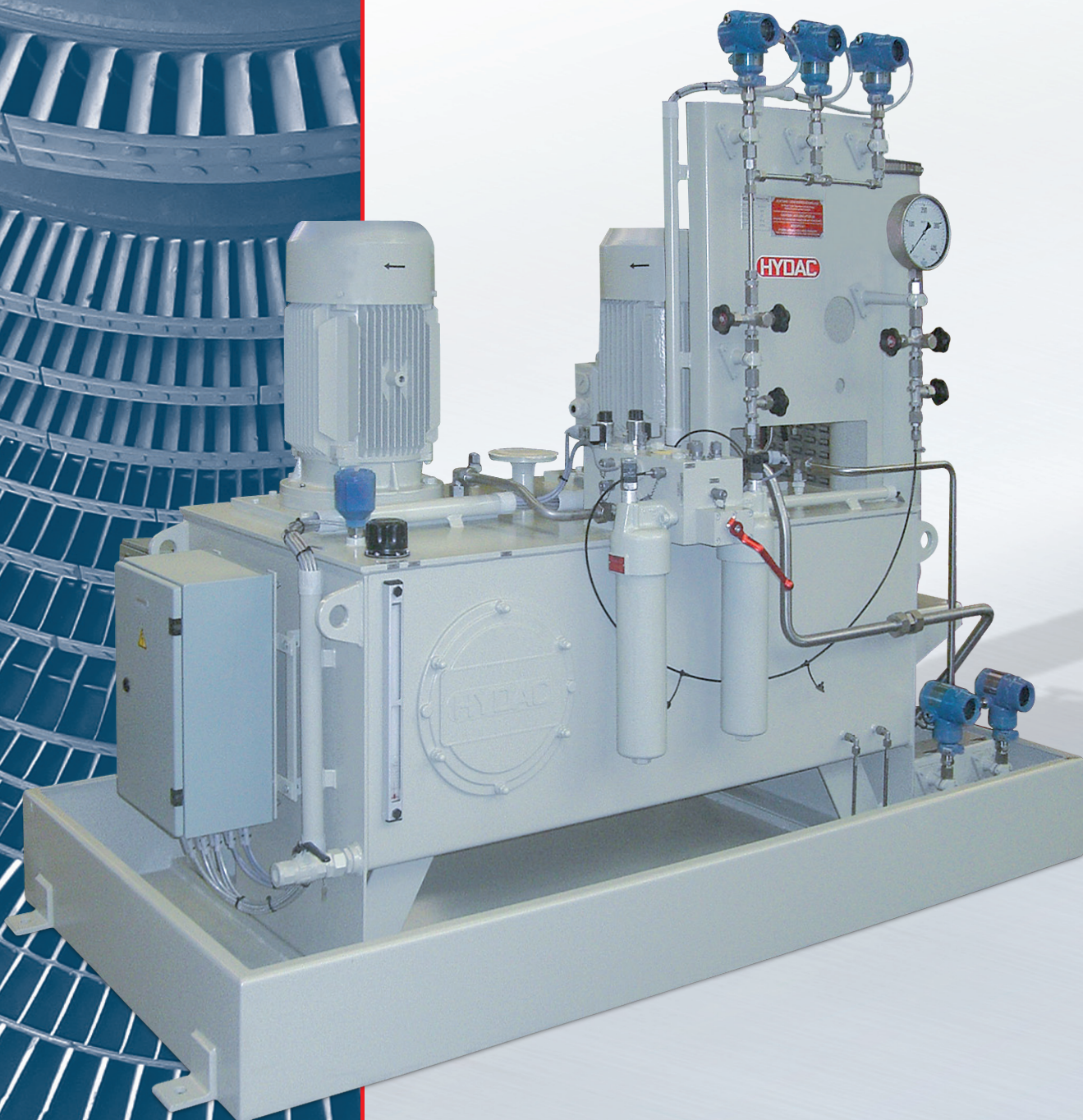


HYDAC

INTERNATIONAL

**Electrohydraulic
Oil Supply Unit
EHC-U**



Electrohydraulic Oil Supply Unit EHC-U

Highly Available Oil Supply by Modularized Redundancy

For the operation of the electrohydraulic actuators of the EHC family oil supply units with reservoir are needed that provide the operating medium with sufficient flow and pressure.

The provision of the oil is done by an electric motor-driven pump with a pressure relief valve.

Deviations between the oil consumption and the flow rate can be compensated by hydraulic accumulators with safety valve.

The necessary cleanliness of the oil is provided by a pressure filter with differential pressure monitor. Level, temperature and pressure of the oil and the contamination of the filter are monitored by sensors and switches.

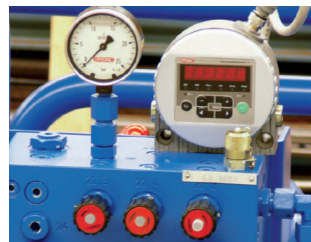
On the one hand, the modular design allows for critical components to be integrated into a redundant setup. In particular, the option to double the motor-pump group provides an increase in the availability of the unit. A redundant layout of sensors and switches can also be selected.

On the other hand, depending on the application requirements, the oil supply unit can optionally be equipped with additional components, for example heating and cooling for an adapted temperature of the oil.

With the optional manual pump the operation of the powered actuators is possible in case of maintenance. If necessary, an oil drip pan with sufficient size to accommodate the entire volume of the reservoir can be added.

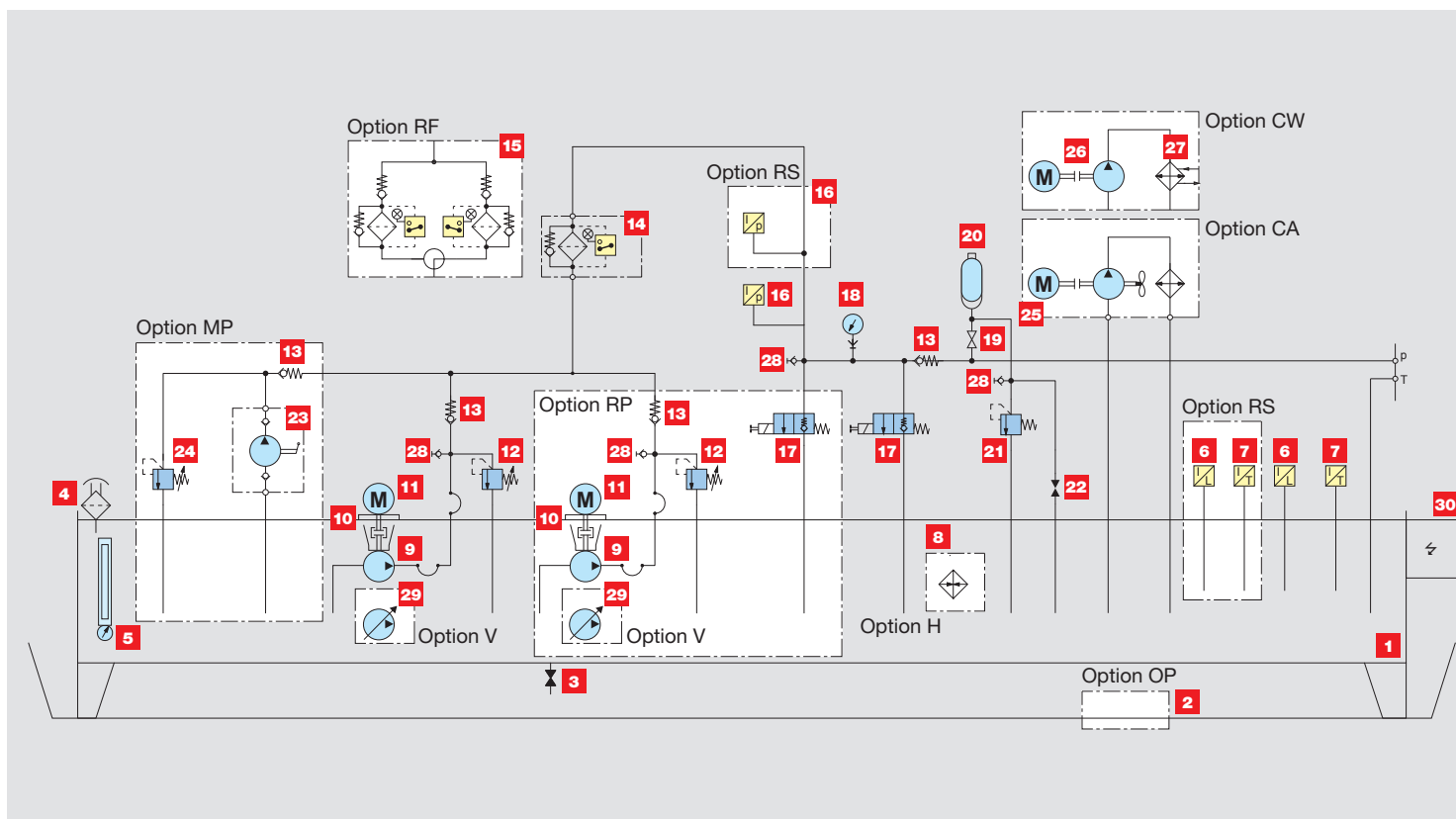
The oil supply unit can be equipped with either constant displacement pumps or pressure-compensated variable displacement pumps.

The components with electrical connection are wired to a terminal box.



The availability of hydraulic systems depends on the condition of the operating oil. EHC-U units can be optionally equipped with **Condition Monitoring Systems** for this purpose.

Circuit Diagram of the Oil Supply Unit EHC-U



Design Details

Nominal values of the preferred types

	Main pump flow rate [dm ³ /min]	Volume of accumulator [dm ³]	Volume of the reservoir [dm ³]	Power of main pump motor [kW]	Power of heat exchanger [kW] at temperature difference 20 K	Motor power of oil-air heat exchanger [kW]	Motor power of oil-water heat exchanger [kW]	Cooling water flow rate [dm ³ /min]	Power of heater [kW]	Nitrogen prefilling pressure P ₀ [bar]	Minimal operating pressure P ₁ [bar]	Volume of accumulator (P _{EP2} - P ₁) [dm ³] for spare strokes	Switch-on value for pump 2 P _{EP2} [bar]	Switch-on value for pump 1 P _{EP1} [bar]	Charging volume pump 1 (P ₂ - P _{EP1}) [dm ³]	Maximal operating pressure P ₂ [bar] Switch-off value for the main pumps	Exchange volume of accumulators (P ₂ - P ₁) [dm ³]
EHC-U-X-2.2-32-63	2.2	32	63	1.1	1.7	0.37	0.18	14	0.29	100	120	5.75	160	170	2.95	210	9.7
EHC-U-X-5.1-32-100	5.1	32	100	2.2	1.7	0.37	0.18	14	0.5	100	120	5.75	160	170	2.95	210	9.7
EHC-U-X-8.6-32-160	8.6	32	160	4	1.7	0.37	0.18	14	0.66	100	120	5.75	160	170	2.95	210	9.7
EHC-U-X-15.7-50-250	15.7	50	250	7.5	2.2	0.37	0.18	14	1.0	100	120	8.99	160	170	4.61	210	15.1
EHC-U-X-23-100-400	23	100	400	11	3.0	0.37	0.75	28	1.45	100	120	17.96	160	170	9.22	210	30.3
EHC-U-X-35-150-400	35	150	400	15	4.6	0.37	0.75	28	2.0	100	120	26.95	160	170	13.82	210	45.4
EHC-U-X-45-200-630	45	200	630	18.5	6	0.37	0.75	28	3.0	100	120	35.93	160	170	18.43	210	60.6

- | | | |
|---|-------------------------------------|--|
| 1 Reservoir | 11 Electric motor | 21 Safety valve DB-CE |
| 2 Drip pan | 12 Pressure relief valve DB | 22 Drain ball valve KH |
| 3 Drain ball valve KHNVS | 13 Check valve RV | 23 Manual pump |
| 4 Filling and breathing filter ELF | 14 Pressure Filter DF | 24 Pressure relief valve DB |
| 5 Level indicator FSA | 15 Double pressure filter DF | 25 Oil-air heat exchanger SCA |
| 6 Level sensor ENS | 16 Pressure sensor HDA | 26 Motor-pump group MFZP |
| 7 Temperature sensor ENS | 17 Solenoid valve WSM | 27 Oil-water heat exchanger HEX |
| 8 Oil heater | 18 Manometer | 28 Test point |
| 9 Oil pump PGE | 19 Locking ball valve KH | 29 Pump PPV |
| 10 Pump carrier with coupling | 20 Bladder accumulator SB330 | 30 Terminal box |

Note:

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

The picture shows a photo of an EHC-U unit with additional special equipment.

Design Criteria

The EHC-U series covers an operating pressure range of up to 210 bar and is available in steps up to a flow rate of 45 dm³/min.

The decision for the type of the pump, for constant or variable displacement with pressure control, depends on the application.

In case of closed loop control, the constant pressure improves the control quality. Examples of this are actuators for turbine control valves.

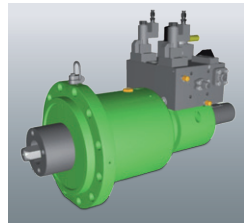
For other applications, such as bypass stations for steam boilers, constant displacement pumps are usually sufficient. They are used for intermittent charging of accumulators.

The main pump charges the accumulator up to the operating pressure. The actuators consume the pressu-

risied oil and when the pressure drops below the pump switch-on value, the pump charges the accumulator again up to the operating pressure.

The second pump takes over if the pressure drops below its own switch-on value.

The remaining oil volume in the accumulator between this second switch-on value and the minimum operating pressure can be used for spare strokes of the actuators.



The design details of the preferred types cover the requirements of the electro-hydraulic actuator series EHC-A.

Applications of the EHC-U unit with extended requirements can be realised on request.

Technical Data

Nominal pressure	210 bar
Operating fluids	ISO VG 32, ISO VG 46, mineral oil to DIN 51524, optionally HFD-U
Ambient temperature condition	Standard +5 °C to +40 °C, optionally others
Motor / Control voltage	400 V, 3-ph., 50 Hz / 24 V DC, optionally others
Protection class	According IP54 (DIN EN 60 529), optionally others

Model Code

EHC-U - X - XXX - XXX - XXX - XX

Electro Hydraulic Control Unit _____

Pump type _____

C = Pump with constant displacement
V = Pump with variable displacement

Nominal pump flow rate [dm³/min] (at 1,500 U/min) _____

Nominal accumulator volume [dm³] _____

Nominal reservoir volume [dm³] _____

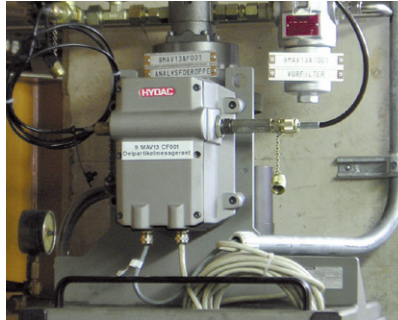
Options _____

H = Oil heater
CA = Oil-air heat exchanger
CW = Oil-water heat exchanger
RP = Redundant pump
RF = Redundant filter
RS = Redundant sensors
MP = Manual pump
OP = Oil drip pan
CM = Condition Monitoring System

System Expertise with First-Rate Service Network: Local Availability – Worldwide.

User Accessories

HYDAC offers a comprehensive and proven range of condition monitoring products, components and systems designed for fluid conditioning and monitoring as well as for technical cleanliness of components.



Condition Monitoring

To monitor the essential fluid parameters in turbine hydraulics online, HYDAC has developed an extensive fluid monitoring range which makes a significant contribution to the safe operation of both the turbine hydraulics and lubrication.

Contamination Sensor CS 2000



FluidAqua Mobil FAM

On lubrication oil systems of steam turbines, particularly high levels of unwelcome process steam and water enter the oil circuit.

This results in substantially increased fluid ageing and limited lubrication.

By using FAM dewatering and filtration units continuously during system operation, integrated conditioning of the lubrication media is assured.



Ion eXchange Unit IXU

When hydraulic fluids based on phosphate esters are used, it is essential to condition the fluids (also during system operation).

HYDAC offers an extensive range of ionexchange conditioning products (IXU).



NEW

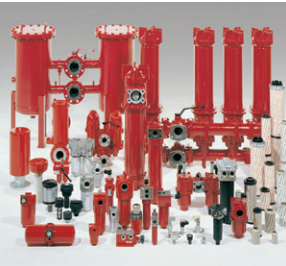
Stat-Free® Filter Elements

The operation of modern power plant hydraulics and lubrication systems with zinc-free fluids gives rise to risks of electrostatic charging of the oils (especially via the filter elements). Uncontrollable voltage flashovers, formation of sludge and varnish as well as rapid oil ageing are the result.

HYDAC Stat-Free® filter element technology prevents these unwelcome side-effects and increases the safety of the system for the operator.



Accumulator Technology 30,000



Filtration Technology 70,000



Process Technology 77,000



Filter Systems 79,000



Compact-Hydraulik 53,000



Accessories 61,000



Electronics 180,000



Cooling Systems 5,700

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