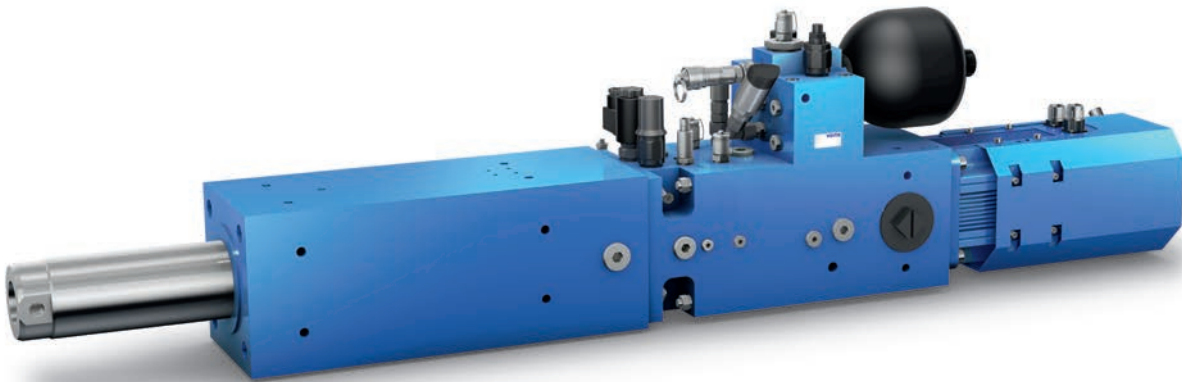


# DrivAx CLDP

## Self-contained servo drives

### Technical data sheet



#### Advantages

- + High productivity and flexibility
- + Resource-saving and energy efficient
- + High reliability and availability
- + Compact – neither power pack nor piping
- + Modular and scalable

## DrivAx servo drives

### Efficient drive technology for high productivity

DrivAx servo drives combine the advantages of hydraulics with the advantages of servo drives. The result: energy-efficient drives with low heat and noise emissions and at the same time high robustness, power density and dynamics.

DrivAx servo drives consist of a variable speed pump and a servo motor, which simultaneously serves as drive and control for the actuator.

They are suitable for all linear movements requiring high forces and precision. At the same time, they are highly productive while protecting the environment, climate and resources.

Perfectly adaptable to your requirements, DrivAx servo drives are available in various system configurations:

- Motor pump combination
- Self-contained drives
- Application-specific system solutions

### Machine and equipment manufacturer

#### Why you should rely on DrivAx servo drives?



#### The allrounder with a modular set-up

DrivAx servo drives supports all common standard interfaces, enabling them to be easily integrated into existing machines. Various pre-configured modules allow optimal dimensioning of the system, precisely matching to your application. Furthermore, the drive can be scaled and synchronized to cover all conceivable force spectra. The allrounder for all applications.



#### Less is always more – no servo valves required

The drive technology of the future works without a complex infrastructure. DrivAx drives are based on a combination of a servo motor and a variable speed pump. The servo motor drives the system and precisely controls the force, movement, and position of the actuator. Control valves, hydraulic power units and complex piping are no longer required. True to the principle: less is more.



#### Easily integrated, rapidly enabled

DrivAx drives are compact, optionally self-contained systems and therefore very easy to integrate into machines. A mechanical interface, an electrical connection, and data connections for the sensor system are all that is needed. As there is no need for complex power unit pipings, valve technology cabling, and filtering of the hydraulic fluid, you save a lot of time while designing and commissioning your machine. For lean mechanical engineering without compromise.

DrivAx IPS



2002

DrivAx PSH



2011

DrivAx CLDP



2012

DrivAx CSH



DrivAx PDSC



2014



## Operators of machines and plants

### Why you should rely on DrivAx servo drives?



#### Increase productivity, save resources

No proportional valves, but the pump regulates the volume flow and pressure. Only as much electrical energy as the process actually requires is converted into power. Efficiency at its best. And at the same time, electricity costs and CO<sub>2</sub> emissions are reduced. It's not just the environment that benefits.



#### Intelligent solutions for Industry 4.0

DrivAx servo drives work precisely, with high forces, while paving the way for sustainable, climate-friendly production processes. Intelligent sensors and electronics control, regulate and monitor the drive system, which not only enables high machine productivity but also gives the system diagnostic capability – ready for Condition Monitoring and Predictive Maintenance.



#### The reliable endurance runner

DrivAx servo drives are compact power packs with a high level of endurance and low maintenance. The actuator is practically wear-free in operation, while proven pump technology and reduced system complexity guarantee long maintenance intervals. Compared to electromechanical solutions, the lifetime is increased by 80%, even in highly demanding operating conditions.



#### Less oil, good for the environment

DrivAx servo drives only consume as much energy as is currently needed in the process. This not only reduces electricity costs, but also the heat input into the hydraulic medium and the necessary cooling effort are reduced. Hydraulic fluid can be reduced by up to 90%. Green light for clean technology.

DrivAx CLCP



2016

DrivAx RQ4



2021

DrivAx IQ4



2022

## DrivAx CLDP

### Compact, energy-efficient and highly productive

#### DrivAx CLDP are self-contained servo drives suitable for all linear movements requiring high forces and precision.

DrivAx CLDP (Closed Loop Differential Pump) is a servo-hydraulic linear axis consisting of a servo motor, an internal gear pump and a directly mounted hydraulic cylinder. The design of the DrivAx CLDP is thus self-contained and compact.

The integrated servo pump is designed to the area ratio of the cylinder. Speed and direction of movement are controlled without directional or throttle valves. Neither a hydraulic power pack nor an oil tank is required for operation, thus eliminating the need for piping. All hydraulic components are integrated in the drive. DrivAx CLDP is suitable for force and position control. Accordingly, pressure sensors and/or a displacement measuring system are integrated. Benefit from our many years of expertise in all aspects of hydraulic servo drives.

Starting with the calculation and design, continuing with the installation and commissioning, up to questions of cost-optimized operation and maintenance concepts - we are your partner with system competence.

#### Technical data

Ambient temperature	0°C to +40°C
Mounting position	any
Working force	up to 500 kN, higher forces on request
Stroke length	50, 100, 200, 300, 400 mm, longer strokes on request
Linear feedback system (option)	absolute encoder SSI
Position accuracy	< 0.01 mm
Pressure accuracy	0.5 % FS (full scale)
Repeatability	< 0.01 mm
IP rating	IP54 / IP64
Control	position and / or pressure control
Service interval	3 years, 20,000 operating hours or 10 million load changes

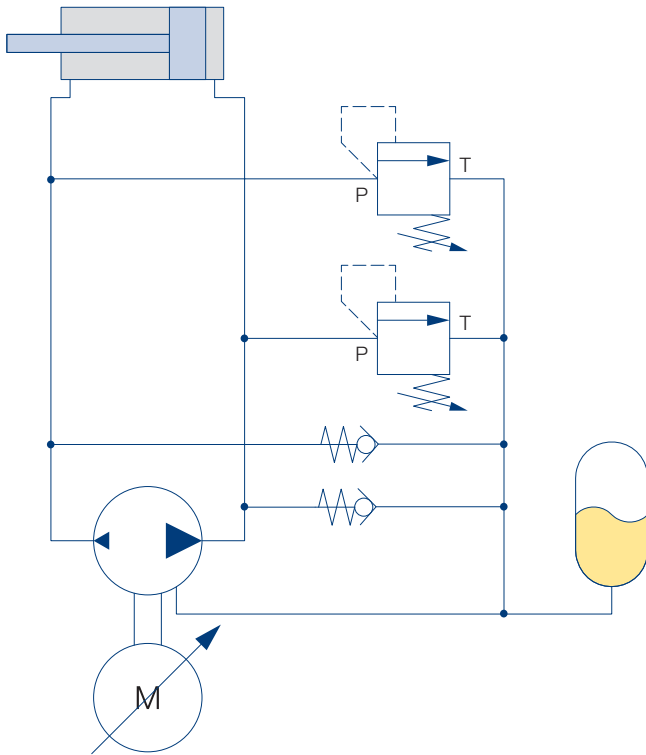
#### Scope of delivery

- Basic version:
  - Complete drive unit
  - Motor, pump, cylinder, compensation tank, valves, pressure switch
  - Oil filling with high performance fluid PF-700
  - Drift protection (not a safety component)
- Options:
  - Pressure transducer
  - Servo converter with safety relay and interface cards (e.g. analog, CANopen, Ethernet, ...)
  - Line filter, mains line choke, brake resistor
  - Motor cable, encoder cable
  - Parameterization software
  - Start-up on-site
  - Integrated position feedback sensor (absolute)

#### Applications

- Bending machines
- Cutting machines
- Forming machines
- Presses
- Special machines
- General replacement of spindle drives with servo motor
- Material handling
- Testing machines (laboratory)
- Food industry

### System drawing



### Standard sizes

	10	20	40
<b>Force F [kN]</b>			
<b>v [mm/s]</b>			
<b>25</b>	430	980	1500
<b>50</b>	275	550	1040
<b>75</b>	175	350	640
<b>100</b>	105	215	400
<b>125</b>	105	215	400
<b>150</b>	70	140	255
<b>175</b>	70	140	255
<b>200</b>	70	140	255
<b>225</b>	–	95	175
<b>250</b>	–	95	175
<b>275</b>	–	95	175
<b>300</b>	–	95	175
<b>350</b>	–	–	130
<b>400</b>	–	–	130
<b>450</b>	–	–	100
<b>500</b>	–	–	100

additional data on request

### Performance fluid PF-700 for servo drive DrivAx CLDP

Performance Fluid PF-700 was developed especially for all power transmission systems with special requirements on tribology, temperature, oxidation and shearing stability. The result is a very high application period at minimum degradation.

- Very low frictional losses, therefore significantly enhanced efficiency of power transmission
- Energy saving
- High viscosity index
- Outstanding wear protection characteristics
- Compatible with commonly used sealing materials

For the servo drive CLDP, exclusive use of PF-700 is mandatory.

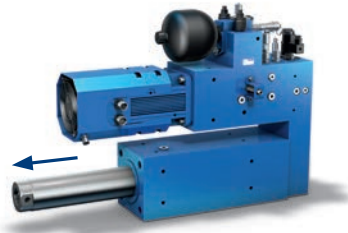
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## Design options

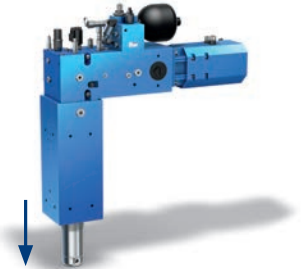
Linear



Parallel



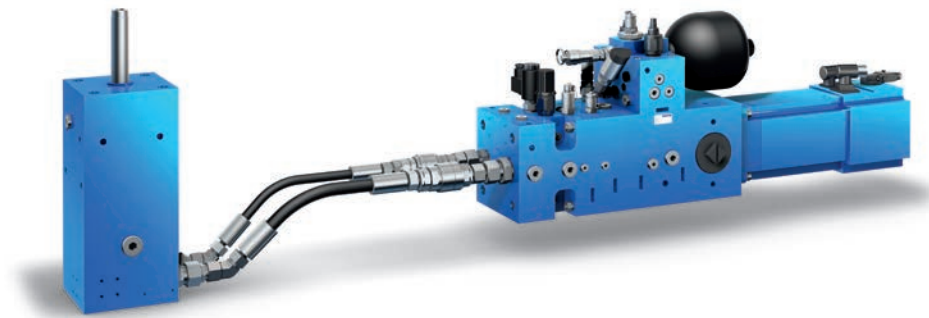
Orthogonal



→ Movement direction of the piston rod

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## Designs, special designs



The special split design has been developed for use in very cramped installation situations. The pump group and the servomotor form a unit and the cylinder forms its own unit.

The units are hydraulically connected by pipes or hoses. The split version offers extended design options compared to the standard series. All advantages of the CLDP are preserved.

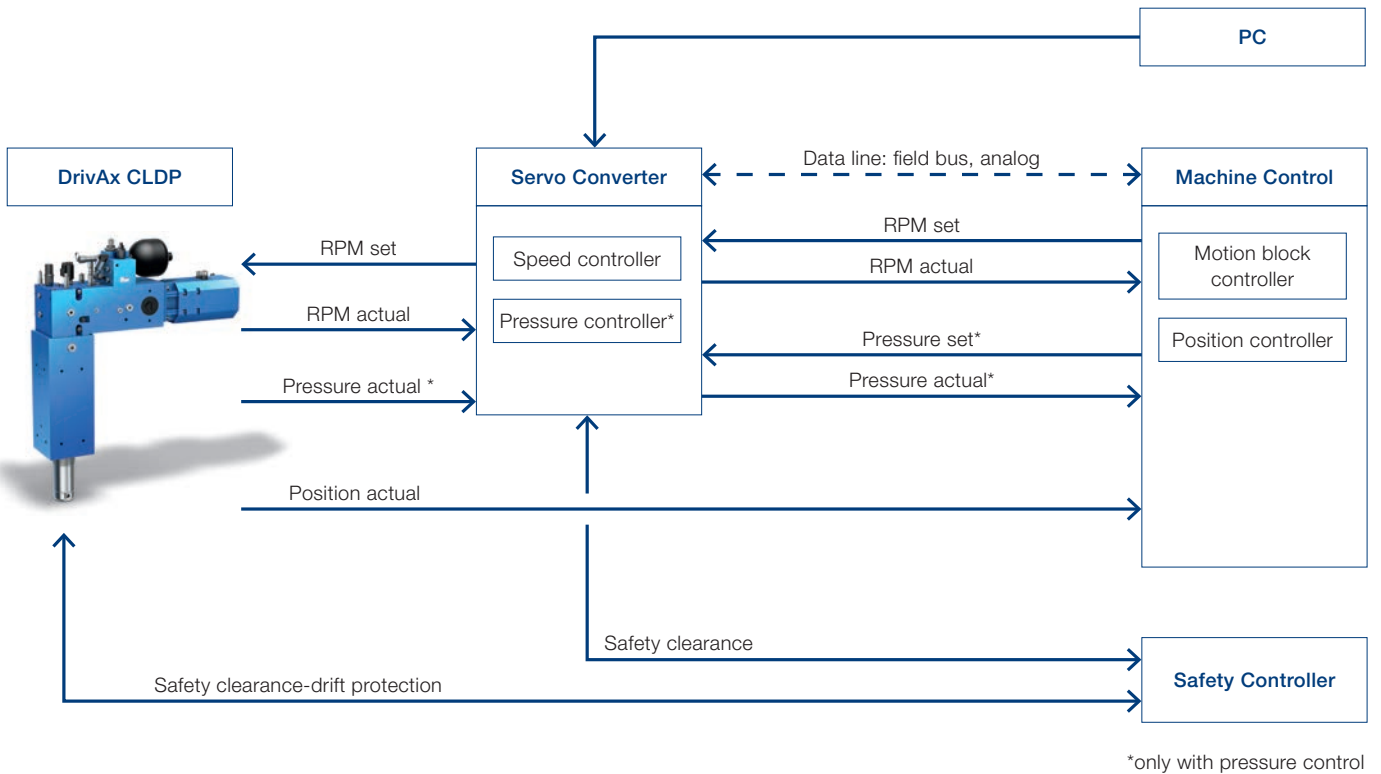
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## Product characteristics

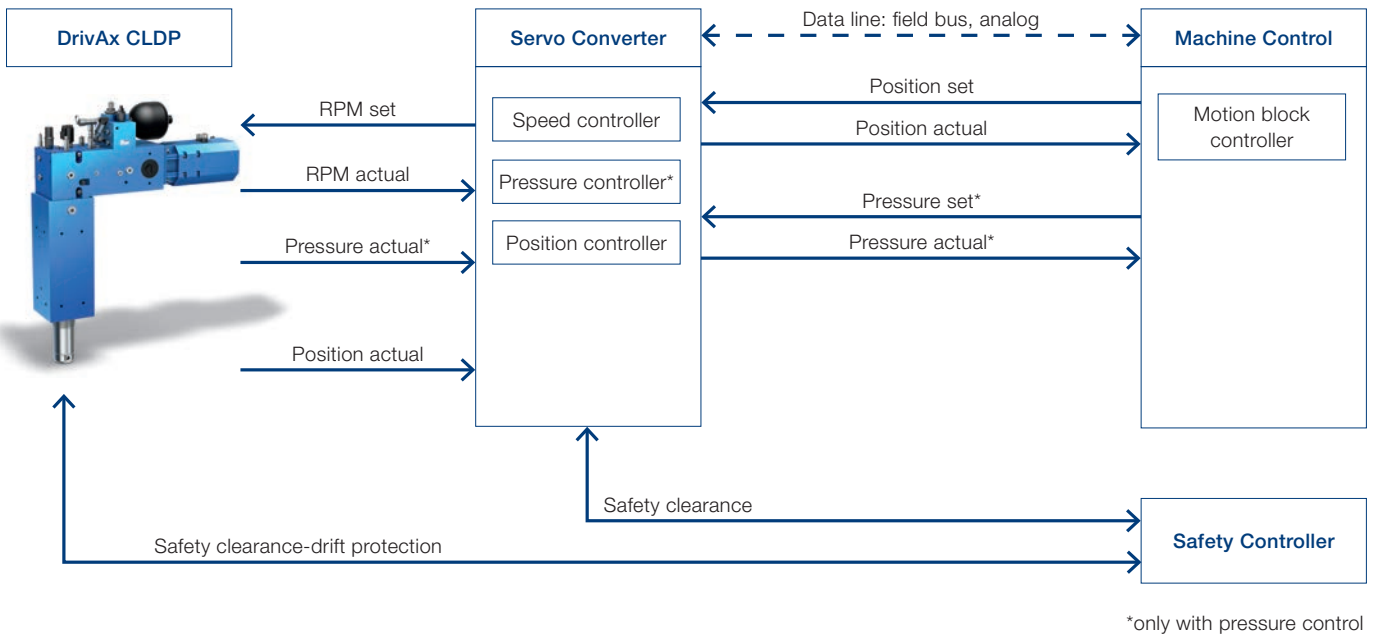
Characteristics	Advantages	Benefits
Speed and motion control of the actuator with a variable speed internal gear pump driven by a servo motor, operating as motor or generator	<ul style="list-style-type: none"> <li>• reduced energy consumption</li> <li>• high dynamics thanks to low mass moment of inertia</li> <li>• freely and easily programmable process</li> <li>• reduced cooling capacity needed</li> <li>• lower noise emission</li> <li>• no control valves</li> <li>• recovery of system energy</li> </ul>	<ul style="list-style-type: none"> <li>+ increases the productivity of the machine thanks to the precise position and force control of the actuator as well as the easy adaptation to different production processes</li> <li>+ reduces investment and operating costs</li> <li>+ quick and easy installation and commissioning</li> <li>+ reduced effort and cost of noise protection measures</li> </ul>
Closed hydraulic system	<ul style="list-style-type: none"> <li>• no piping</li> <li>• compact</li> <li>• reduced oil volume</li> <li>• no hydraulic power unit</li> </ul>	<ul style="list-style-type: none"> <li>+ easy integration into the machine</li> <li>+ fast and easy assembly and commissioning</li> <li>+ no hydraulic know-how required</li> <li>+ low operating costs and environmental cleanliness</li> <li>+ no initial or maintenance costs for a hydraulic power unit</li> </ul>
Hydraulic power transmission	<ul style="list-style-type: none"> <li>• almost wear-free</li> <li>• over-load safe operation</li> <li>• high power density</li> <li>• high forces realizable</li> </ul>	<ul style="list-style-type: none"> <li>+ Low service costs thanks to long service intervals</li> <li>+ tools are protected, production downtimes are avoided and investments in overload safety are not necessary</li> <li>+ reduced machine footprint</li> </ul>
Modular design	<ul style="list-style-type: none"> <li>• high variety of options</li> <li>• scalable</li> </ul>	<ul style="list-style-type: none"> <li>+ reduced development time and cost</li> <li>+ free selection from different servo motor and frequency converter manufacturer</li> <li>+ the power can be adapted exactly to the machine cycle, thus reducing investment costs</li> <li>+ high forces can be realized</li> </ul>
Position measuring system, temperature and pressure sensors integrated into the axis	<ul style="list-style-type: none"> <li>• Process monitoring without additional sensors and measuring systems</li> <li>• Sensors protected from damage and other process conditions</li> </ul>	<ul style="list-style-type: none"> <li>+ the drive is Industry 4.0-ready</li> <li>+ integration into the machine control without investment in sensors and measuring systems</li> <li>+ reliable sensor technology avoids production downtimes</li> </ul>
Pre-configured software modules	<ul style="list-style-type: none"> <li>• Control algorithms are optimally adapted to hydraulics and electronics</li> </ul>	<ul style="list-style-type: none"> <li>+ fast and efficient commissioning</li> <li>+ easy integration into the machine control</li> </ul>



Control principle: speed and pressure control integrated in the servo converter

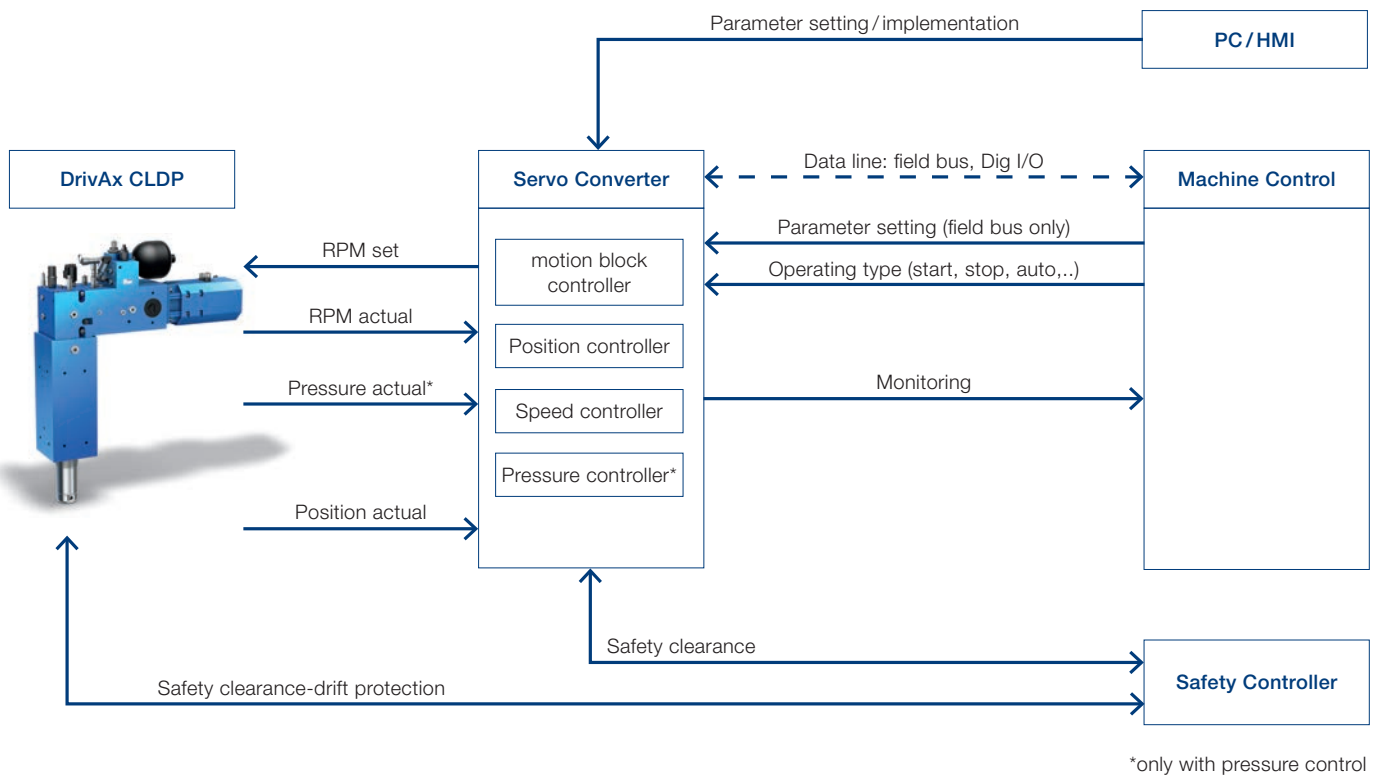


Control principle: speed, position and pressure controller integrated in the servo converter





Control principle: motion block control integrated in the servo converter



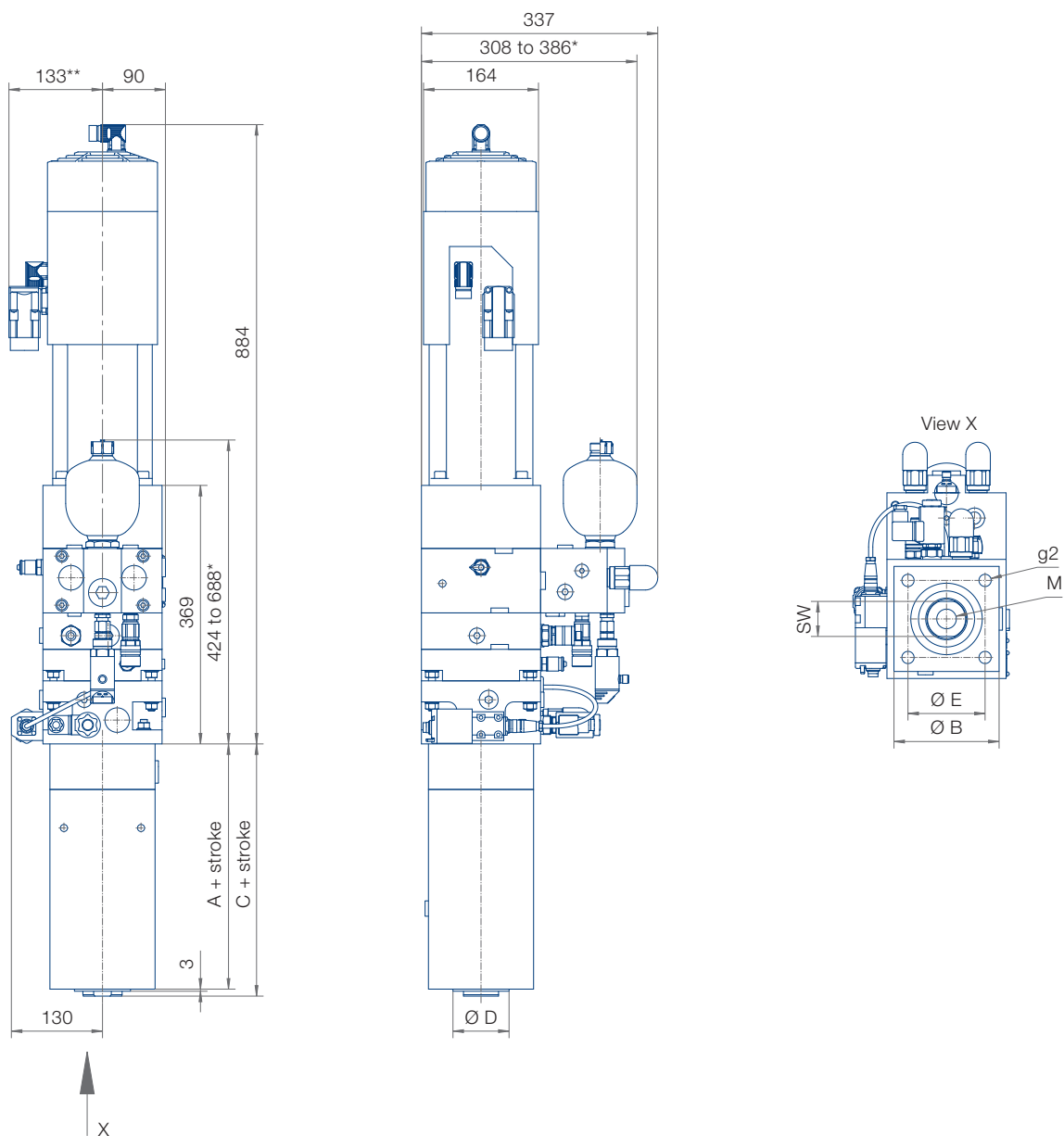
## Dimensional drawing basic design DrivAx CLDP 10

Force F [kN]	Ø Piston	Ø D	A	C	M	g2	B	E	SW
25	40	40f7	235	255	M16x1	4xM20	150	110	25
50	50	50f7	235	255	M20x1,5	4xM20	150	110	30
75	63	63f7	235	255	M30x2	4xM20	150	110	41
125	80	80f7	250	270	M36x2	4xM20	150	110	50
200	100	100f7	255	280	M42x2	4xM20	160	110	65
300	120	120f7	265	290	M48x2	4xM24	180	130	75

All dimensions in mm, all dimensions for reference only

\* depending on version

\*\* plug position may be rotated in 90° steps



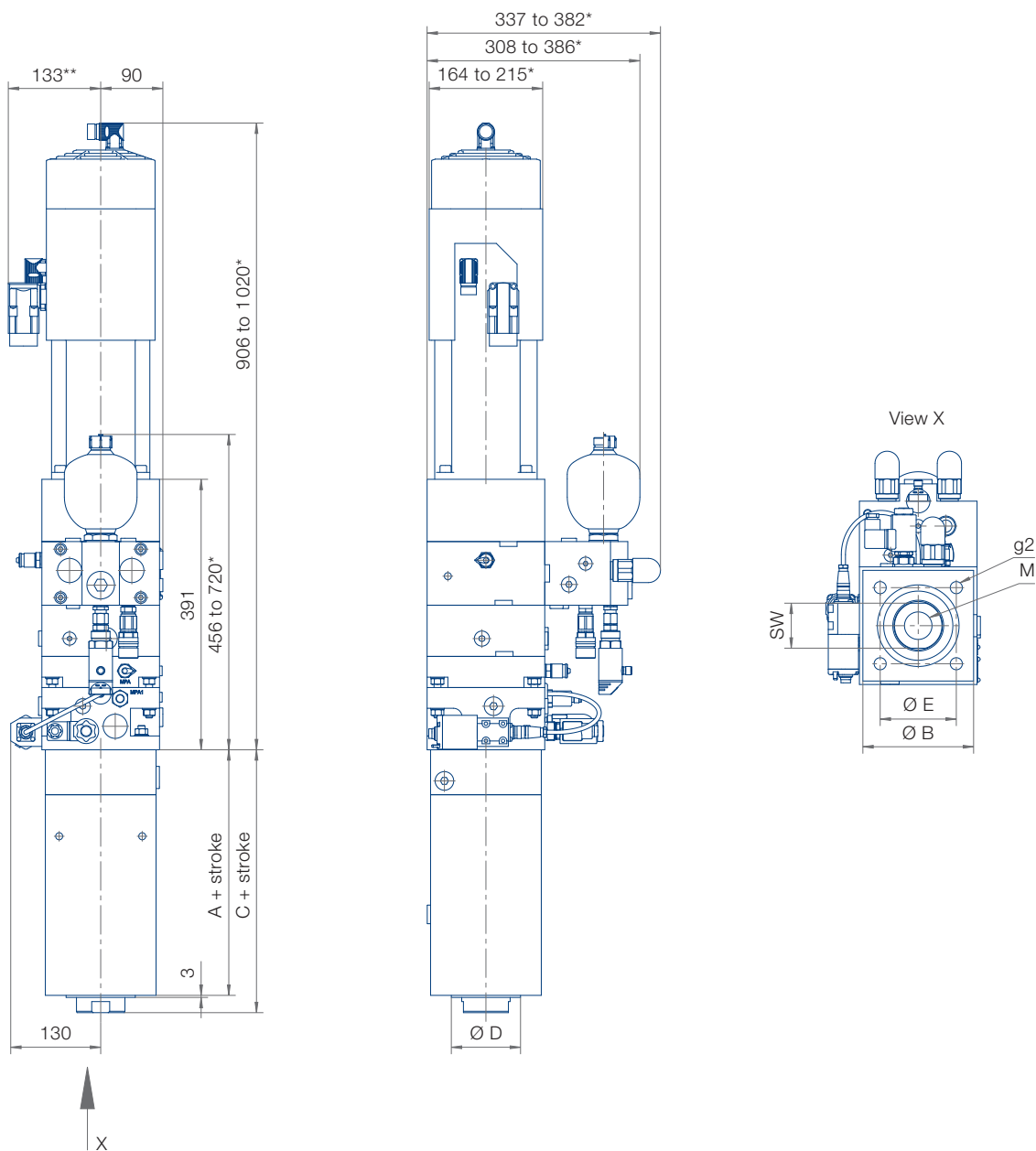
### Dimensional drawing basic design DrivAx CLDP 20

Force F [kN]	Ø Piston	Ø D	A	C	M	g2	B	E	SW
50	50	50f7	235	255	M20x1,5	4xM20	150	110	30
75	63	63f7	235	255	M30x2	4xM20	150	110	41
125	80	80f7	250	270	M36x2	4xM20	150	110	50
200	100	100f7	255	280	M42x2	4xM20	160	110	65
300	120	120f7	265	290	M48x2	4xM24	180	130	75
400	140	140f7	285	310	M64x2	4xM30	210	160	90

All dimensions in mm, all dimensions for reference only

\* depending on version

\*\* plug position may be rotated in 90° steps



## Dimensional drawing basic design DrivAx CLDP 40

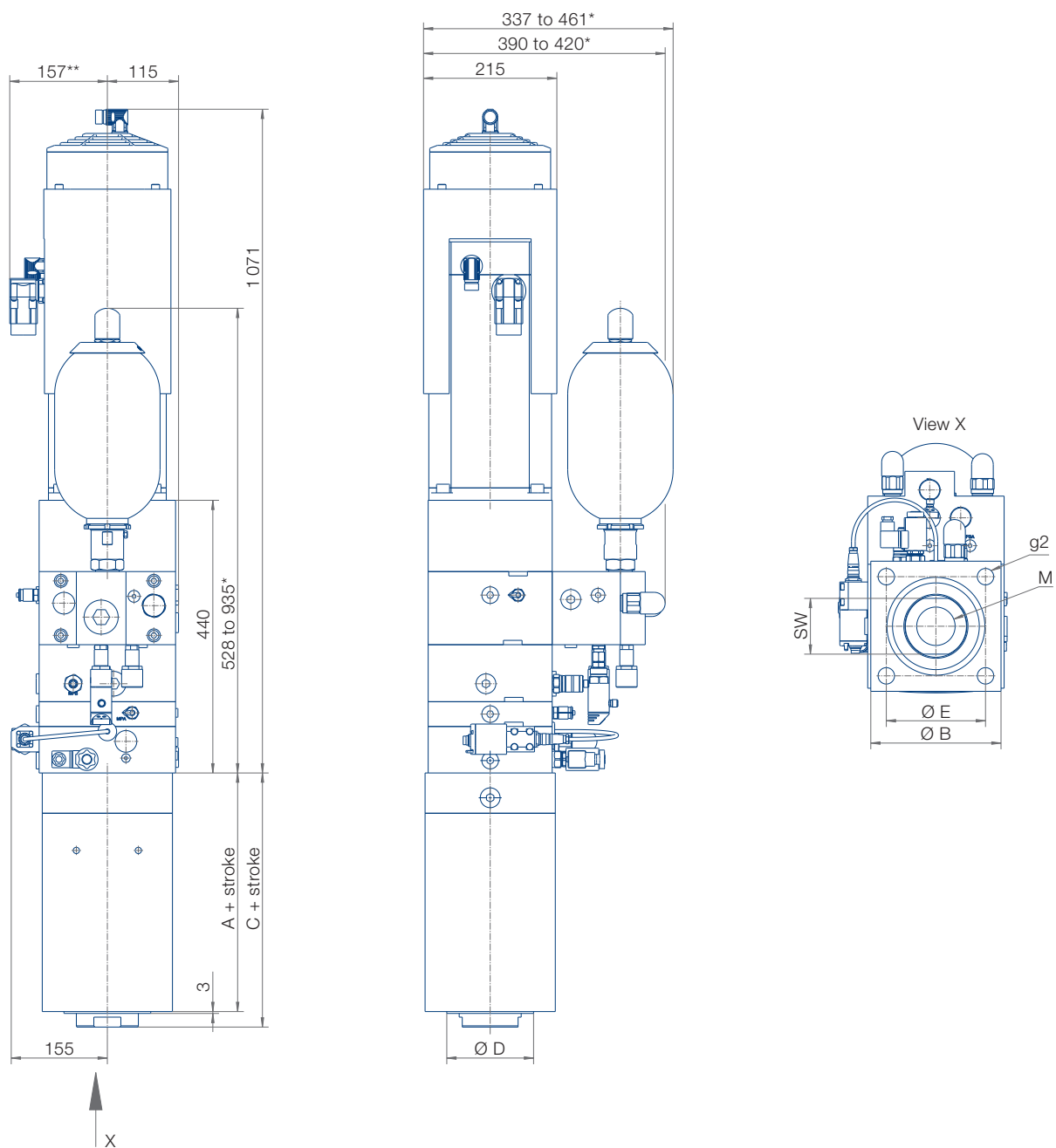
Force F [kN]	Ø Piston	Ø D	A	C	M	g2	B	E	SW
75	63	63f7	235	255	M30x2	4xM20	150	110	41
125	80	80f7	250	270	M36x2	4xM20	150	110	50
200	100	100f7	255	280	M42x2	4xM20	160	110	65
300	120	120f7	265	290	M48x2	4xM24	180	130	75
400	140	140f7	285	310	M64x2	4xM30	210	160	90
500	160	160f7	305	330	M64x2	4xM30	240	180	100

all dimensions in mm, all dimensions for reference only

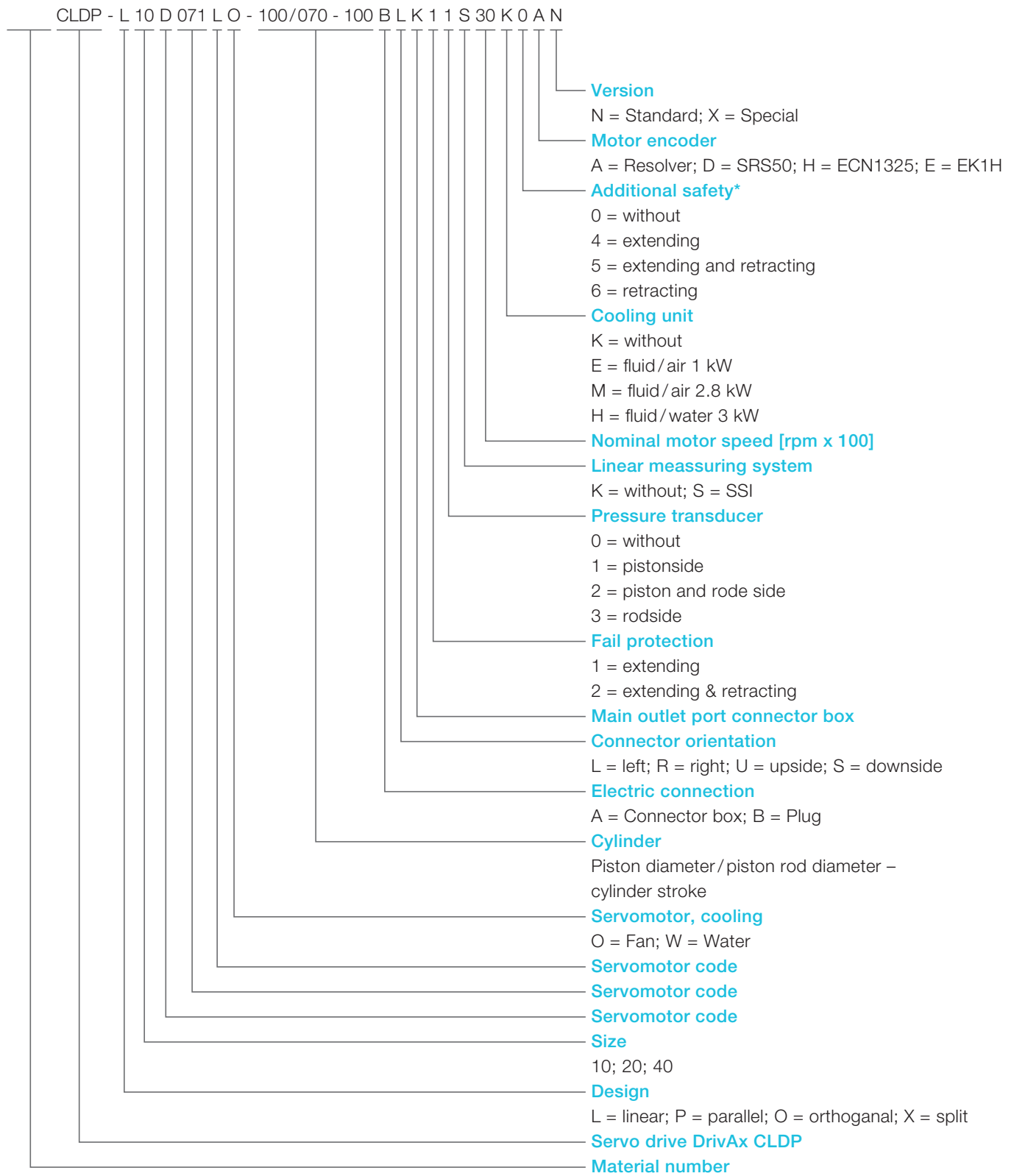
\* depending on version

\*\* plug position may be rotated in 90° steps

\*\*\* Piston



## Type code



\*up to performance level e (PL e) according to EN ISO 13849-1, without corresponds to PL c

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