The frequency-controlled continuous-operation unit for machine tools – Compact Power Unit CO3
Your competent partner for innovative hydraulic solutions in machine tools

The “heart” of your machine tools

Compact Power Unit CO3

The frequency-controlled Compact Power Unit CO3 forms the “heart” for the hydraulics in your machine tools. The frequency-controlled, continuous-rated double pump of the CO3 reacts to every demand spike and compensates immediately. In addition, efficient air flow in the power unit housing guarantees optimal motor and oil cooling. All in all, this ensures excellent machine availability.

The Compact Power Units CO3 are constantly in use – literally, because they are designed for continuous operation S1. At the same time, they require lower drive power than conventional power units and in addition take care of oil conditioning and cooling.

The new stacking system HL, as complete control logic for the auxiliary functions in machine tools, can be used to extend the functions of the power unit.

The perfect supply solution – HL stacking system

see brochure no. 5.319 – HL stacking system

Power consumption of various power unit concepts compared

HYDAC double-pump set-up compared with single-pump set-up with bypass orifice at 1.5 KW

Supply to cooler via pressurised orifice bypass
(competition)

Supply to cooler via almost unpressurized bypass flow (CO3 double pump)

Conventional power unit

Power unit with pressure-controlled variable displacement pump

Frequency-controlled CO3 power unit

Supply to cooler via almost unpressurized bypass flow (CO3 double pump)

Energy efficiency

Suitable for continuous operation

Quiet running (optional)

Plug and play

Reliability

High level of integration
Always in action for maximum productivity

Supply, cooling, oil conditioning in one unit

- Reduced drive power due to frequency-controlled motor
- Highly dynamic adjustment to application-based load changes
- Optimum fluid power supply via requirements-based closed loop pressure control at each operating point
- Greater cooling capacity than conventional power packs with bypass oil cooling
- Centralised cooling of oil, motor and frequency inverter via full integration of all components in innovative housing and air flow
- Constant motor cooling even at low drive speeds thanks to forced ventilation

- Designed for operating type S1
- Very efficient cooling with low energy requirement
- Permanent oil cooling and conditioning thanks to double pump (bypass-filtration optional)

- Complete plastic composite encapsulation and low frequency running characteristics in stand-by operation make the power pack barely perceptible
- Low noise pump optional

- Simple and time-saving commissioning due to pre-defined electrical and hydraulic connections
- International connectable

- Components have been service-life tested, proving themselves over many years provide high availability

- TM design (tuned monolithic design) and the consistent use of modern materials in combination enable a low weight and extremely high mechanical and thermal stability

Innovative air flow for simultaneous cooling of motor, oil and frequency inverter
**CO3 Performance**

**Q/P curve with 1.5 kW motor**
Measured with $\nu = 33$ mm$^2$/s and oil temperature 40°C

**Q/P curve with 2.2 kW motor**
Measured with $\nu = 33$ mm$^2$/s and oil temperature 40°C
## Specifications

### Specifications (standard layout)

<table>
<thead>
<tr>
<th></th>
<th>1Ph 1.5 kW</th>
<th>1Ph 2.2 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency inverter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage:</td>
<td>200–240 V</td>
<td>200–240 V</td>
</tr>
<tr>
<td>Mains frequency:</td>
<td>50/60 Hz</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Rated current of device:</td>
<td>9.0 A</td>
<td>9.0 A</td>
</tr>
<tr>
<td><strong>Motor-pump unit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated power:</td>
<td>1.5 kW</td>
<td>2.2 kW</td>
</tr>
<tr>
<td>Permissible flow rate, continuous operation:</td>
<td>10 l/min</td>
<td>7 l/min</td>
</tr>
<tr>
<td>Max. flow rate:</td>
<td>18 l/min</td>
<td>18 l/min</td>
</tr>
<tr>
<td>Operating pressure:</td>
<td>max. 50 bar</td>
<td>max. 70 bar see Q-P graph</td>
</tr>
<tr>
<td>Relieving pressure:</td>
<td>55 bar</td>
<td>75 bar</td>
</tr>
<tr>
<td>Tank filling volume:</td>
<td>approx. 17 l / (approx. 30 l for oil tank made from aluminium, A30)</td>
<td></td>
</tr>
<tr>
<td>Tank discharge volume:</td>
<td>approx. 10 l / (approx. 23 l for oil tank made from aluminium, A30)</td>
<td></td>
</tr>
<tr>
<td>Operating fluid:</td>
<td>Mineral oil to DIN 51524, Part 2</td>
<td></td>
</tr>
<tr>
<td>Media operating temp. range:</td>
<td>-20 to +80 °C</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature range:</td>
<td>-20 to +35 °C</td>
<td></td>
</tr>
<tr>
<td>Viscosity range:</td>
<td>10 to max. 380 [mm²/s]</td>
<td></td>
</tr>
<tr>
<td>Filtration:</td>
<td>To ISO 4406 Class 21/19/16 or better</td>
<td></td>
</tr>
<tr>
<td>Protection class:</td>
<td>IP54 to DIN EN 60034-5</td>
<td></td>
</tr>
<tr>
<td>Total weight with plastic oil tank:</td>
<td>Without oil filling: approx. 29 kg</td>
<td>With oil filling: approx. 46 kg</td>
</tr>
<tr>
<td>Total weight with aluminium oil tank:</td>
<td>Without oil filling: approx. 32 kg</td>
<td>With oil filling: approx. 59 kg</td>
</tr>
</tbody>
</table>

All data is subject to technical modifications! **Other layouts on request.**
The basic power unit includes:
- Double pump (standard)
- Hydraulic manifold with fixed-setting pressure relief valve and check valve
- Temperature switch, motor
- Temperature sensor, oil
- Frequency inverter
- Pressure transmitter
- Tank with oil level gauge
- Screw type cable gland

Specific examples:
Part no. 3956305.
CO3FULK17-A-18.0SN-50-63-1.5-BA-F55
Part no. 3956306.
CO3FULK17-A-18.0SN-70-63-2.2-BA-F75
CO3 data

DIMENSIONS

Installation requirements

NOTICE: The power unit’s cooling strategy is based on unobstructed air flow through the housing. It is therefore vital to provide air inlet and outlet openings if the power pack is installed inside an enclosure. The positions and dimensions of the required opening can be taken from the above sketch.

- Stationary industrial environment (Category C3)
- Provide adequate ventilation, particularly on the inlet air and the outlet air side
- Set up with dust protection. For a high-dust environment, we recommend using an easy-to-remove dust protection filter – ideally with three layers, or alternatively with four layers for particularly high dust load (consider reduced cooling capacity).
- Protect power unit from wet, spray water, cooling lubricants and high humidity (RH above 85 %)
## CO3 equipment options

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Part No.</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic equipment with plastic oil tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure gauge</td>
<td>5; 4047450 (incl. screwed fittings)</td>
<td></td>
</tr>
<tr>
<td>Dust protection filter (pre-ventilation installation)</td>
<td>7; 3976047 (3-layered); 3831117 (4-layered)</td>
<td></td>
</tr>
<tr>
<td>Pivotal oil draining hose</td>
<td>4; 3866411</td>
<td></td>
</tr>
<tr>
<td>Oil level gauge with electrical monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bypass filter Stat-X (in tank)</td>
<td>9; Stat-X replacement filter element, 20µm; 3958361</td>
<td></td>
</tr>
<tr>
<td>Oil tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part no.: 4100572 incl. oil level gauge, 1 x seal, 1 x oil draining screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil tray</td>
<td>8; 4047957</td>
<td></td>
</tr>
<tr>
<td>Vibration dampers GUA + GUB</td>
<td>8; 4047445 type GUA; 4047446 type GUB</td>
<td></td>
</tr>
<tr>
<td>Fully equipped with plastic oil tank (without oil tray)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fully equipped with aluminium oil tank (without oil tray)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Items 4 and 9 cannot be retrofitted – only possible as original equipment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Model code**

**Example:** CO3FUL - F20B - K17 - A - 18.0SN - 50 - 63 - 1,5 - BA-F55 + M1/MA1 + MLF4 + GUA + AS + WA

- **CO3FUL**
  - Power unit with frequency inverted, oil-air-cooled
- **F20C:** bypass filter 20 μm + electrical clogging sensor
- **F20B:** bypass filter 20 μm + visual clogging indicator
- **K17:** plastic oil tank, filling volume 17 litres
- **A30:** aluminium tank, filling volume 30 litres (75 mm additional height)

**Options**

- **A:** optical filling level gauge FSA/
- **K:** electrical filling level monitor FSK

- **18.0:** max. flow rate in l/min (+/-10 %)

- **SN:** standard pump
- **LN:** low-noise pump

- **50:** regulated pressure setting in bar at 1.5 kW
- **70:** regulated pressure setting in bar at 2.2 kW
  (other regulated pressure settings on request)

- **63:** 1Ph-230 V connection, frequency inverter
- **1,5:** motor power in kW
- **2,2:** motor power in kW

- **BA** = manifold type A (see hydraulic circuit diagram)
  (other manifold types or hydraulic circuits on request)

- **F55** = fixed-setting pressure relief valve set at 55 bar
- **F75** = fixed-setting pressure relief valve set at 75 bar
  (generally 5 bar above pressure setting)

- **M1/MA1:** with pressure gauge (scale 100 bar) at connection M1
- **M1/MP1:** with pressure gauge (scale 10 Mpa) at connection M1

- **No specification:** without dust protection filter

- **MLF3:** with dust protection filter (3-layered, preferred)
- **MLF4:** with dust protection filter (4-layered, high-dust environment, considerably reduced cooling capacity)

- **No specification:** without vibration damper

- **GUA:** with vibration damper, ext. thread M8x23
- **GUB:** with vibration damper, int. thread M8x7

- **No specification:** with screw plug G½"

- **AS:** with pivotable oil draining hose

- **No specification:** without oil tray

- **WA:** with oil tray (33 ltr.)

**Circuit diagram (manifold type A)**
Connection and equipment data

**Designations**

- Check valve
- Pressure relief valve
- Pressure transmitter
- Double pump
- Load hook Di = 30 mm

![Diagram with labeled parts:](image)

**Notices and operating conditions**

- Ensure that the unit is only used for its designated purpose. Do not use the power unit for anything other than its intended purpose!
- In all product life phases, the corresponding work on the power unit must only be performed by authorised specialist personnel.
- Only perform work while the power pack is in a de-energised and depressurised state.
- For the bypass filtration option, only the STAT-X filter elements described in this brochure under equipment options may be used, to prevent electrostatic charging.
- CO3 power units are exclusively intended for use in stationary operation and industrial applications.
- Ensure adequate continuous ventilation (inlet air and outlet air) in the area of the axial fan and the oil/air heat exchanger.
- Power unit to be set up in an environment with low dust and corrosion conditions.
- Power unit to be operated only within the capacity limits described in this brochure.
- For a high-dust environment, use dust protection filter.
- Operation only with permitted operating media.
- Connection and power supply only in conjunction with permissible single-phase networks with equipotential bonding within the specified limits.
- HYDAC operation instructions (drawing no. 4153997) applies in addition.