XAi series

the intelligent pump - SAE version

fixed displacement bent axis design

The compact size envelope of XAi pumps, together with their technology, means they can be installed in environments with little space available, and be used at relatively high rotating speeds.

ADVANTAGES

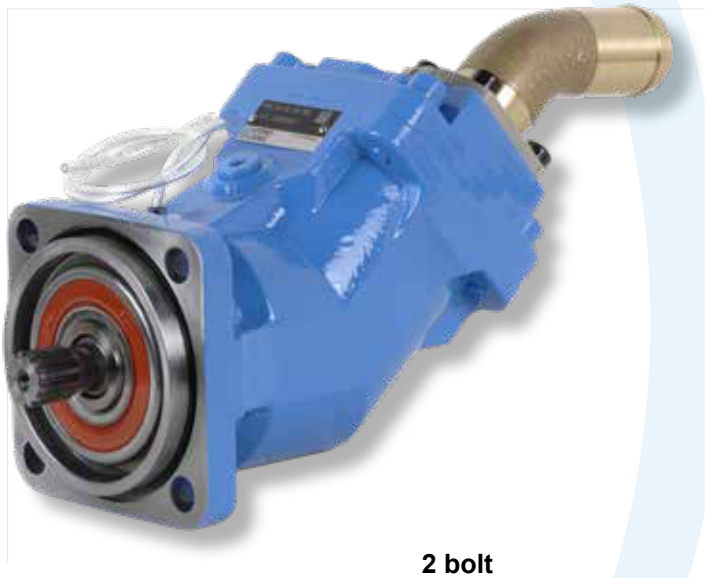
- Pump automatically sets to required direction of rotation
- Mounting and start-up, easier than ever !

CHARACTERISTICS

- 7 pistons
- original idea for plate - barrel synchronisation
- use of materials with high mechanical resistance
- reinforced sealing

12 models :

- from 12 to 63 cc/rev (0.74 to 3.84 cu.in/rev)
- 380 bar (5511 psi) continuous working pressure
- 420 bar (6092 psi) peak pressure
- maximum speed from 2300 to 2950 rpm



4 bolt flange models

2 bolt flange models

Characteristics - XAi SAE version

► 2 bolt flange - SAE J744

Pump reference	Displac. Cu.in/rev (cc/rev)	Maximum continuous pressure psi (bar)	Maximum peak pressure < 5 seconds psi (bar)	Max speed(1) rpm	Max. torque absorbed at 5511 psi (380 bar)(2) lbf ft (N.m)	Weight without inlet fitting lbs (kg)	Weight with inlet fitting 2" lbs (kg)	Overhang torque without inlet fitting lbf ft (N.m)	Overhang torque with inlet fitting 2" lbf ft (N.m)
XAi 12	0.74 (12)	5511 (380)	6092 (420)	2950	54 (73)	21.8 (9.9)	23 (10.5)	6 (8.1)	6.9 (9.4)
XAi 18	1.1 (18)	5511 (380)	6092 (420)	2400	84 (114)	22.15 (10.5)	23.14 (10.5)	7.04 (9.54)	7.35 (9.97)
XAi 25	1.52 (25)	5511 (380)	6092 (420)	2650	117 (159)	22.38 (10.15)	23.36 (10.6)	7.11 (9.64)	7.43 (10.07)
XAi 32	1.95 (32)	5511 (380)	6092 (420)	2600	150 (204)	26.34 (11.95)	27.67 (12.4)	8.81 (11.95)	9.15 (12.4)
XAi 41	2.5 (41)	5511 (380)	6092 (420)	2550	192 (261)	26.45 (12)	27.45 (12.45)	8.85 (12)	9.18 (12.45)

(1) At absolute pressure 14,50 psi (1 bar), ISO VG46 fluid at 25°C.
(2) Maximum torque given with a mechanical efficiency at 95%.

► 4 bolt flange - SAE J744

Pump reference	Displac. Cu.in/rev (cc/rev)	Maximum continuous pressure psi (bar)	Maximum peak pressure < 5 seconds psi (bar)	Max speed(1) rpm	Max. torque absorbed at 5511 psi (380 bar)(2) lbf ft (N.m)	Weight without inlet fitting lbs (kg)	Weight with inlet fitting lbs (kg)	Overhang torque without inlet fitting lbf ft (N.m)	Overhang torque with inlet fitting lbf ft (N.m)
XAi 12	0.74 (12)	5511 (380)	6092 (420)	2950	54 (73)	21.8 (9.9)	23 (10.5)	6.1 (8.23)	7 (9.52)
XAi 18	1.1 (18)	5511 (380)	6092 (420)	2400	84 (114)	22.59 (10.25)	23.59 (10.7)	7.18 (9.73)	7.49 (10.16)
XAi 25	1.52 (25)	5511 (380)	6092 (420)	2650	117 (159)	22.71 (10.3)	23.70 (10.75)	7.19 (9.75)	7.53 (10.21)
XAi 32	1.95 (32)	5511 (380)	6092 (420)	2600	150 (204)	26.68 (12.1)	27.67 (12.55)	8.92 (12.1)	9.26 (12.55)
XAi 41	2.5 (41)	5511 (380)	6092 (420)	2550	192 (261)	26.78 (12.15)	27.78 (12.6)	8.96 (12.15)	9.29 (12.6)
XAi 50	3.07 (50.3)	5511 (380)	6092 (420)	2450	234 (318)	26.89 (12.2)	27.89 (12.65)	9.45 (12.81)	9.80 (13.28)
XAi 63	3.84 (63)	5511 (380)	6092 (420)	2300	295 (401)	27.01 (12.25)	28 (12.7)	9.49 (12.86)	9.83 (13.33)

(1) At absolute pressure 14,50 psi (1 bar), ISO VG46 fluid at 25°C.
(2) Maximum torque given with a mechanical efficiency at 95%.

DUAL DIRECTION OF ROTATION:
this *intelligent* pump can operate
in either direction of rotation.

Fit the inlet fitting on required side, depending on the direction of rotation of the PTO, and the pump will set itself accordingly.



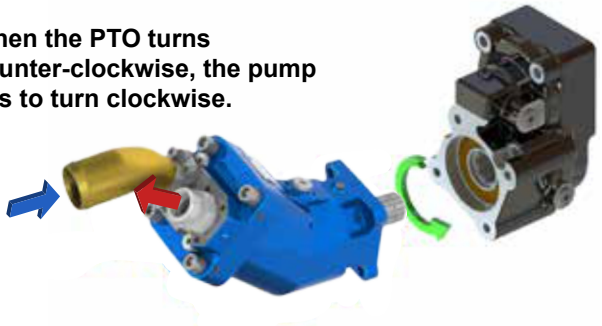
Clockwise (CW)



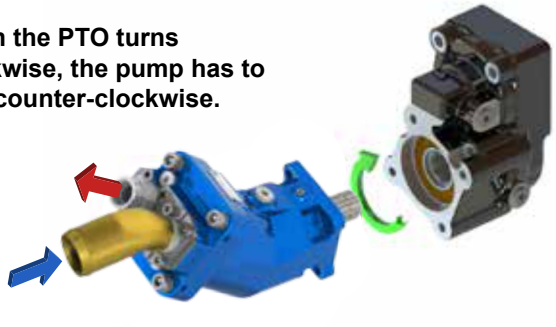
Counter-clockwise (CCW)

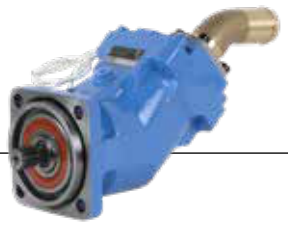


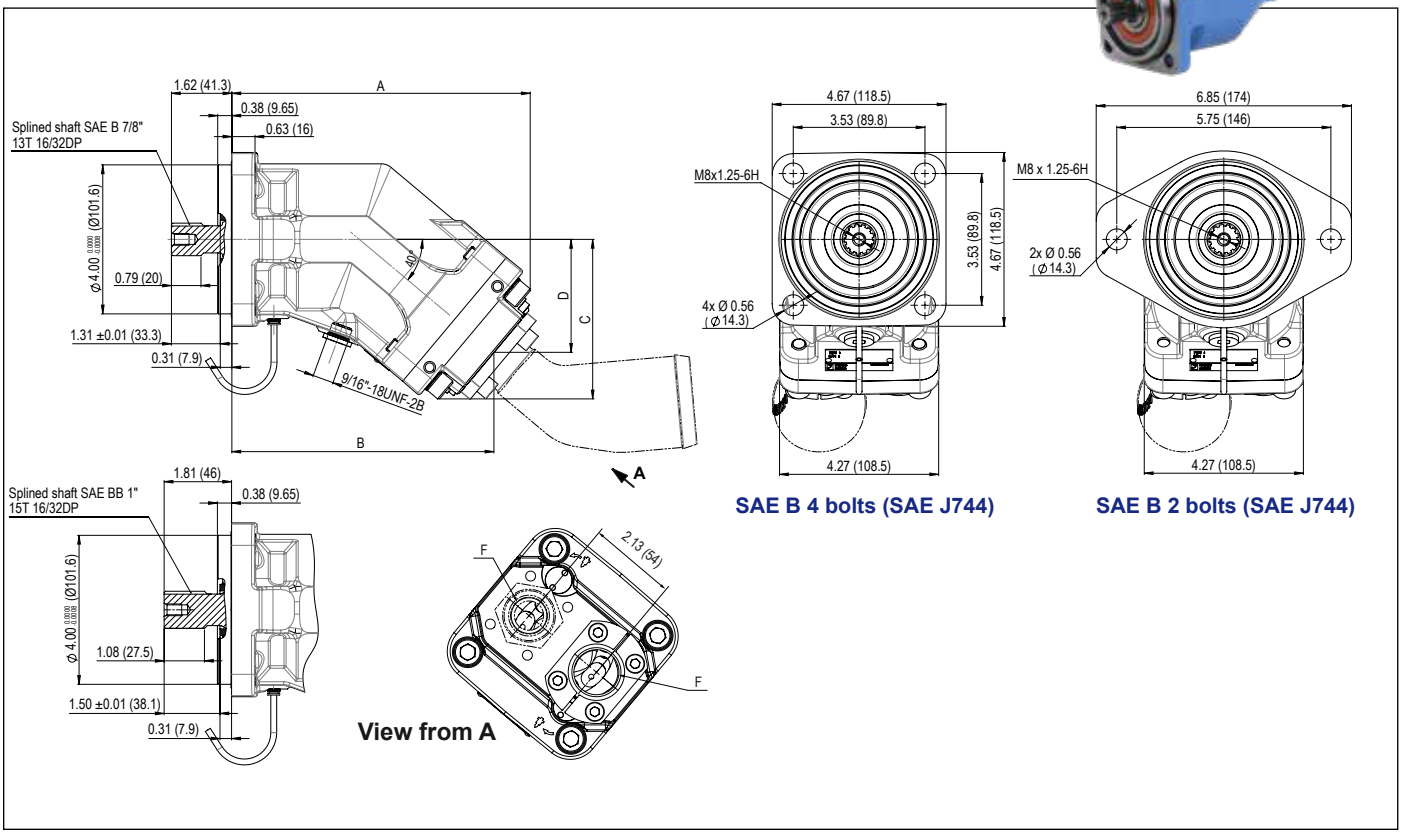
When the PTO turns counter-clockwise, the pump has to turn clockwise.



When the PTO turns clockwise, the pump has to turn counter-clockwise.







► SAE B - 2 bolt mounting configurations (SAE J744)

Pump type	A	B	C	D	F	Shaft
XAi 12	7.76 (197.2)	6.79 (172.5)	4.08 (103.7)	2.87 (73)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 18	7.76 (197.2)	6.79 (172.5)	4.08 (103.7)	2.87 (73)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 25	7.76 (197.2)	6.79 (172.5)	4.08 (103.7)	2.87 (73)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 32	8 (203.2)	7.03 (178.5)	4.28 (108.7)	3.03 (77)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 41	8 (203.2)	7.03 (178.5)	4.28 (108.7)	3.03 (77)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP

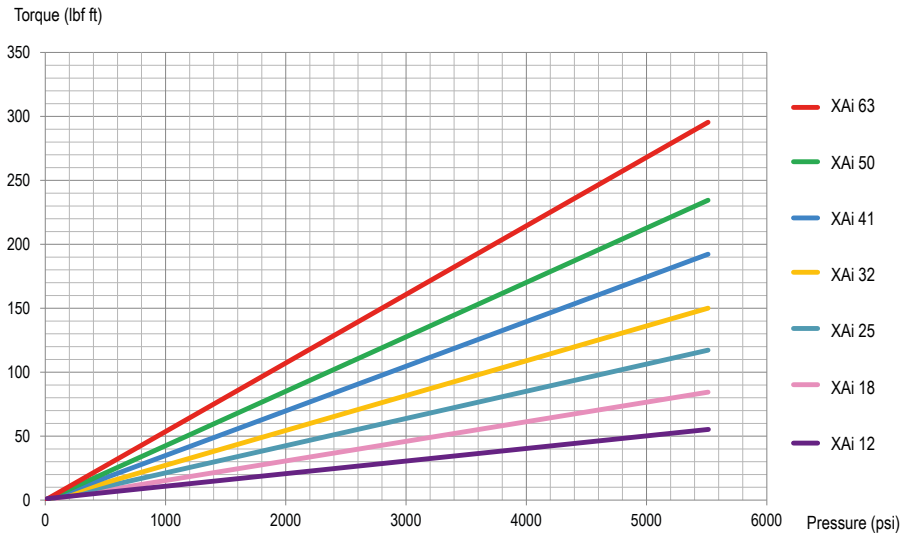
► SAE B - 4 bolt mounting configurations (SAE J744)

Pump type	A	B	C	D	F	Shaft
XAi 12	7.76 (197.2)	6.79 (172.5)	4.08 (103.7)	2.87 (73)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 18	7.76 (197.2)	6.79 (172.5)	4.08 (103.7)	2.87 (73)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 25	7.76 (197.2)	6.79 (172.5)	4.08 (103.7)	2.87 (73)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 32	8 (203.2)	7.02 (178.5)	4.28 (108.7)	3.03 (77)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 41	8 (203.2)	7.02 (178.5)	4.28 (108.7)	3.03 (77)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 50	8.45 (214.7)	7.48 (190)	4.65 (118.2)	3.4 (86.5)	1 1/16"-12 UN-2B	SAE B 7/8" 13T-16/32DP
XAi 50	8.45 (214.7)	7.48 (190)	4.65 (118.2)	3.4 (86.5)	1 1/16"-12 UN-2B	SAE BB 1" 15T-16/32DP
XAi 63	8.45 (214.7)	7.48 (190)	4.65 (118.2)	3.4 (86.5)	1 1/16"-12 UN-2B	SAE BB 1" 15T-16/32DP

Dimensions in inches (mm).

Performance - XAi SAE version

▶ Torque absorbed as a function of pump output pressure (with a mechanical efficiency considered at 95%)

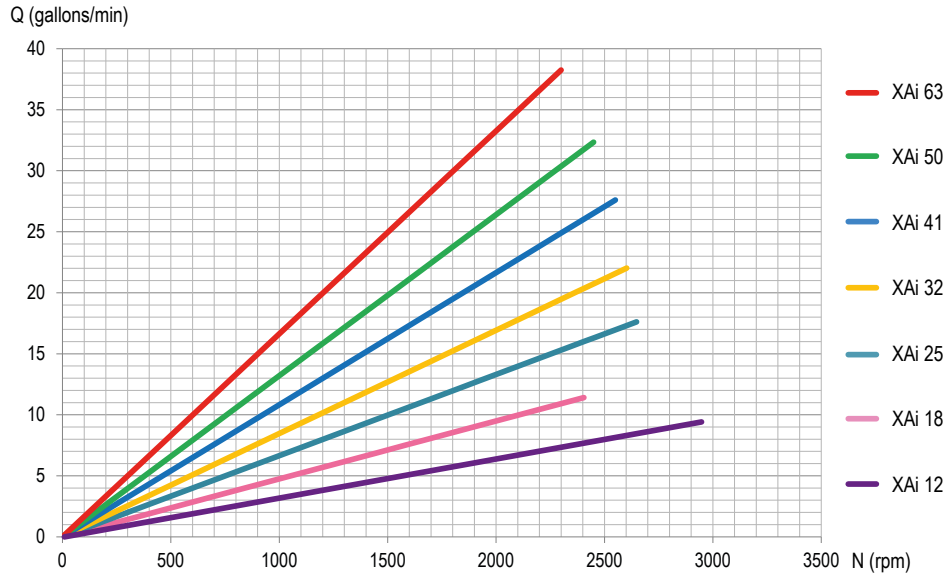


$$C = \frac{Cyl \times \Delta P}{62.8 \times \eta_{meca}}$$

With:

C	=	Torque in N.m
Cyl	=	Displacement in cc/rev
ΔP	=	Differential pressure in bar
η_{meca}	=	Mechanical efficiency

▶ Flow as a function of rotating speed



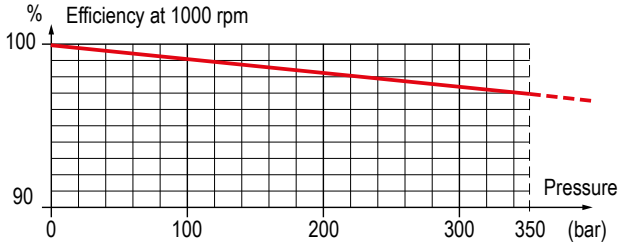
$$Q = \frac{Cyl \times N \times \eta_{vol}}{1000}$$

With:

Q	=	Flow in l/min
N	=	Speed in rpm
η_{vol}	=	Volumetric efficiency
Cyl	=	Displacement in cc/rev

These graphs are the results of testwork done in HYDRO LEDUC R&D laboratory, on a specific test bench with a mineral hydraulic fluid ISO VG46 at 25°C (~100 cSt) - disregarding the volumetric efficiency.

▶ Volumetric efficiency



Order code system of XAi SAE version pumps

XAi	...	...	...	P0	...	...
01	02	03	04	05	06	07

To define your pump's model code, complete parameters 02, 03, 04, 06 and 07 based on the desired options (refer to the table below).

Pump												
01	XAi Bent axis piston pump											**XAi**
Displacement [cc/rev]												
02				012	018	025	032	041	050	063		**...**
Mounting flange												
03	NF ISO 7653, 4-bolt		2-bolt	●	●	●	●	●	-	-		**B1**
			4-bolt	●	●	●	●	●	●	●		**B2**
Shaft												
04	SAE B 7/8" 13T- 16/32DP			●	●	●	●	●	●	●[1]		**S1**
	SAE BB 1" 15T- 16/32DP			-	-	-	-	-	●	●		**S2**
Rear cover												
05	Rear ports			3/4"-16UNF-2B				1"1/16-12UNF-2B				**P0**
Shaft seal material												
06	FKM			●	●	●	●	●	●	●		**F**
	NBR			●	●	●	●	●	●	●		**N**
Suction fitting kit												
07	45°	1"1/2	Ref. 0519370	●	●	●	●	●	●	-		**V1**
		42mm	Ref. 0519373	●	●	●	●	●	●	●		**V2**
		1"3/4	Ref. 0519374	●	●	●	●	●	●	●		**V3**
		2"	Ref. 0519371	●	●	●	●	●	●	●		**V4**
		2"1/2	Ref. 0519372	●	●	●	●	●	●	●		**V5**
	90°	1"1/2	Ref. 0521740	●	●	●	●	●	●	-		**J1**
		2"	Ref. 0521741	●	●	●	●	●	●	●		**J4**
		2"1/2	Ref. 0521742	●	●	●	●	●	●	●		**J5**
	0° (straight)	2"	Ref. P003671	●	●	●	●	●	●	●		**I4**

Legend:
● Default option
● **Available model**
– **Not available**

1 Maximum permissible pressure: 290 bar.

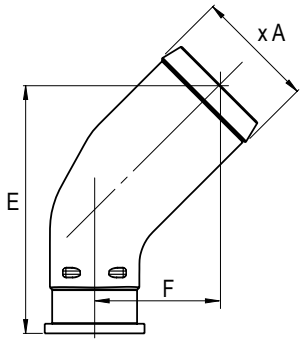


INLET FITTINGS FOR XAi PUMPS

⚠ **See recommendations of the hosing dimensions on page 40.**

For high speeds, please consult.
All XAipumps are supplied with their inlet fitting.
Please specify required fitting from the choice below when ordering.

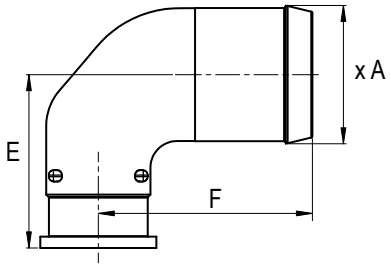
45° elbow fittings kit



Confi-gurator code	Reference	Ø hose	Ø A	E	F
V1	0519370	1 1/2"	1.54 (39,1)	3.61 (91,7)	1.84 (46,7)
V2	0519373	42	1.69 (43,0)	3.61 (91,7)	1.84 (46,7)
V3	0519374	1 3/4"	1.81 (46,0)	3.61 (91,7)	1.84 (46,7)
V4	0519371	2"	2.04 (51,8)	4.27 (108,4)	2.14 (54,4)
V5	0519372	2 1/2"	2.54 (64,5)	4.93 (125,2)	2.45 (62,2)

Dimensions in inches (mm).

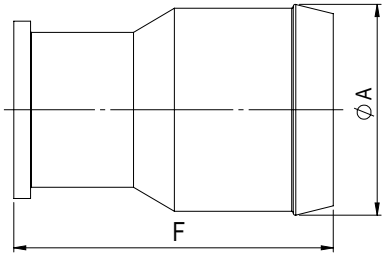
90° elbow fittings kit



Confi-gurator code	Reference	Ø hose	Ø A	E	F
J1	0521740	1 1/2"	1.54 (39,1)	2.31 (58,6)	3.13 (79,5)
J4	0521741	2"	2.04 (51,8)	2.56 (64,9)	3.16 (80,2)
J5	0521742	2 1/2"	5.54 (64,5)	2.81 (71,3)	3.44 (87,5)

Dimensions in inches (mm).

0° straight fitting kit



Confi-gurator code	Reference	Ø hose	Ø A	F
I4	P003671	2"	2.05 (52)	3.15 (80)

Dimensions in inches (mm).

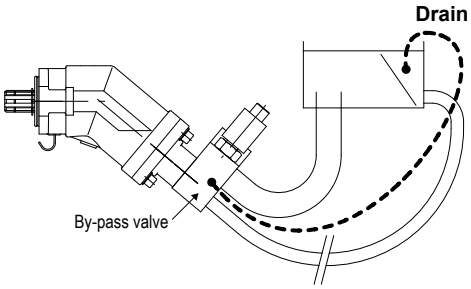
BY-PASS VALVE FOR XAi PUMPS

For XAi pump applications where the pump is driven by a continuous running PTO (PTO which cannot be disengaged), this solution allows the continuous running of the pump:

- without creating problems of fluid overheating;
- without affecting pump service life;
- with no modifications necessary to the hydraulic circuit of the equipment.

⇨ **By-pass fitted on the back of the XAipump.**

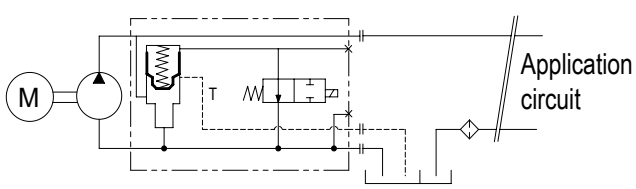
Part number	Pump	Voltage	Connector
BPA63-0521715	XAi 12 to XAi 63	24 V	HIRSCHMANN



► How does it work ?

The by-pass valve is a solenoid valve (12 or 24 Volts).

When not activated, it enables pump output to link up to pump inlet.
When it is activated, the pump operates normally (output flow).



A drain line has to be installed between the By-Pass valve and the hydraulic tank of the vehicule to ensure sufficient oil circulation and a good cooling into the pump. In any case, the connection to the tank must be done below the oil level.