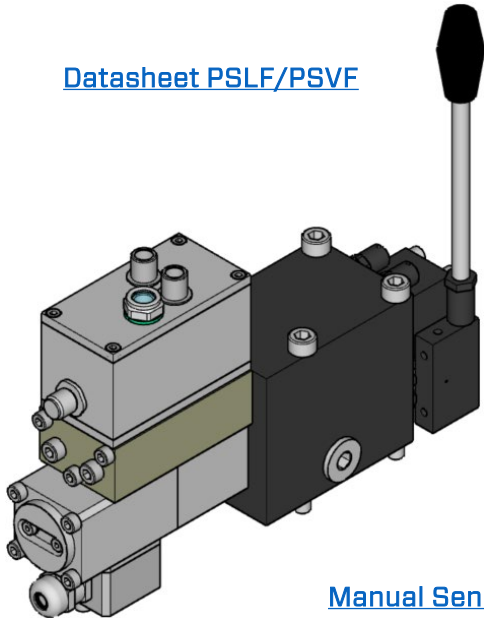


SAC Servi Addon Components

2. Degree of integration

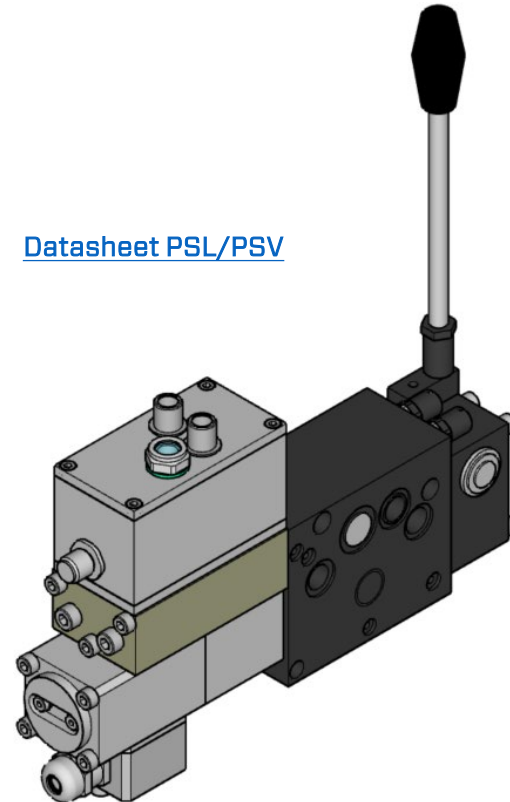
- Valve + sensor and Onboard electronic

[Datasheet PSLF/PSVF](#)



[Manual Sensor - HPRS](#)

[Datasheet PSL/PSV](#)

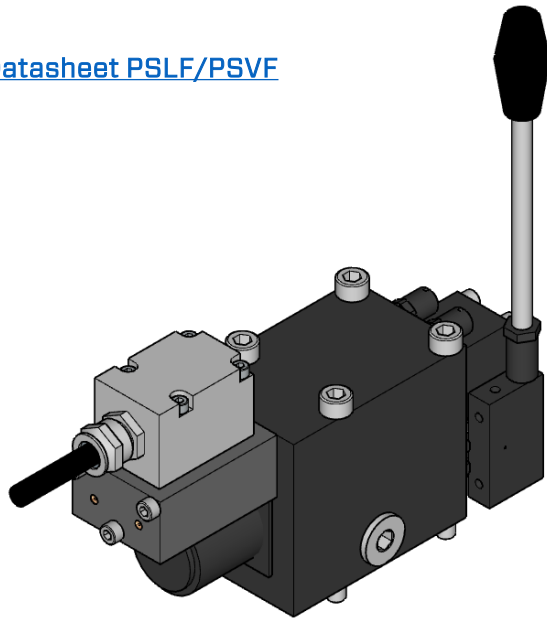


SAC Servi Addon Components

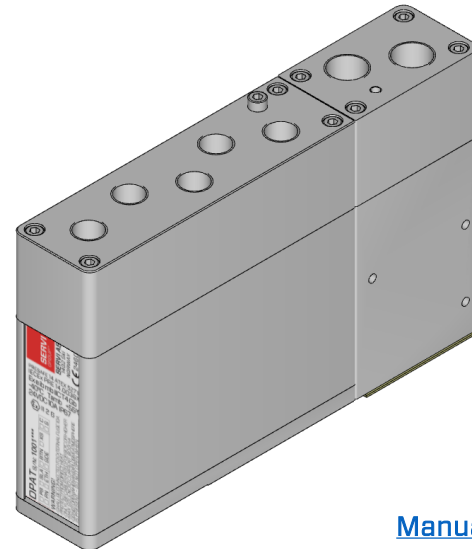
2. Degree of integration

- Valve with no sensor and stand alone electronic (“-XS”)

[Datasheet PSLF/PSVF](#)



+



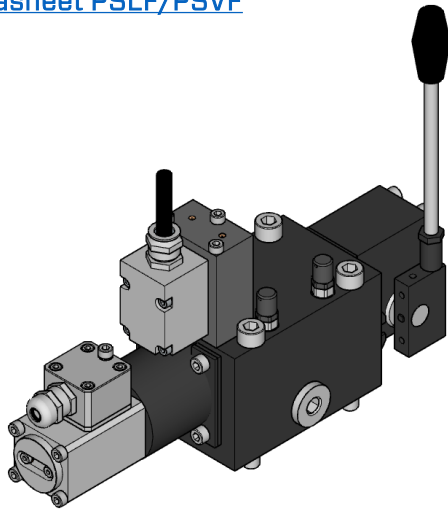
[Manual OPAT](#)

SAC Servi Addon Components

2. Degree of integration

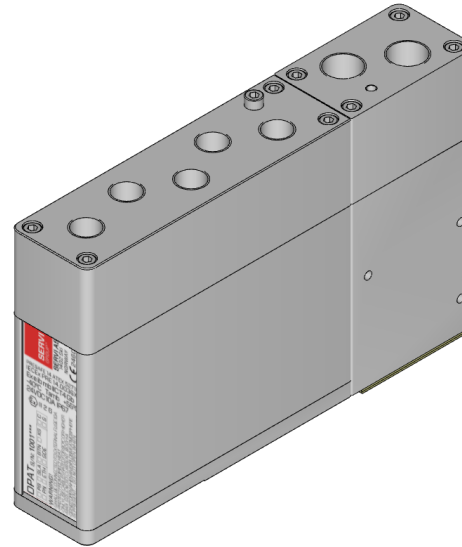
- Valve with sensor and stand alone electronic (“-XS”)

[Datasheet PSLF/PSVF](#)



[Manual Sensor – HPRS](#)

+



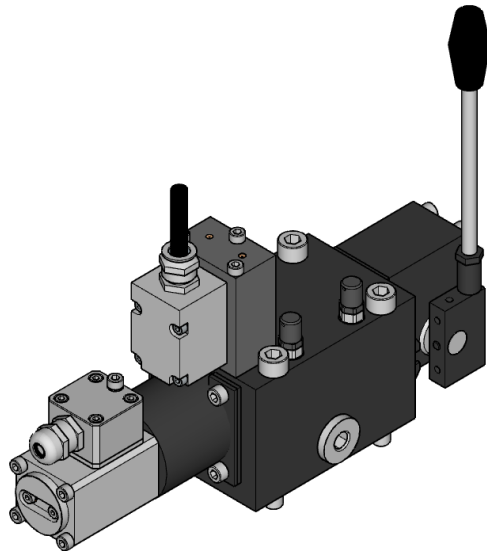
[Manual OPAT](#)

SAC Servi Addon Components

2. Degree of integration

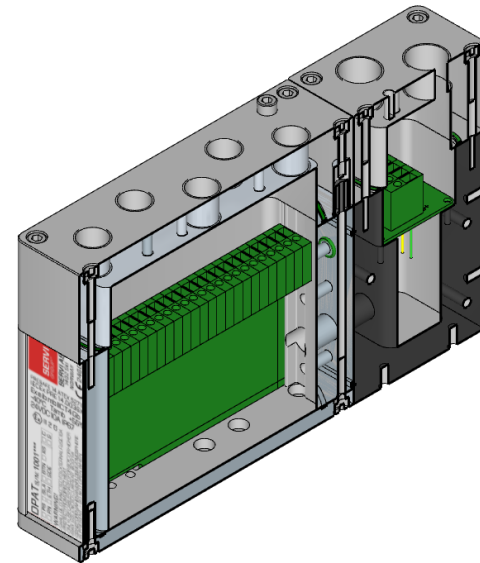
- Valve with sensor and stand alone electronic (“-XS”)

[Datasheet PSLF/PSVF](#)



[Manual Sensor - HPRS](#)

+



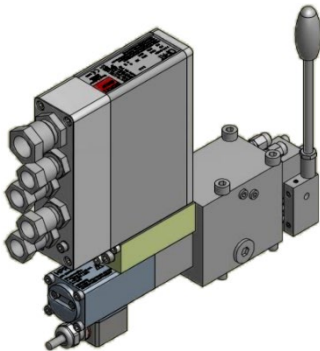
[Manual OPAT](#)

SAC Servi Addon Components

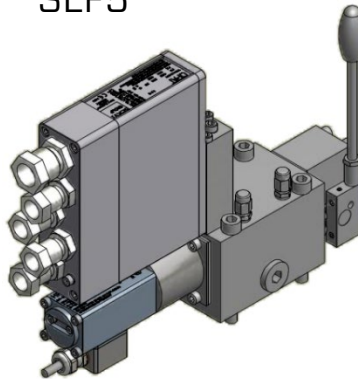
3. Unified interfaces

- OPAT versions

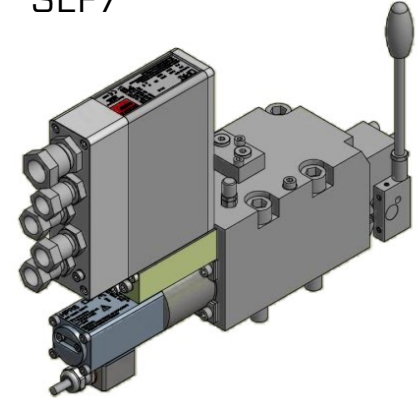
SLF3



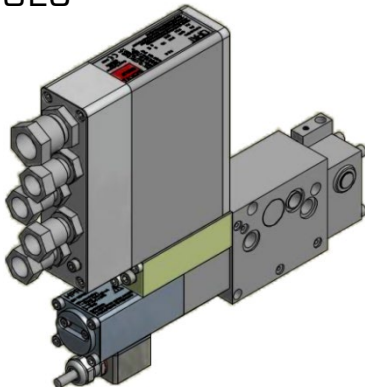
SLF5



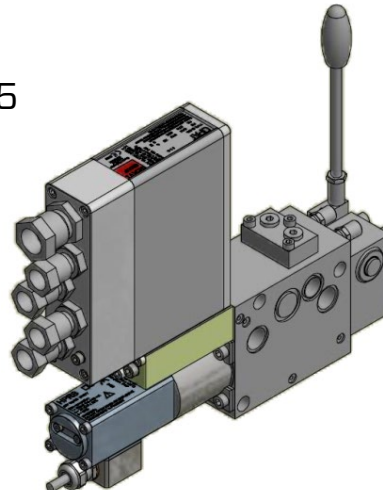
SLF7



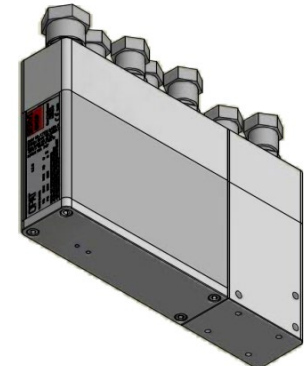
SL3



SL5



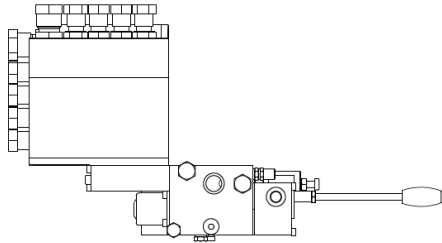
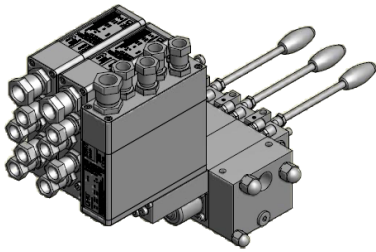
OPAT XS



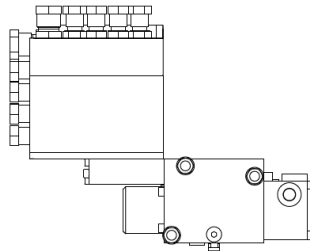
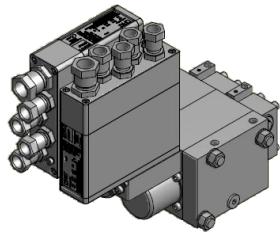
SAC Servi Addon Components

3. Unified interfaces

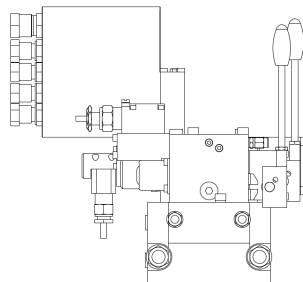
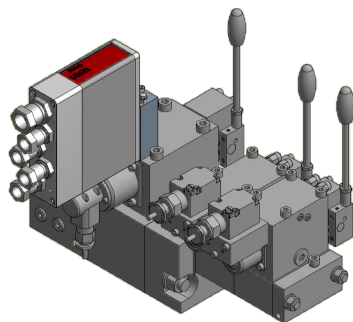
- Combined assemblies



Size 3 sectional assembly



Size 5 sectional assembly

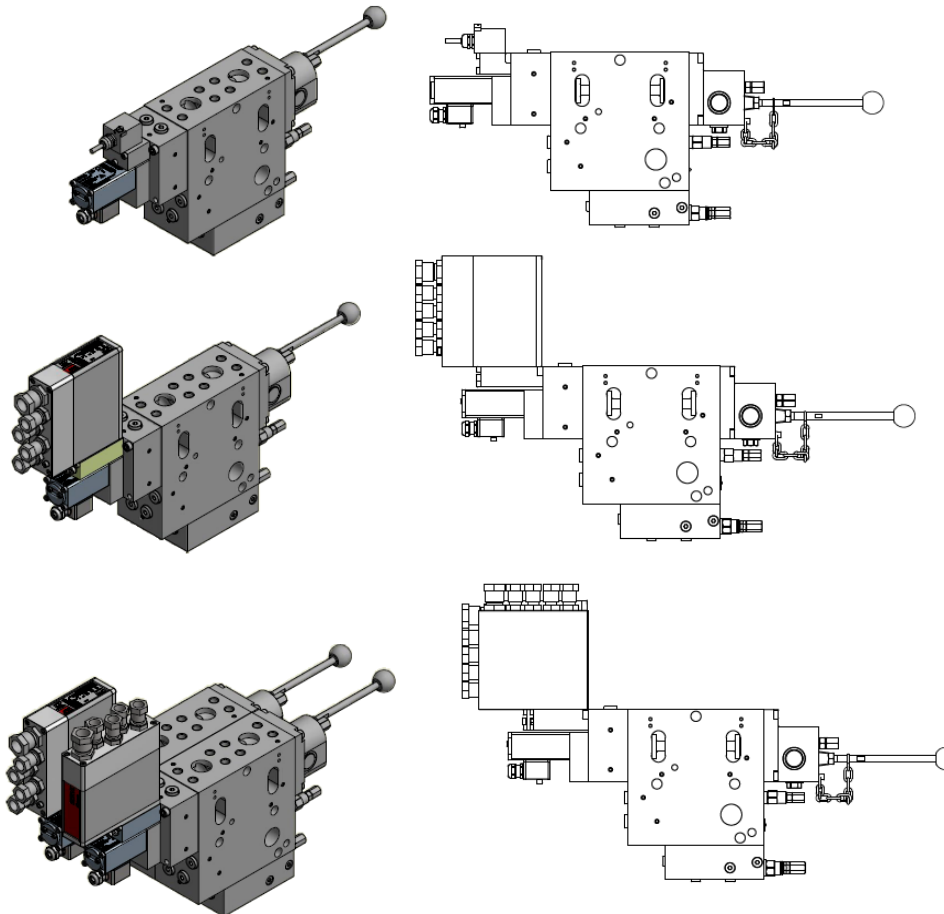


Size 5/3 plate assembly

SAC Servi Addon Components

3. Unified interfaces

- Combined assemblies, HSV600



[Datasheet HSV600](#)

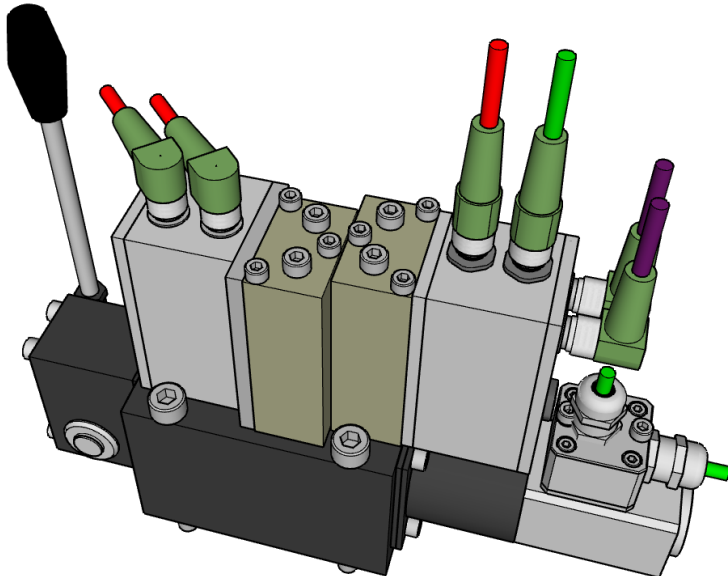
SAC Servi Addon Components

3. Unified interfaces

- DMA and ODC with command $U_b \cdot 0,5 \pm U_b \cdot 0,25$ (typical $12\text{ V} \pm 6$) VDC)
- Version for closed loop FP pressure control

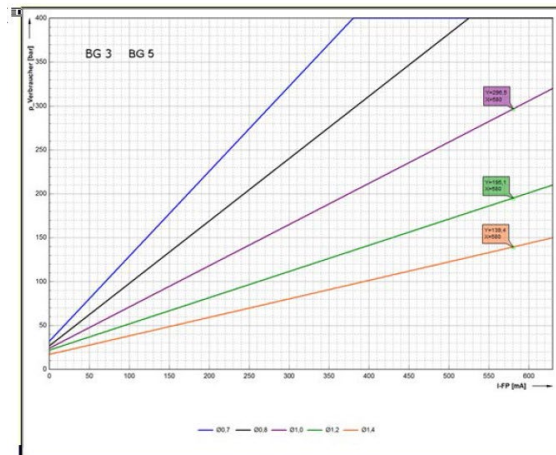
[Datasheet PSLF/PSVF](#)

[Information SAC](#)



Code	pmin [bar]	pmax [bar]	Sitz Ø [mm]
0	blockiert		0
1	20	135*	1,4
2	25	195*	1,2
3	35	295*	1
5	40	400	0,8
7	50	420	0,7

*= 580mA



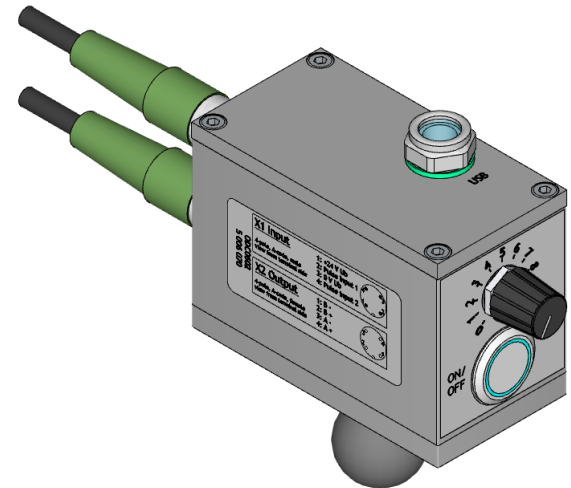
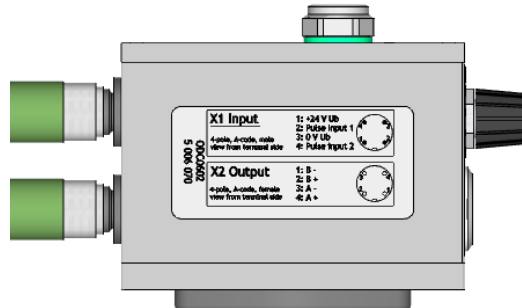
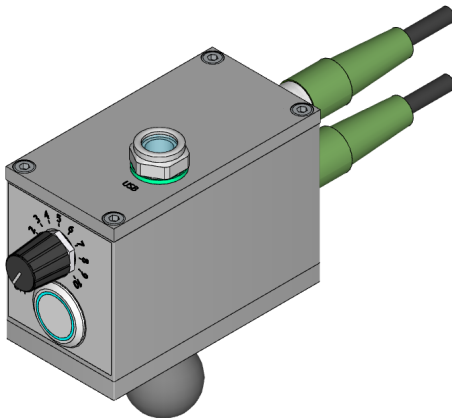
SAC Servi Addon Components

3. Unified interfaces

- Modular design for easy customization

ODC-XS AGRO

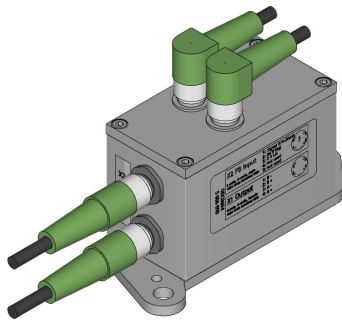
[Datasheet ODC-XS Agro](#)



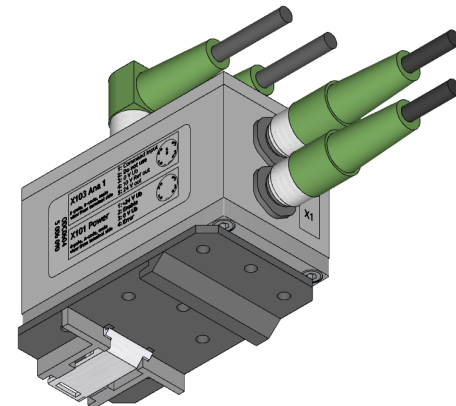
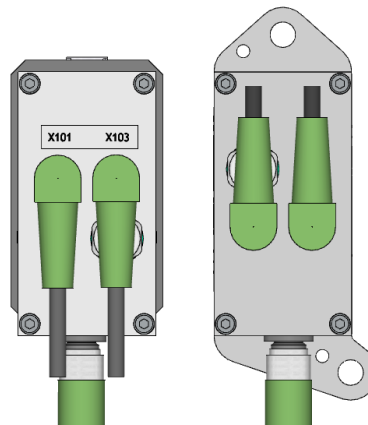
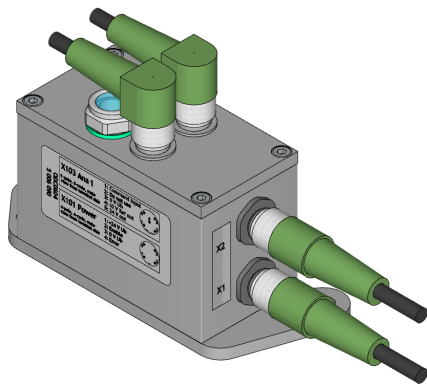
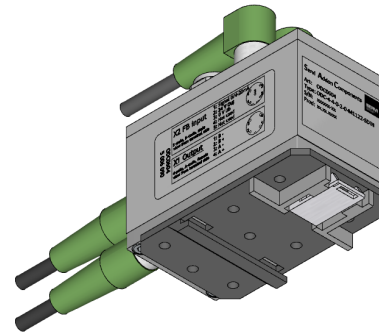
SAC Servi Addon Components

3. Unified interfaces

- Modular design for easy customization



ODC-XS



SAC **Servi Addon Components**

3. Unified interfaces

- HPRS

The LVDT is specially designed for offshore and marine applications and may be used for stroke length up to $\pm 10,4$ mm. The positioning sensor is of a conventional design with integrated electronics providing 4-20 mA output.

The LVDT is made available in three sizes (3, 5 & 7) for the Hawe PSL/PSV program as well as for Servi Hydranor valve HSV600. It may be used for both manifold and valve bank design.

The design is made flexible and the modular design allow easy upgrade of PSL/PSV and HSV program, with or without other onboard electronic, ie ODC or OPAT.

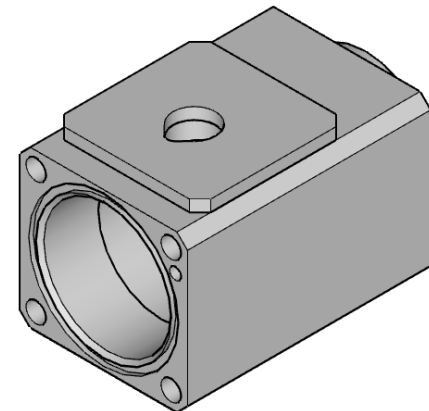
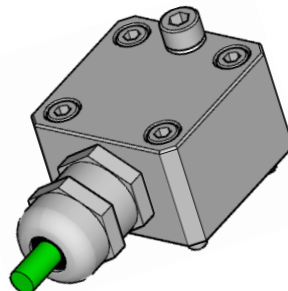
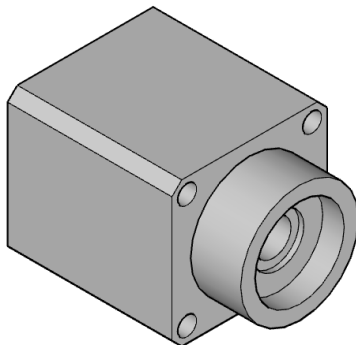
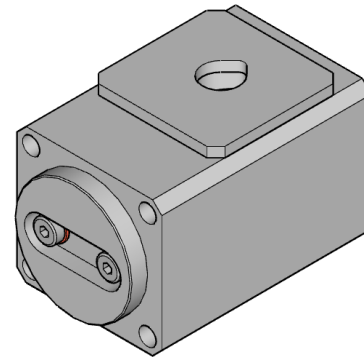
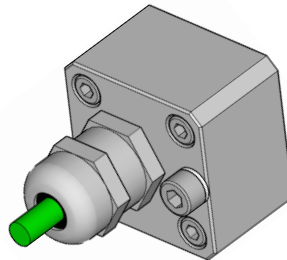
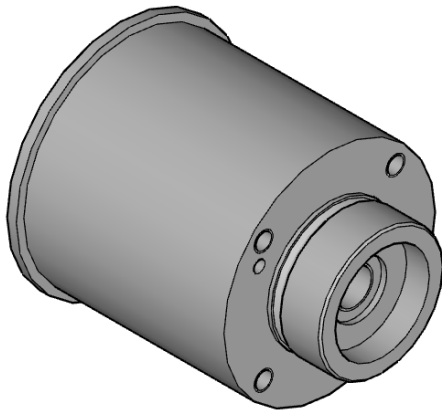
The sensor can be used in closed loop control of the proportional valve main spool or as a spool position feedback.

Simple calibration of the sensor by included potentiometers and/or semiautomatic process

SAC Servi Addon Components

3. Unified interfaces

- HPRS basic parts



SAC Servi Addon Components

3. Unified interfaces

- HPRS assemblies

