RE 51057
Edition: 2020-11
Replaces: 2019-12

rexroth
A Bosch Company

Hydraulic power unit

CytroBox

- Component series 1X
- Maximum operating pressure 315 bar
- Maximum flow 160 l/min

Features

- Integrated drive controller
- Power up to 30 kW with identical frame size and interfaces
- Servo drive
- Reduced hydraulic fluid volume due to degassing-optimized tank
- Optional set-up of different control systems

Contents

Ordering code

01	02		03	04	05		06	07		08	09		10	11		12	13
CYTROBOX	**–**		**/**	**A**	**A**	**A**	**/**			**/**	**00**	**0**	**/**		**0**	**/**		*****

01	Hydraulic power unit	**CYTROBOX**

Version

02	Standard	**N**
	Functionality extension	**F**

Oscillating volume

03	Maximum 50 liters	**A**

Control cabinet

04	Position "top"	**A**

Cooling

05	Motor and hydraulic system water-cooled; control cabinet air-cooled	**A**

Motor-pump group (drive 1)

06	A10FZO010/MS2N07-E0BQL	**AA**
	A10FZO016/MS2N07-E0BQL	**BA**
	A10FZO032/MS2N10-F0BHL	**CB**
	A10FZO045/MS2N10-F0BHL	**DB**
	A10FZO063/MS2N10-F0BHL	**EB**

Converter (drive 1)

07	HCS03-0070	**A**
	HCS03-0100	**B**
	HCS03-0150	**C**

Motor-pump group (drive 2)

08	Without	**00**

Converter (drive 2)

09	Without	**0**

Oil cooling

10	Without (standard)	**0**
	Cooling power 4 kW	**A**
	Cooling power 10 kW	**B**

Oil treatment

11	Pressure filter (standard)	**A**
	Pressure filter and return flow filter	**B**

Sensor technology

12	Standard sensor package	**AAA**
	For more sensor packages, see selection table on page 5	**e.g. AAE**

13	Further details in the plain text	*****

Ordering code

CytroBox selection table

Motor-pump group in cm³	**Converter** in A (max)	**Cooling**	**Sensor package**	**Denomination**	**Material number**
10	70	without	AAA	**CYTROBOX-N/AAA/AAA/000/0A/AAA**	R901600033
			AAB	**CYTROBOX-N/AAA/AAA/000/0A/AAB**	R901600001
			ABG	**CYTROBOX-N/AAA/AAA/000/0A/ABG**	R901600068
		4 kW	AAA	**CYTROBOX-N/AAA/AAA/000/AA/AAA**	R901600041
			AAB	**CYTROBOX-N/AAA/AAA/000/AA/AAB**	R901600003
			ABG	**CYTROBOX-N/AAA/AAA/000/AA/ABG**	R901600084
		10 kW	AAA	**CYTROBOX-N/AAA/AAA/000/BA/AAA**	R901600060
			AAB	**CYTROBOX-N/AAA/AAA/000/BA/AAB**	R901600092
			ABG	**CYTROBOX-N/AAA/AAA/000/BA/ABG**	R901600069
16	70	without	AAA	**CYTROBOX-N/AAA/BAA/000/0A/AAA**	R901600034
			AAB	**CYTROBOX-N/AAA/BAA/000/0A/AAB**	R901600005
			ABG	**CYTROBOX-N/AAA/BAA/000/0A/ABG**	R901600070
		4 kW	AAA	**CYTROBOX-N/AAA/BAA/000/AA/AAA**	R901600042
			AAB	**CYTROBOX-N/AAA/BAA/000/AA/AAB**	R901600007
			ABG	**CYTROBOX-N/AAA/BAA/000/AA/ABG**	R901600085
		10 kW	AAA	**CYTROBOX-N/AAA/BAA/000/BA/AAA**	R901600061
			AAB	**CYTROBOX-N/AAA/BAA/000/BA/AAB**	R901600093
			ABG	**CYTROBOX-N/AAA/BAA/000/BA/ABG**	R901600071
32	100	without	AAA	**CYTROBOX-N/AAA/CBB/000/0A/AAA**	R901600035
			AAB	**CYTROBOX-N/AAA/CBB/000/0A/AAB**	R901600009
			ABG	**CYTROBOX-N/AAA/CBB/000/0A/ABG**	R901600072
		4 kW	AAA	**CYTROBOX-N/AAA/CBB/000/AA/AAA**	R901600043
			AAB	**CYTROBOX-N/AAA/CBB/000/AA/AAB**	R901600011
			ABG	**CYTROBOX-N/AAA/CBB/000/AA/ABG**	R901600086
		10 kW	AAA	**CYTROBOX-N/AAA/CBB/000/BA/AAA**	R901600062
			AAB	**CYTROBOX-N/AAA/CBB/000/BA/AAB**	R901600094
			ABG	**CYTROBOX-N/AAA/CBB/000/BA/ABG**	R901600073
32	150	without	AAA	**CYTROBOX-N/AAA/CBC/000/0A/AAA**	R901600036
			AAB	**CYTROBOX-N/AAA/CBC/000/0A/AAB**	R901600013
			ABG	**CYTROBOX-N/AAA/CBC/000/0A/ABG**	R901600074
		4 kW	AAA	**CYTROBOX-N/AAA/CBC/000/AA/AAA**	R901600044
			AAB	**CYTROBOX-N/AAA/CBC/000/AA/AAB**	R901600015
			ABG	**CYTROBOX-N/AAA/CBC/000/AA/ABG**	R901600087
		10 kW	AAA	**CYTROBOX-N/AAA/CBC/000/BA/AAA**	R901600063
			AAB	**CYTROBOX-N/AAA/CBC/000/BA/AAB**	R901600095
			ABG	**CYTROBOX-N/AAA/CBC/000/BA/ABG**	R901600075

Ordering code

Motor-pump group in cm³	**Converter** in A (max)	**Cooling**	**Sensor package**	**Denomination**	**Material number**
45	100	without	AAA	**CYTROBOX-N/AAA/DBB/000/0A/AAA**	R901600037
			AAB	**CYTROBOX-N/AAA/DBB/000/0A/AAB**	R901600017
			ABG	**CYTROBOX-N/AAA/DBB/000/0A/ABG**	R901600076
		4 kW	AAA	**CYTROBOX-N/AAA/DBB/000/AA/AAA**	R901600045
			AAB	**CYTROBOX-N/AAA/DBB/000/AA/AAB**	R901600019
			ABG	**CYTROBOX-N/AAA/DBB/000/AA/ABG**	R901600088
		10 kW	AAA	**CYTROBOX-N/AAA/DBB/000/BA/AAA**	R901600064
			AAB	**CYTROBOX-N/AAA/DBB/000/BA/AAB**	R901600096
			ABG	**CYTROBOX-N/AAA/DBB/000/BA/ABG**	R901600077
45	150	without	AAA	**CYTROBOX-N/AAA/DBC/000/0A/AAA**	R901600038
			AAB	**CYTROBOX-N/AAA/DBC/000/0A/AAB**	R901600021
			ABG	**CYTROBOX-N/AAA/DBC/000/0A/ABG**	R901600078
		4 kW	AAA	**CYTROBOX-N/AAA/DBC/000/AA/AAA**	R901600046
			AAB	**CYTROBOX-N/AAA/DBC/000/AA/AAB**	R901600023
			ABG	**CYTROBOX-N/AAA/DBC/000/AA/ABG**	R901600089
		10 kW	AAA	**CYTROBOX-N/AAA/DBC/000/BA/AAA**	R901600065
			AAB	**CYTROBOX-N/AAA/DBC/000/BA/AAB**	R901600097
			ABG	**CYTROBOX-N/AAA/DBC/000/BA/ABG**	R901600079
63	100	without	AAA	**CYTROBOX-N/AAA/EBB/000/0A/AAA**	R901600039
			AAB	**CYTROBOX-N/AAA/EBB/000/0A/AAB**	R901600025
			ABG	**CYTROBOX-N/AAA/EBB/000/0A/ABG**	R901600080
		4 kW	AAA	**CYTROBOX-N/AAA/EBB/000/AA/AAA**	R901600047
			AAB	**CYTROBOX-N/AAA/EBB/000/AA/AAB**	R901600027
			ABG	**CYTROBOX-N/AAA/EBB/000/AA/ABG**	R901600090
		10 kW	AAA	**CYTROBOX-N/AAA/EBB/000/BA/AAA**	R901600066
			AAB	**CYTROBOX-N/AAA/EBB/000/BA/AAB**	R901600098
			ABG	**CYTROBOX-N/AAA/EBB/000/BA/ABG**	R901600081
63	150	without	AAA	**CYTROBOX-N/AAA/EBC/000/0A/AAA**	R901600040
			AAB	**CYTROBOX-N/AAA/EBC/000/0A/AAB**	R901600029
			ABG	**CYTROBOX-N/AAA/EBC/000/0A/ABG**	R901600082
		4 kW	AAA	**CYTROBOX-N/AAA/EBC/000/AA/AAA**	R901600048
			AAB	**CYTROBOX-N/AAA/EBC/000/AA/AAB**	R901600031
			ABG	**CYTROBOX-N/AAA/EBC/000/AA/ABG**	R901600091
		10 kW	AAA	**CYTROBOX-N/AAA/EBC/000/BA/AAA**	R901600067
			AAB	**CYTROBOX-N/AAA/EBC/000/BA/AAB**	R901600099
			ABG	**CYTROBOX-N/AAA/EBC/000/BA/ABG**	R901600083

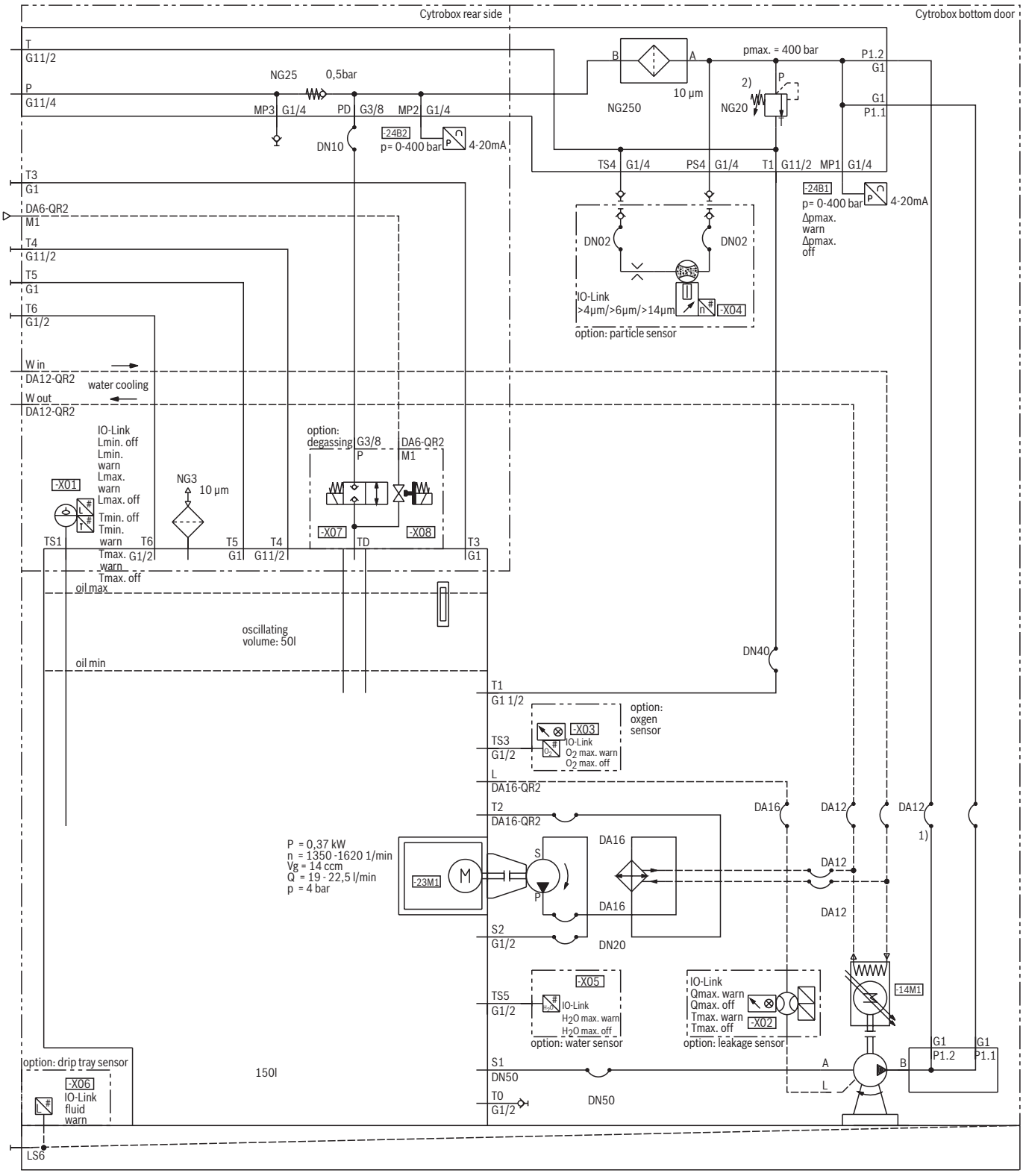
Ordering code

Sensor selection table

Type	Standard				Optional					
	Control pressure	Tank filling level	Tank temperature	Pressure filter contamination	Pump leakage flow	Pump leakage temperature	Water content in tank	Dissolved air share in tank	Dirt particles in tank	Oil pan leakage
AAA	✓	✓	✓	✓	–	–	–	–	–	–
AAB	✓	✓	✓	✓	✓	✓	–	–	–	–
AAC	✓	✓	✓	✓	–	–	✓	–	–	–
AAD	✓	✓	✓	✓	✓	✓	✓	–	–	–
AAE	✓	✓	✓	✓	–	–	–	✓	–	–
AAF	✓	✓	✓	✓	✓	✓	–	✓	–	–
AAG	✓	✓	✓	✓	–	–	✓	✓	–	–
AAH	✓	✓	✓	✓	✓	✓	✓	✓	–	–
AAI	✓	✓	✓	✓	–	–	–	–	✓	–
AAJ	✓	✓	✓	✓	✓	✓	–	–	✓	–
AAK	✓	✓	✓	✓	–	–	✓	–	✓	–
AAL	✓	✓	✓	✓	✓	✓	✓		✓	–
AAM	✓	✓	✓	✓	–	–	–	✓	✓	–
AAN	✓	✓	✓	✓	✓	✓	–	✓	✓	–
AAO	✓	✓	✓	✓	–	–	✓	✓	✓	–
AAP	✓	✓	✓	✓	✓	✓	✓	✓	✓	–
AAR	✓	✓	✓	✓	–	–	–	–	–	✓
AAS	✓	✓	✓	✓	✓	✓	–	–	–	✓
AAT	✓	✓	✓	✓	–	–	✓	–	–	✓
AAU	✓	✓	✓	✓	✓	✓	✓	–	–	✓
AAV	✓	✓	✓	✓	–	–	–	✓	–	✓
AAW	✓	✓	✓	✓	✓	✓	–	✓	–	✓
AAX	✓	✓	✓	✓	–	–	✓	✓	–	✓
AAY	✓	✓	✓	✓	✓	✓	✓	✓	–	✓
AAZ	✓	✓	✓	✓	–	–	–	–	✓	✓
ABA	✓	✓	✓	✓	✓	✓	–	–	✓	✓
ABB	✓	✓	✓	✓	–	–	✓	–	✓	✓
ABC	✓	✓	✓	✓	✓	✓	✓	–	✓	✓
ABD	✓	✓	✓	✓	–	–	–	✓	✓	✓
ABE	✓	✓	✓	✓	✓	✓	–	✓	✓	✓
ABF	✓	✓	✓	✓	–	–	✓	✓	✓	✓
ABG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

☞ **Notice:**
The sensors are connected to the drive controllers via IO link. Current data and limit values can be read and set via the Multi-Ethernet interface.

Circuit diagram: hydraulic



Technical data

(For applications outside these values, please consult us!)

General			
Installation position			Vertical
Line connections	▶ Pressure port		G1 1/4
	▶ Return flow		G1 1/2
Place of installation			Industrial building; stationary application
Ambient temperature range (during operation)		°C	+10 ... +40
Weight (depending on configuration level) without oil		kg	500 ... 550 depending on the equipment
Corrosion Protection class	▶ Tank		Plastic (PP)
	▶ Steel components		Galvanized, painted, powder-coated
	▶ Base		Polymer concrete

Hydraulic			
Maximum operating pressure		bar	315 (see characteristic curves)
Maximum flow		l/min	160 (see characteristic curves)
Maximum oscillating volume		l	50
Maximum tank capacity		l	150
Maximum temperature range hydraulic fluid		°C	+5 ... +70
Hydraulic fluids			Mineral oil HLP according to DIN 51524
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			class 20/18/15 [1]
Pressure filter [2]	▶ Filter rating	µm	10
Filling level monitoring	▶ Early warning		adjustable by means of parameter
	▶ Shut-off		adjustable by means of parameter
Temperature monitoring (hydraulic fluid)	▶ Early warning		adjustable by means of parameter
	▶ Shut-off		adjustable by means of parameter
Pump	▶ Minimum flow	l/min	0
	▶ Hydraulic fluid viscosity range (see data sheet 91485)	mm^2/s	≤ 1000 during cold start 1000 ... 400 warm-up phase 400 ... 16 continuous operation

[1] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components. For the selection of the filters, see www.boschrexroth.com/filter

[2] Directly mounted at the block

☞ **Important notice on hydraulic fluids:**
For further information and data on the use of other hydraulic fluids, please contact us.

Technical data

(For applications outside these values, please consult us!)

Electric			
Voltage (according to IEC 60038)		V	400 ... 500 AC (+10% / -15%)
Frequency		Hz	50/60
Protection class according to DIN EN 60529			IP54
Maximum pre-fuse protective motor switch (on the customer side)	▶ HCS03 - 0070	A	50
	▶ HCS03 - 0100	A	80
	▶ HCS03 - 0150	A	125

Cooling water supply [3]		
Flow	l/min	20
Inlet temperature	°C	15 ... 25
Connections		Quick-release coupling push-in Ø12 mm
Maximum glycol share	%	30
Maximum cooling water pressure	bar	< 10

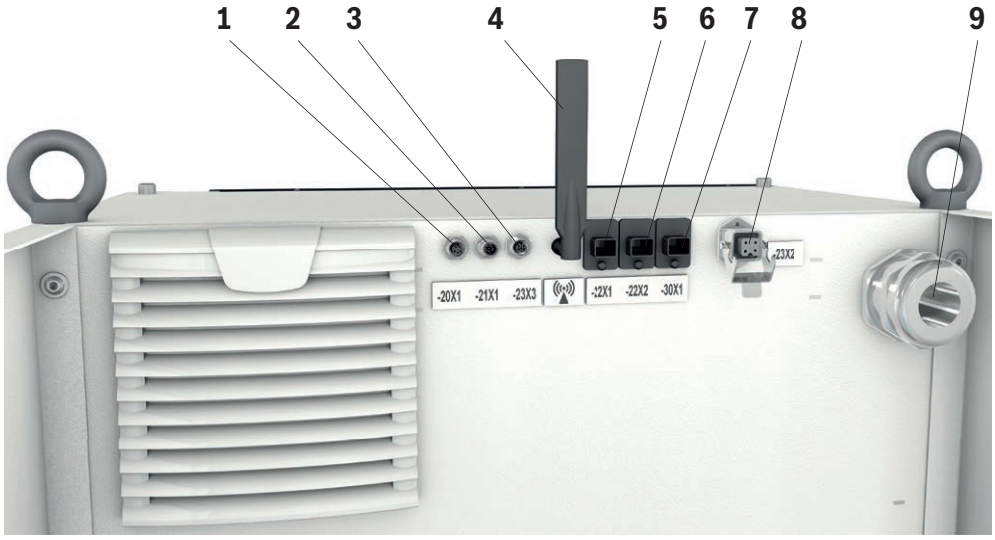
Plate heat exchanger		
Thermal output (for hydraulic fluid and motor)	kW	4; 10
Inlet oil temperature	°C	50
Outlet oil temperature	°C	43
Inlet water temperature	°C	20
Outlet temperature	°C	25

[3] In addition, the R911347582 project planning instructions for IndraDyn S must be observed. Maximum particle size ≤ 100 µm

☞ **Notice:**

- ▶ A cooling water supply must always be connected, the oil temperature can be set by means of parameters.
- ▶ The control cabinet is air-cooled and the electric motor is water-cooled. The hydraulic fluid is cooled by a circulation circuit with a plate heat exchanger.

Electrical connections: Voltage supply, data interfaces



1 20X1: Digital input and output signals
2 21X1: Safe Torque OFF (STO)
3 23X3: Water valve control (optional)
4 Mobile communications antenna
5 22X1: Multi-Ethernet control communication (network output)
6 22X1: Multi-Ethernet control communication (network input)
7 30X1: CytroConnect
8 23X2: Cooling unit control (optional)
9 Cable bushing for power supply

☞ **Notice:**
For further information, see project planning description R911338961.

20X1 (position 1), digital inputs and outputs

(Mating connector)
M12x1; 8-pole
A-coded

Pin	Function	Input DI/output DO
1	Release	**DI**
2	Reset	**DI**
3	GND . Ext.	**DI**
4	Filter alarm	**DO**
5	Oil level alarm	**DO**
6	Temperature alarm	**DO**
7	Ready for operation, no error	**DO**
8	In operation	**DO**

Inputs: 24 VDC (high ≥11 V ; low ≤5 V)
Outputs: max. current 500 mA; total of all currents max. 2000 mA

Electrical connections: Voltage supply

21X1 (position 2), safety technology Safe Torque OFF (STO)

(Connector)
M 12x1; 8-pole
A - coded

Pin	Function
1	Input channel 2
2	0 V power supply
3	Input channel 1
4	+24 V power supply ±20%/0.7 A
5	Output channel 2
6	Output channel 1
7	not used
8	not used

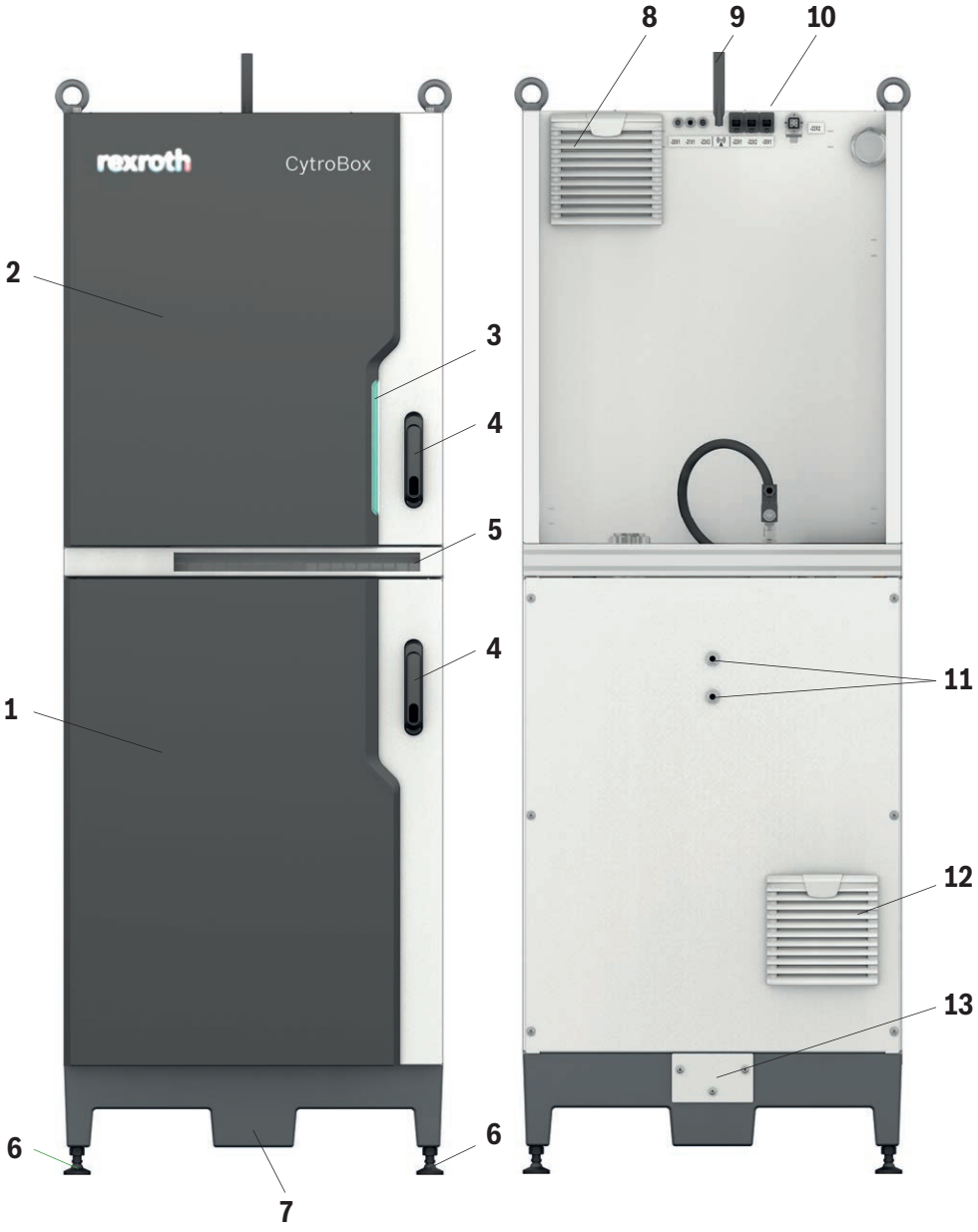
For further information on connection possibilities see R911332633

RJ45 (IP67)	Position	Port	Function
	5	22X1	Multi-Ethernet Control communication
	6	22X2	
	7	30X1	Engineering port

☞ **Notice:**
For RJ45 ports, only use suitable connectors (push-pull) in compliance with IP67, e.g.
R901469479 CONNECTOR IE-PS-V04P-RJ45-FH
R901471844 NETWORK CABLE RJ45/IP47-RJ45 5M

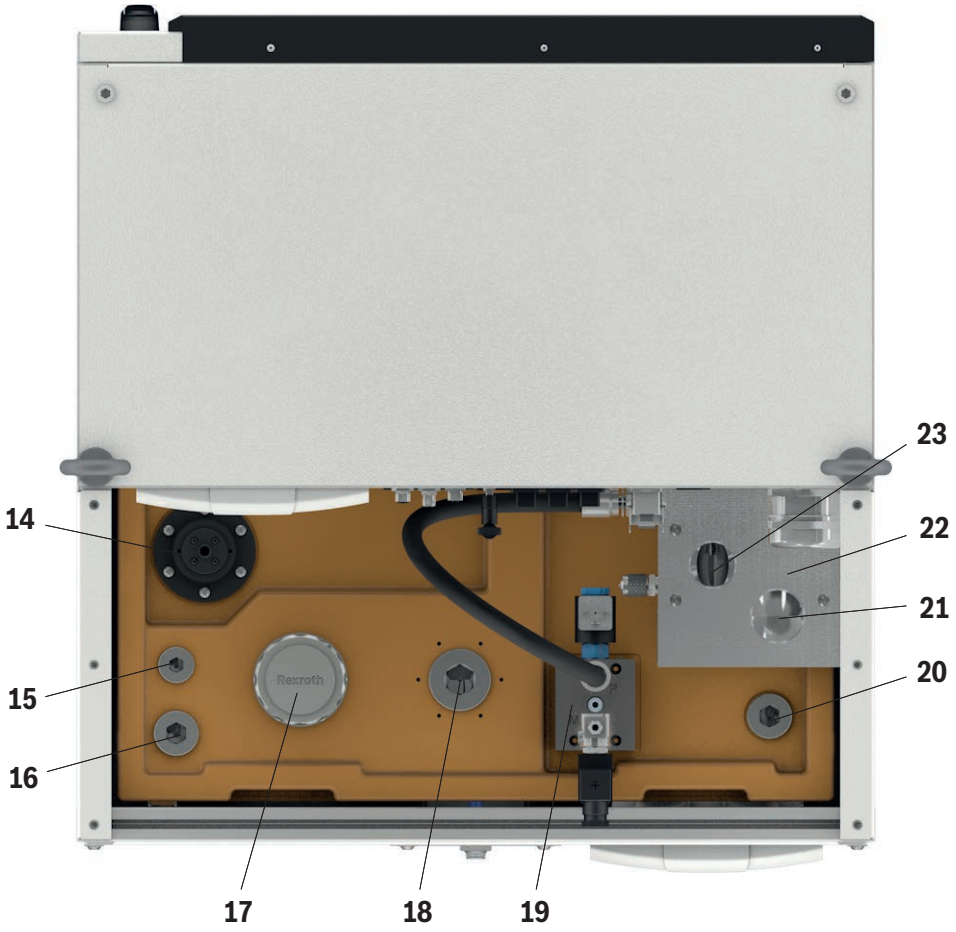
Mains connection voltage in VAC	Power rating	Maximum current in A	PIN	Terminal	Cable cross-section in mm²
400 ... 500	70	63	L1	2	16 ... 25
			L2	4	
			L3	6	
			GNYE	PE	16
	100	100	L1	2	35 ... 50
			L2	4	
			L3	6	
			GNYE	PE	25
	150	125	L1	2	50 ... 70
			L2	4	
			L3	6	
			GNYE	PE	25

Interfaces



1 Hydraulic cabinet
2 Electrical cabinet
3 LED status display
4 Door opener
5 Air inlet at the electrical cabinet
6 Adjustable machine feet
7 Foundation made of polymer concrete
8 Air outlet at the electrical cabinet
9 Mobile antenna
10 Electrical interfaces
11 Cooling water connections (push-in, Ø12 mm)
12 Air inlet at the hydraulic cabinet
13 Drip pan discharge plate

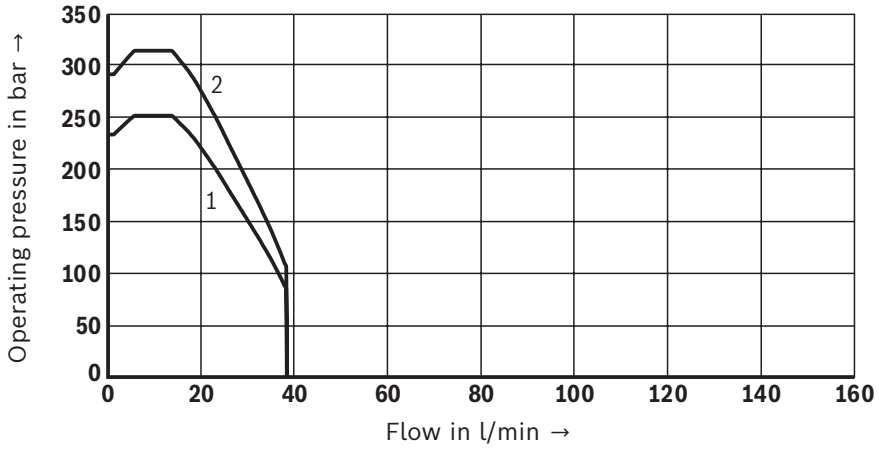
Interfaces



14 Level and temperature sensor
15 Tank spare port (G3/4)
16 Tank spare port (G1)
17 Breathing filter
18 Tank spare port (G1 1/2)
19 Degassing and irrigation module
20 Tank spare port (G3/4)
21 Return flow port T (G1)
22 Connection block; optional adapter for modular IH20 plate systems
23 Pressure port P (G1 1/4)

Characteristic curves

Design "AAA" (A10FZO010-MS2N07-E0BQL-HCS03.1E-W0070)

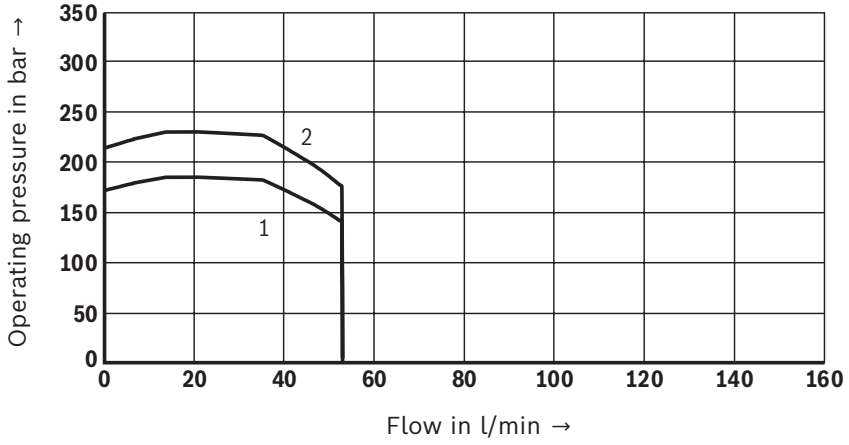


Continuous characteristic curve at

1 40 °C ambient temperature

2 30 °C ambient temperature

Design "BAA" (A10FZO016-MS2N07-E0BQL-HCS03.1E-W0070)

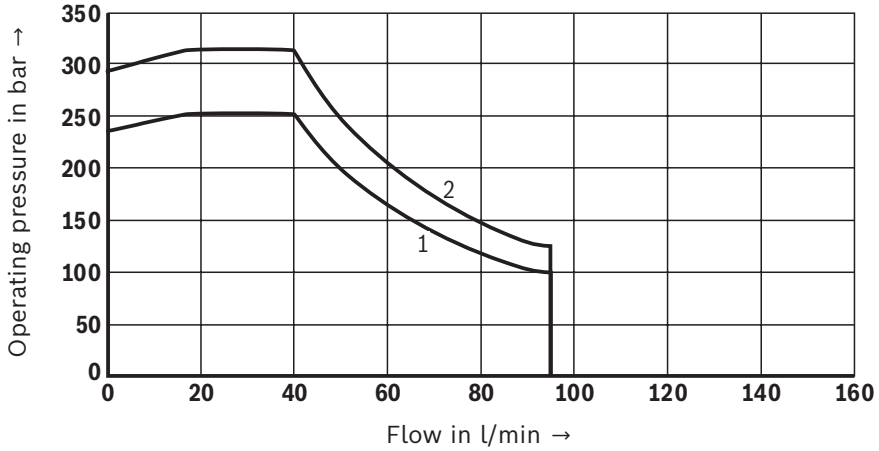


Continuous characteristic curve at

1 40 °C ambient temperature

2 30 °C ambient temperature

Version "CBB" (A10FZO032-MS2N10-F0BHL-HCS03.1E-W0100)



Continuous characteristic curve at

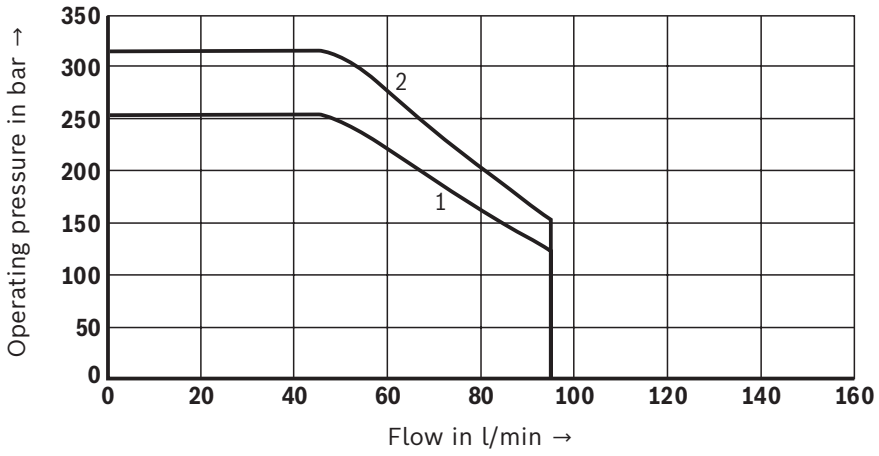
1 40 °C ambient temperature

2 30 °C ambient temperature

☞ **Notice:**
At ambient temperatures > 30 °C, the power characteristic curve is reduced by 2% per Kelvin temperature increase. Maximum ambient temperature 40 °C.

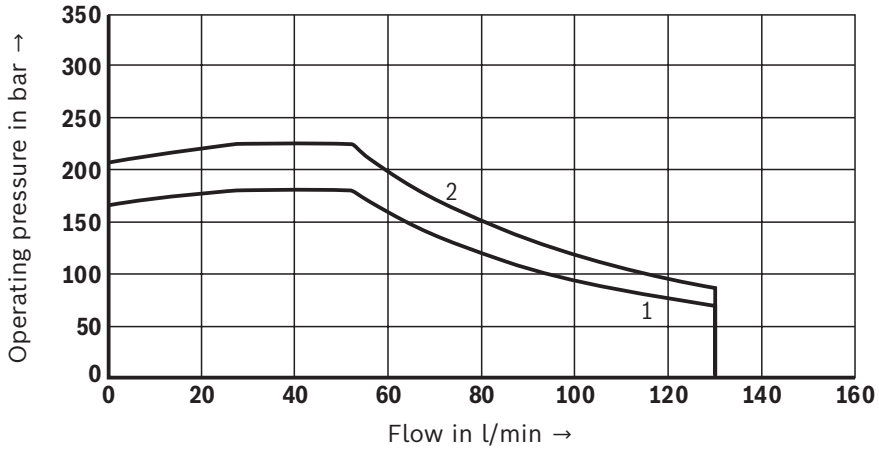
Characteristic curves

Version "CBC" (A10FZO032-MS2N10-F0BHL-HCS03.1E-W0150)



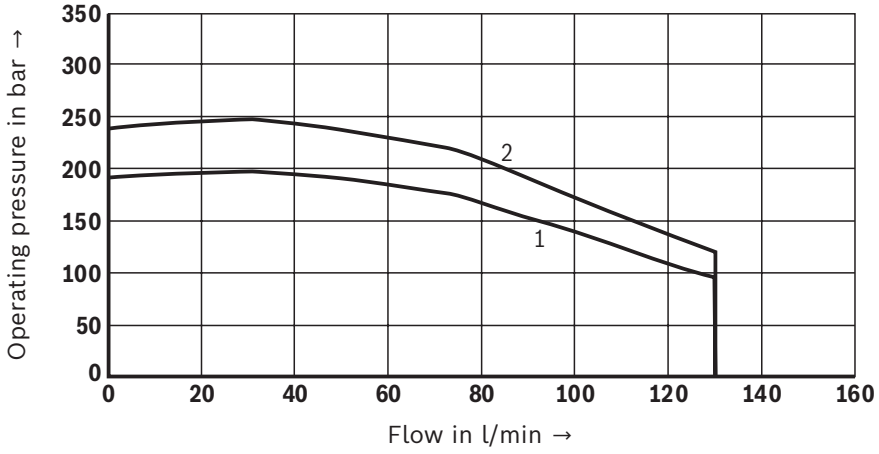
Continuous characteristic curve at
1 40 °C ambient temperature
2 30 °C ambient temperature

Version "DBB" (A10FZO045-MS2N10-F0BHL-HCS03.1E-W0100)



Continuous characteristic curve at
1 40 °C ambient temperature
2 30 °C ambient temperature

Version "DBC" (A10FZO045-MS2N10-F0BHL-HCS03.1E-W0150)

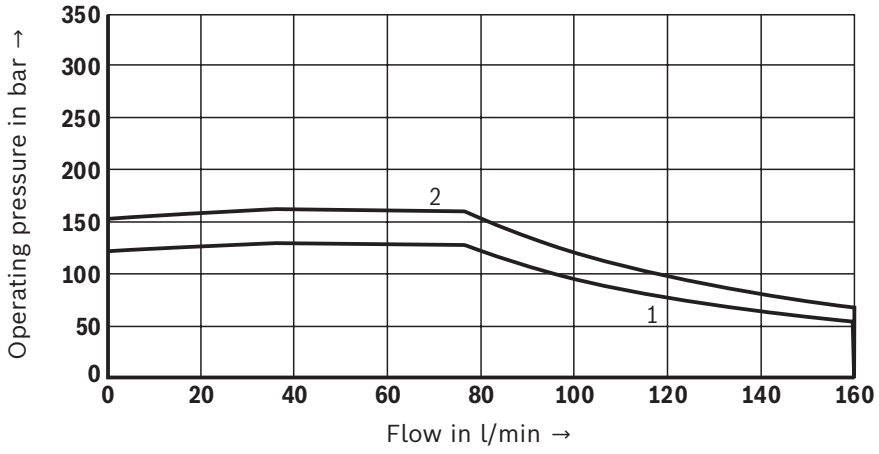


Continuous characteristic curve at
1 40 °C ambient temperature
2 30 °C ambient temperature

☞ **Notice:**
At ambient temperatures > 30 °C, the power characteristic curve is reduced by 2% per Kelvin temperature increase. Maximum ambient temperature 40 °C.

Characteristic curves

Version "EBB" (A10FZO063-MS2N10-F0BHL-HCS03.1E-W0100)

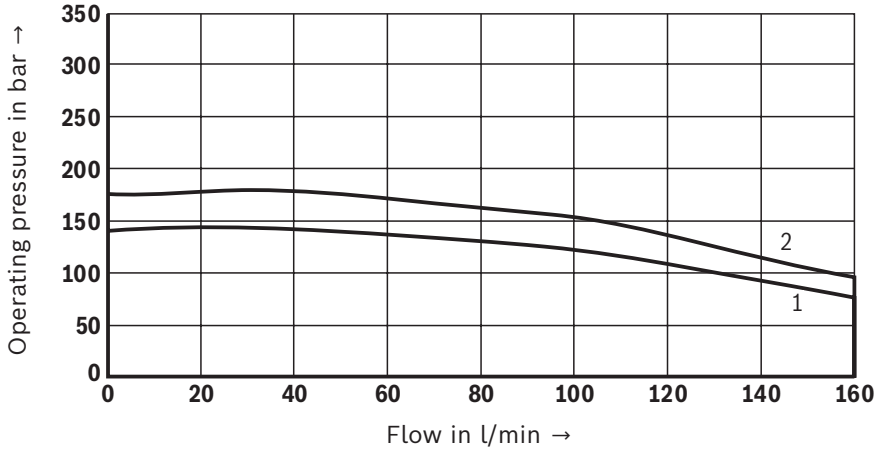


Continuous characteristic curve at

1 40 °C ambient temperature

2 30 °C ambient temperature

Version "EBC" (A10FZO063-MS2N10-F0BHL-HCS03.1E-W0150)



Continuous characteristic curve at

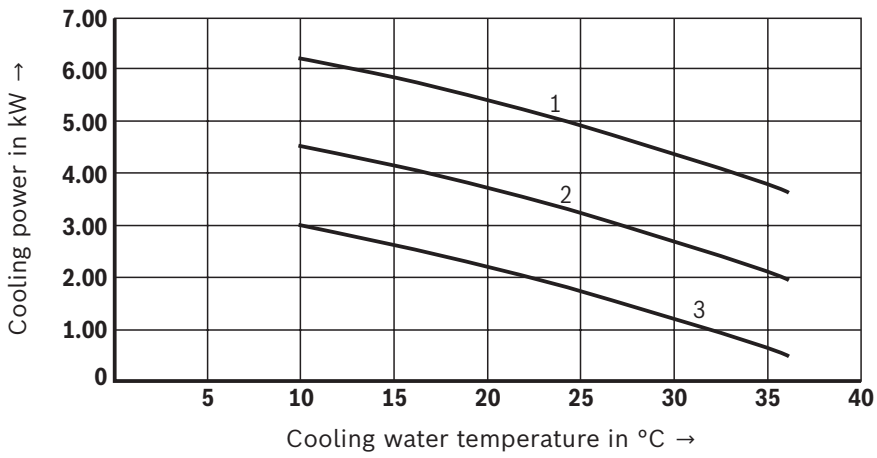
1 40 °C ambient temperature

2 30 °C ambient temperature

☞ **Notice:**
At ambient temperatures > 30 °C, the power characteristic curve is reduced by 2% per Kelvin temperature increase. Maximum ambient temperature 40 °C.

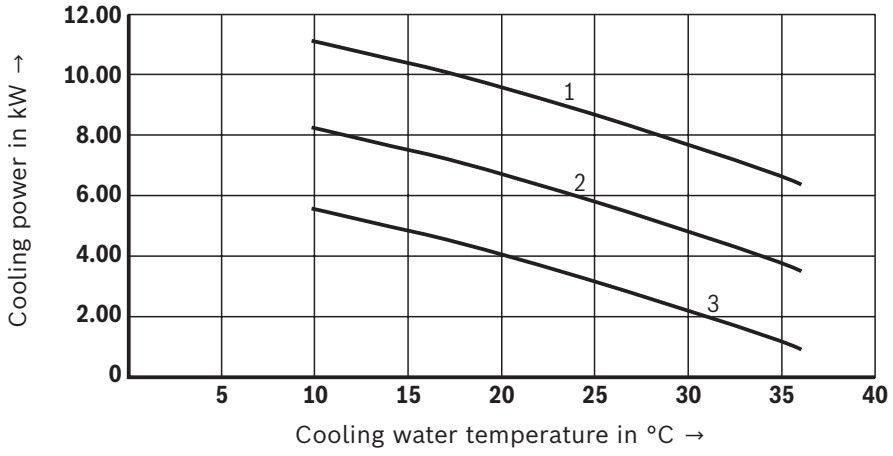
Characteristic curves: Cooler

Cooling power 4 kW



1 60 °C
2 50 °C
3 40 °C

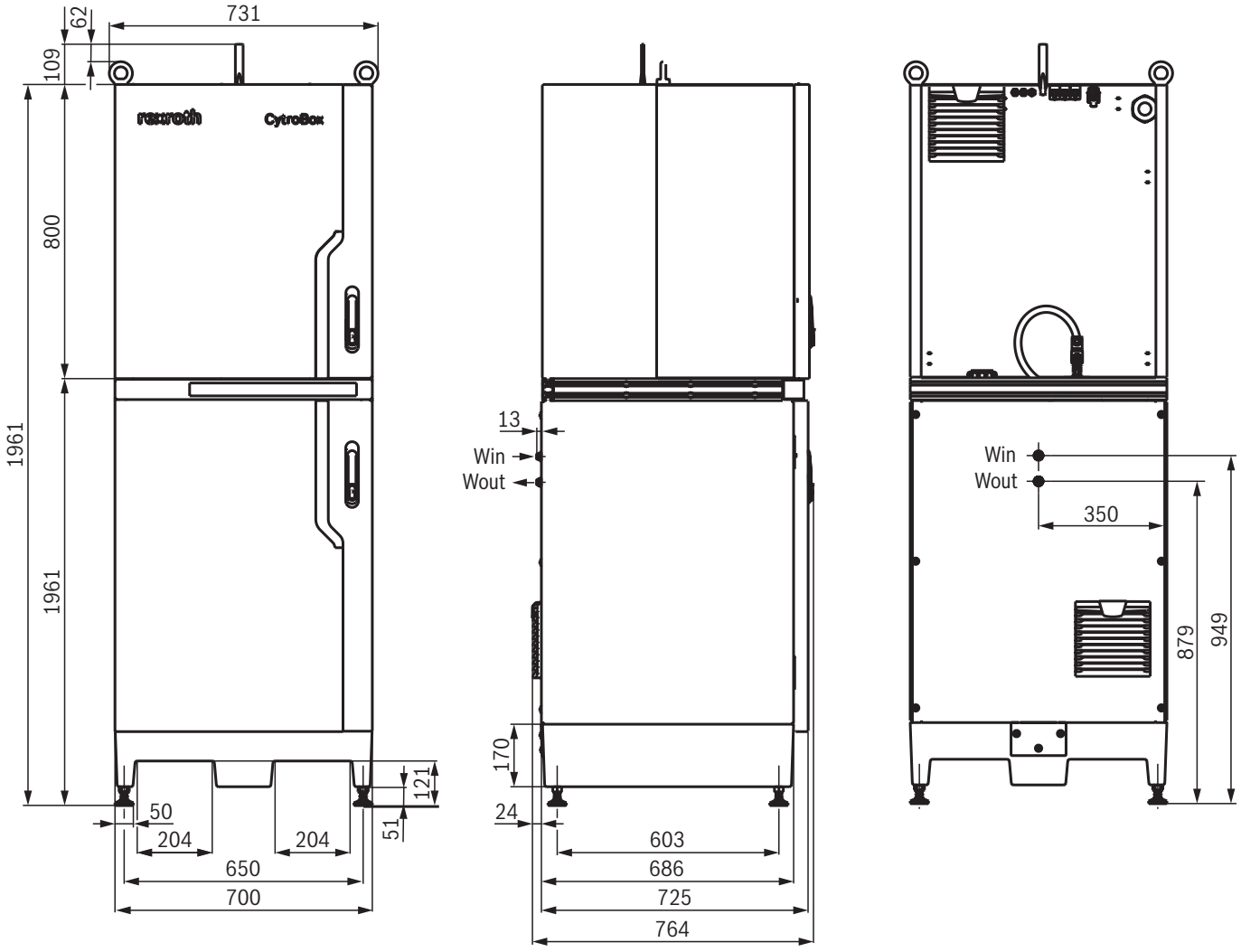
Cooling power 10 kW



1 60 °C
2 50 °C
3 40 °C

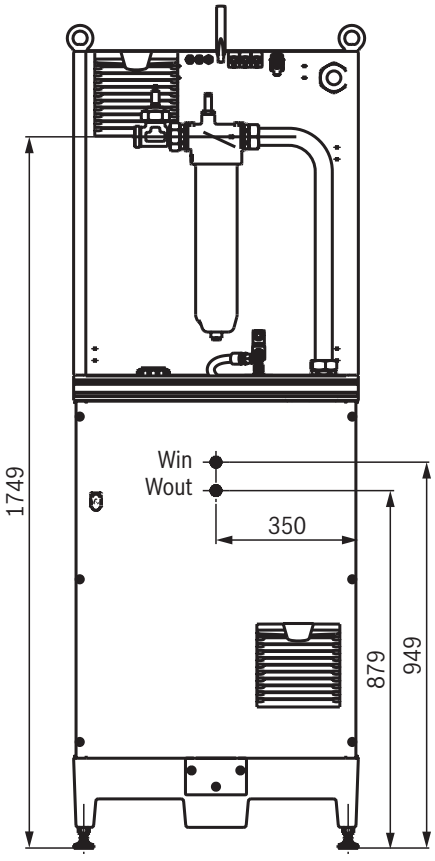
Dimensions

(dimensions in mm)



Return flow filter (optional)

For the CytroBox an optional return flow filter is available as an assembly.
This is mounted on the back of the tank port G1 1/2 and contains a pressure sensor type HM20 for back pressure measurement, see page 19.



Accessories

▶ Electric

20X1, analog / digital input signals

		Comment	scope of delivery
R913002119	CONDUCTOR PLUG 8P 7000-17081-2910500	Connection plug, straight, shielded, 8-pole M12, with free PUR line end, Length: 5 m (8 x 0.25 mm² /Ø7.0 mm) 24 VAC/DC, max. 1.5 A; IP67	1
R913002641	CONDUCTOR PLUG 8P 7000-17081-2911000	Connection plug, straight, shielded, 8-pole M12, with free PUR line end, Length: 10 m (8 x 0.25 mm² /Ø7.0 mm) 24 VAC/DC, max. 1.5 A; IP67	1

21X1, Safe Torque OFF (STO)

		Comment	scope of delivery
R913002121	PLUG-IN CONNECTOR 8P 7000-17121-2910500	Socket, straight, shielded, 8-pole M12, with free PUR line end, Length: 5 m (8 x 0.25 mm² /Ø7.0 mm) 24 VAC/DC, max. 1.5 A; IP67	1
R901467712	PLUG-IN CONNECTOR 7000-17041-3771000	Bush straight with cable support sleeve 8-pole M12, with free PUR line end, Length: 10 m (8 x 0.34 mm² /Ø6.2 mm) 30 VAC/DC, max. 2.0 A; IP65 and IP67 in plugged and screwed condition	1

21X1 / 22X2 / 30X1, Multi-Ethernet interface / CytroConnect [1)]

		Comment	scope of delivery
R901469479	CONNECTION PLUG IE-PS-V04P-RJ45-FH	Connector without cable	1
R901471844	NETWORK CABLE RJ45/IP67-RJ45 5M	Length: 5 m Certificate: CAT 6 A / RoHS	1
R901471845	NETWORK CABLE RJ45/IP67-RJ45 10M	Length: 10 m Certificate: CAT 6 A / RoHS	1
R901492613	NETWORK CABLE RJ45/IP67-RJ45 20M	Length: 20 m Certificate: CAT 6 A / RoHS	1

▶ Mechanical

		Comment	scope of delivery
R901500465	COUPLING SOCKET CEJN567-G1/2-020-105&	Counterpart filling coupling	1
1823391944	FITTING QR2-S-RVA-DA12-DA12	Pneumatic angle for cooling water connection	2
R901527423	INLINE FILTER CB ASSEMBLY RETURN FLOW FILTER	Optional assembly return flow filter incl. HM20 pressure sensor	1

[1)] We recommend using the Multi-Ethernet cable provided by Rexroth (protection class IP67).

Project planning information

- Design
  Sytronix Size - SvP 7020. Only selected converter and motor-pump combinations can be realized.

- Connectivity
  The default 4G interface enables connection of the CytroBox to the CytroConnect Service. This way, additional Cloud-based functions are available. For detailed information, see www.Cytroconnect.com

Further information

▶ Hydraulic fluids on mineral oil basis	Data sheet 90220
▶ Environmentally compatible hydraulic fluids	Data sheet 90221
▶ Rexroth IndraDrive	R911332633
▶ IndraDrive control parts	R911338961
▶ IndraDyn S	R911347582
▶ Selection of the filters	www.boschrexroth.com/filter
▶ Information on available spare parts	www.boschrexroth.com/spc

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