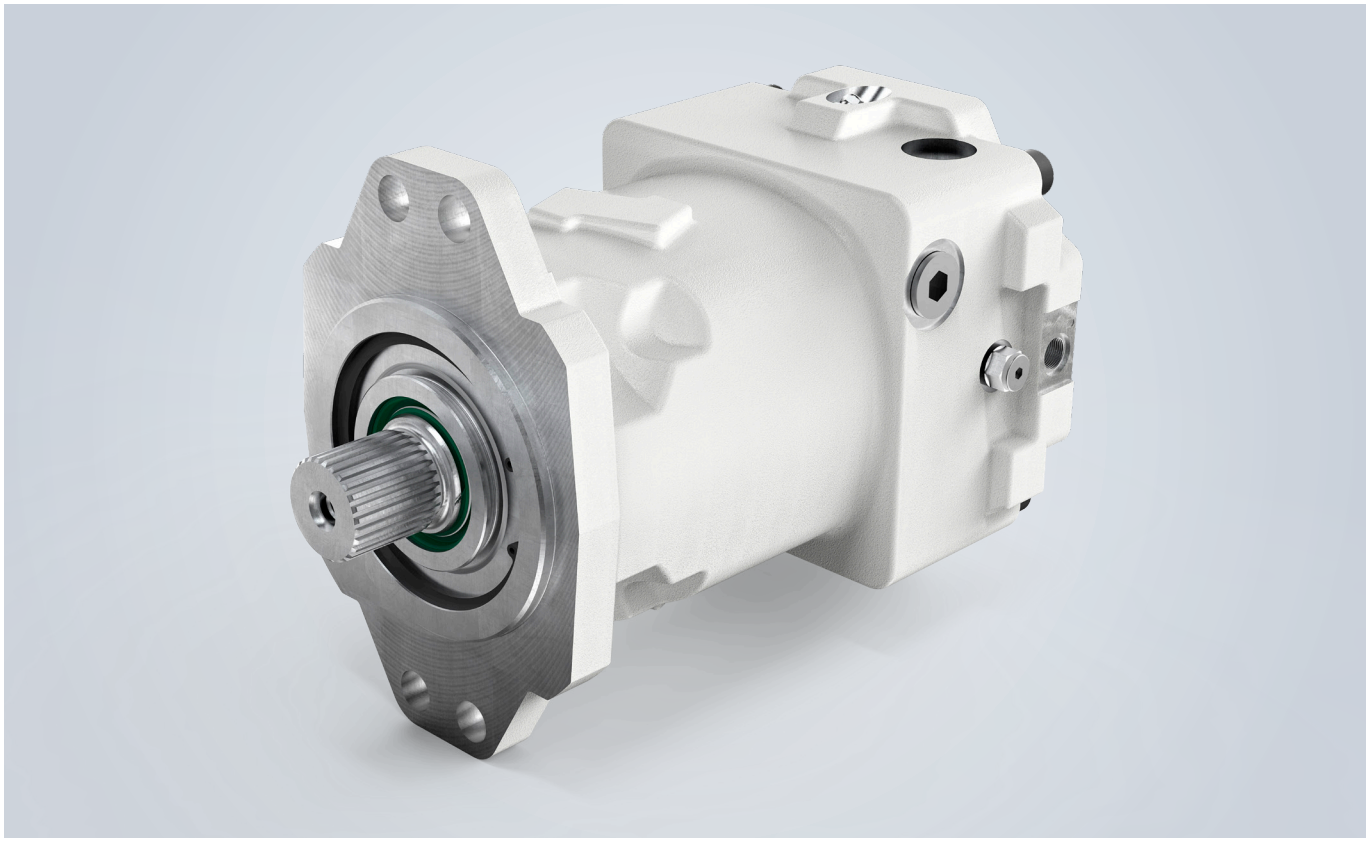
Data sheet

Axial piston motor DMFA



The Liebherr axial piston motors in the DMFA series are designed as swashplates for open and closed circuits and were specially developed for use in mobile machinery in harsh environments.

The inverse drive with a swivel angle of 22° is very efficient and has a very high power density, making it ideal for applications that require a constant displacement to hydraulic motor.

The flange-mounted constant motors are available in nominal size 355. The nominal pressure of the units is 5,802 psi (400 bar) and the maximum pressure is 6,527 psi (450 bar) absolute.

The optional through-drive can be used for mounting a brake or tandem motor.

Speed sensor or preparation for speed sensor available on request.

Valid for:
DMFA 355

Features:
Axial piston motor (constant)
D series
Open and closed circuit

Pressure range:
Nominal pressure p_N = 5,802 psi (400 bar)
Maximum pressure p_{max} = 6,527 psi (450 bar)

Document identification:

ID number:	11444561
Date of issue:	03/2023
Authors:	Liebherr - Abteilung VH13
Version:	1.2

LIEBHERR

Table of contents

1 Type code

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

1. Motor type

D series / motor / constant (fixed) / flanged	**DMFA**

2. Type of circuit

Open	■
Closed	■

3. Nominal size (NS)

	355

4. Residual displacement $V_{g\ min}$

Enter value in cm^3/rev	■	

5. Activation / control type

No activation/control	**00**

6. Design

	1

7. Direction of rotation (viewed towards the drive shaft)

alternating	**W**

8. Mounting flange

ISO 3019-2		□	31
Mounting flange Customised design	Ø200 (four-hole mounting flange). Enter "Ø200" in the order text	■	51

9. Shaft end

Splined shaft	DIN 5480	■	1
	ANSI B92.1a	□	2
Parallel key shaft	DIN 6885 (pattern A)	■	3

10. Connections

ISO 6162-2 / SAE J518-2, high-pressure connection 6000 psi	**A**

11. Accessories

Without add-on parts	■	0
With multi-disk brake	□	L

12. Through drive

No through drive	□	0
Special through-drive	■	K

1 Type code

	355	
13. Valves		
Flushing, open circuit with high-pressure limitation	■	MH
Flushing, closed circuit	■	SO
14. Sensors		
Without sensor	■	0
With speed sensor	■	D

■ = Available
□ = On request
- = Not available

Note
Contact addresses for queries are provided on the back of this document.

2 Technical data

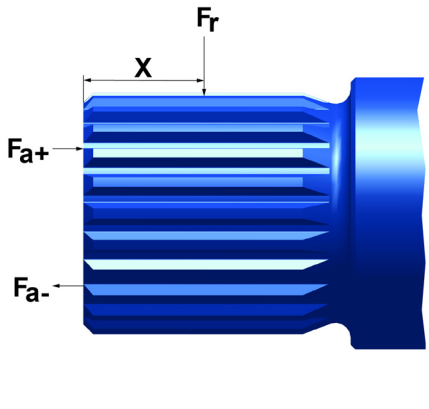
2.1 Table of values

Nominal size			355
Displacement	$V_{g\ max}$	cm^3	355.6
	$V_{g\ min}$	cm^3	-
Displacement flow at n_{max}	qv_{max}	l/min	853
Max. speed at $V_{g\ max}$ and 8 bar on the low pressure side and Δp = 380 bar	n_{max}	rpm	2400
Output torque at $V_{g\ max}$ and Δp = 380 bar	M_{max}	Nm	2149
Output power at qv_{max} and Δp = 380 bar	p_{max}	kW	541
Driving gear moment of inertia	J_{TW}	kgm^2	0.13
Weight (approx.)	m	kg	140

Note
The stated values (maximum values) are theoretical values, rounded, and without efficiencies or tolerances.

2.1.1 Maximum radial and axial load of the driving shaft

Note
Theoretical rounded values, not taking into account efficiency, tolerances, contamination of the hydraulic fluid or the deflection of the driving shaft.



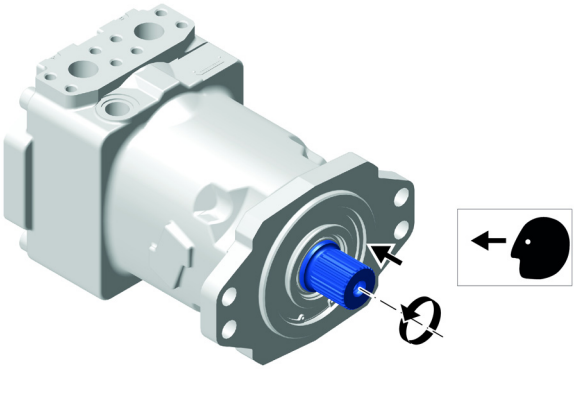
Nominal size			355
Max. radial force	$F_{r\ max}$	N	Values upon request
Max. axial force	$F_{a\pm\ max}$	N	

2 Technical data

Note
The radial and axial loads depend on the load cycle, e.g. pressure, rpm and direction of force.
If planning a belt drive or continuous axial and/or radial forces are expected, please contact Liebherr.

2.2 Direction of rotation

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

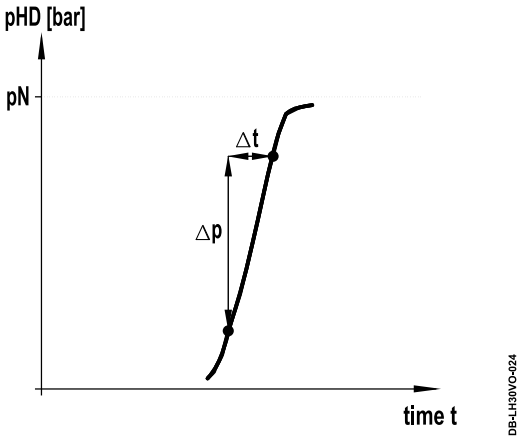


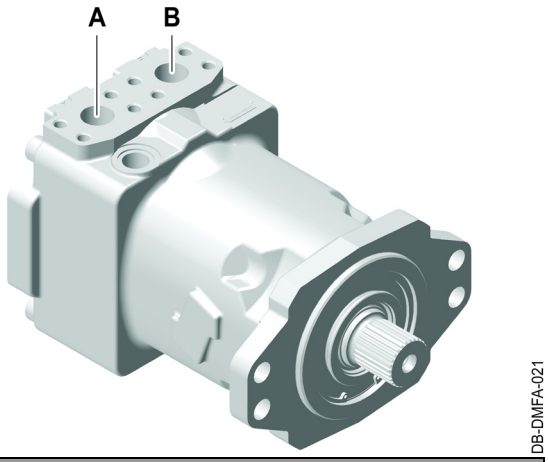
The direction of rotation is stated with view of the driving shaft, as shown in the figure.

R	right	=	clockwise
L	left	=	anti-clockwise
W	alternating	=	depending on the activation at A / B

2.3 Permitted pressure range

2.3.1 Operating pressure





Operating pressure at connection A / B			
Nominal size			**355**
Minimum pressure**	pHD_{min}	bar	8
Nominal pressure (fatigue resistant)	pHD_N	bar	400
Maximum pressure (single operating period)	pHD_{max}	bar	450
Single operating period at maximum pressure pHD_{max}	t	s	< 1

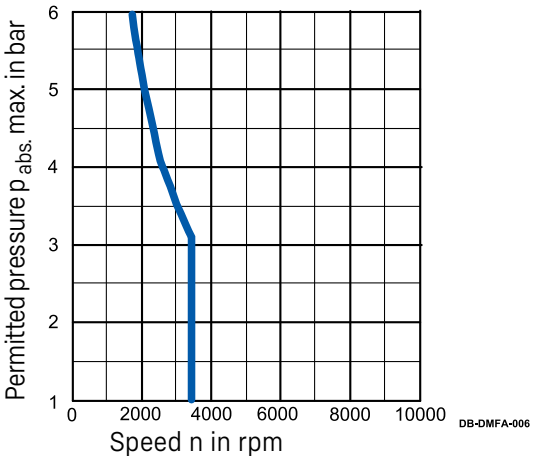
2 Technical data

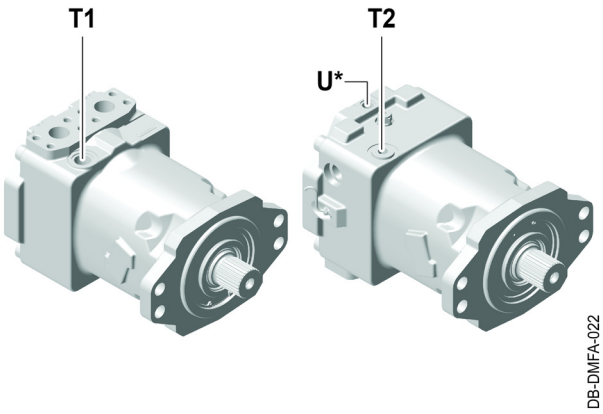
Total operating period at maximum pressure pHD $_{max}$	t	OH*	300
Rate of pressure change	RA	bar/s	17000

*) OH = operating hours
**)There must be minimum pressure in the working circuit at connection A/B to ensure adequate lubrication of the driving gear during operation.

DANGER
Failure of the fastening screws at working connection A / B!
Danger to life.
Use fastening screws of strength category 10.9.

2.3.2 Housing, leakage oil pressure





U*)Leakage oil connection U is optional and is only designed for use with externally connected multi-disk brakes.

Leakage oil pressure at connection T1 / T2			
Nominal size			**355**
Permanent leakage oil pressure, absolute, open and closed circuit	p_L	bar	3
Maximum pressure, absolute, open and closed circuit at reduced speed	pL_{max}	bar	6*

*) Short pressure peaks of max. 10 bar abs. are permitted (t < 0.1 s).

Note
The pressure in the axial piston unit must always be higher than the external pressure on the shaft lip seal.

2 Technical data

2.4 Hydraulic liquids

2.4.1 General information

Selection of the appropriate hydraulic fluid is significantly influenced by the anticipated operating temperature relative to the ambient temperature, which is equivalent to the tank temperature.

ATTENTION
You must not mix different mineral oil hydraulic fluids!

Minimum required quality

Specification
LH-00-HYC3A
LH-00-HYE3A

Note
For additional information, see: www.liebherr.com (brochure: Lubricants and operating fluids)
Alternatively: Contact lubricants@liebherr.com.

2.4.2 Fill quantity

Nominal size	Fill quantity
355	Values upon request

Note
Before commissioning, the axial piston unit must be filled with oil and vented.
This process must be checked and repeated if necessary during operation and after long downtimes!

2.4.3 Filtering

- Filtering of the hydraulic fluid is necessary to maintain the specified purity class "21/17/14 according to ISO 4406" under all circumstances.
- The hydraulic fluid is filtered by the device-specific use of oil filters in the hydraulic system.
- The cleaning and maintenance intervals for the oil filters and the entire oil circuit depend on use of the unit: see the device-specific operating instructions.

2 Technical data

2.5 Temperature

Note
The optimum operating range of the hydraulic fluid of 16-36 mm^2/s for Liebherr Hydraulic HVI (ISO VG 46) is from 32° to 62 °C.

If the axial piston unit is operated in the optimum operating range of the hydraulic fluid within the permitted operating conditions and operating limits, it is low-wear and is protected against temperature-dependent ageing. From a viscosity < 11 mm^2/s (for Liebherr Hydraulic HVI (ISO VG 46) = 80 °C), a halving of the service life of the hydraulic fluid must be assumed for every 10 °K increase in temperature.

If the optimum operating range cannot be met, a hydraulic fluid with a more suitable viscosity range must be selected or the hydraulic system must be preheated or cooled.

To prevent temperature shocks, the temperature difference between the hydraulic fluid and the axial piston unit must be kept to less than 25 °C. This can be achieved by, among other things, a continuous flow through all axial piston units in the hydraulic system.

2.5.1 Operating limits

Maximum values:

Maximum leakage oil temperature: 115 °C.

ATTENTION
The temperature should be assumed to be highest in the drive shaft bearing area (rotary shaft lip seal and bearing). Experience has shown this temperature to be 10-15 °K higher than the leakage oil temperature.

Low temperatures: (for additional information see: 2.5.2 Low temperatures, Page 9)

Note
The operating limits of Liebherr hydraulic fluids are provided in the viscosity chart included below to allow users to make an informed choice.
(for additional information see: 2.5.6 Viscosity chart, Page 14)

2.5.2 Low temperatures

ATTENTION
When temperatures drop below the freezing point, the sealing lip of the rotary shaft lip seal could freeze if it becomes wet or frosted. This can cause the sealing lip to tear off when the axial piston unit is started. The risk must be prevented by preheating/thawing the rotary shaft lip seal/the shaft.

Note
At temperatures at which there is already a risk of hardening from freezing, the frictional heat may be sufficient to keep the seal elastic or to bring it to a functional state quickly enough after the start of movement.

2 Technical data

Overview

Temperature [°C]	Phase	Viscosity [mm²/s]	Note
< -50 °C	Idle state	-*	No storage or operation permitted
< -40 °C	Idle state	-**	No operation permitted, preheat to at least -40 °C, select appropriate hydraulic fluid

***) Idle state < -50 °C**

ATTENTION
Temperatures < -50 °C on the system = no operation of the axial piston unit permitted.
Risk of damaging the sealing elements of the axial piston unit.
Avoid temperatures < -50 °C.

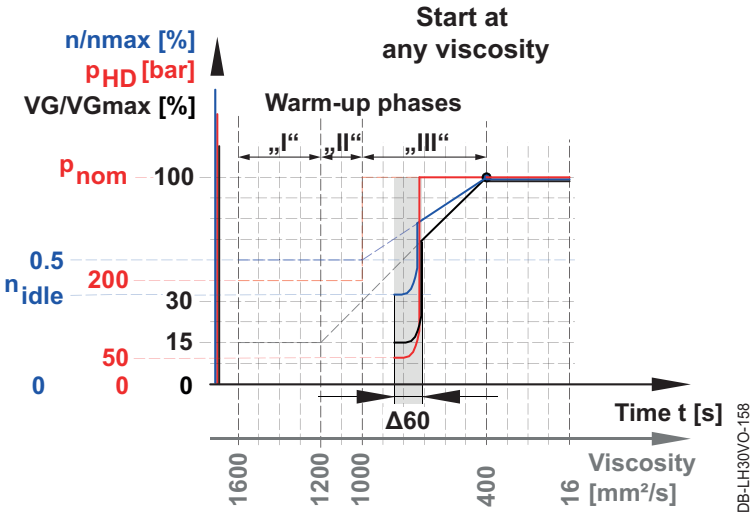
****) Idle state < -40 °C**

ATTENTION
Temperatures < -40 °C on the system = no operation of the axial piston unit permitted.
Functioning of the sealing elements in the axial piston unit is not guaranteed at temperatures < -40 °C. Preheat the axial piston unit and tank to at least -40 °C and use Liebherr Hydraulic Plus Arctic/Liebherr Hydraulic FFE 30 hydraulic fluid with a viscosity < 1600 mm²/s.
(for additional information see: 2.5.6 Viscosity chart, Page 14)

Regardless of the viscosity < 1600 mm²/s, the axial piston unit must be operated for at least 60 s under the following conditions before entering the cold start including the warm-up phases or on warm start:

- Operating pressure range: $p_{HD\ min} \leq p_{HD} \leq 50$ bar
- Speed: $n_{min} \leq n \leq 1000$ rpm, or idle speed of the drive motor*
- Displacement volume: $V_{g\ min} \leq V_g \leq 15\%$ of $V_{g\ max}$
- Do not move any of the equipment.

*) When using a drive with higher speeds than required in the conditions (e.g. an electric motor), please consult Liebherr, stating the potential speed(s).



After the 60 s have elapsed, determine the viscosity using the available temperature values and the viscosity chart, select the appropriate warm-up phase and operate the axial piston unit in the defined period and appropriate conditions (see Warm-up phases).

2 Technical data

Overview

Temperature [°C]	Phase	Viscosity [mm^2/s]	Note
> -40 °C	Cold start	1600-400	The current viscosity of the hydraulic fluid before start-up determines the type of start. In the range of 1600-400 [mm^2/s], it is a cold start. Entry into the warm-up phase must be selected according to the viscosity and the further warm-up phases must be run through according to the time specifications and operating conditions.
for additional information see: 2.5.6 Viscosity chart, Page 14	Warm-up phase "I"	1600-1200	Observe conditions and measures (see Warm-up phase "I")
	Warm-up phase "II"	1200-1000	Observe conditions and measures (see Warm-up phase "II")
	Warm-up phase "III"	1000-400	Observe conditions and measures (see Warm-up phase "III")
	Normal operation	400-16*	Axial piston unit, fully loadable (see Normal operation)
	Optimum operating range	36-16	Axial piston unit, fully loadable (see Normal operation)

*) At maximum leakage oil temperature, the viscosity must not fall below 8 mm^2/s (for a short period, i.e. < 3 minutes, it can be 7 mm^2/s).

2.5.3 Cold start with subsequent warm-up phases

ATTENTION
Before cold start, the viscosity* must be determined on the basis of the oil temperature (e.g. tank temperature) in order to avoid damage to the axial piston units from excessive viscosity* of the hydraulic fluid. At a viscosity* > 1600 mm^2/s, the hydraulic system must be preheated.

Using the determined viscosity*, the type and duration of the warm-up must be followed, using the cold start chart**.

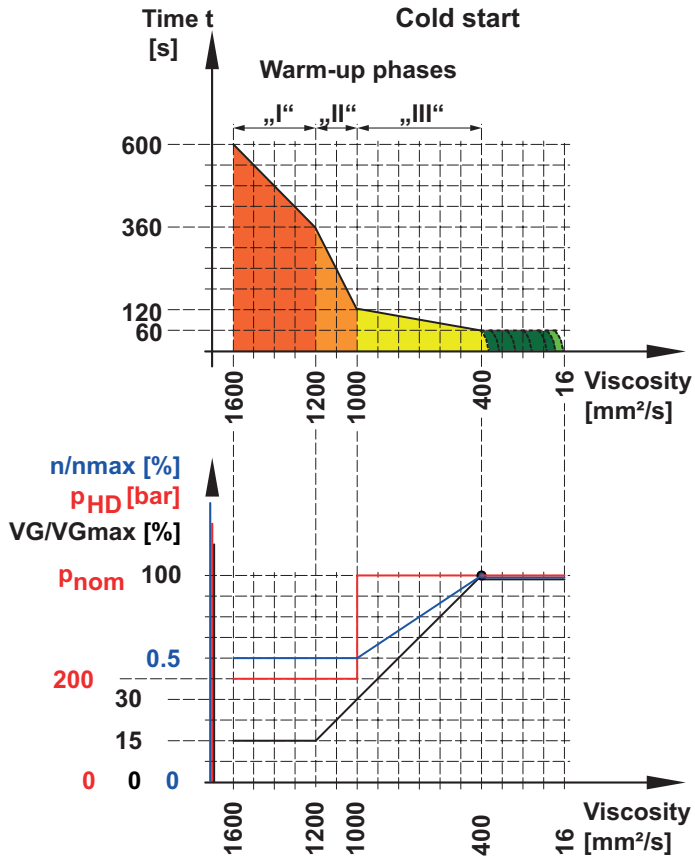
*) for additional information see: 2.5.6 Viscosity chart, Page 14

The following conditions apply:

- Viscosity: 1600-1200 mm^2/s = operate the axial piston unit for 600-360 s with measures listed for Warm-up phase "I".
- Viscosity: 1200-1000 mm^2/s = operate the axial piston unit for 360-120 s with measures listed for Warm-up phase "II".
- Viscosity: 1000-400 mm^2/s = operate the axial piston unit for 120-60 s with measures listed for Warm-up phase "III".
- Viscosity: 400-16 mm^2/s = operate the axial piston unit for 60 s with measures listed for "Warm start". This means that even at ≤ 400 mm^2/s, the measures must be applied for at least 60 s.

2 Technical data

**) Cold start chart



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2.5.4 Warm-up phases

Note
Depending on the current viscosity, continue with the corresponding warm-up phase after the cold start. In the subsequent warm-up phases, the operating parameters may be increased to allow the hydraulic system to warm up rapidly.

Warm-up phase " I "

Condition:

- Viscosity: 1600-1200 mm^2/s = operate the axial piston unit with measures listed below until a viscosity of 1200 mm^2/s is reached.

Measures:

- Operating pressure range: $p_{HD\ min} \leq p_{HD\ Warm\text{-}up\ "I"} \leq 200$ bar
- Speed: $n_{min} \leq n_{Warm\text{-}up\ "I"} \leq 50\%$ of n_{max}
- Displacement volume: $V_{g\ min} \leq V_{g\ Warm\text{-}up\ "I"} \leq 15\%$ of $V_{g\ max}$

Warm-up phase "II"

Condition:

- Viscosity: 1200-1000 mm^2/s = operate the axial piston unit with measures listed below until a viscosity of 1000 mm^2/s is reached.

Measures:

- Operating pressure range: $p_{HD\ min} \leq p_{HD\ Warm\text{-}up\ "II"} \leq 200$ bar
- Speed: $n_{min} \leq n_{Warm\text{-}up\ "II"} \leq 50\%$ of n_{max}
- Displacement volume: $V_{g\ min} \leq V_{g\ Warm\text{-}up\ "II"} \leq 15\text{-}30\%$ of $V_{g\ max}$

Warm-up phase "III"

Condition:

- Viscosity: 1000-400 mm^2/s = operate the axial piston unit with measures listed below until a viscosity of 400 mm^2/s is reached.

Measures:

- Operating pressure range: $p_{HD\ min} \leq p_{HD\ Warm\text{-}up\ "III"} \leq p_{HD\ max}$
- Speed: $n_{min} \leq n_{Warm\text{-}up\ "III"} \leq 50\%$ of n_{max}
- Displacement volume: $V_{g\ min} \leq V_{g\ Warm\text{-}up\ "III"} \leq 30\text{-}100\%$ of $V_{g\ max}$

Warm start

Condition:

- Viscosity: 400-16 mm^2/s = operate the axial piston unit for at least 60 s, even at viscosity < 400 mm^2/s, with measures listed below.

Measures:

- Operating pressure range: $p_{HD\ min} \leq p_{HD} \leq 50$ bar
- Speed: $n_{min} \leq n \leq 1000$ rpm, or idle speed of the drive motor
- Displacement volume: $V_{g\ min} \leq V_g \leq 15\%$ of $V_{g\ max}$

2.5.5 Normal operation

Note

Optimum operating range: 16-36 mm^2/s

The viscosity must not fall below 8 mm^2/s (for a short period, thud < 3 minutes, 7 mm^2/s) at maximum leakage oil temperature.

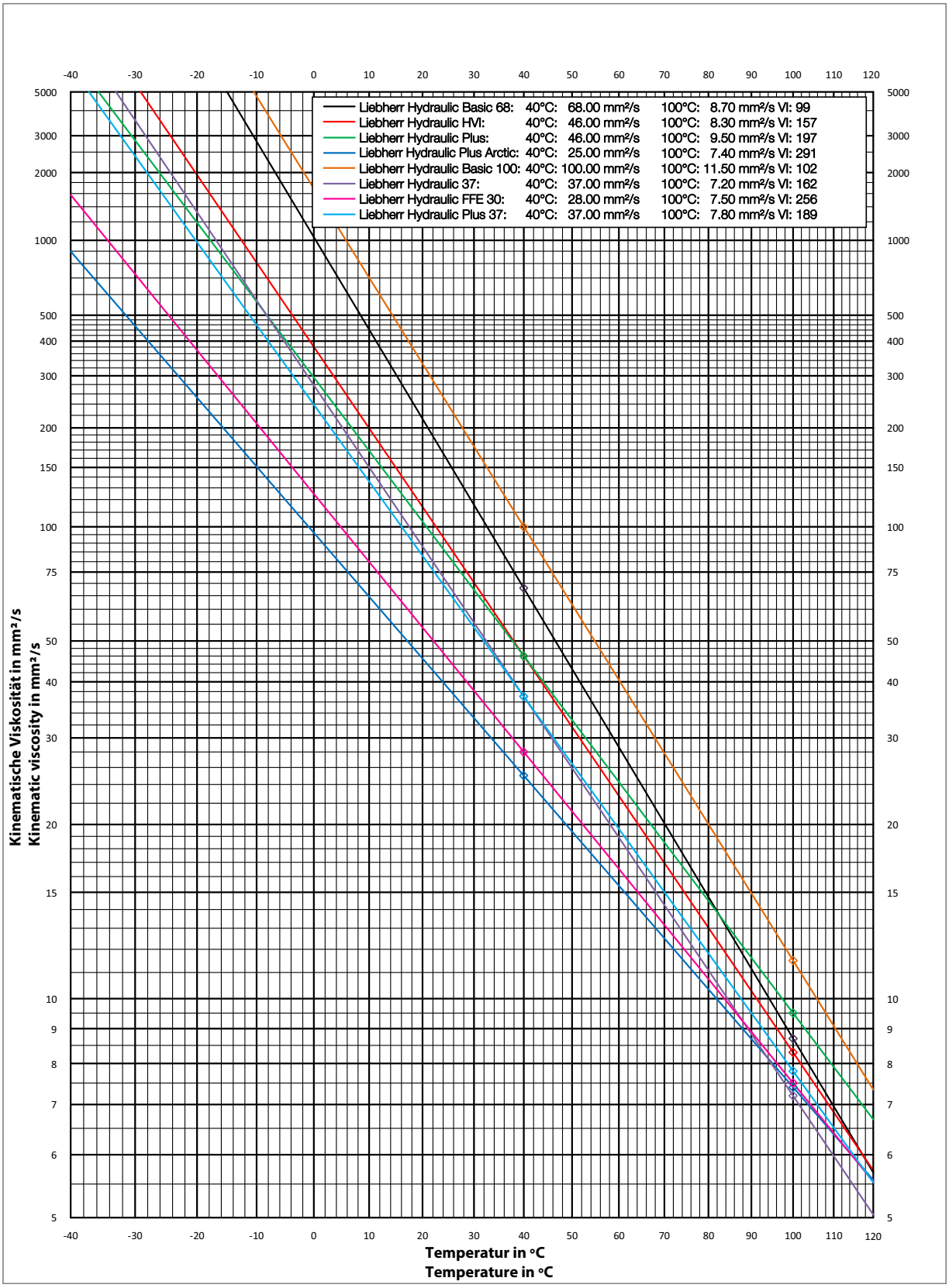
Note

In the viscosity range of 400-8 mm^2/s, the axial piston unit can be put under full load.

- Operating pressure range: $p_{HD\ min} \leq p_{HD} \leq p_{HD\ max}$
- Speed: $n_{min} \leq n \leq n_{max}$
- Displacement volume: $V_{G\ min} \leq V_G \leq V_{g\ max}$

2 Technical data

2.5.6 Viscosity chart



2 Technical data

2.6 Shaft lip seal

2.6.1 General information

The rotary shaft lip seals (RWDR) are special sealing elements which permit a specific housing pressure. In order to ensure that the tribological system functions optimally, the operating conditions must be adhered to.

Sealing edge temperature varies due to the following factors in the housing:
- Circumferential speed
- Hydraulic fluid temperature
- Lubricating medium
- Pressure build-up

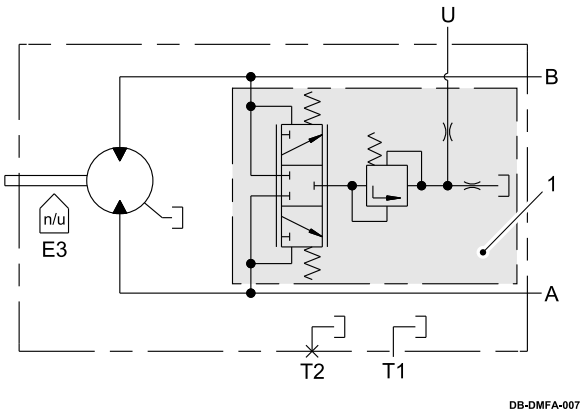
The sealing edge temperature could be 20 °C to 40 °C above the leakage oil temperature of a hydraulic axial piston unit.

2.7 Housing flushing

Under different operating conditions, e.g. a very low displacement flow over a longer period of time, the temperature in the housing may rise to its limit.

Depending on the hydraulic setup, a flushing circuit 1 for cooling and filtration may be required, where the "hot" hydraulic oil is led to an external cooler, cools down and is fed back into the hydraulic system.

The flushing volume Q_V in l/min is to be individually set for each nominal size in connection with the application and is the responsibility of the device or system manufacturer.



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3 Activation type and valves

3.1 Valves

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

Note
For each valve fitting, only one nominal size is illustrated, typically nominal size 355. Special applications and designs are not included in this chapter. Always use the information from the installation drawing provided or contact Liebherr.

The following applies to all valve fittings types:

DANGER
The spring-guided reset in valves is not a safety device!
Contaminants in the hydraulic system such as chips or residual dirt from the device or system parts can cause blockages at undefined points of various valve components.
Under some circumstances, the machine operator's specifications can no longer be implemented.
It is the device or system manufacturer's responsibility to install a safety device e.g. an emergency stop.

The following modular activation types and valve types can be ordered for the DMFA series:

3.1.1 Flushing valves

- Open circuit with high-pressure limitation, see chapter 3.2.1
- Closed circuit, see chapter 3.2.2

Additional valves upon request.

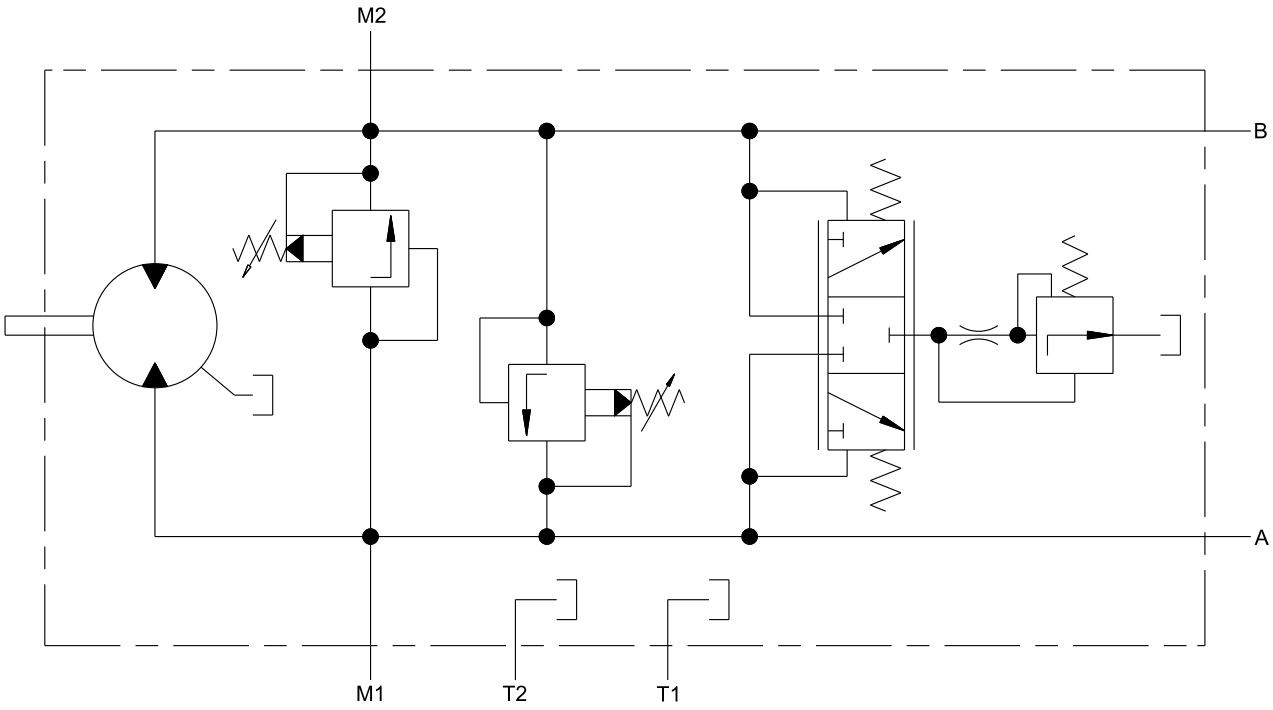
3 Activation type and valves

3.2 Standard hydraulic diagrams

Note
For flushing:

Closed circuit = flushing compulsory

3.2.1 MH / flushing, open circuit with high pressure limitation



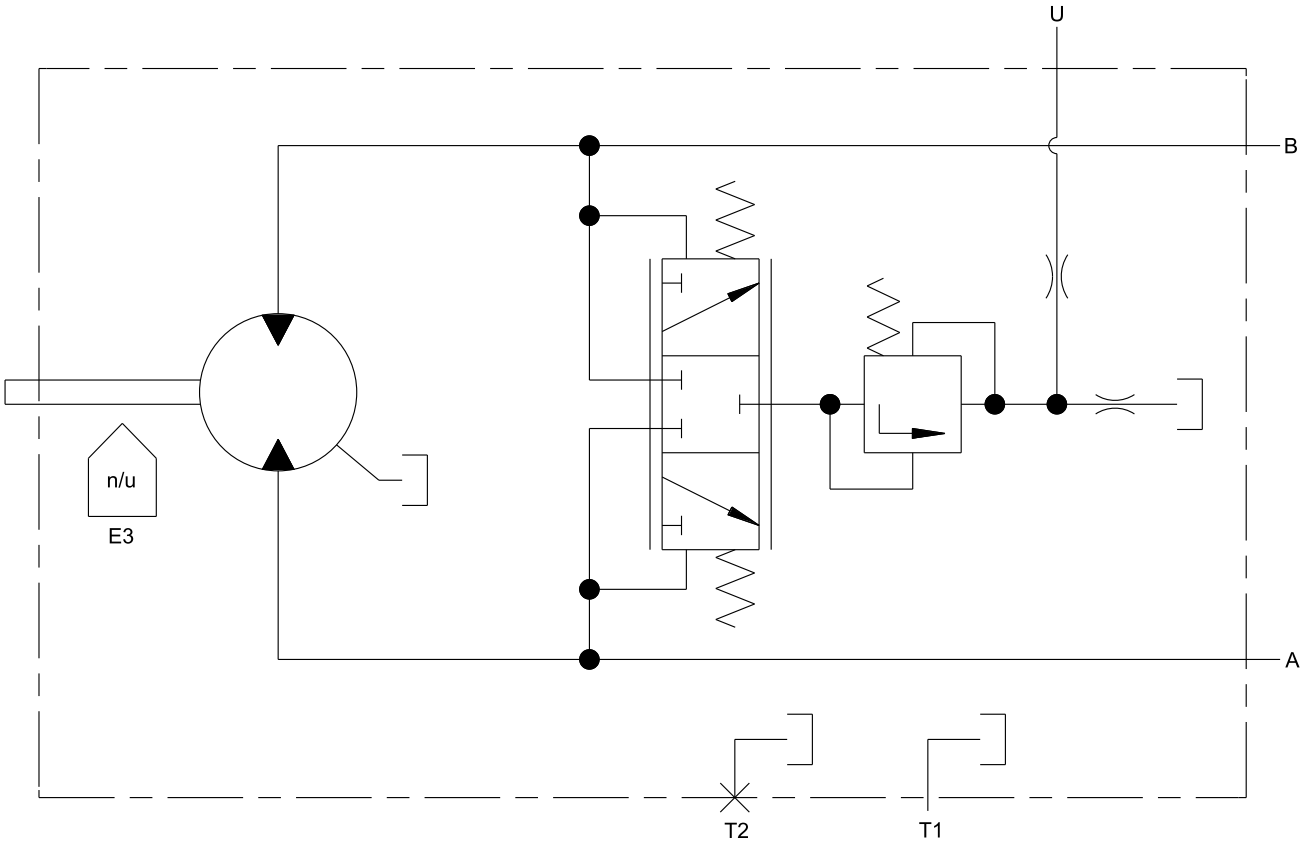
DB-DMFA-009

A, B	Working connections SAE J 518	T1, T2	Leakage oil connections ISO 9974-1
M1, M2	High pressure measuring connections ISO 9974-1	-	-

Note
Oil inlet at connection A: direction of rotation = clockwise
Oil inlet at connection B: direction of rotation = anti-clockwise

3 Activation type and valves

3.2.2 SO / flushing, closed circuit



DB-DMFA-008

A, B	Working connections SAE J 518	T1, T2	Leakage oil connections ISO 9974-1
E3	Speed sensor connection	U	Leakage oil connection ISO 9974-1 (for externally connected multi-disk brake)

Note
Oil inlet at connection A: direction of rotation = clockwise
Oil inlet at connection B: direction of rotation = anti-clockwise

3 Activation type and valves

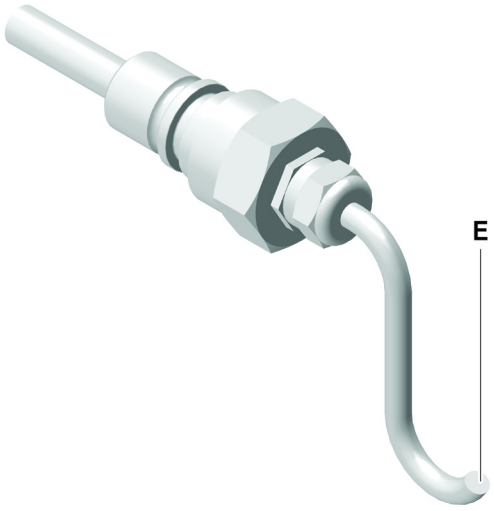
3.3 Sensors

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

0 without sensor

D with speed sensor

Speed sensor



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Technical data			
Rated voltage U	10-30V	Operating temperature range	-40 °C to +120 °C
Power consumption (damped) Power consumption (undamped)	1 to 1.8 mA at 10-30 V 3 to 4 mA at 10-30 V	Air gap, maximum (damped) Air gap, maximum (undamped)	<0.8 mm >1.4 mm
Wiring harness length	400 mm	Protection class	IP68
Maximum switching frequency	3 kHz	Maximum pressure in hydraulic fluid	5 bar
Plug-in terminal E	Deutsch DT04-2P-EP04	-	-

Note
The speed sensor cannot be retrofitted and must be included in the reconfiguration of the DMFA.

4 Installation conditions

4.1 General information about project planning

The installation variant for the device or system must be coordinated with Liebherr, as well as the installation position, at the conceptual design stage of the axial piston unit and must be approved by Liebherr.

ATTENTION
Damage of the hydraulic product.
Lack of lubrication on the hydraulic product!
Make sure that the following requirements are observed:
- Comply with the approved installation positions for the hydraulic product.
- For other installation positions, contact Liebherr customer service.
- Housing is completely filled with hydraulic fluid during commissioning and operation.
- Housing is vented after commissioning and during operation.

Liebherr distinguishes between two installation variants for axial piston units:

A: Under-the-tank installation (axial piston unit is installed **under** the minimum liquid level of the tank)
B: Over-the-tank installation (axial piston unit is installed **above** the minimum liquid level of the tank)

Liebherr distinguishes between two installation positions for axial piston units:

1/3/5/7/9/11: Driving shaft horizontal
2/4/6/8/10/12: Driving shaft vertical

Note
Liebherr recommends:
Installation variant: Under-the-tank installation A
Installation location: 1/3/5/7/9/11 Driving shaft horizontal with "control at top"

*)For installation positions 2/4/6/8 with driving shaft vertical and 1/3/5/7 with driving shaft horizontal with "control at bottom", complete filling and venting is critical. The axial piston unit must then be connected, filled and vented before final positioning in installation position 1/3/5/7/9 "control at top".
It can then be rotated to the final installation position 2/4/6/8 driving shaft vertical or 1/3/5/7 driving shaft horizontal with "control at bottom".

On some axial piston units, an additional T4 leakage oil connection is provided for the installation positions 2/4/6/8 driving shaft vertical and 1/3/5/7 driving shaft horizontal with control at bottom: Order leakage oil connection T4 as special design. (for additional information see: 1 Type code, Page 3)

4.1.1 Leakage oil lines

To prevent draining of the axial piston unit during long downtimes, the leakage oil line must be routed in a bend so that it runs at the minimum dimension Ü1 = 30 mm above the highest possible level of the axial piston unit. This applies in particular to installation variant B: over-the-tank installation.

Connect the leakage oil line to the top leakage oil connection T1, T2, T3....Tx depending on the installation position.

The leakage oil line must open into the tank at a minimum distance of 115 mm from the tank bottom to prevent stirring up dirt particles in the tank.

The leakage oil line must open into the tank at a minimum distance of 250 mm below the minimum liquid level to prevent foaming in the tank.

4 Installation conditions

At low temperatures with high viscosities, it is essential to observe the maximum housing pressure for axial piston units with multiple driving gears and with a shared leakage oil line. (for additional information see: 2.3.2 Housing, leakage oil pressure, Page 7) If the maximum housing pressure is outside the tolerance limit, a separate leakage oil line must be connected for each driving gear.

4.1.2 Hydraulic fluid tank

Design the hydraulic fluid tank so that the hydraulic oil cools off sufficiently during circulation and impurities that develop during operation settle to the bottom of the tank.

Make sure that the lines are connected according to recommendations and that they open into the hydraulic fluid tank. (for additional information see: 4.1.1 Leakage oil lines, Page 20)

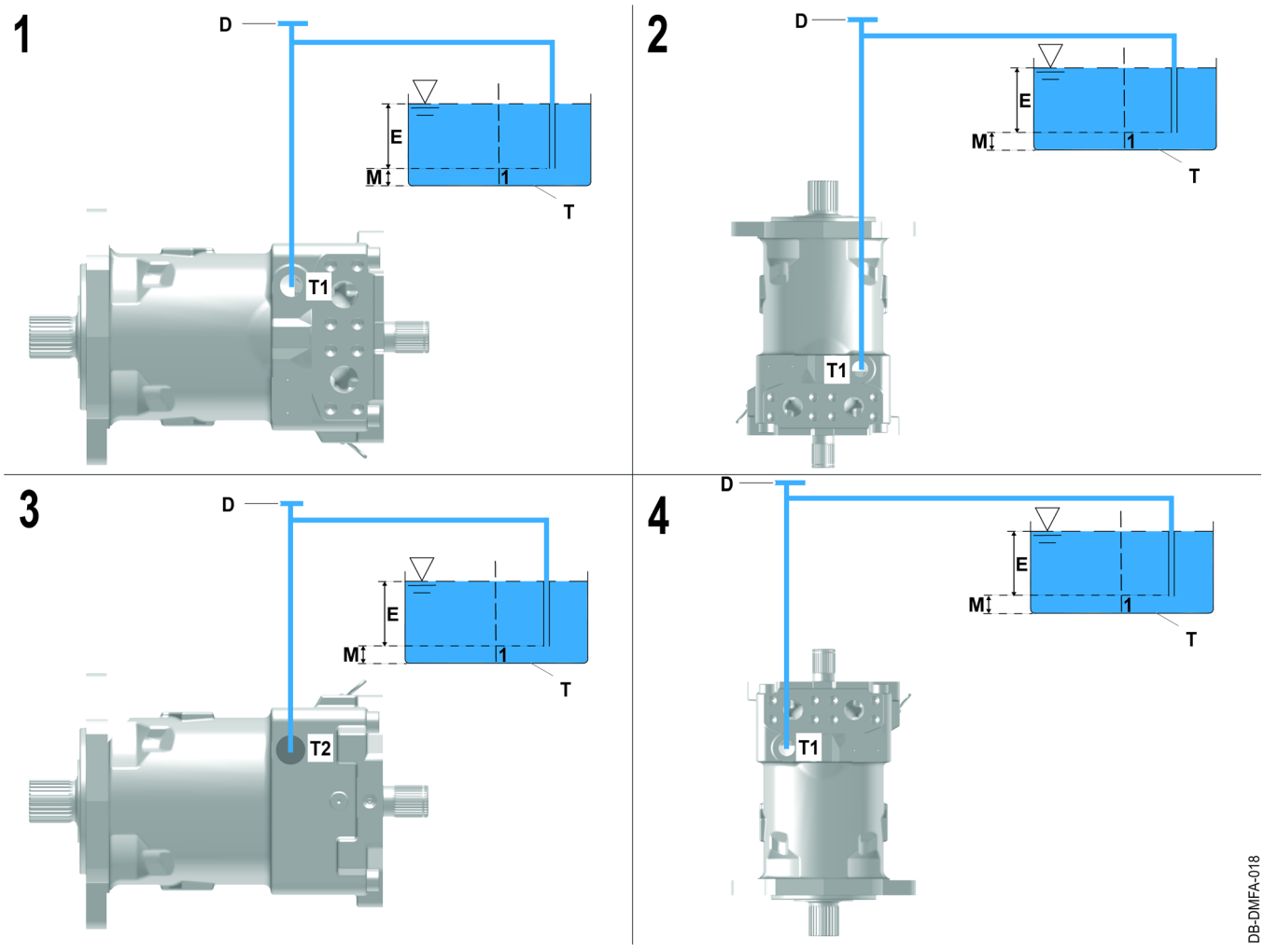
4 Installation conditions

4.2 Installation variants

Note
When using the DMFA in a "closed circuit", the installation variant is irrelevant due to the missing tank.

4.2.1 Under-the-tank installation variant

Note
Liebherr recommends: Under-the-tank installation A, so that:
- The housing cannot empty to the tank.



1	Baffle (to calm the hydraulic fluid in the tank)	M	Minimum line end distance from tank bottom = 115 mm
D	Fill and vent connection (external, not included in scope of delivery)	T_-	Leakage oil connections T1 / T2 / T3 / T4 (T4 = optional)
E	Minimum immersion depth = 250 mm	T	Tank

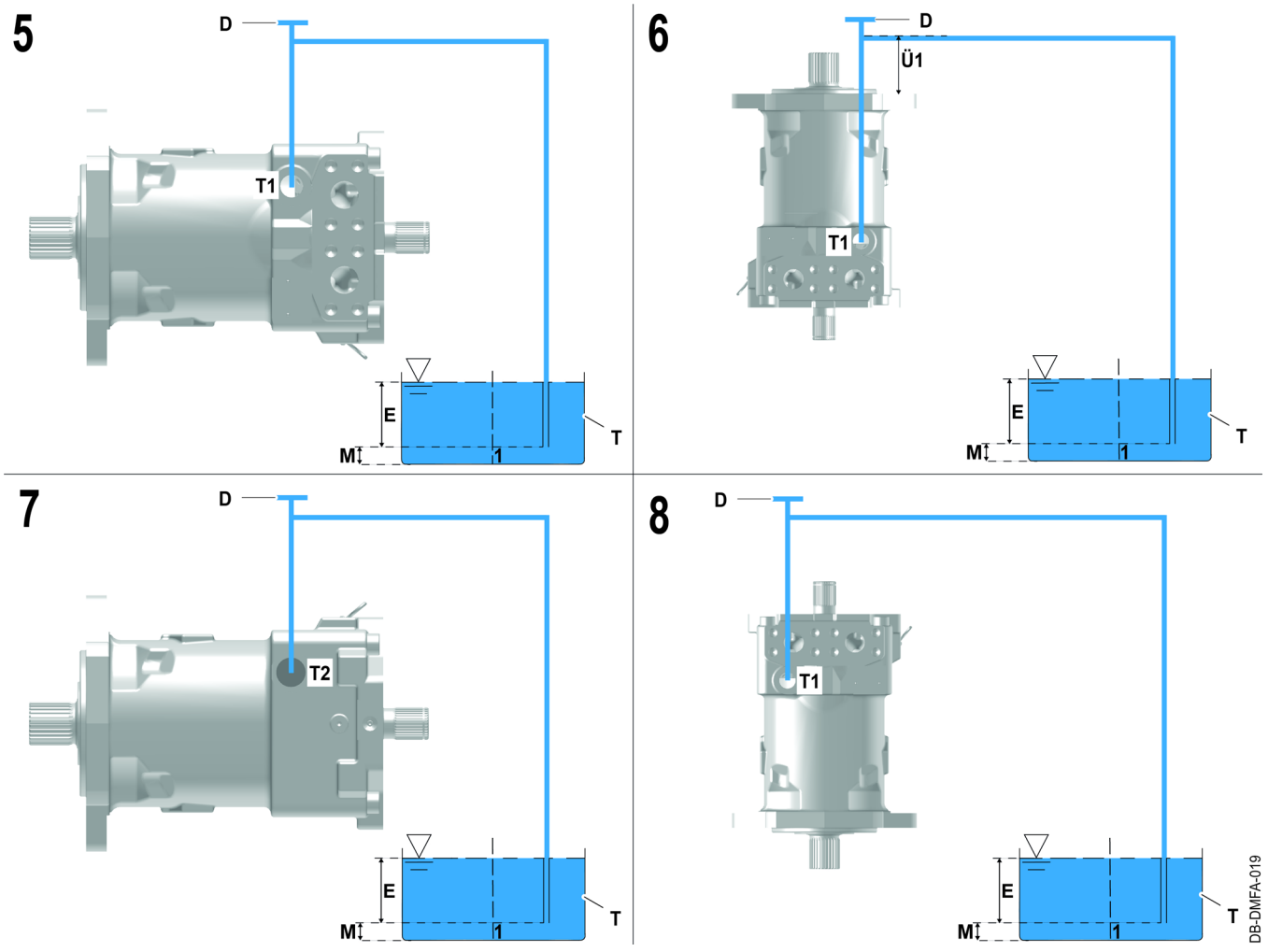
4 Installation conditions

4.2.2 Over-the-tank installation variant

ATTENTION
Damage of the hydraulic product.
The air cushion in the bearing area or on the rotary shaft lip seal “runs hot” in over-the-tank installation position (installation variant B)! Make sure that the following requirements are observed:

- Housing is completely filled with hydraulic fluid during commissioning and operation.
- Housing is vented after commissioning and during operation*.

Note
To prevent draining of the axial piston unit during long shutdowns, the leakage oil line must be routed in a bend so that it runs at the minimum dimension Ü1 = 30 mm above the highest possible level of the axial piston unit.



1	Baffle (to calm the hydraulic fluid in the tank)	M	Minimum line end distance from tank bottom = 115 mm
E	Minimum immersion depth = 250 mm	T_	Leakage oil connections T1 / T2 / T3 / T4 (T4 = optional)

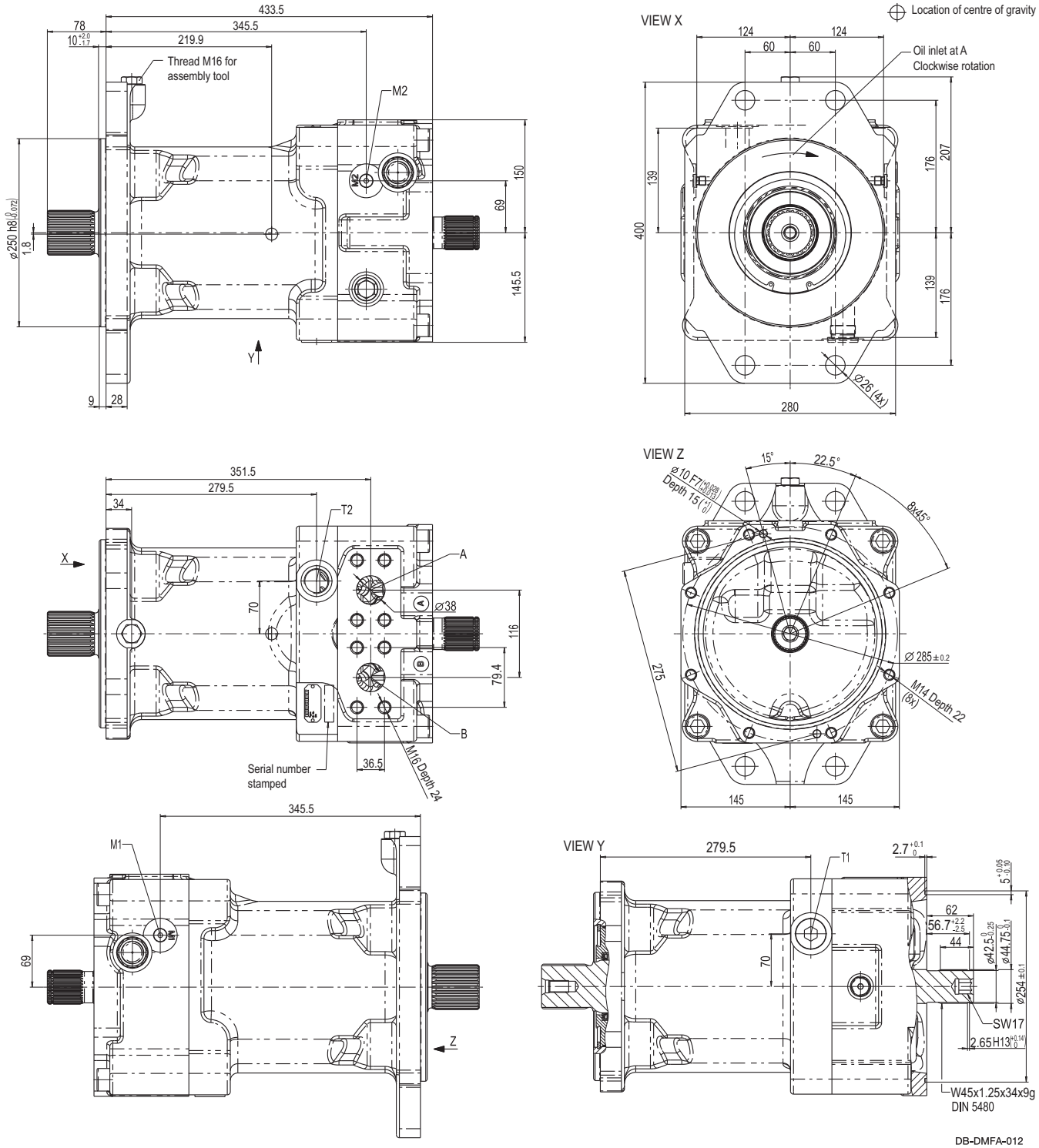
4 Installation conditions

D	Fill and vent connection (external, not included in scope of delivery)	T	Tank
Ü1	Minimum leakage oil line height = 30 mm	-	-

5 Dimensions

5.1 Nominal size 355

5.1.1 Nominal size 355, MH / flushing, open circuit with high-pressure limitation

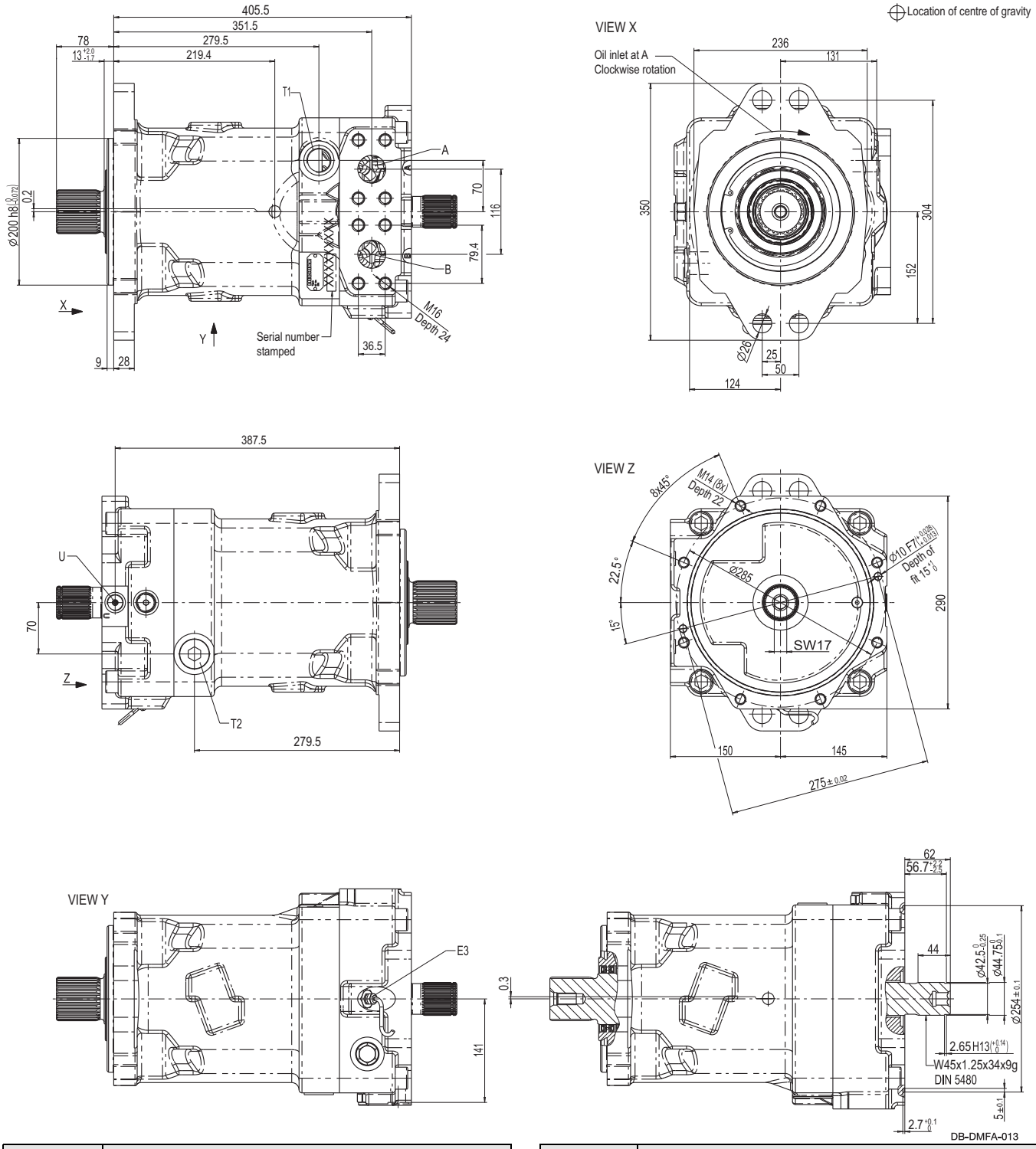


A, B	Working connections SAE J 518
M1, M2	High pressure measuring connections ISO 9974-1

T1, T2	Leakage oil connections ISO 9974-1
-	-

5 Dimensions

5.1.2 Nominal size 355, SO / flushing, closed circuit



A, B	Working connections SAE J 518
E3	Speed sensor connection

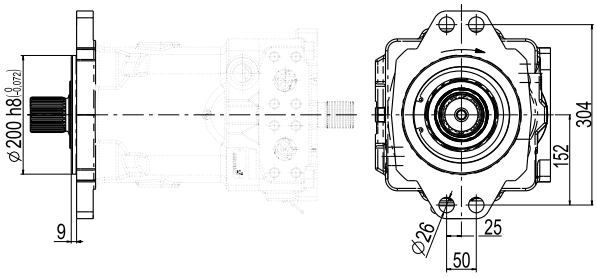
T1, T2	Leakage oil connections ISO 9974-1
U	Leakage oil connection ISO 9974-1 (for externally connected multi-disk brake)

5 Dimensions

5.2 Nominal size 355, mounting flange

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

Special flange



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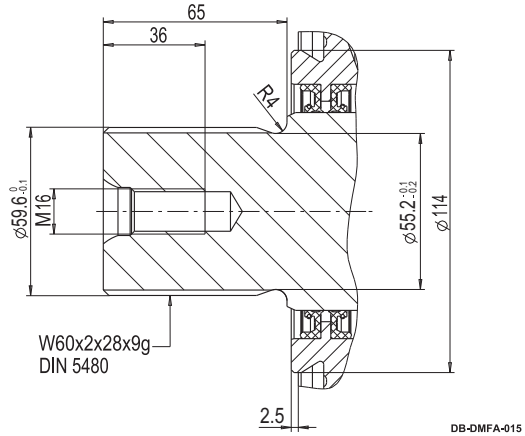
5.3 Nominal size 355, shaft end

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

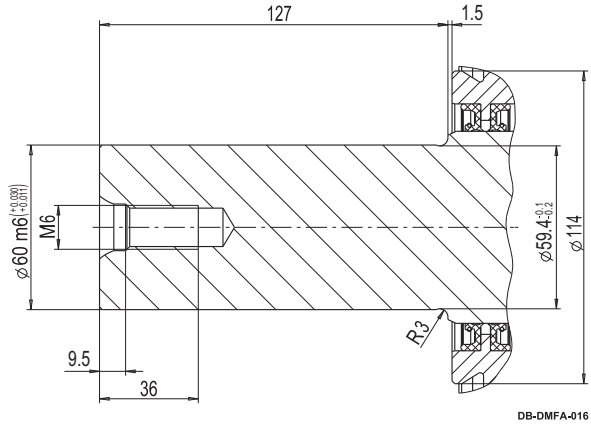
DIN 5480 splined shaft W60x2x28x9g



DB-DMFA-015

1

DIN 6885 Parallel key shaft (pattern A) ∅ 60



DB-DMFA-016

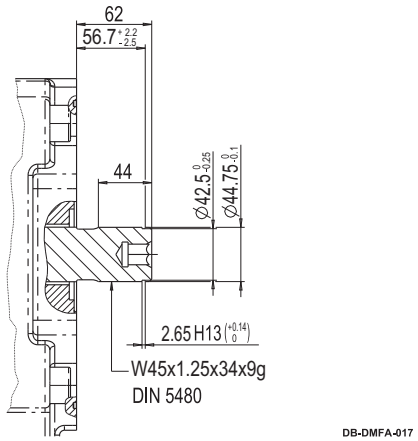
3

5 Dimensions

5.4 Through-drive DIN 5480

DMFA			/		00	1	W			A				
1.	2.	3.	/	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.

5.4.1 Nominal size 355, special through-drive



K	W45x1.25x34x9g

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