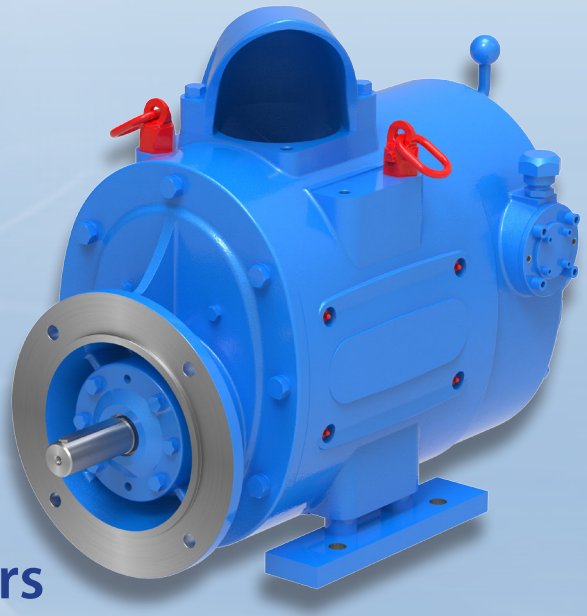
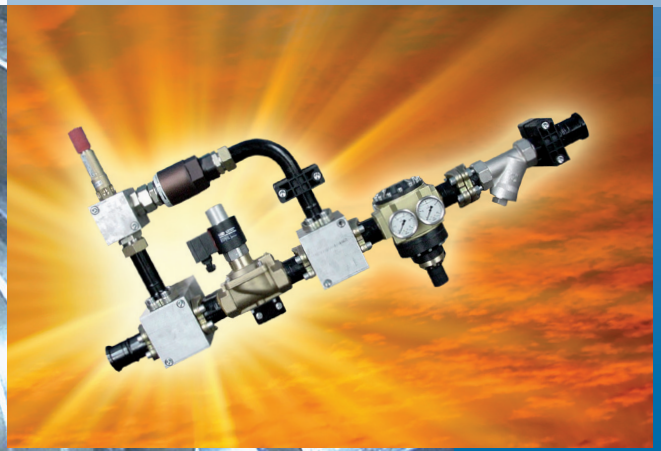
DÜSTERLOH Fluidtechnik

Pneumatic-motors



Pneumatic- gearwheel motors
Pneumatic- spur gear motors
model series DMO 8 - DMO 35

Catalogue



LM1-008 EN Edition 2024.09 / 16

A
- Air conditioner drivers
- Aluminum melting furnaces
- Anchor winches
- Auger drives

B
- Bending machines
- Blind shaft reel drives

C
- Capstan winches
- Caterpillars
- Chain conveyors
- Charging plants
- Chemical mixers
- Claw winches
- Coal cutters
- Coke emitting machines
- Cold-compressor drives
- Concrete mixers
- Concrete pumps
- Convert-drives
- Convert-flap drives
- Conveyor belts
- Conveyor machines
- Core hole drills
- Crane trains

D
- Derricks
- Drills
- Drive helps
- Driving drives

F
- Fountain-drill devices

H
- Hatch cover actuation
- Hauling engines
- Hydraulic pumps

L
- Lance stroke devices
- Lifting devices
- Lifting winches
- Loading machines

M
- Mining plants
- Mixer drives
- Mixing plants
- Mooring winches

P
- Paper machines
- Pilot hoists
- Pipe cleaning devices
- Pipeline main pusher drives
- Pre-lubrication pump drives
- Pump drives

R
- Raw iron mixers
- Reel drives
- Rotary tables
- Rotation drives
- Rudder machines

S
- Scraper winches
- Servo drives
- Servomotor drives
- Ship winches
- Starters
- Steering aid
- Stone drill machines
- Stowing machines
- Swimming docks
- Swivel machines

T
- Track laying machines
- Transport trolley drives
- Trolley drives

U
- Underwater drives

V
- Vehicles winches

W
- Winch drive
- Winding machines

The DMO pneumatic gearwheel motors have been designed for permanent operation under harsh conditions. Air, nitrogen or a similar gas mix is supplied to the motor via a hose or pipeline DN50.

As a medium temperature, we recommend a max. temperature of 60-70 °C. The ambient temperature or heat radiation should not exceed 70-90 °C. At different temperatures, please contact our technical department.

Generally, the following components are installed upstream of the motor in the supply line:

- Ball valve DN50

  In case of prolonged standstill, the closed ball valve prevents leakage losses at the downstream components and at the control slide of the motor. It makes it possible to carry out maintenance work to the motor and the upstream components.

- Dirt trap DN50 (filter mesh 0.3 mm to 1.0 mm)

  A strainer filter with a mesh of approx. 3.0 mm is located at the motor inlet to prevent the inflow of coarse particles. The upstream dirt trap increases functioning reliability and reduces the risk of jamming of the control slide.

- Pressure reducer in case of storage operation

  As the storage medium is under heavy pretension by reasons of volume, a pressure reducer must be provided downstream of the ball valve to bring the pressure medium down to operating pressure.

- Maintenance unit

  Comprises a moisture trap, a pressure reducing valve, and an oiler and is provided between the ball valve and the motor inlet.
  The moisture trap with level indicator filters moisture from the air to prevent icing up after air expansion in the motor casing and at the air outlet during permanent operation.
  The working pressure, which should be as constant as possible, is set at the pressure-reducing valve.
  The oiler with oil level indicator supplies the working air with an oil mist for lubrication and avoidance of corrosion of the control slide, the rotors and bearings.

The DMO pneumatic motor comprises:

- Differential pressure oiler

  Downstream of the motor inlet, the working air flows through the differential pressure oiler which is designed for horizontal installation of the motor. If the motor is installed vertically or in inclined position, a separate oiler is provided upstream of the motor.

  Function:

  A back pressure nozzle installed in the air inlet of the differential pressure oiler reduces the working air flow in the area of the nozzle so that the air presses on the oil level of the oil container which is connected to the flowing working air via a small air channel upstream of the back pressure nozzle Downstream of the back pressure nozzle, the pressure drops by reason of the higher flow speed created by the reduction of the air flow. This pressure difference between the front and the rear edge of the back pressure nozzle causes a small amount of oil to flow through a nozzle opening into the working air flow behind the back pressure nozzle; from there, the oil is carried along with the working air flow and, finely atomized, supplied to the lubrication points (speed controller, control slide, bearings, rotors).

- Speed controller

Downstream of the differential pressure oiler, the centrifugal force speed controller is provided mechanically connected to the rotors, it reduces the supply air in correspondence with an increase in speed, thus allowing for precise regulation of the idle speed. In an accurately manufactured bushing installed radially and centrally in the speed controller housing, two pistons are arranged to the left and to the right of the centre and retained in this position by compression springs. With increase or reduction of speed, the pistons are moved by the centrifugal force against the spring force, opening or closing air gaps provided in the regulator bushing that discharge into the interior of the control housing.

- Control slide (5/3-way valve)

Downstream of the speed controller, there is a manually operated 5/3-way slide with spring return in centre position. In centre position, connection P is locked, and the motor connections A and B are connected to the exhaust. In control version MP, the manual lever is overridden by an integrated pneumatic cylinder that specifies the sense of rotation when pressure is applied to control connections X1 and X2 and that goes into centre position when pressure relief with spring return is applied. To ensure fast retraction, install a quick-action vent valve at each of X1 and X2.

- Rotors

From the control slide, the working air is supplied to the motor rotors and sets them in motion in the sense of rotation, left or right, set at the control slide. The two pressurized, spur-toothed, tempered, and ground rotors are mounted in a cast metal housing. The rotor with the mounted drive shaft can be installed either in top or bottom position. Thus, there are two possible distances between the axis and the mounting feet.
The working pressure applied to the rotors can be tapped from the measuring connections Z1 and Z2 and used as control pressure for brakes and clutch couplings.

- Exhaust air

After power output, the exhaust air flows in part through pre-flow slots and in part over the control slide through the exhaust channel of the double chamber motor housing into the open. This double chamber motor housing is designed to act as a silencer.

- Silencer (KS)

It is possible to bolt a box silencer adapted to the motor design to the exhaust air connection to reduce the noise by approx. 10 dB(A).

- Integrated spur gear unit (FST2 and FST3)

A spur-toothed, one-stage spur gear unit FST2 (i=1,92 / 2.0) and FST3 (i=2.75 / 2.80) adapted to the motor design may be attached.

- After consultation with the customer, external brakes / gear units may be mounted downstream.

In our exemplary calculation, a DMO 15/15 is used wich according to operators information needs approx. 5 to 8 minutes to move for example a lance out of the melting furnace.
For this period of time, a sufficiently large compressed- air reservoir is to be provided which would drive the air motor in case of main drive failure.
The motor runs at a speed of n = 1500 min^{-1} and is to be operated at 6 bar.
The max. storage pressure was specified to be p_{max} = 10 bar.
The calculation of the requiered storage volume must always be based on the absolute air consumption.

Technical data:

motor	:		DMO 15/15	
nominal speed	:	n	= 1500	min^{-1}
idle speed	:	n	= 1680	min^{-1} (speed used as calculation basic)
air consumption (catalogue p.11)	:	Q	~ 20,5	Nm^3 / min
operating pressure	:	$p_{cont.}$	= 6	bar
duration of the travelling path	:	t	= 5 bis 8	minutes
max. storage pressure	:	p_{max}	= 10	bar
applicable pressure difference	:	$p_{exis.}$	= 4	bar (p_{max} - $p_{cont.}$)

The required compressed- air storage volume is calculated exclusively on the foundation of the applicable pressure difference.

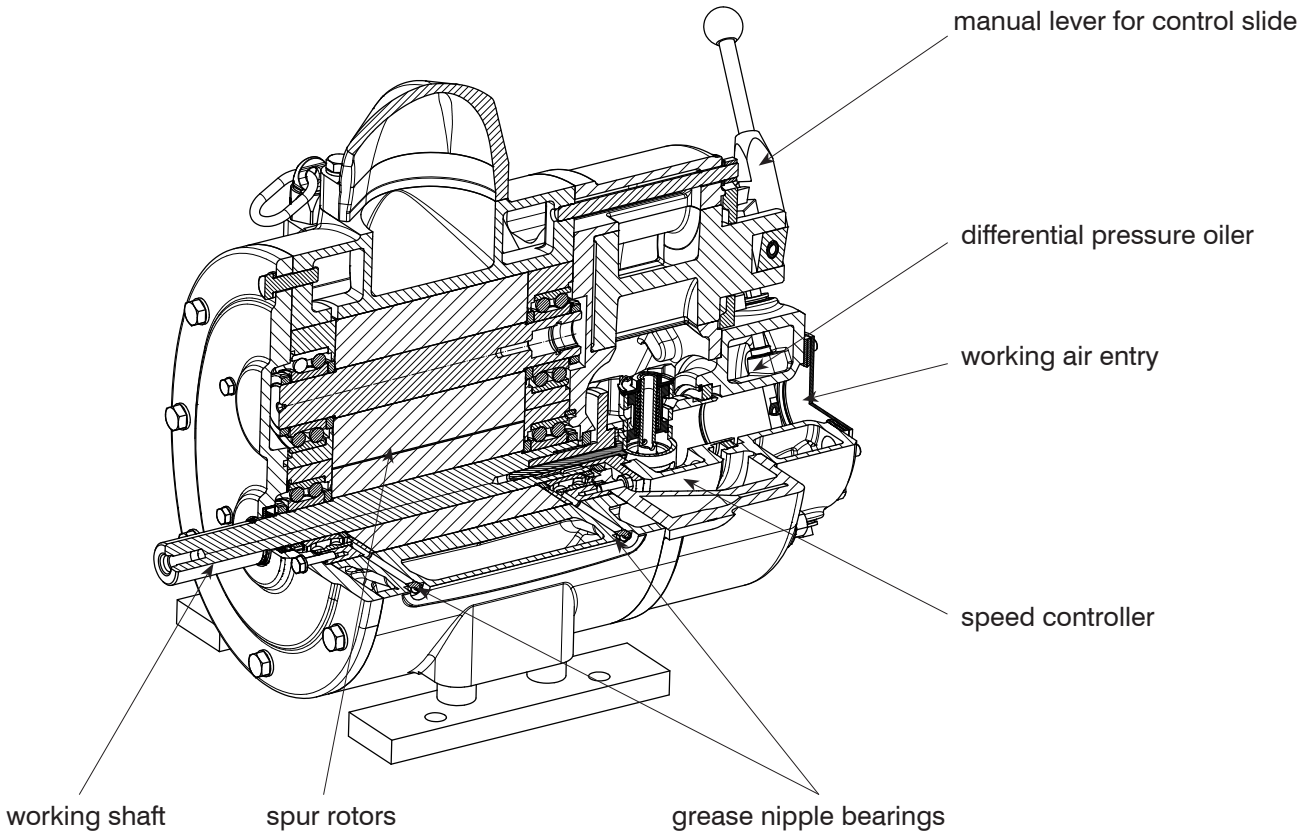
Calculation:

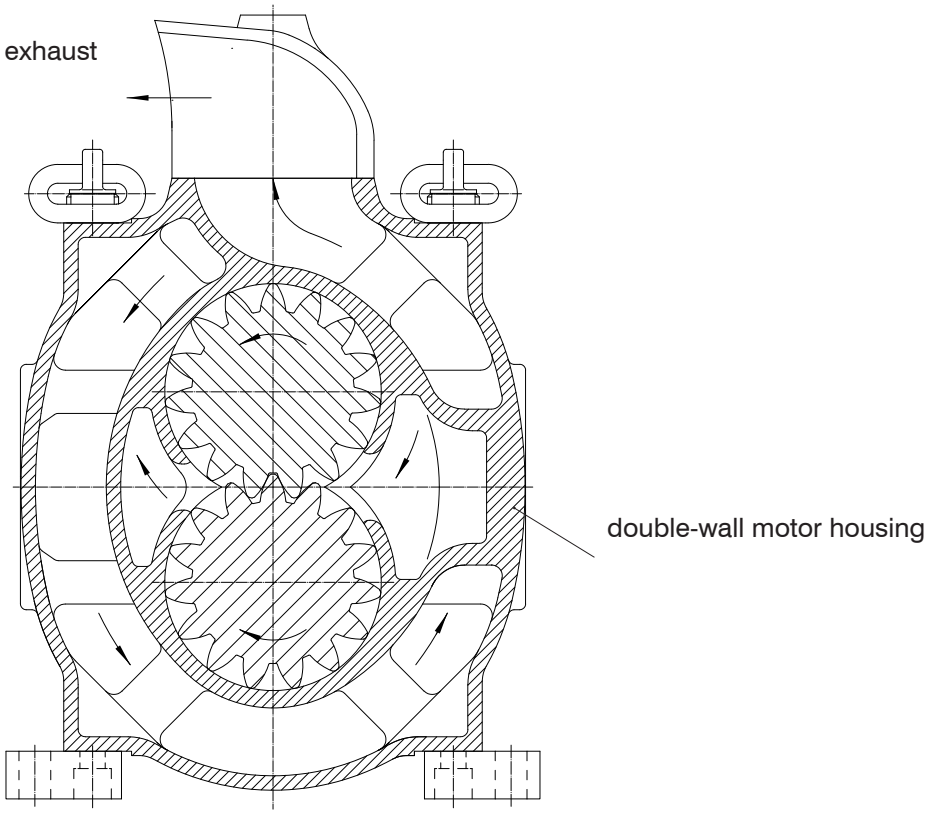
$$V = \frac{Q \cdot t}{p_{vorh}}$$

20,5 Nm^3 / min · 8 min = 164 Nm^3

164 Nm^3 / 4 bar = 41m^3 storage volume

The storage volume must be o less than 41 m^3 to ensure that it will still have a pressure of 6 bar after withdrawal of 164 Nm^3 by way of reduction to 6 bar via pressure- reduction valve.
Furthermore, take into consideration that the pressure- reduction valve may allow passage of a slightly higher pressure so that the 164 Nm^3 are withdrawn faster than calculated.
Accordingly, it is necessary to provide a sufficiently large reserve volume.


manual lever for control slide
differential pressure oiler
working air entry
speed controller
working shaft
spur rotors
grease nipple bearings


exhaust
double-wall motor housing

D	M	O		/														-	

Type

Nominal size

883 cm³/U = **8**
1431 cm³/U = **15**
2394 cm³/U = **20**
6116 cm³/U = **35G**

Nominal speed

1000 min⁻¹ = **10**
1200 min⁻¹ = **12**
1500 min⁻¹ = **15**
1800 min⁻¹ = **18**
2000 min⁻¹ = **20**

Basic version

wirhout foot = **A**
with foot = **F**

Output drive flange

without output drive flange = **no specified**

Dimensions acc. to IEC 72 part 7 (electric motors) acc. DIN 50347

DMO 8 outer-ø 300, mounting-ø 265, with 4 x M12 centering-ø 230, shaft-ø 38, IEC132
DMO15 outer-ø 300, mounting-ø 265, mit 4 x M12 centering-ø 230, shaft-ø 38, IEC132
DMO20 outer-ø 450, mounting-ø 400, mit 1 x ø18 6 x M16, centering-ø 350, shaft-ø 45
DMO35G outer-ø 545, mounting-ø 500, mit 8 x M16 centering-ø 450, shaft-ø 55

= **FL**

DMO 8 outer-ø 300, mounting-ø 265, mit 4 x ø13,5 centering-ø 230, shaft-ø 38, IEC132
DMO15 outer-ø 350, mounting-ø 300, mit 4 x ø18 centering-ø 250, shaft-ø 42, IEC160
DMO20 outer-ø 350, mounting-ø 300, mit 8 x ø18 cetering-ø 250, shaft-ø 42, IEC160
DMO35G outer-ø 450, mounting-ø 400, mit 8 x ø 18 cetering-ø 350, shaft-ø 48, IEC160

= **B5**

with spur gear i=1,92 / 2,00 = **ST2**

with spur gear i=2,75 / 2,80 = **ST3**

Output shaft

zylindrical with parallel key (nach DIN 6885) = **Z**
with tapered external threads (spec. version) = **Ka**

Position of output shaft

mounting position horizontal with shaft bottom = **1**
mounting position horizontal with shaft above = **2**
mounting position vertical = **specify in plain text**

Control (reversing)

manual = **M**
manual / pneumatic / remote controlled = **MP**

Silencer

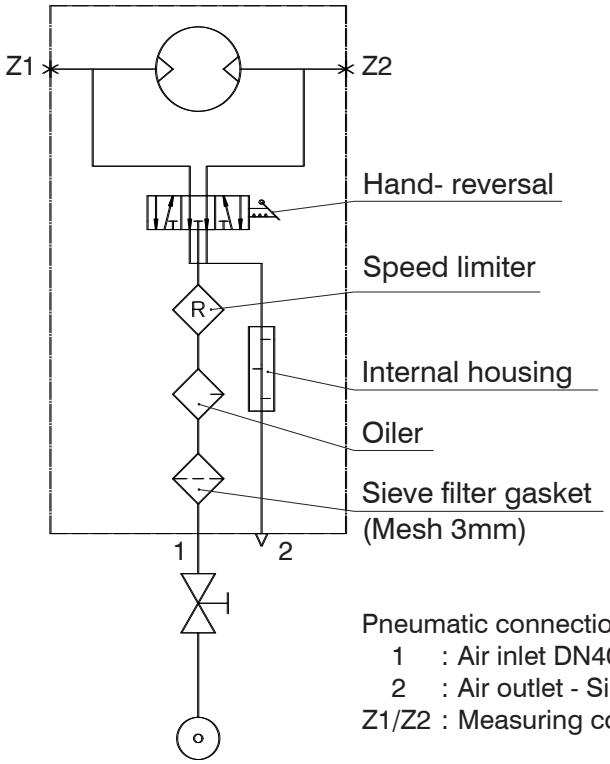
without silencer = **not specified**
with silencer = **KS**

Accessories (plain text)

Entry: ball valve, strainer, oiler, maintenance unit, flange
Exit: brake, spur-, bevel spur gear-, planetary gear, pulse connections

Integrated control: M

manual reversal of sense of direction with standstill in centre position

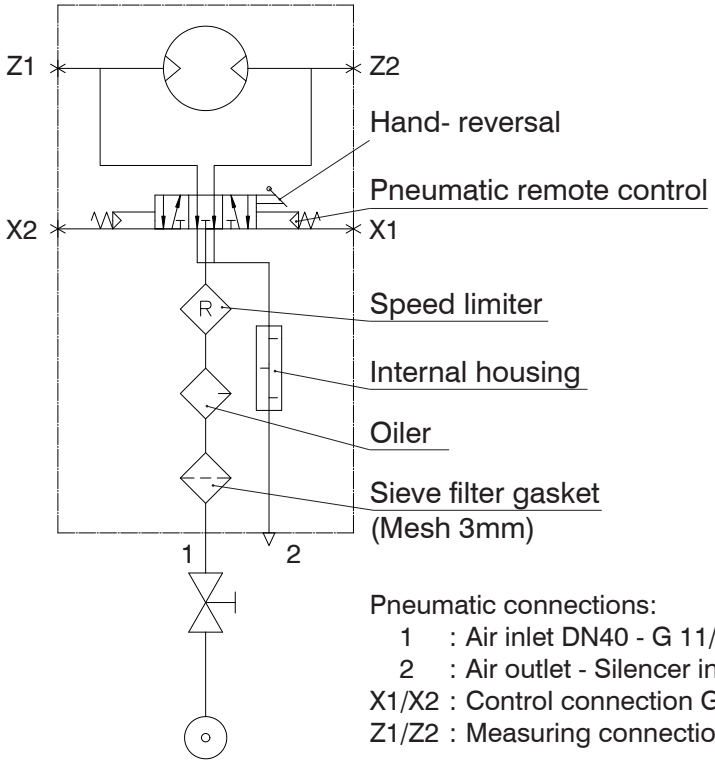


Function:
Reversal of sense of direction with motor standstill in centre position via manual lever. The switch position engages.
At the measuring connections Z1 and Z2, the operating pressure applied to the rotors may be tapped for measuring and control purposes.

Pneumatic connections:
1 : Air inlet DN40 - G 11/2“ ; DN50 - G 2“ ; DN65 - G 21/2“
2 : Air outlet - Silencer installation, optional
Z1/Z2 : Measuring connection (optional - also available as a special version)

Integrated control: MP

manual / pneumatic reversal of sense of direction with standstill in centre position



Function:
Reversal of sense of direction with motor standstill in centre position via manual lever. The switch position engages.
Override by the pneumatic remote control via connections X1/X2.
By default, each of connections X1/X2 has a vent plug for manual lever operation.
In case of pneumatic remote control, one 3/8“ quick-action vent valve should be installed at the connections X1/X2.
The control pressure should not fall below 5.0 bar.
At the measuring connections Z1 and Z2, the operating pressure applied to the rotors may be tapped for measuring and control purposes.

Pneumatic connections:
1 : Air inlet DN40 - G 11/2“ ; DN50 - G 2“ ; DN65 - G 21/2“
2 : Air outlet - Silencer installation, optional
X1/X2 : Control connection G 3/8“
Z1/Z2 : Measuring connection (optional - also available as a special version)

Specifications: - The data is calculated on the basis of 6 bar overpressure and the nominal speed.

Speeds:
- The max. idle speed is controlled by means of the speed controller.
- The max. permissible idle speed without speed controller is 3000 min^{-1}.
- With nominal speed, the nominal torque is delivered.
  With higher torques, the nominal speed will drop until standstill.

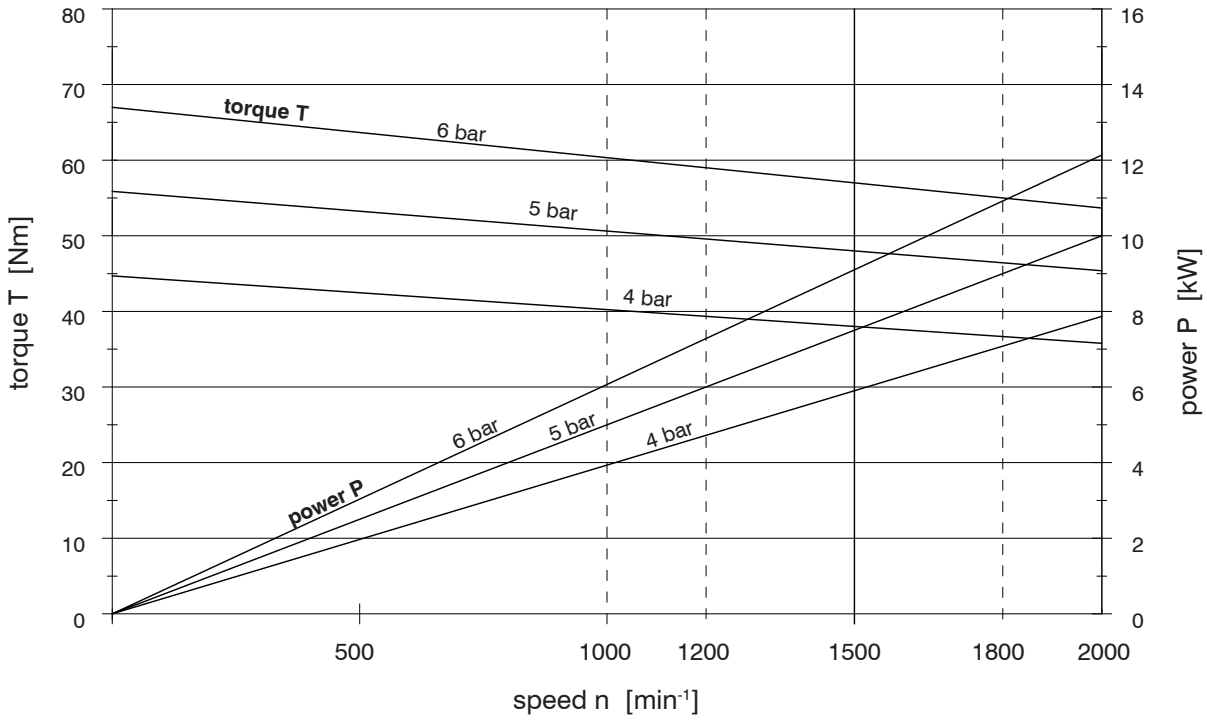
model	operat. pressure		speed range		data at nom. speed and 6 bar exc. pressure			
			nom.	idle	torque		power	air
	cont. **p** [bar]	max. **p** [bar]	pressure n [min^{-1}]	speed n [min^{-1}]	start **T** [$_{min/max}$ Nm]	nom. **T** [Nm]	**P** [kW]	consumpt. **Q** [Nm^3/min]
DMO 8/10	6	8	1000	ap. 1200	62 - 71	60	6,3	9
DMO 8/12	6	8	1200	ap. 1400	62 - 71	59	7,4	10
DMO 8/15	6	8	1500	ap. 1680	62 - 71	57	9,0	12
DMO 8/18	6	8	1800	ap. 1950	62 - 71	55	10,4	14
DMO 8/20	6	8	2000	ap. 2150	62 - 71	54	11,3	15
DMO 15/10	6	8	1000	ap. 1200	115 - 131	111	11,6	14
DMO 15/12	6	8	1200	ap. 1400	115 - 131	109	13,7	16
DMO 15/15	6	8	1500	ap. 1680	115 - 131	104	16,3	19
DMO 15/18	6	8	1800	ap. 1950	115 - 131	102	19,2	23
DMO 15/20	6	8	2000	ap. 2150	115 - 131	99	20,7	24
DMO 20/10	6	8	1000	ap. 1200	170 - 196	170	17,8	22
DMO 20/12	6	8	1200	ap. 1400	170 - 196	166	20,9	25
DMO 20/15	6	8	1500	ap. 1680	170 - 196	156	24,5	28
DMO 20/18	6	8	1800	ap. 1950	170 - 196	144	27,1	31
DMO 20/20	6	8	2000	ap. 2150	170 - 196	134	28,1	32
DMO 35G/10	6	8	1000	ap. 1200	315 - 355	311	32,6	36
DMO 35G/12	6	8	1200	ap. 1400	315 - 355	304	38,2	40
DMO 35G/15	6	8	1500	ap. 1680	315 - 355	290	45,5	46
DMO 35G/18	6	8	1800	ap. 1950	315 - 355	270	50,9	52
DMO 35G/20	6	8	2000	ap. 2150	315 - 355	254	53,2	56

The quantities DMO 56 on request.

Nominal speed, torque, power, air consumption:

- The data is calculated proportionally to the operating pressure of 6 bar.
- For other operating pressures, the data is converted proportionally.

Air consumption : Specification in standard cubic meters / minute [Nm^3/min] pursuant to DIN 1343, ISO 2533


torque T [Nm]
power P [kW]
speed n [min-1]
torque T
6 bar
5 bar
4 bar
power P
6 bar
5 bar
4 bar
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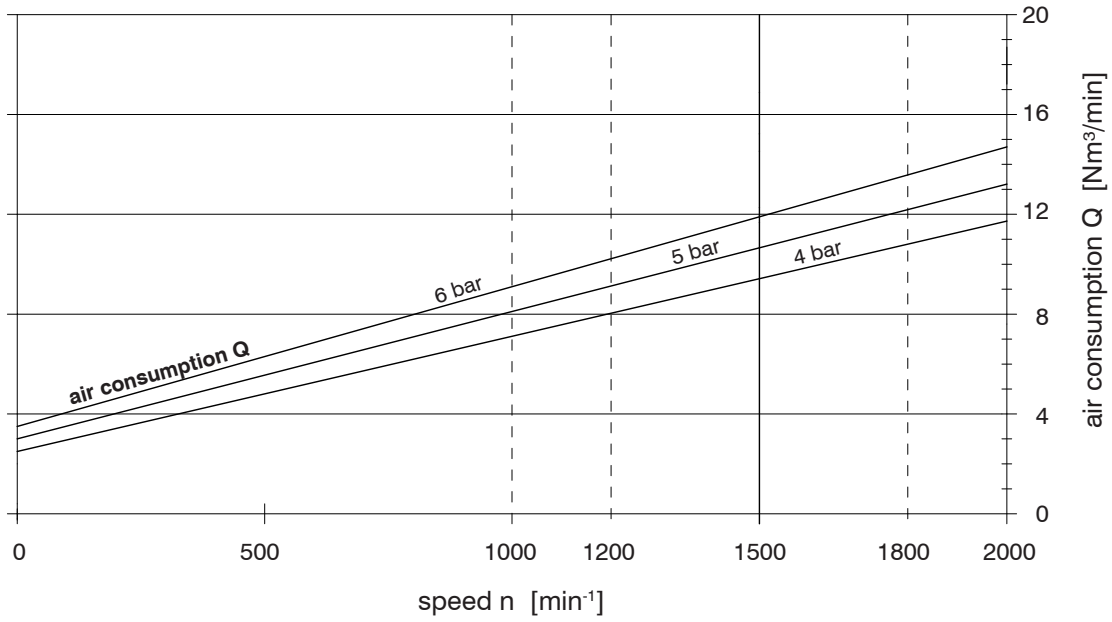
air consumption Q [Nm3/min]
speed n [min-1]
air consumption Q
6 bar
5 bar
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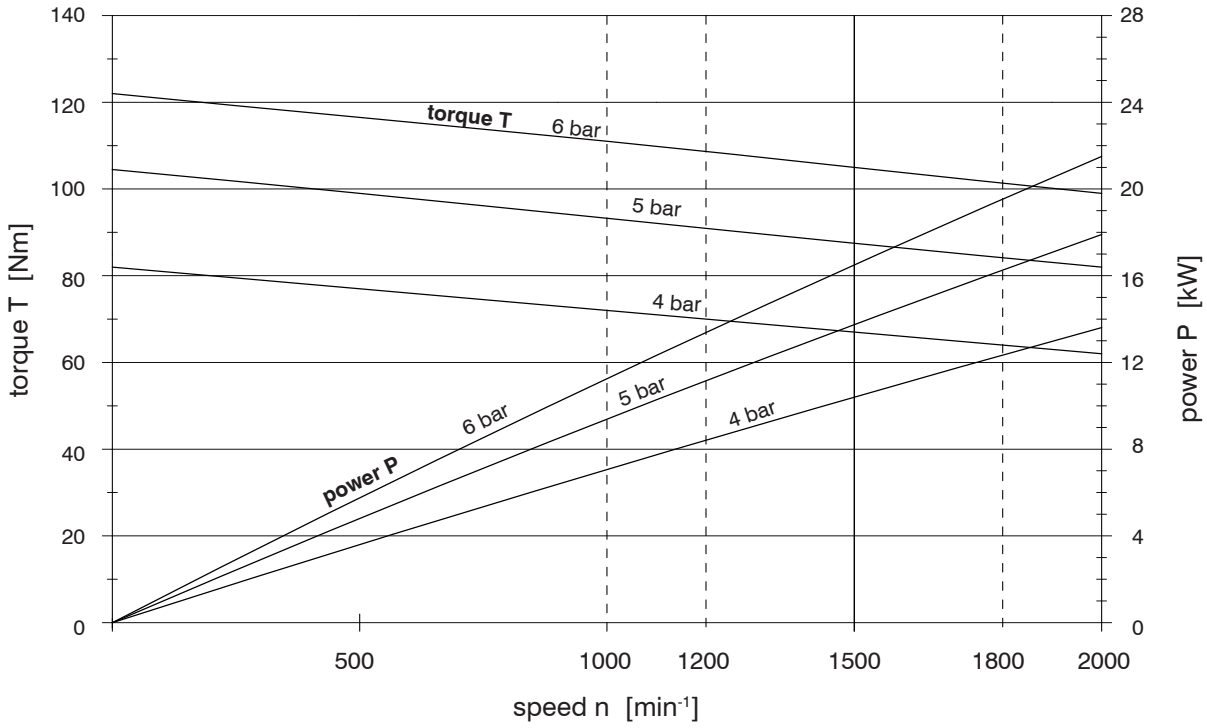
torque T [Nm]
power P [kW]
speed n [min-1]
torque T
6 bar
5 bar
4 bar
power P
6 bar
5 bar
4 bar
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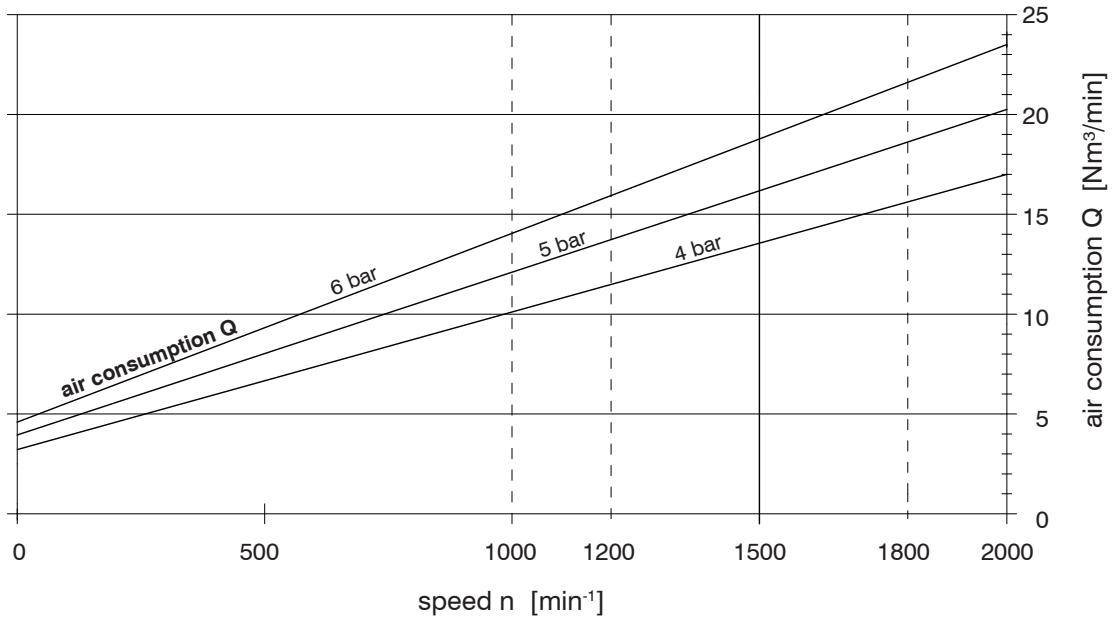
air consumption Q [Nm3/min]
speed n [min-1]
air consumption Q
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5 bar
4 bar
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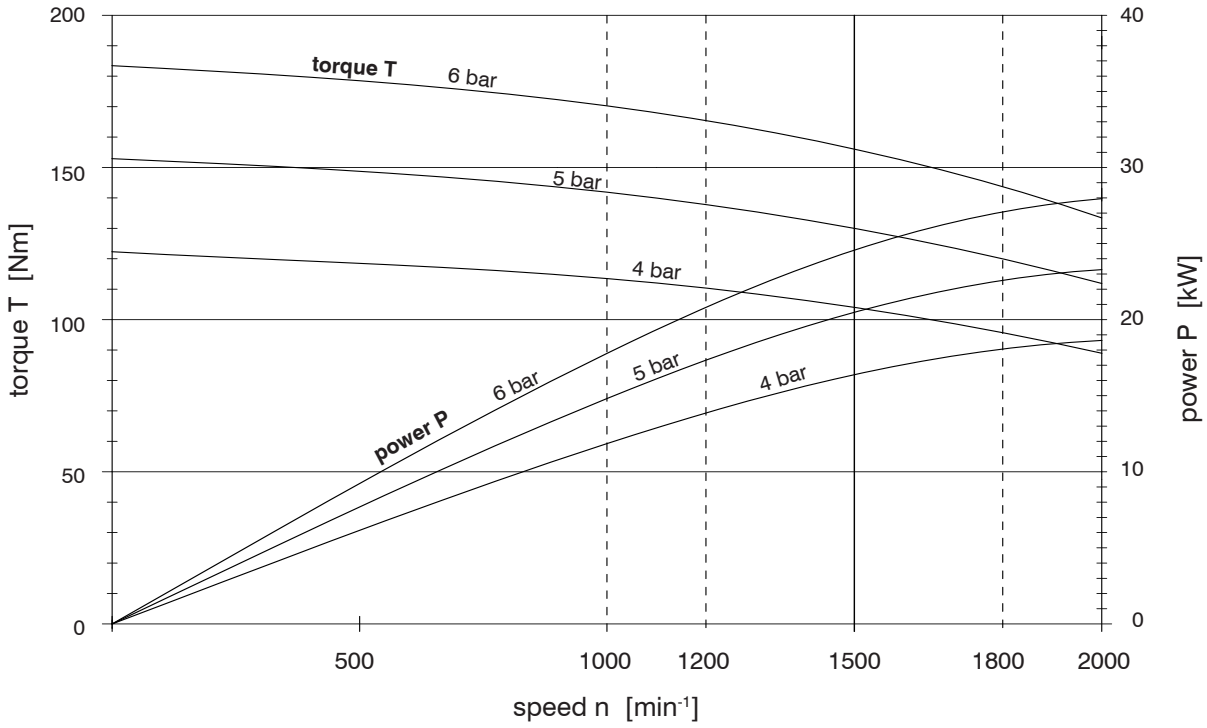
torque T
6 bar
5 bar
4 bar
power P
6 bar
5 bar
4 bar
torque T [Nm]
power P [kW]
speed n [min-1]
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1000
1200
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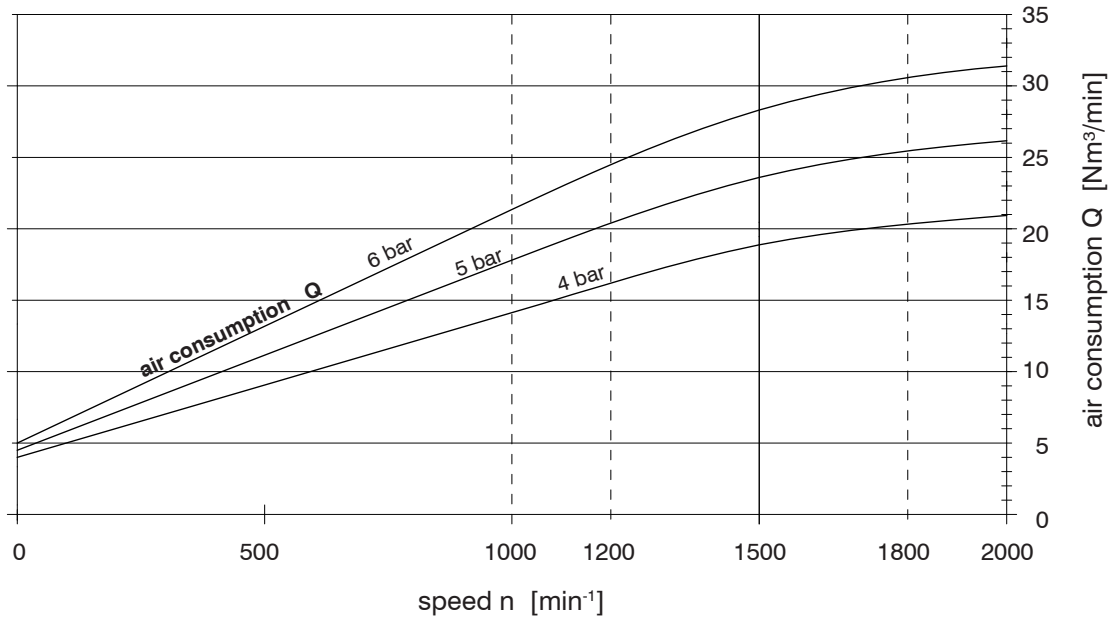
1800
2000


air consumption Q
6 bar
5 bar
4 bar
air consumption Q [Nm³/min]
speed n [min-1]
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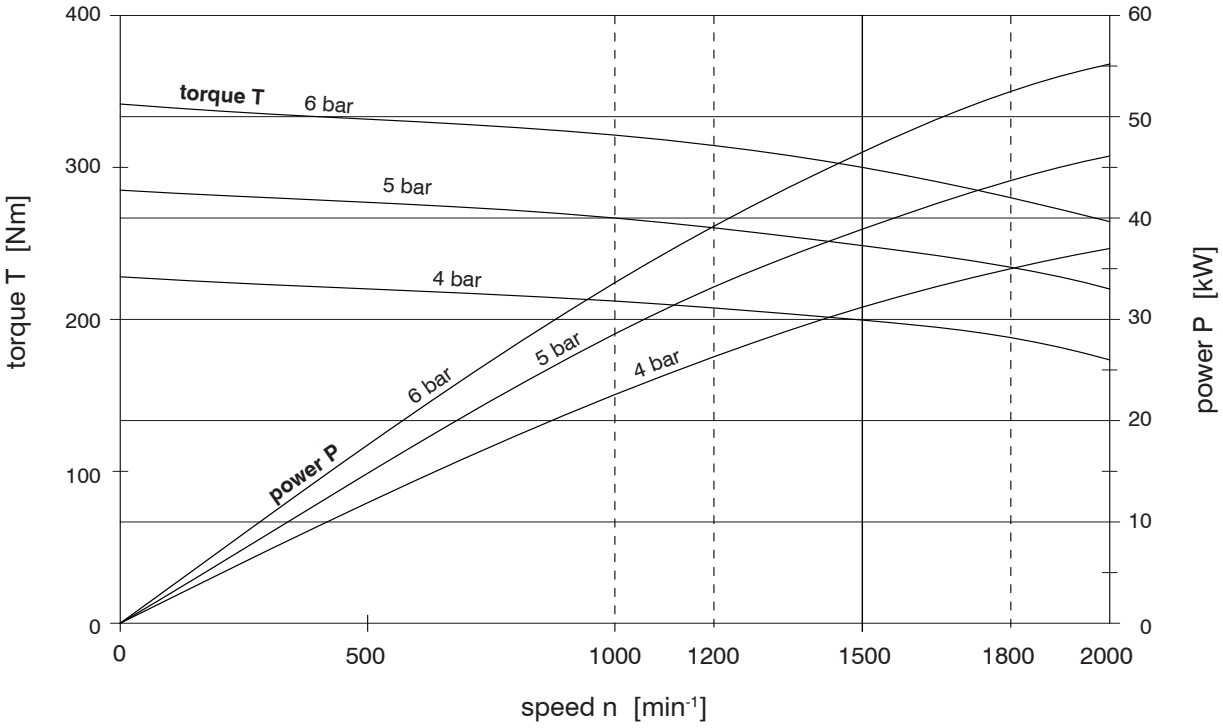
1500
1800
2000


torque T [Nm]
power P [kW]
speed n [min-1]
torque T
6 bar
5 bar
4 bar
power P
6 bar
5 bar
4 bar
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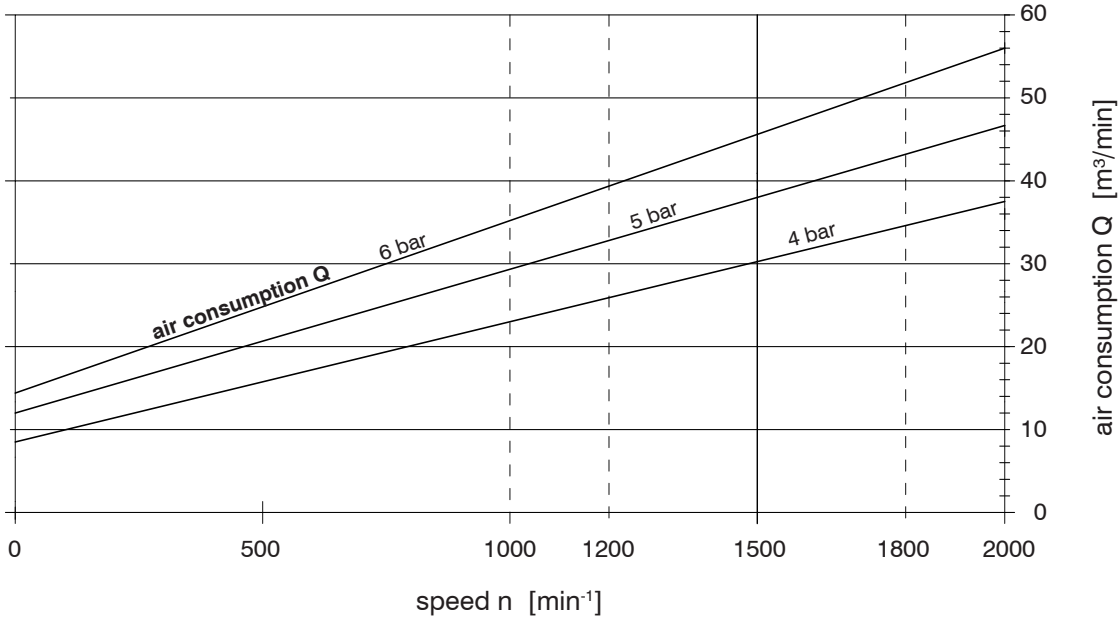

air consumption Q [m³/min]
speed n [min-1]
air consumption Q
6 bar
5 bar
4 bar
0
10
20
30
40
50
60
0
500
1000
1200
1500
1800
2000

Specifications : - The data is calculated on the basis of 6 bar overpressure and the nominal speed.

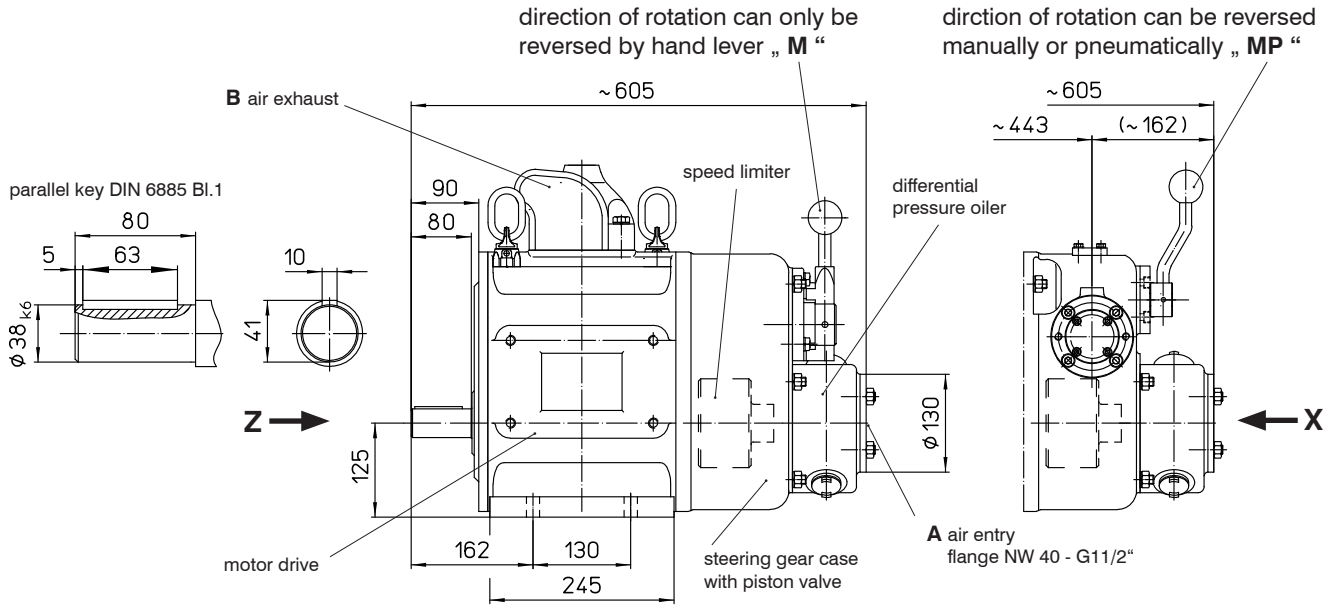
Speeds : - The max. idle speed is controlled by means of the speed controller.
- With nominal speed, the nominal torque is delivered.
With higher torques, the nominal speed will drop until standstill.

model	gear ratio **i**	operat. pressure		speed range		data at nom. speed and 6 bar exc. pressure			
				nom. pressure **n** [min^{-1}]	idle speed **n** [min^{-1}]	torque		power	air consumpt. **Q** [Nm^3/min]
		cont. **p** [bar]	max. **p** [bar]			start **T** [$_{min/max}$ Nm]	nom. **T** [Nm]	**P** [kW]	
DMO 8/10	1,92	6	8	520	ap. 625	108-124	105	5,7	9
DMO 8/10	2,80	6	8	355	ap. 430	158-181	153	5,7	9
DMO 8/12	1,92	6	8	625	ap. 730	108-124	103	6,8	10
DMO 8/12	2,80	6	8	430	ap. 500	158-181	150	6,8	10
DMO 8/15	1,92	6	8	780	ap. 875	108-124	100	8,2	12
DMO 8/15	2,80	6	8	535	ap. 600	158-181	145	8,2	12
DMO 8/18	1,92	6	8	940	ap.1015	108-124	96	9,4	14
DMO 8/18	2,80	6	8	640	ap. 700	158-181	140	9,4	14
DMO 8/20	1,92	6	8	1040	ap. 1120	108-124	94	10,3	15
DMO 8/20	2,80	6	8	715	ap. 770	158-181	138	10,3	15
DMO 15/10	2,00	6	8	500	ap. 600	209-239	202	10,6	14
DMO 15/10	2,75	6	8	360	ap. 435	288-328	278	10,6	14
DMO 15/12	2,0	6	8	600	ap. 700	209-239	199	12,5	16
DMO 15/12	2,75	6	8	435	ap. 510	288-328	273	12,5	16
DMO 15/15	2,0	6	8	750	ap. 840	209-239	189	14,9	19
DMO 15/15	2,75	6	8	545	ap. 610	288-328	260	14,9	19
DMO 15/18	2,0	6	8	900	ap. 975	209-239	186	17,5	23
DMO 15/18	2,75	6	8	655	ap. 710	288-328	155	17,5	23
DMO 15/20	2,0	6	8	1000	ap. 1075	209-239	180	18,9	24
DMO 15/20	2,75	6	8	730	ap. 780	288-328	248	18,9	24
DMO 20/10	2,0	6	8	500	ap. 600	310-357	309	16,2	22
DMO 20/10	2,75	6	8	360	ap. 435	426-491	425	16,2	22
DMO 20/12	2,0	6	8	600	ap. 700	310-357	302	19,0	25
DMO 20/12	2,75	6	8	435	ap. 510	426-491	416	19,0	25
DMO 20/15	2,0	6	8	750	ap. 840	310-357	284	22,3	28
DMO 20/15	2,75	6	8	545	ap. 610	426-491	390	22,3	28
DMO 20/18	2,0	6	8	900	ap. 975	310-357	262	24,7	31
DMO 20/18	2,75	6	8	655	ap. 710	426-491	360	24,7	31
DMO 20/20	2,0	6	8	1000	ap. 1075	310-357	244	25,5	32
DMO 20/20	2,75	6	8	730	ap. 780	426-491	355	25,5	32

Nominal speed, torque, power, air consumption:
- The data is calculated proportionally to the operating pressure of 6 bar.
- For other operating pressures, the data is converted proportionally.

Air consumption : Specification in standard cubic meters/minute [Nm^3/min] pursuant to DIN 1343, ISO 2533

gear unit : A degree of efficiency of $\mu = 0{,}91$ was assumed for the spur gear unit.

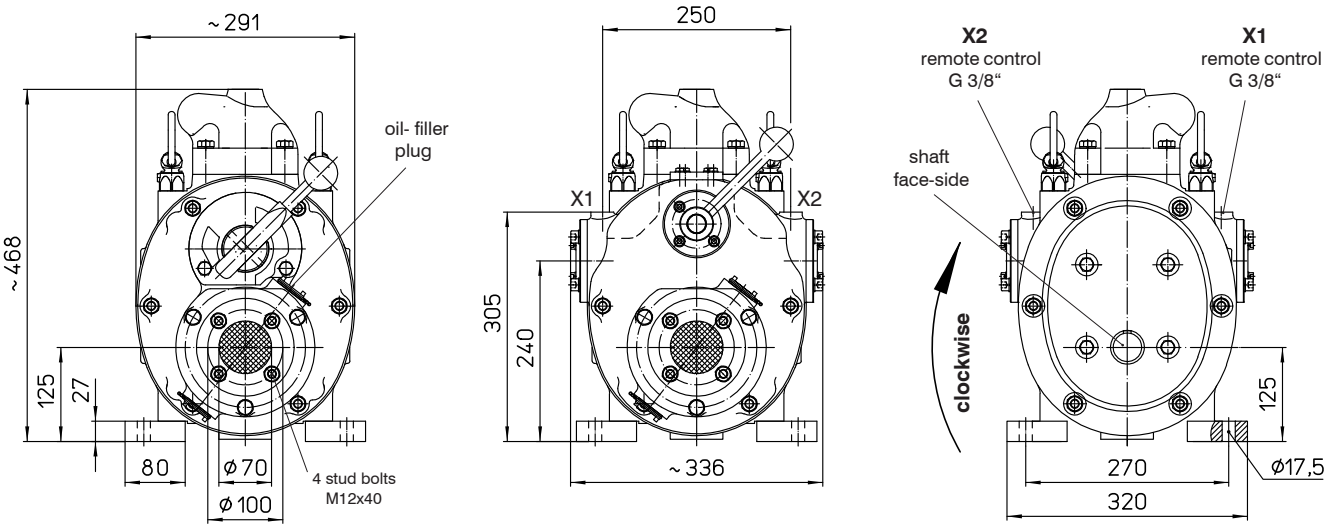


X
control **M**

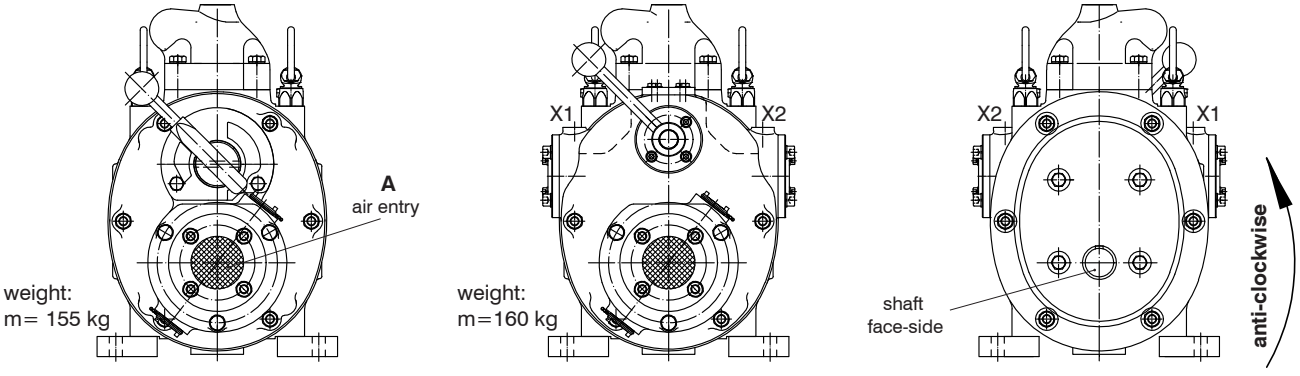
X
control **MP**

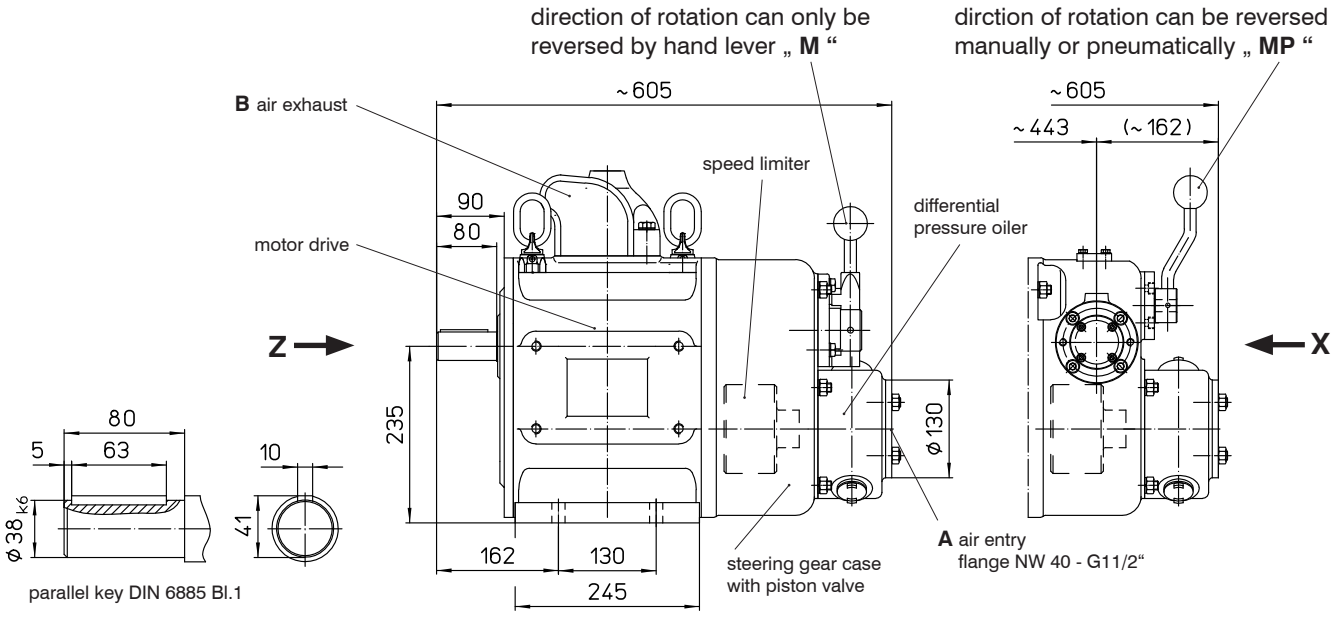
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



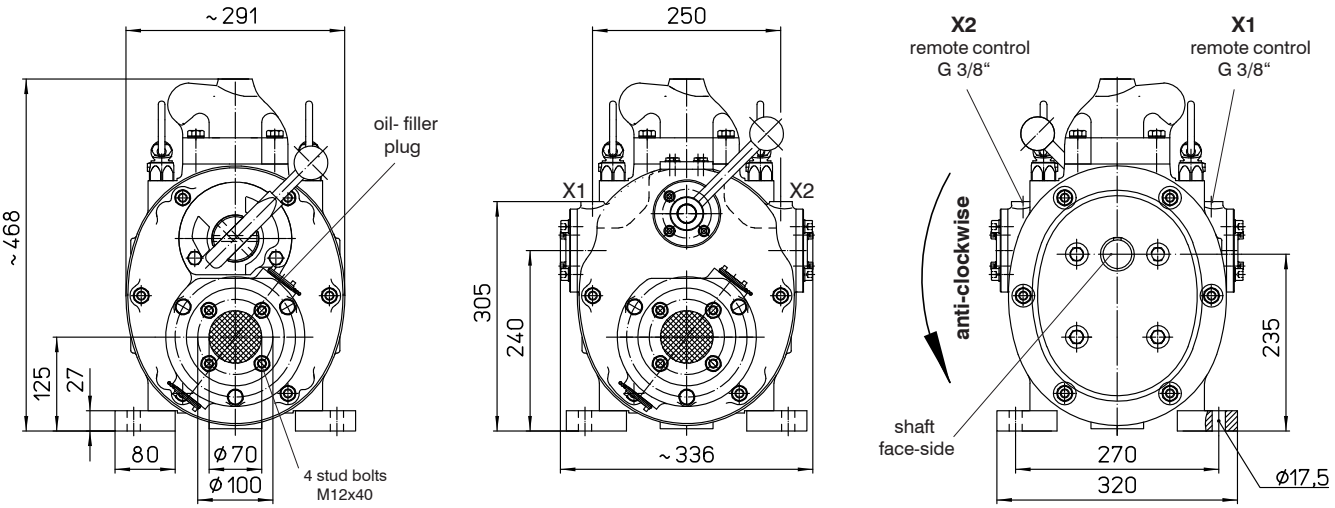


X
control **M**

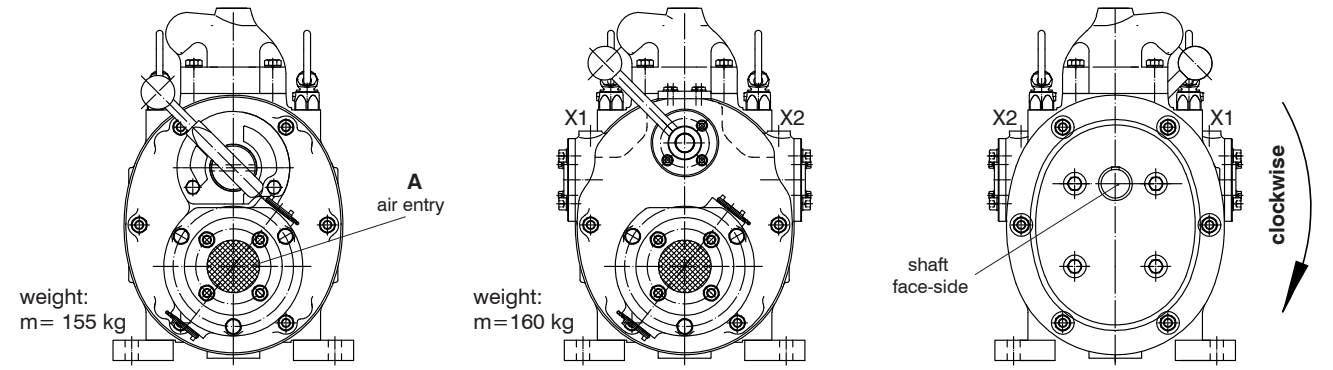
X
control **MP**

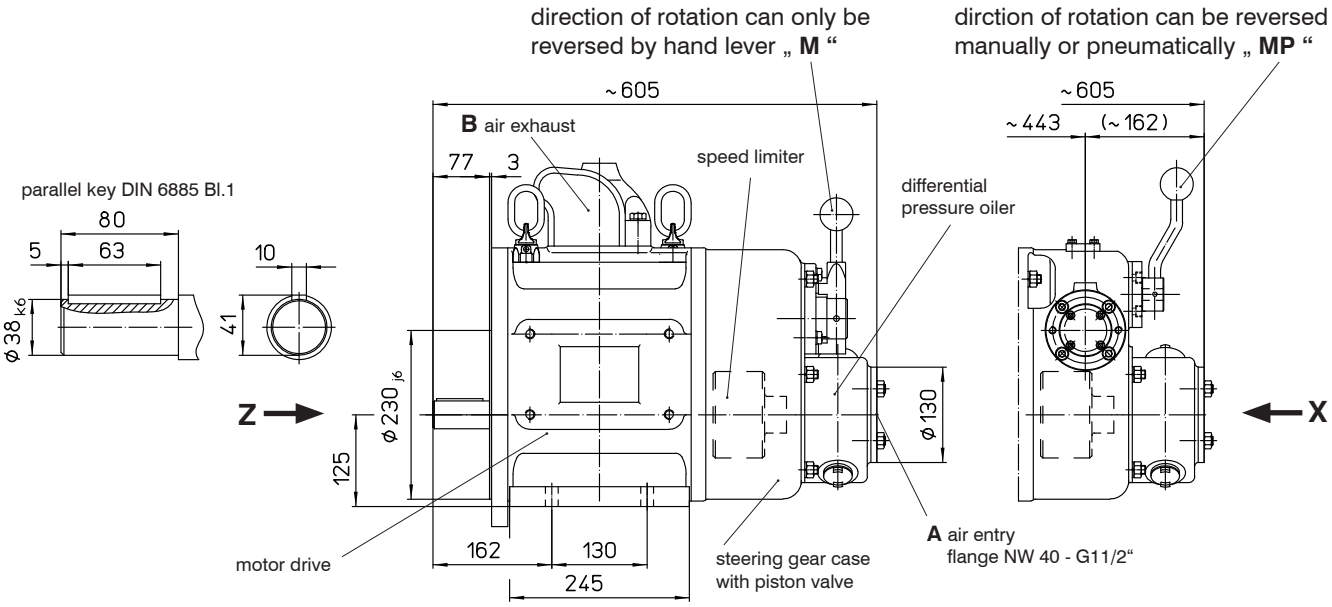
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



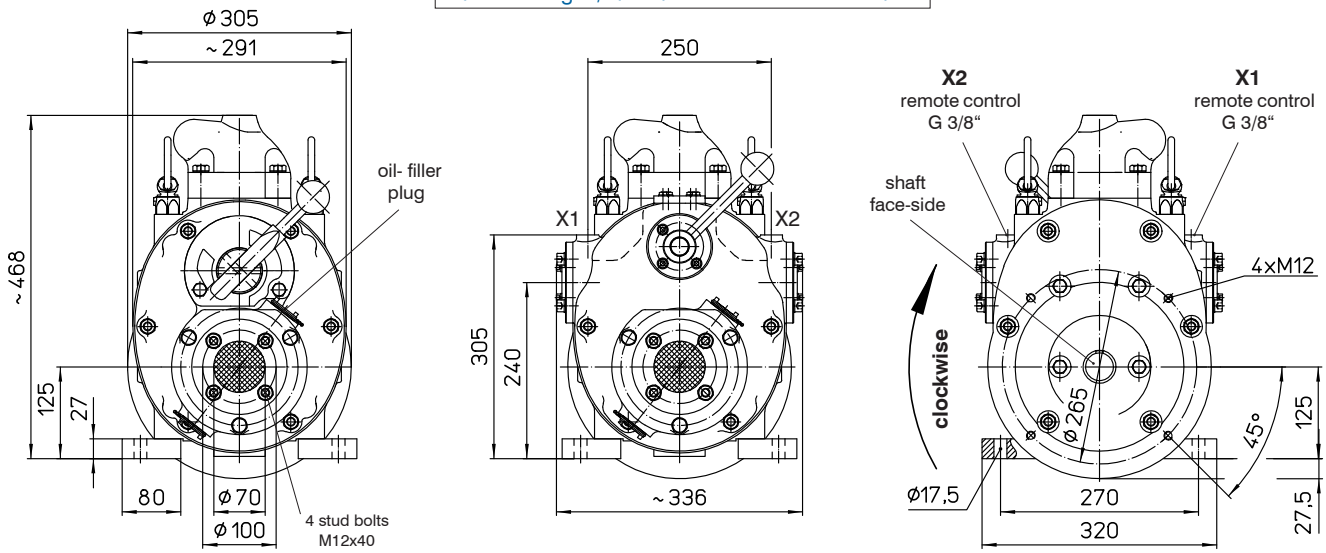


X
control **M**

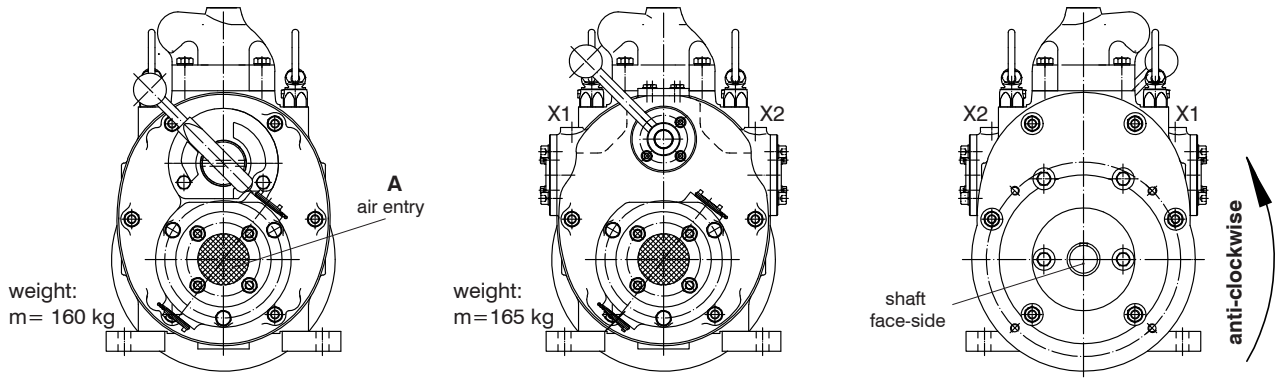
X
control **MP**

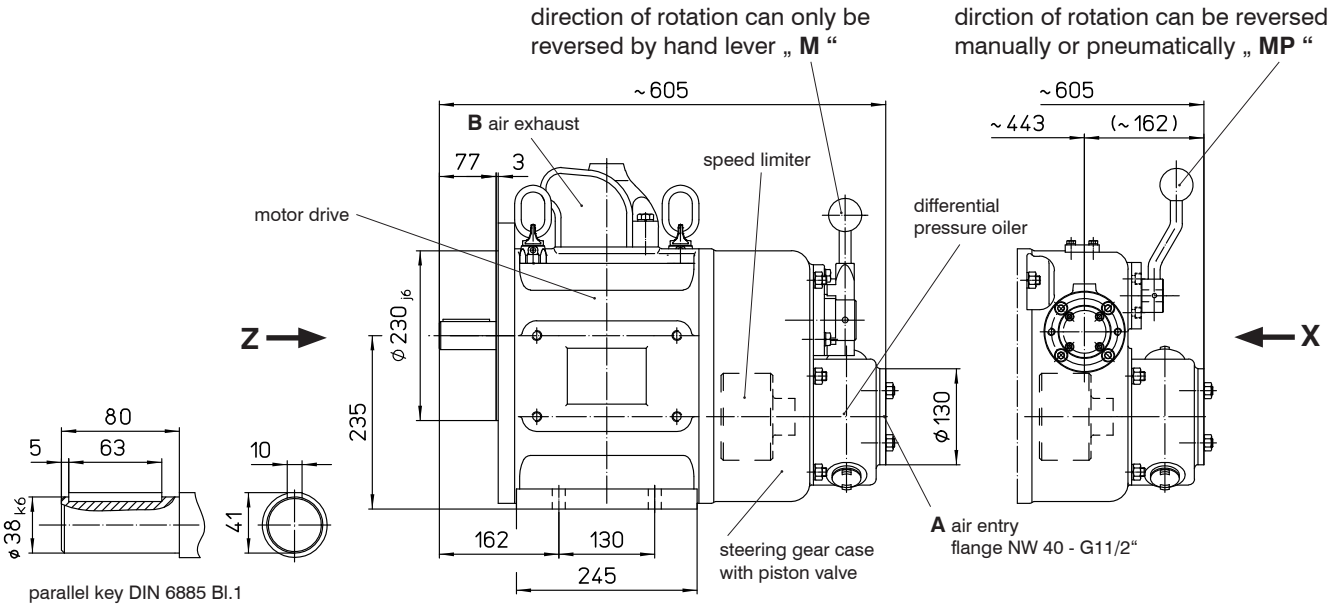
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



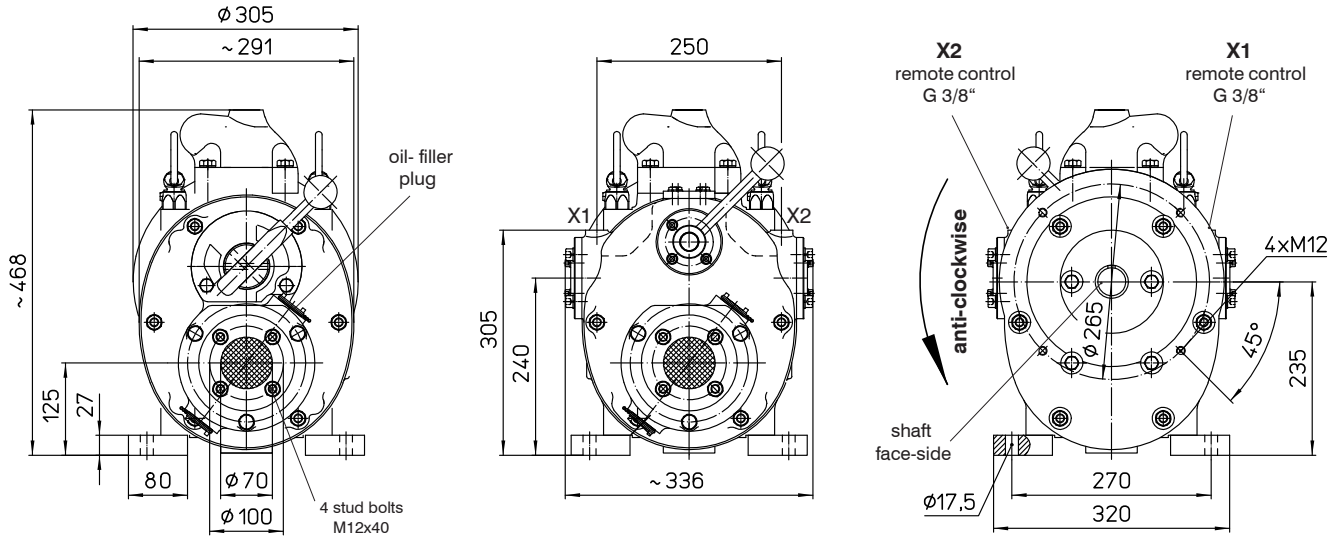


X
control **M**

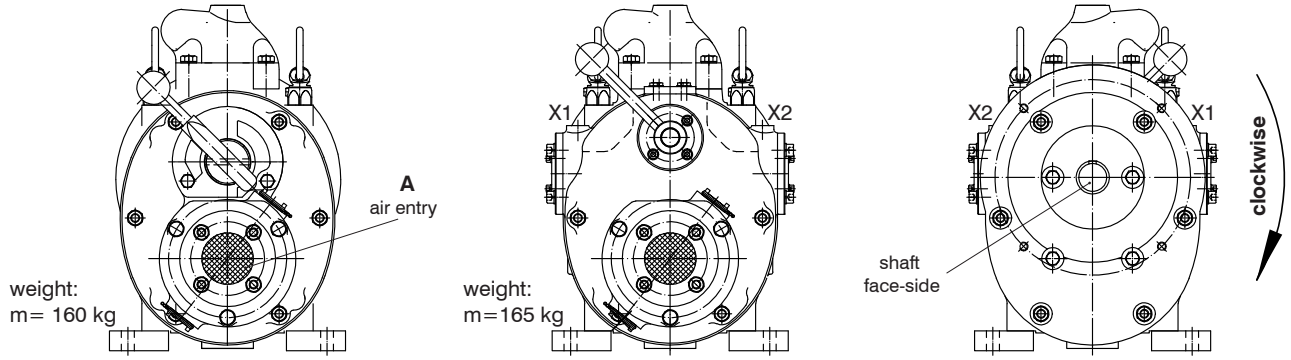
X
control **MP**

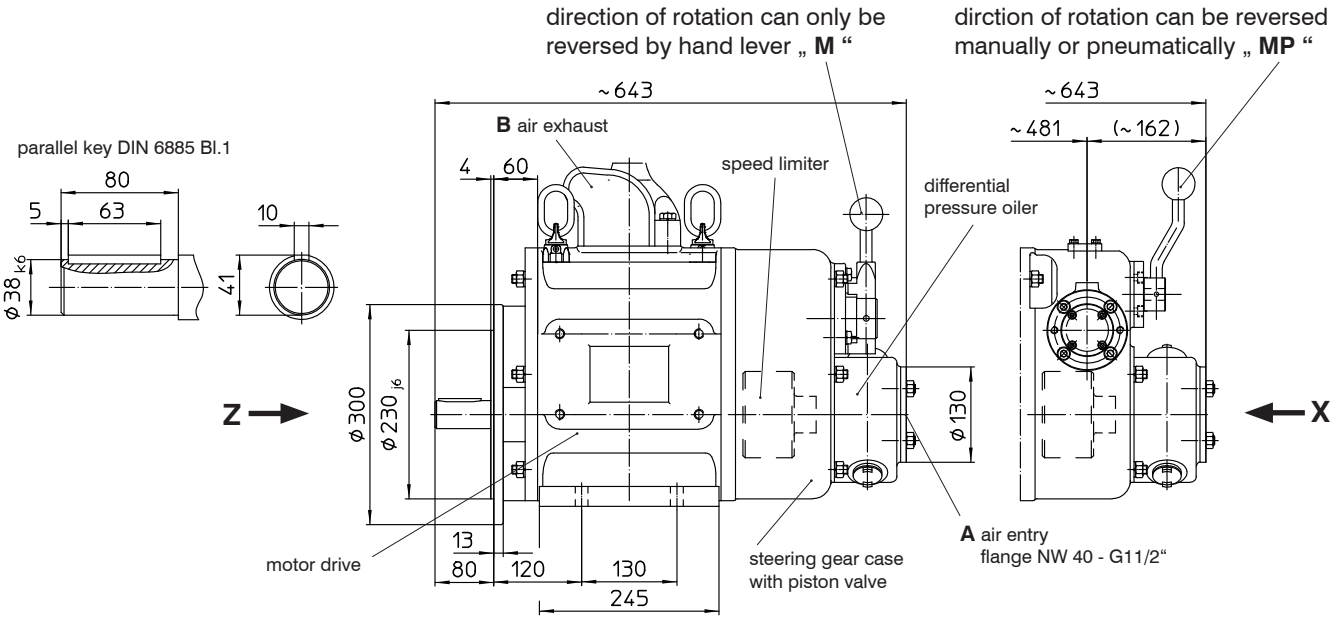
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



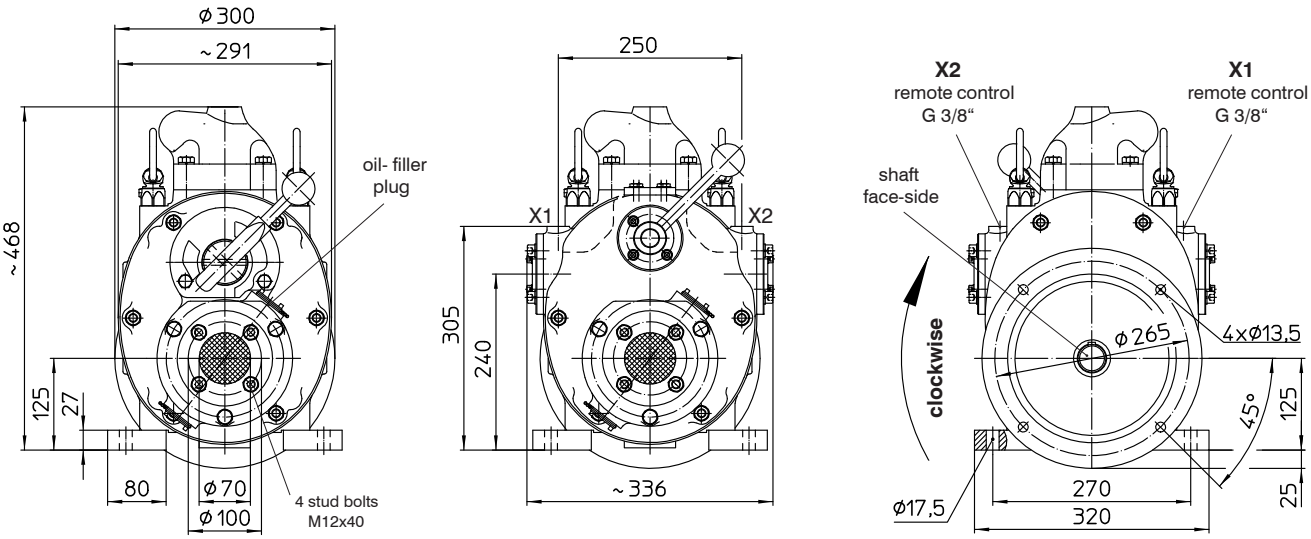


X
control **M**

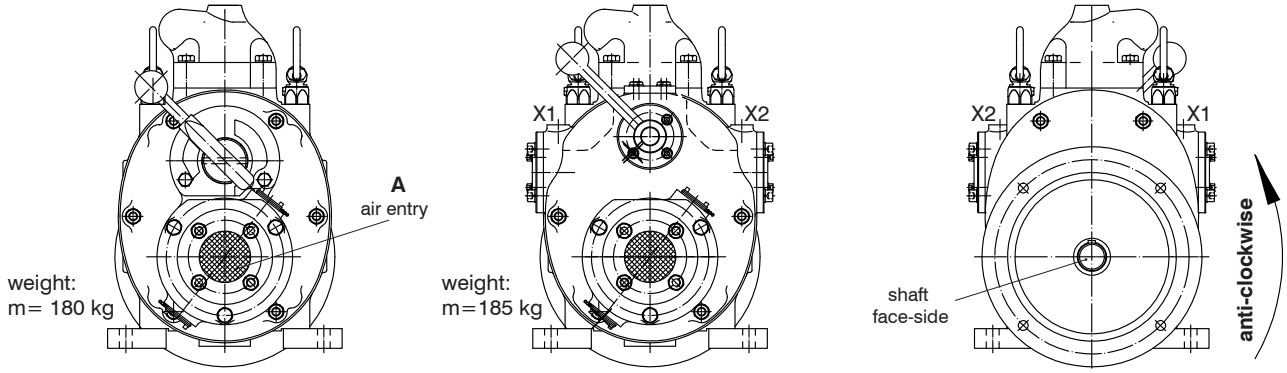
X
control **MP**

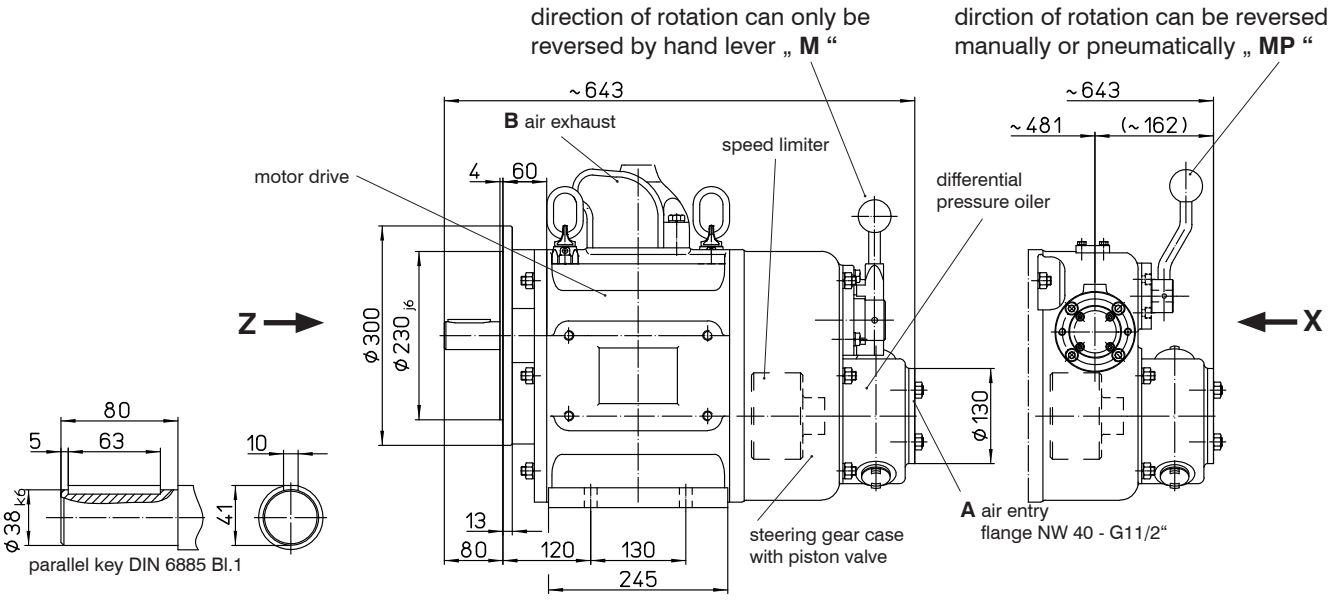
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



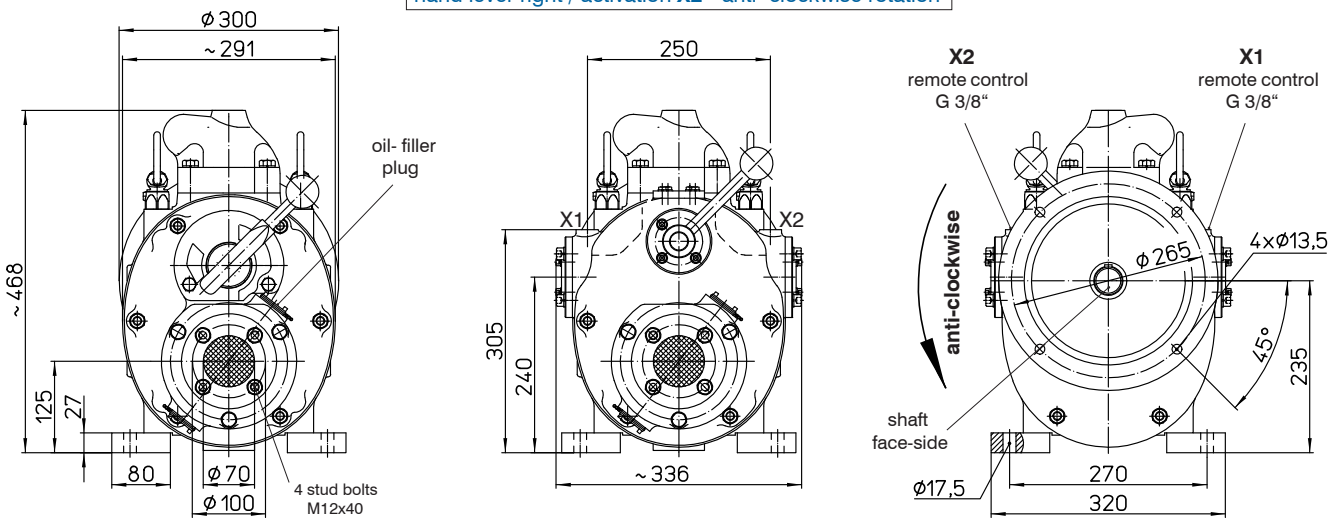


X
control **M**

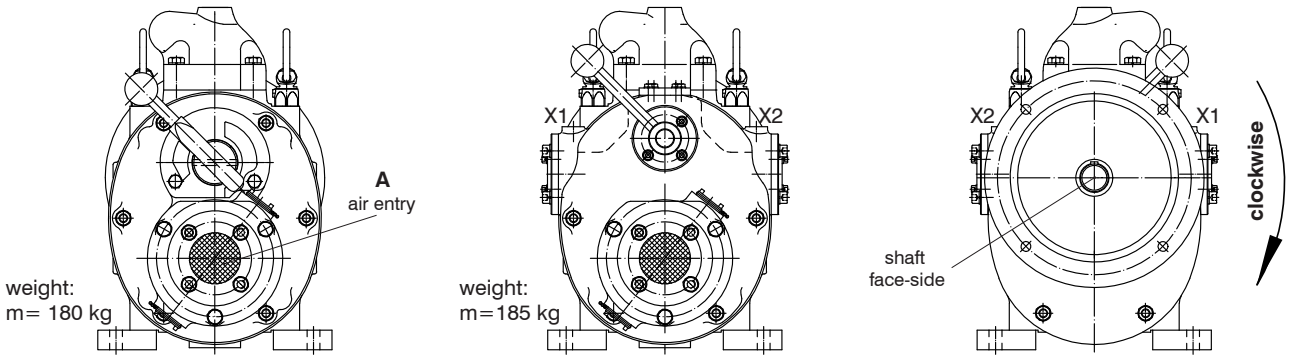
X
control **MP**

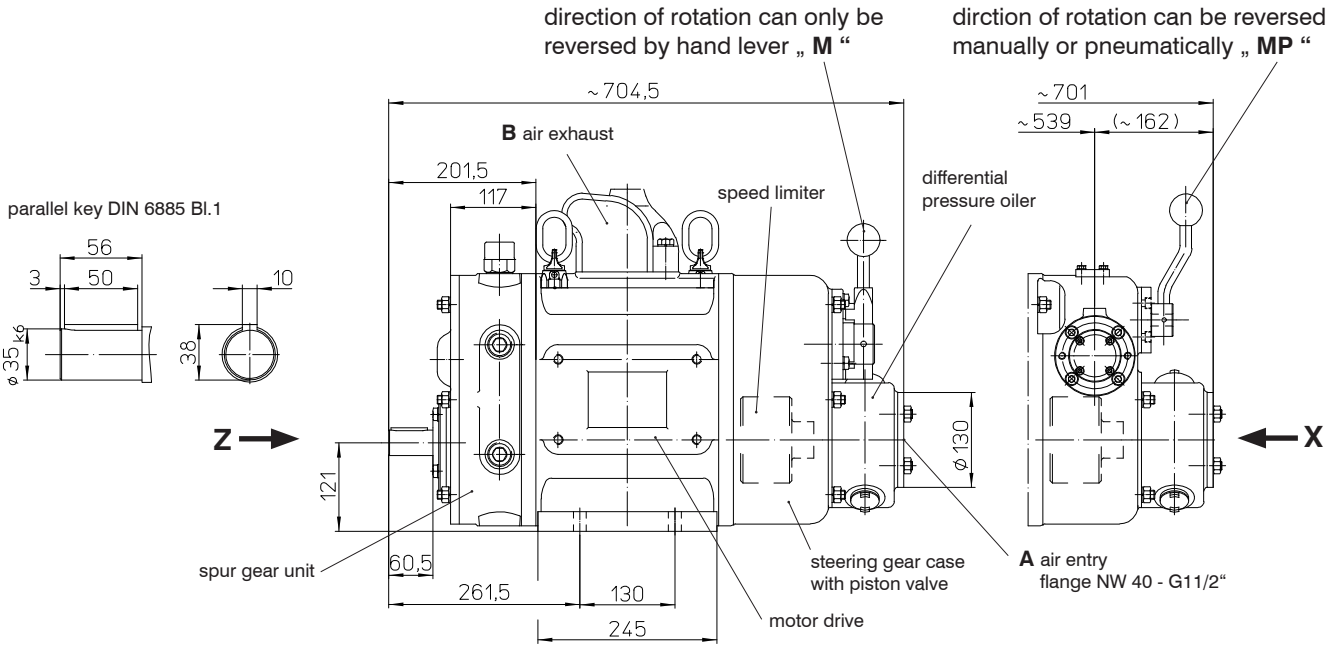
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



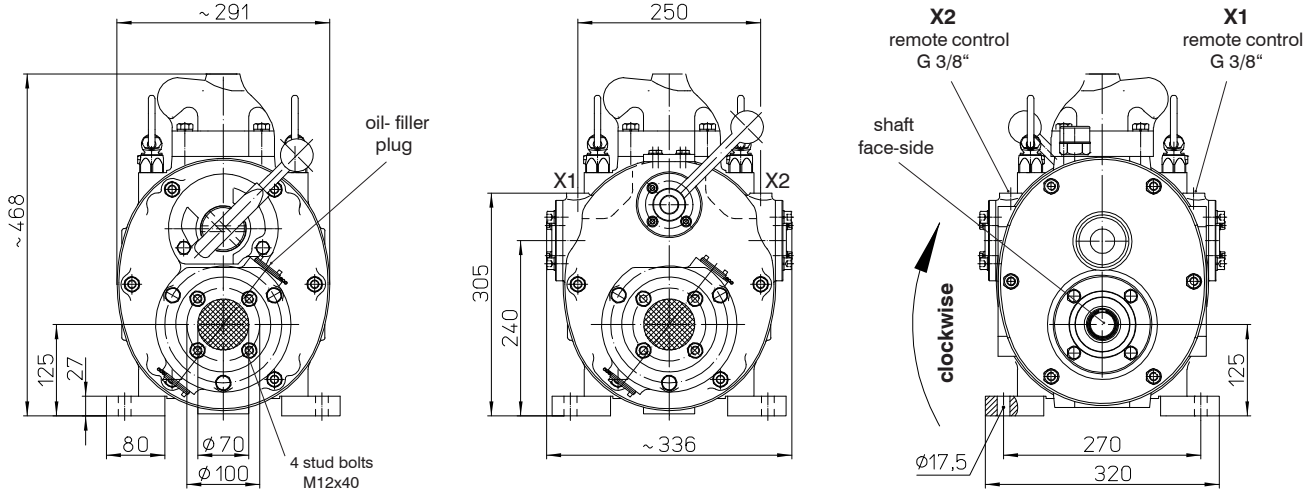


X
control **M**

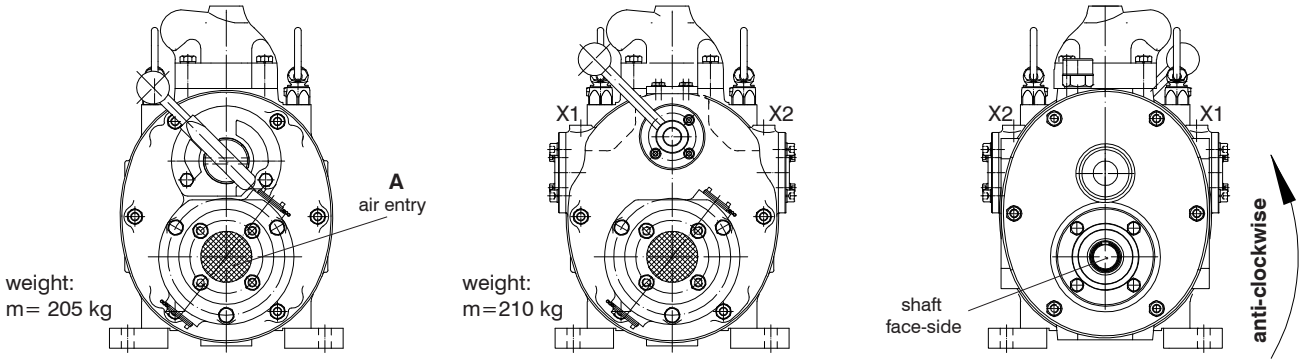
X
control **MP**

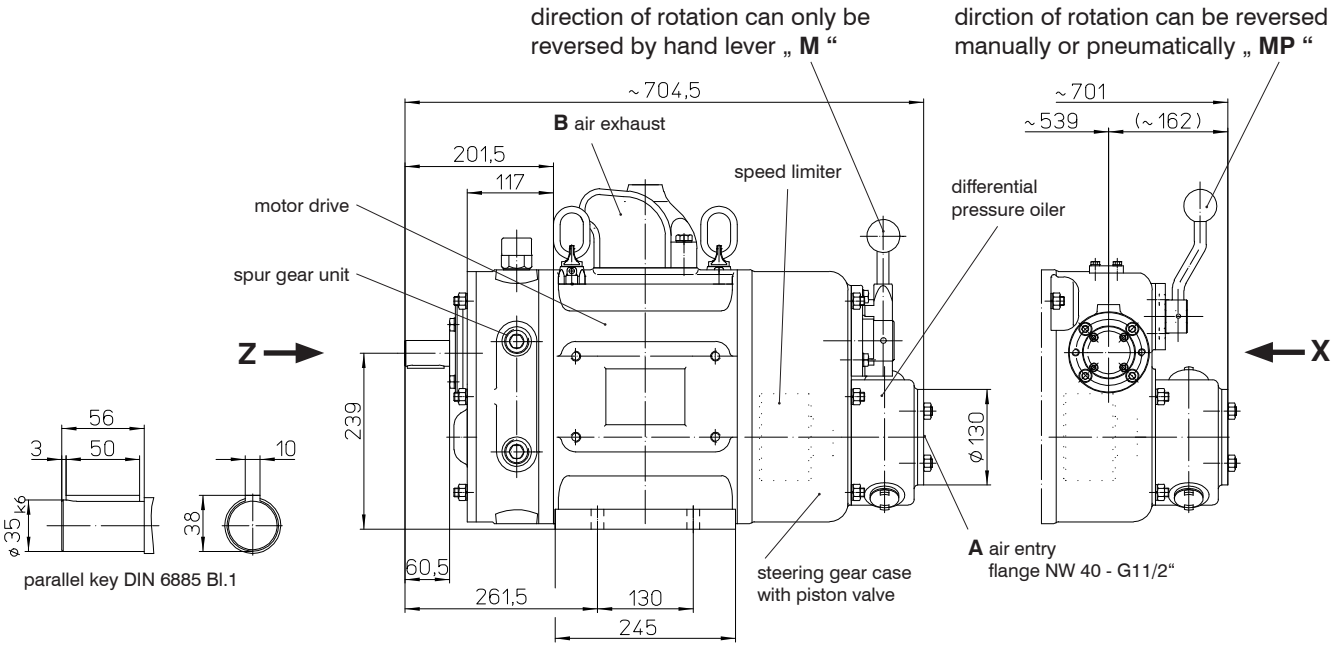
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



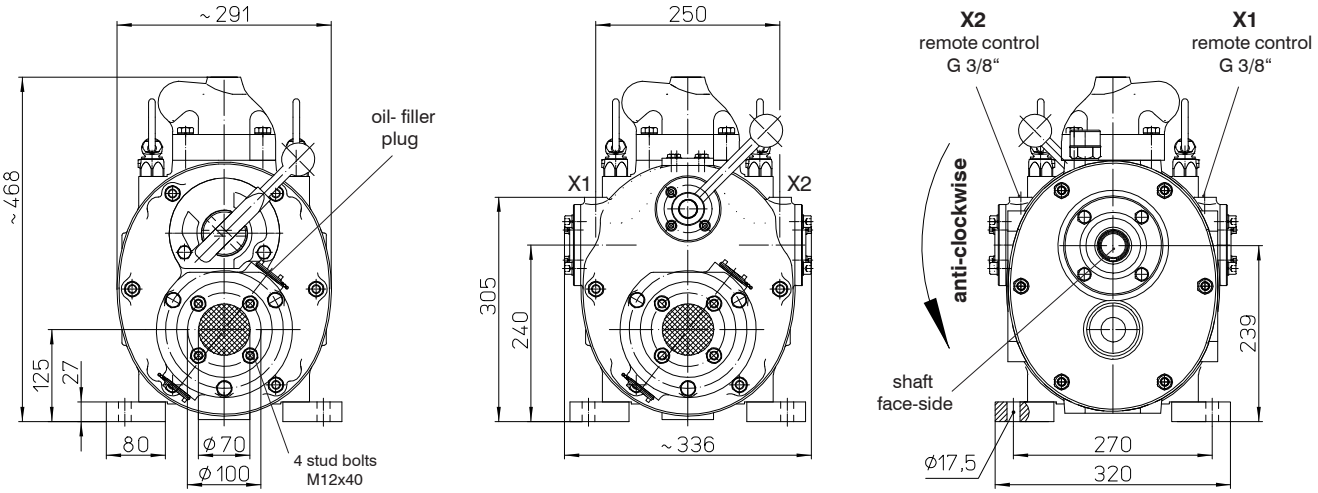


X
control **M**

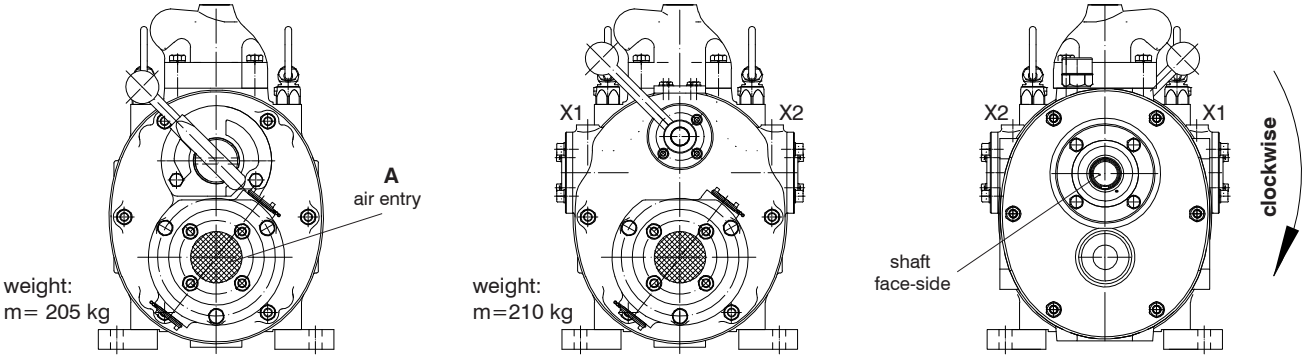
X
control **MP**

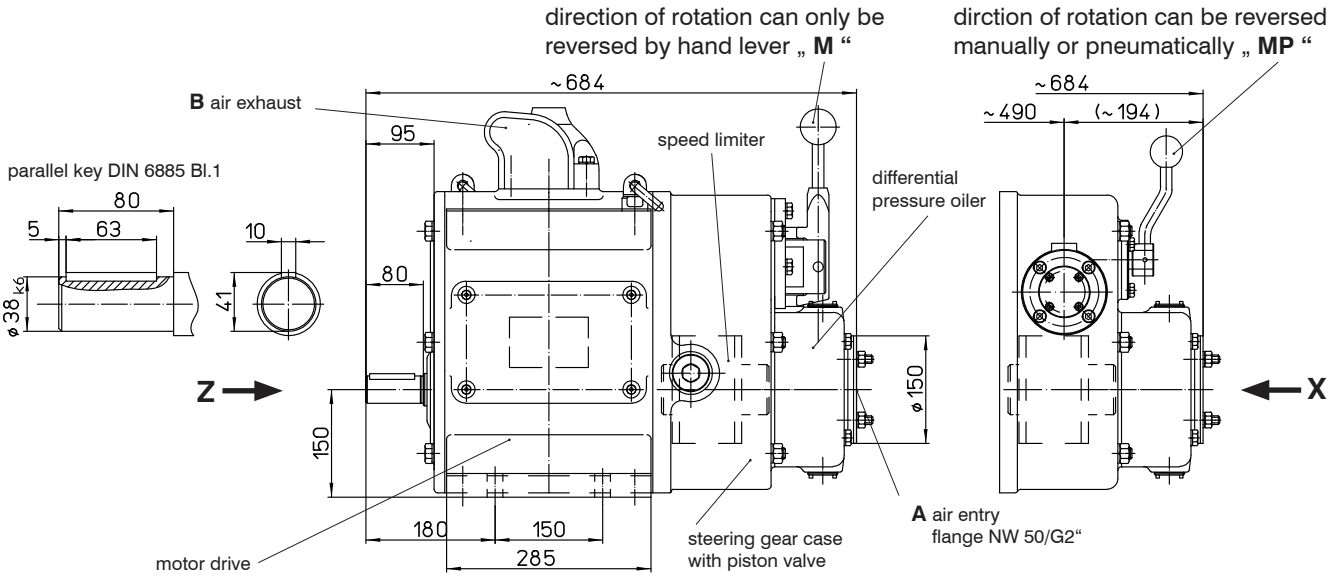
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



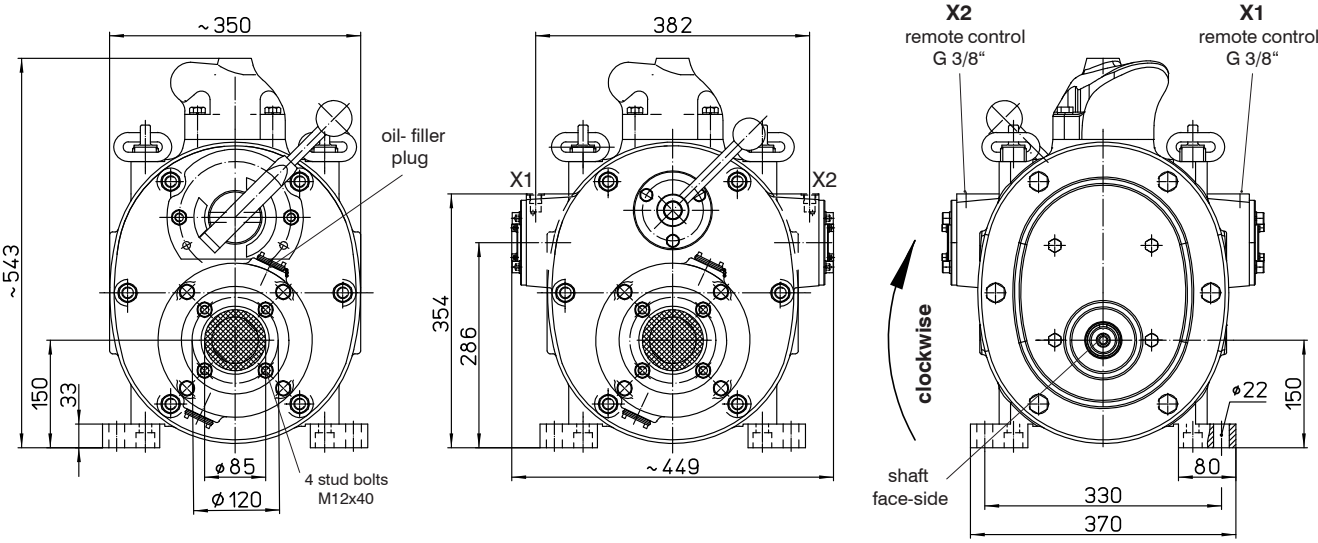


X
control **M**

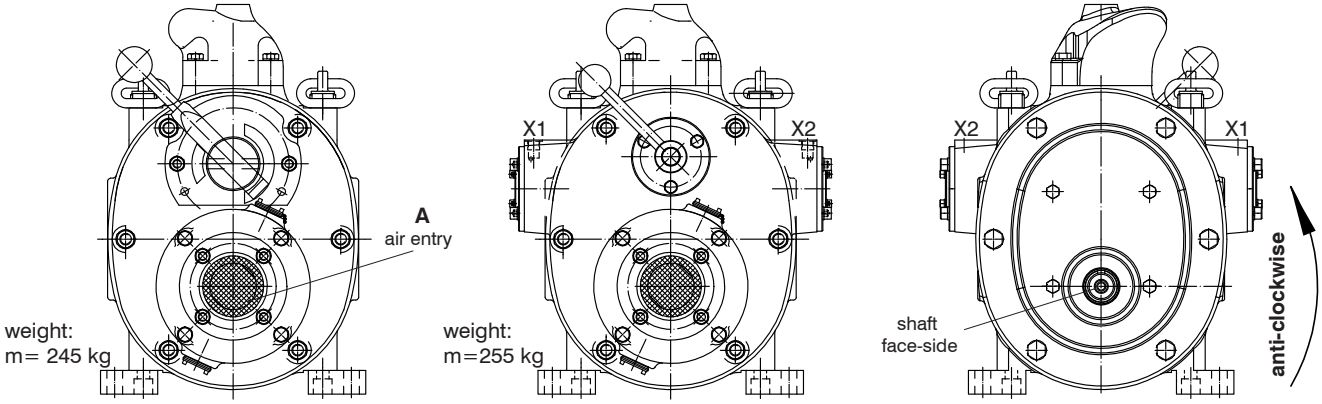
X
control **MP**

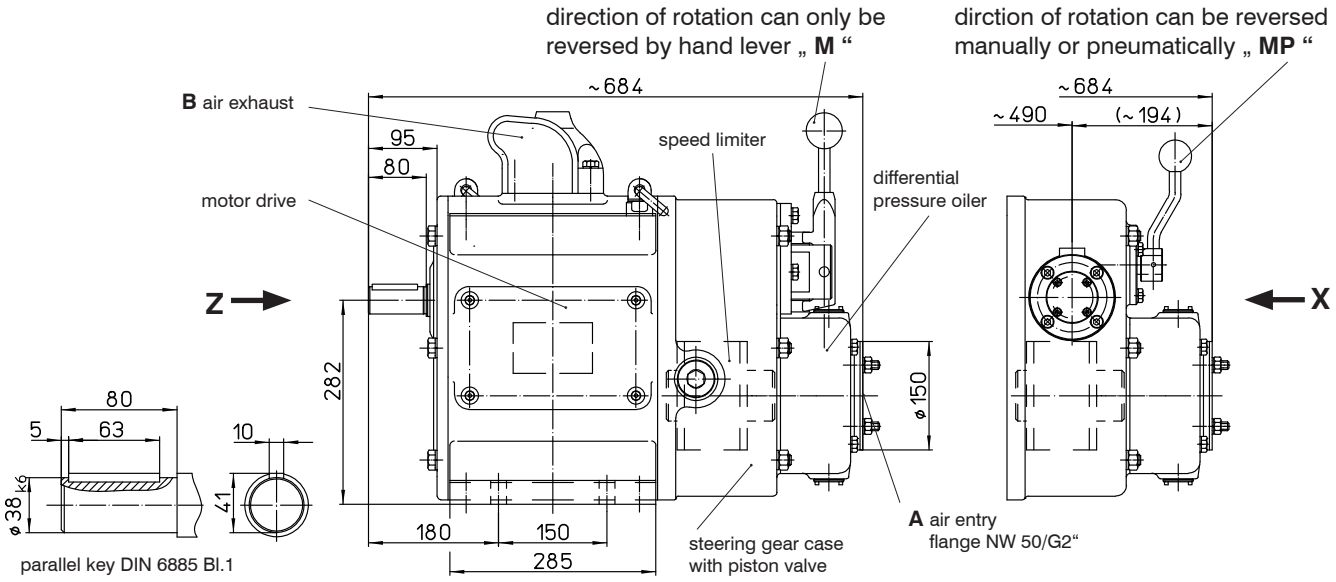
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



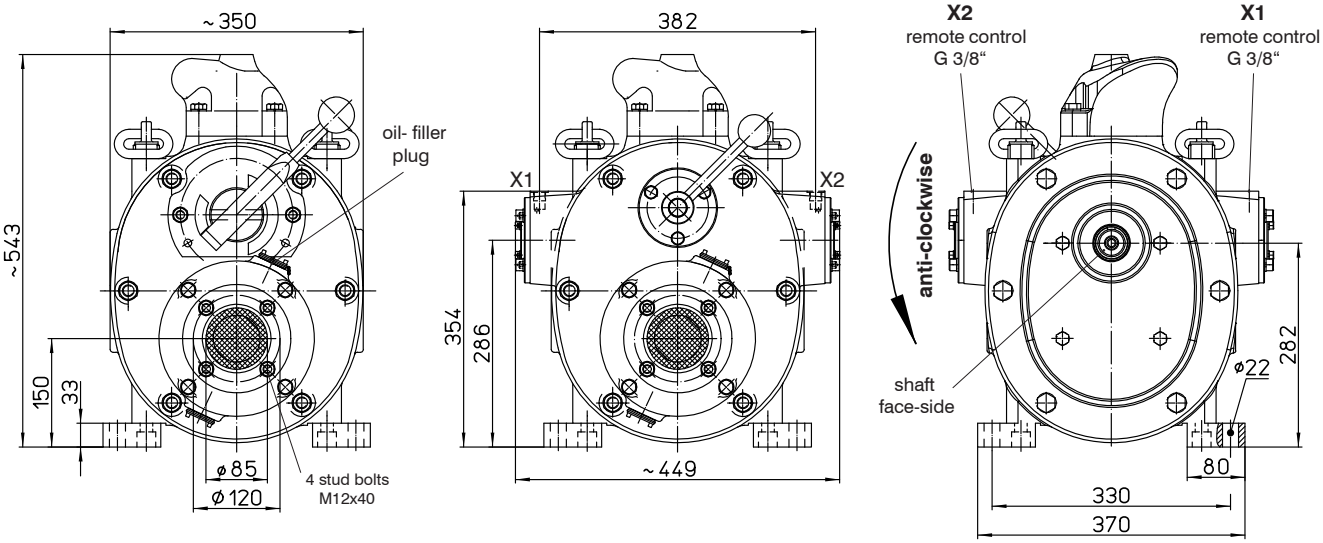


X
control **M**

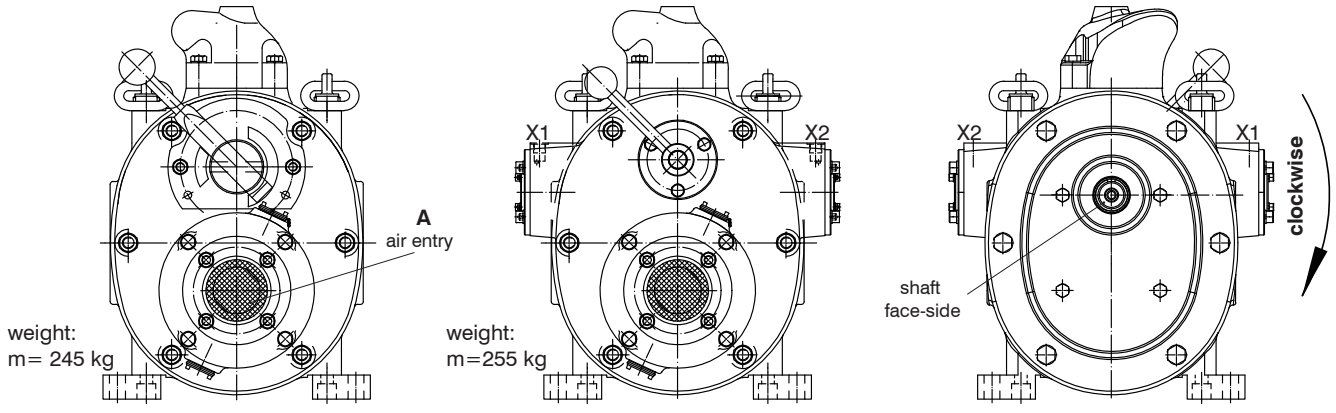
X
control **MP**

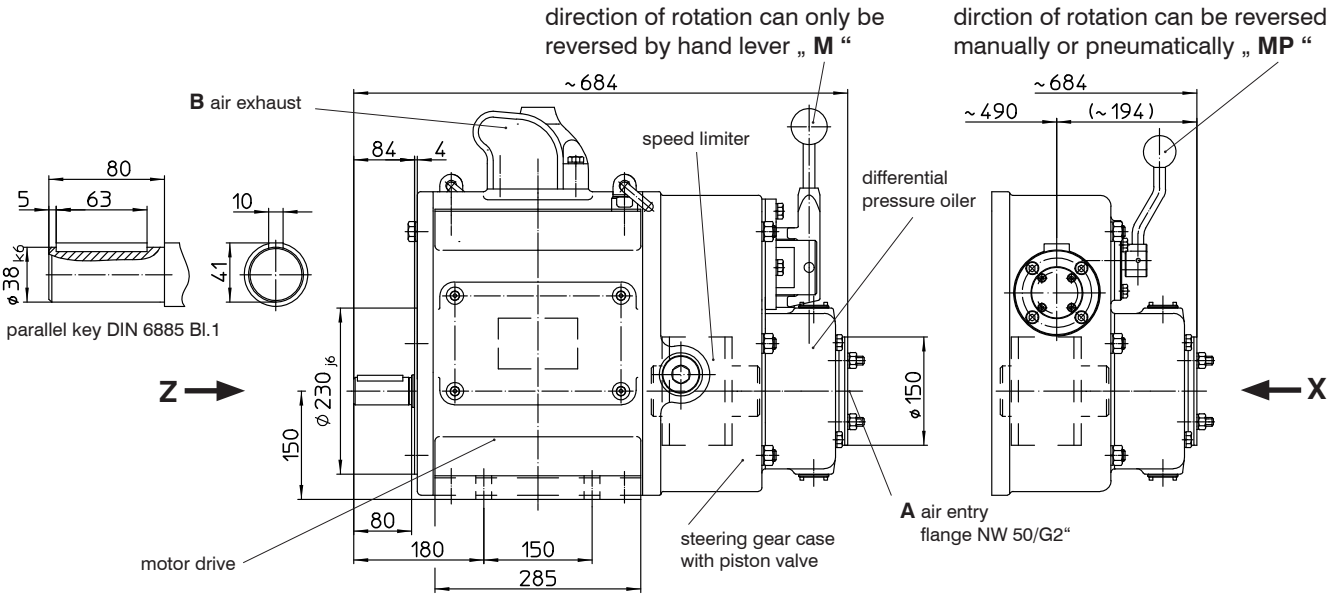
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



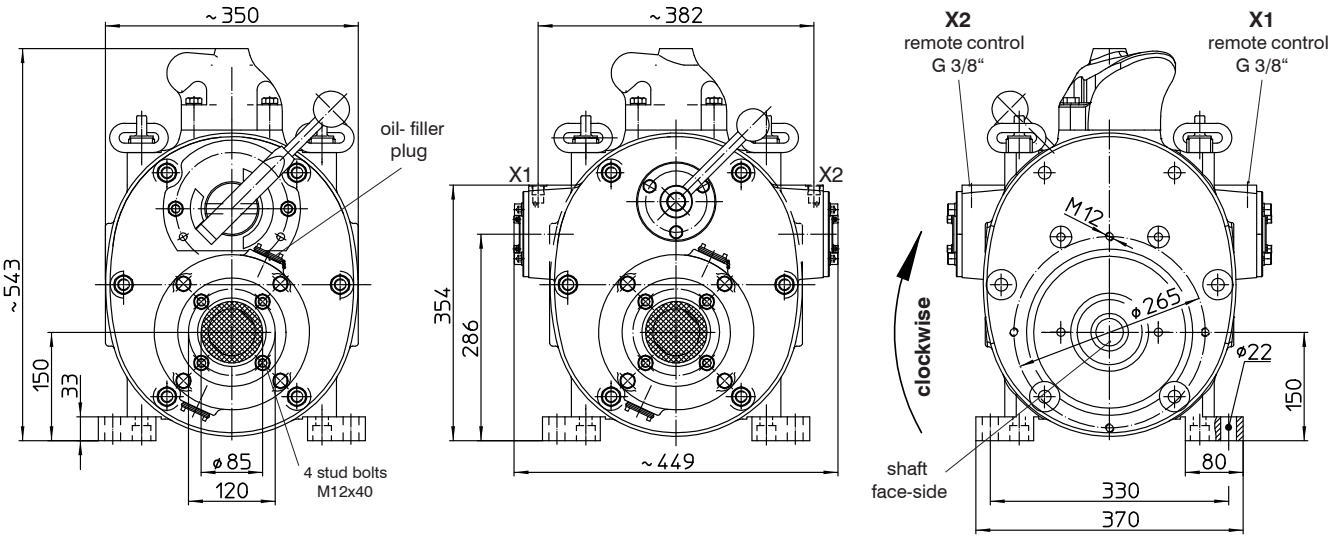


X
control **M**

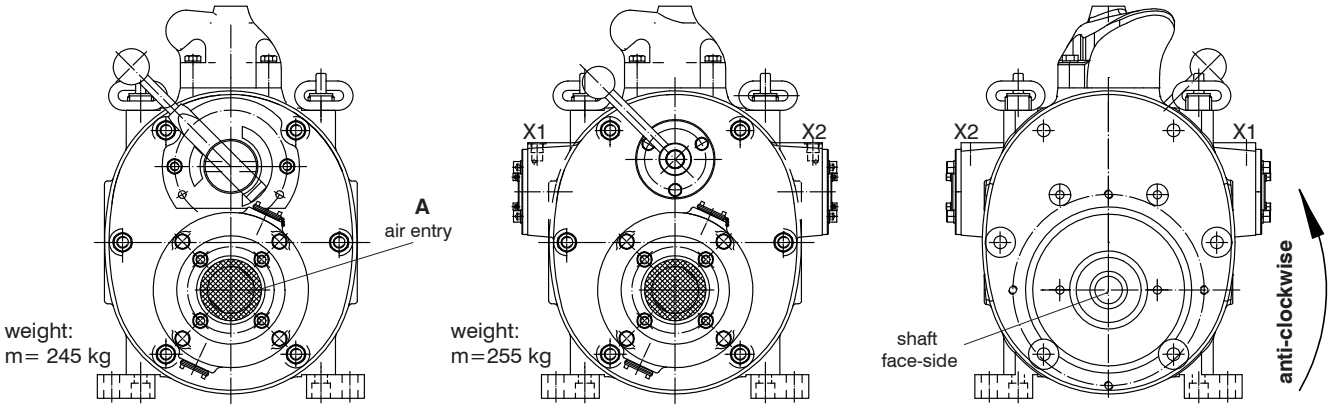
X
control **MP**

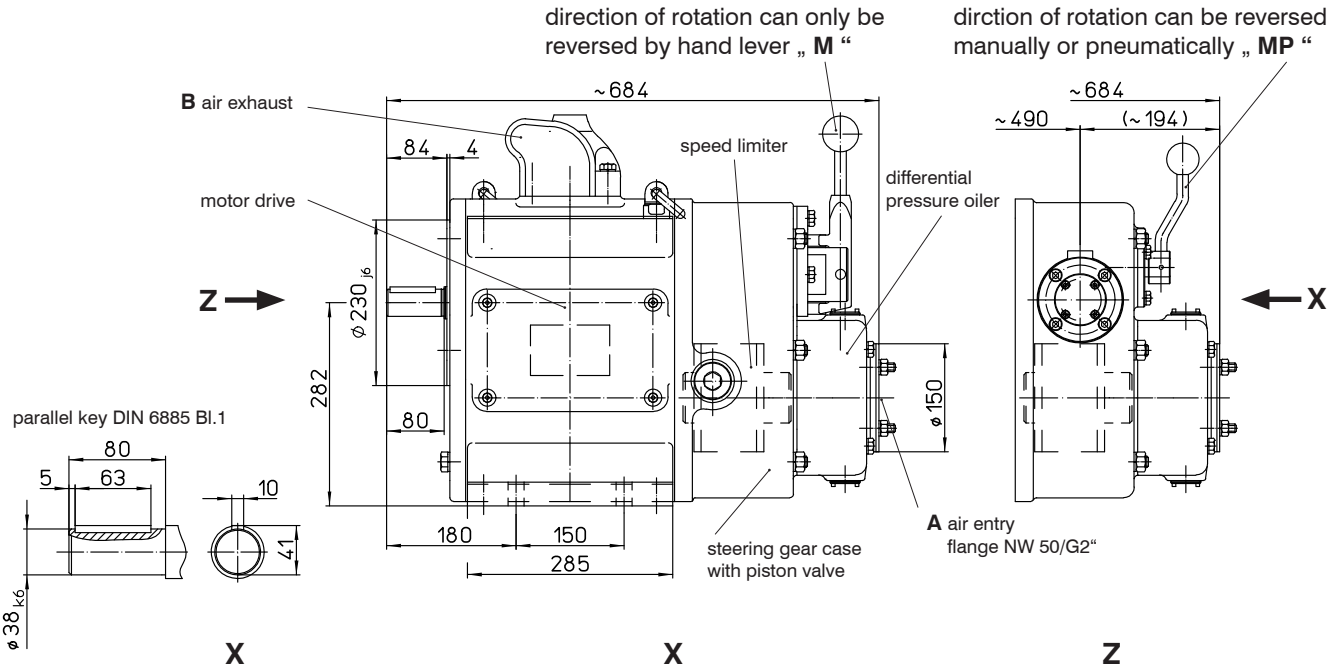
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



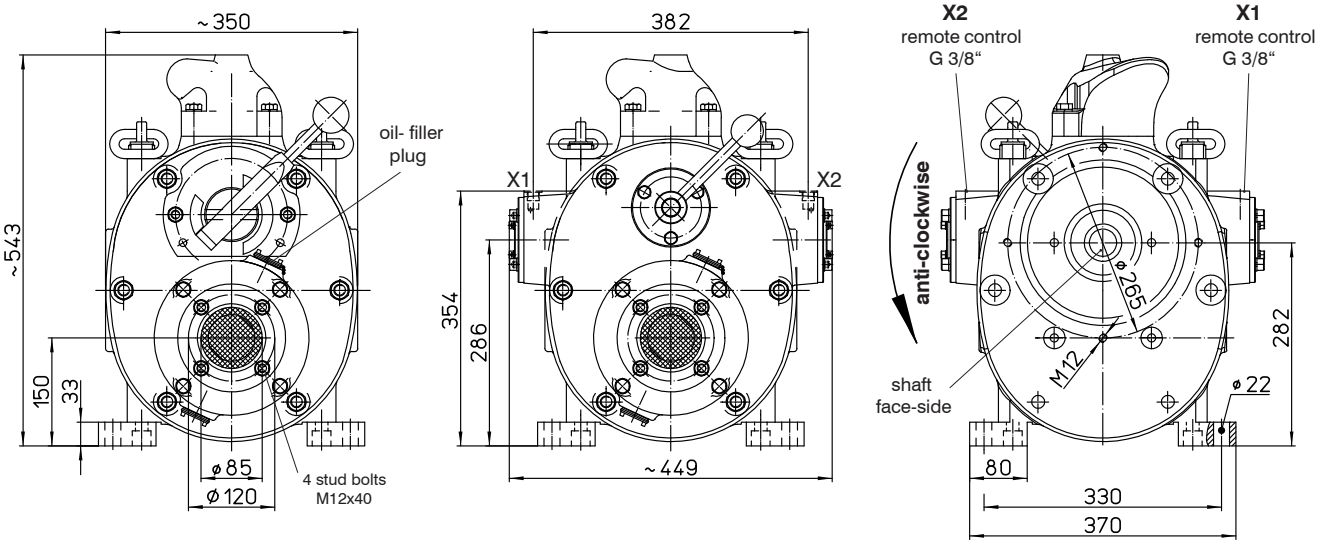
hand lever left / activation **X1 -** anti- clockwise rotation



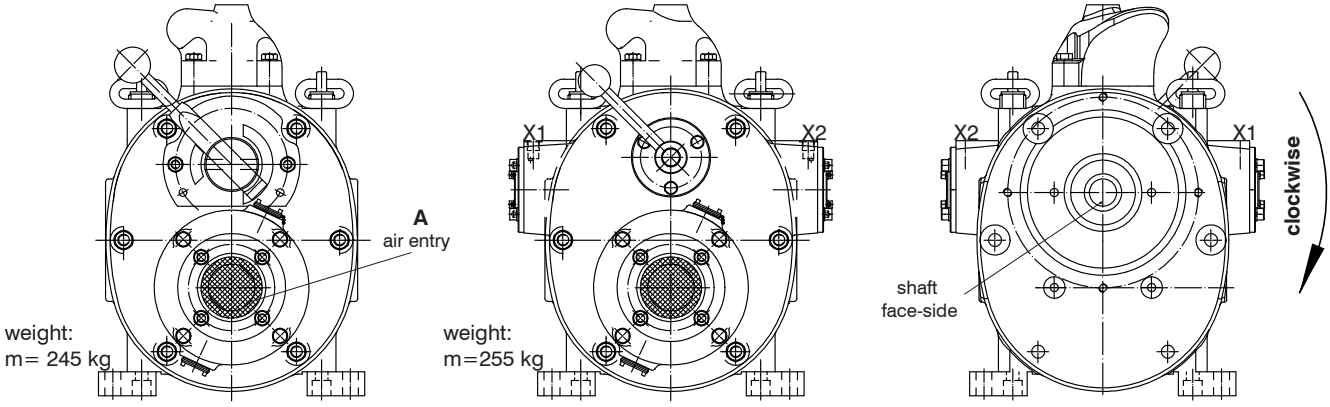


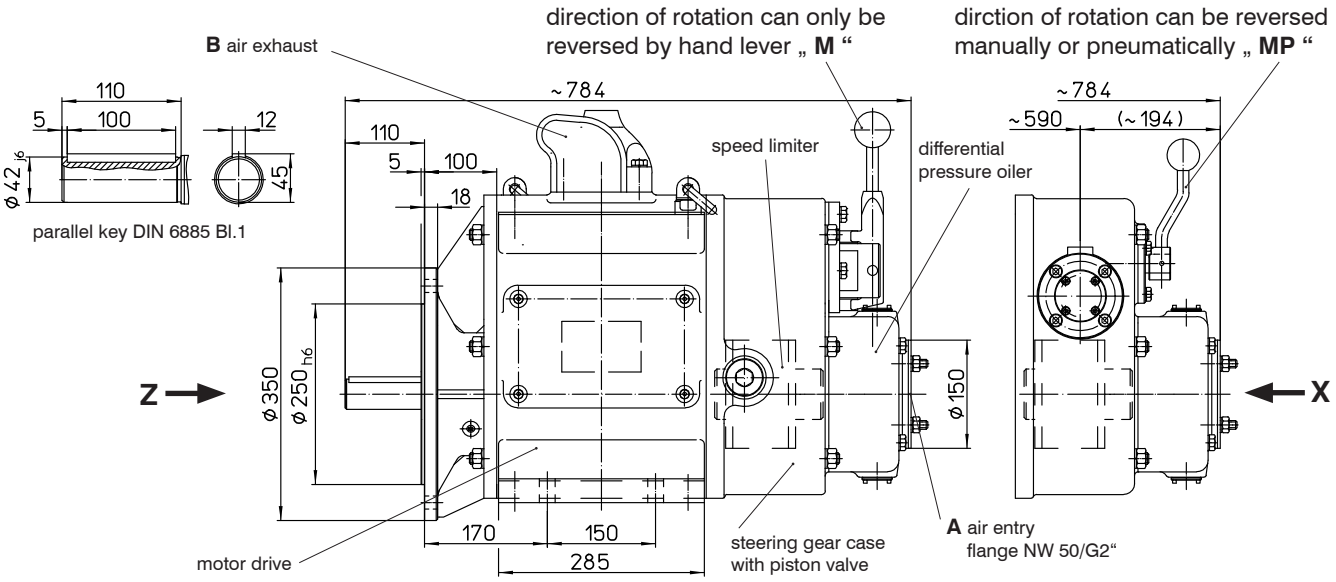
X control **M** | **X** control **MP** | **Z** control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



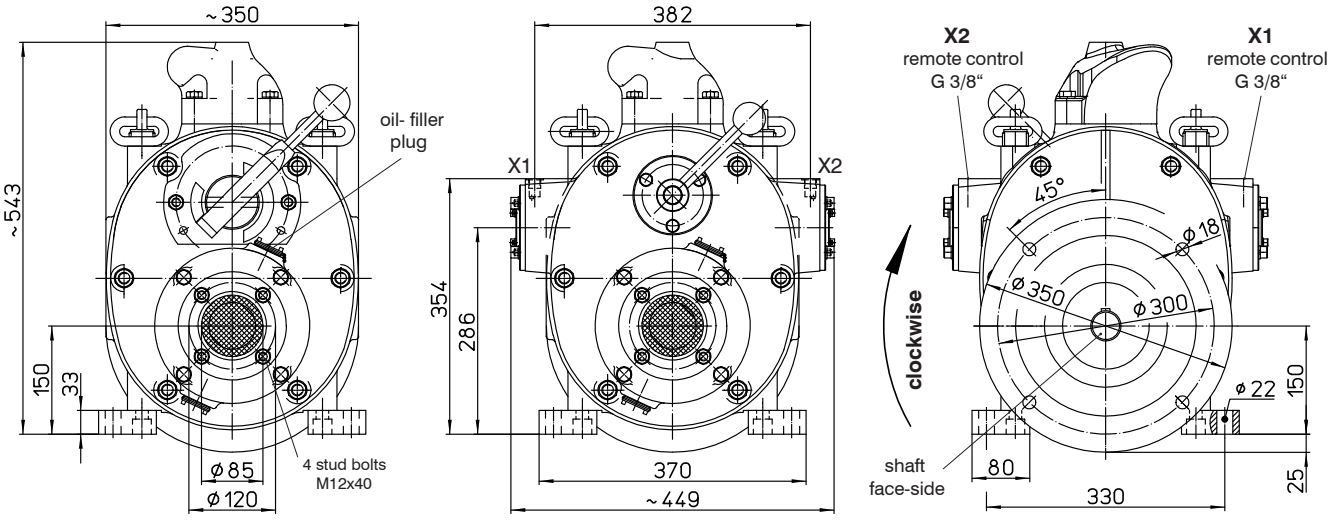


X
control **M**

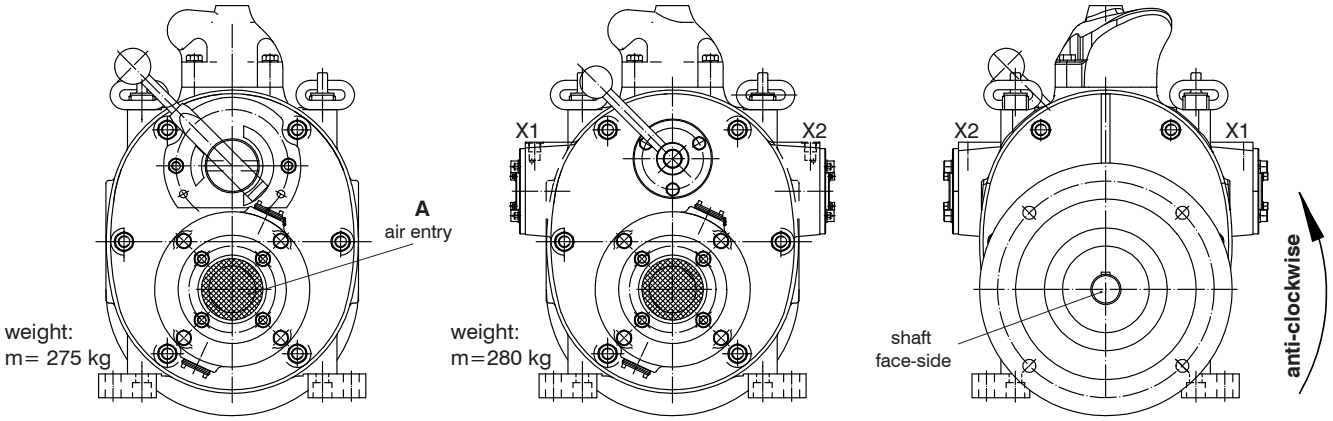
X
control **MP**

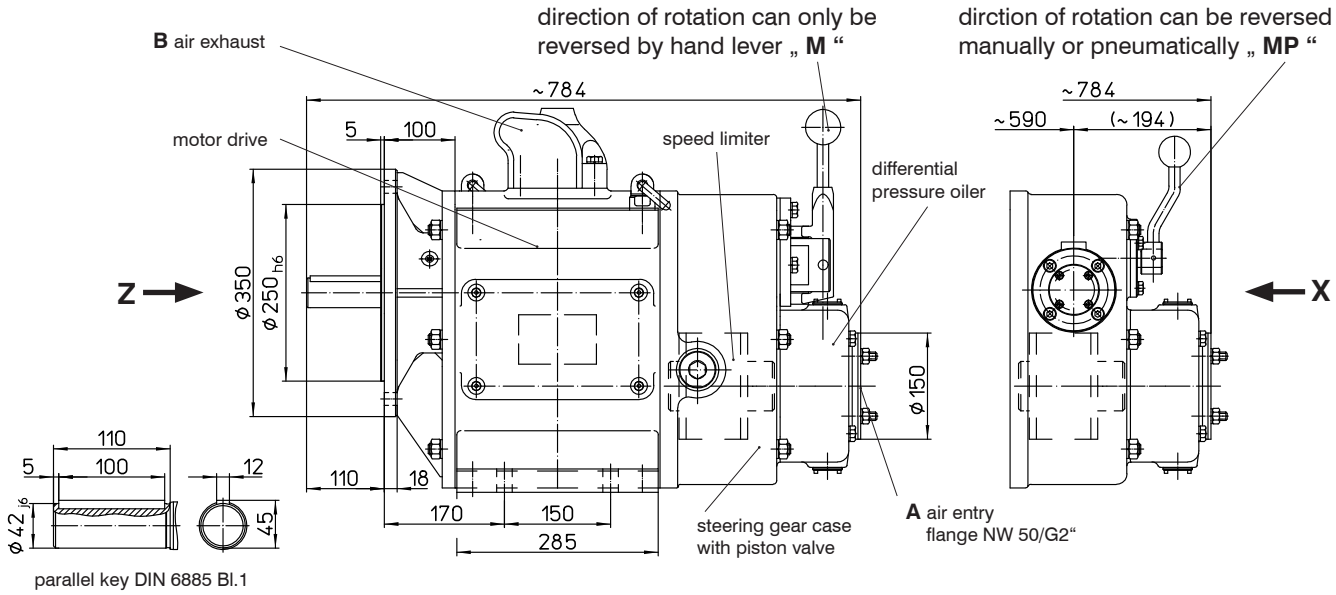
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



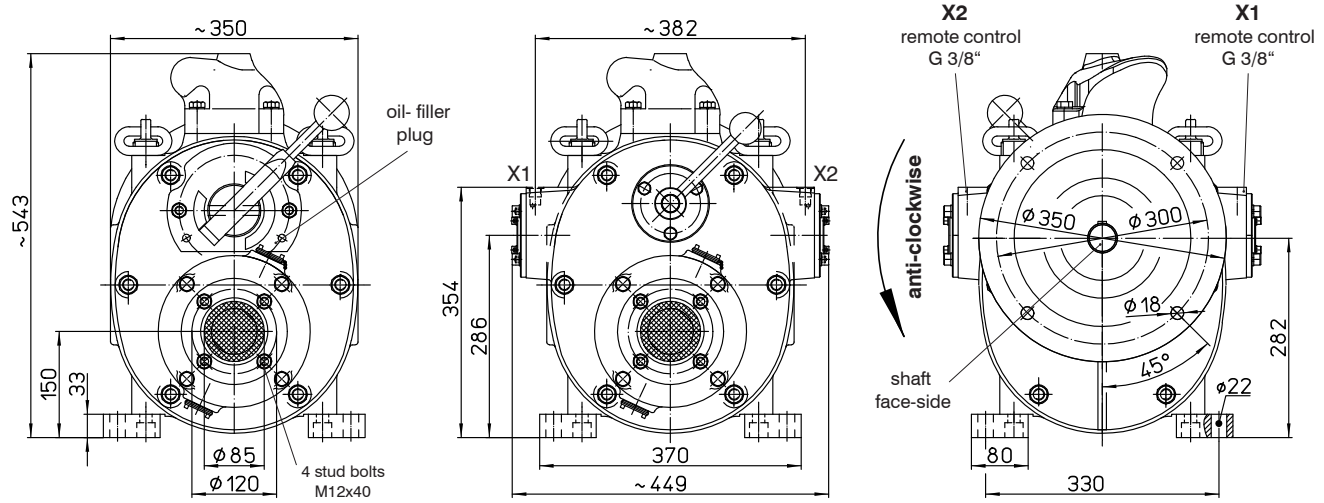


X
control **M**

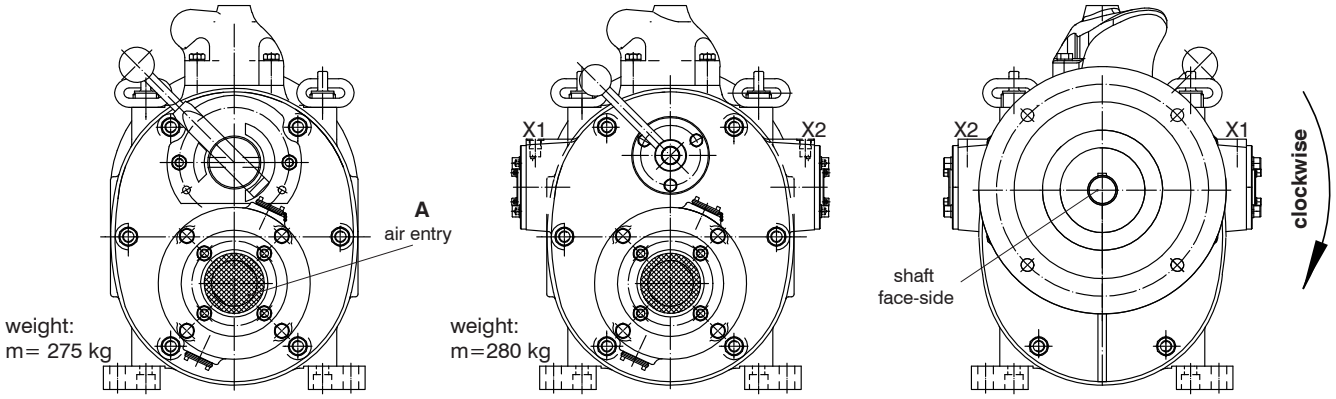
X
control **MP**

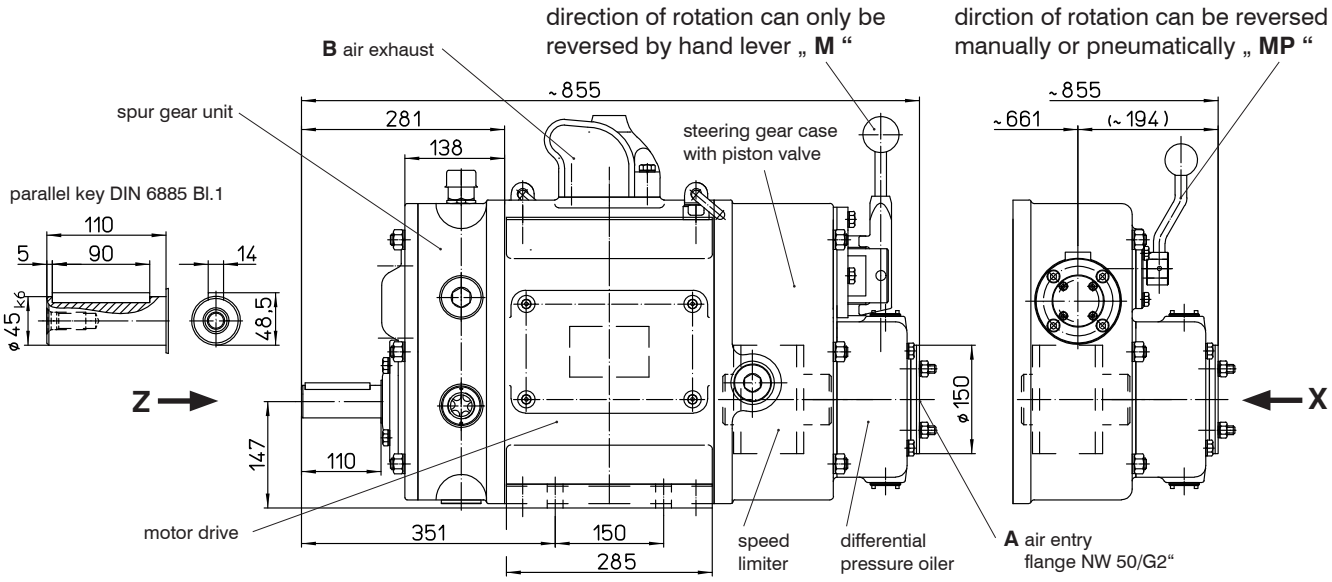
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



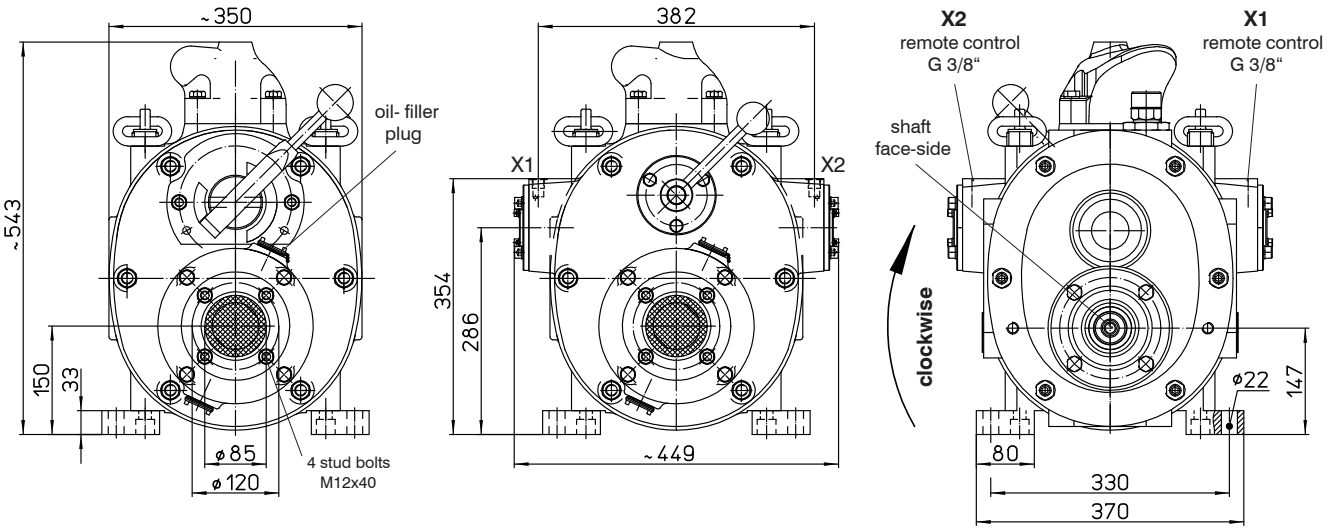


X
control **M**

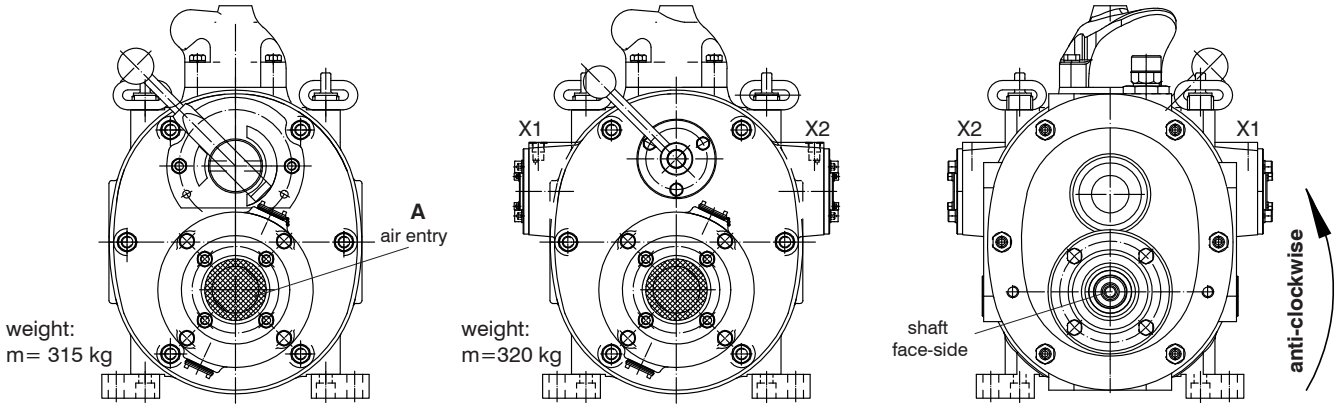
X
control **MP**

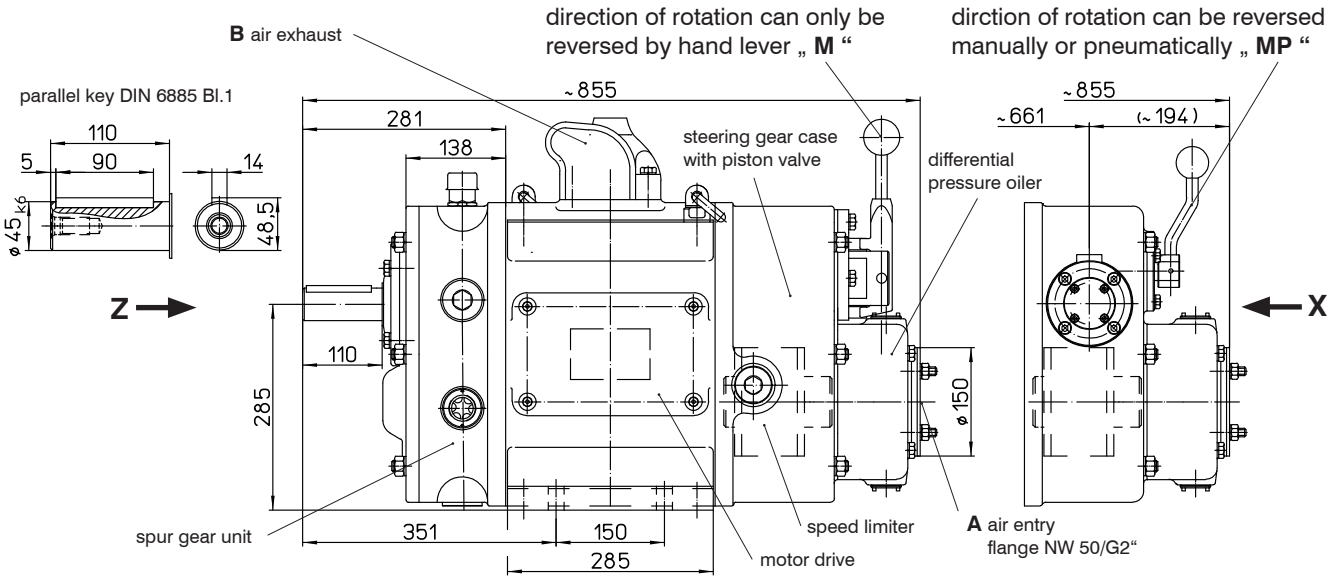
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



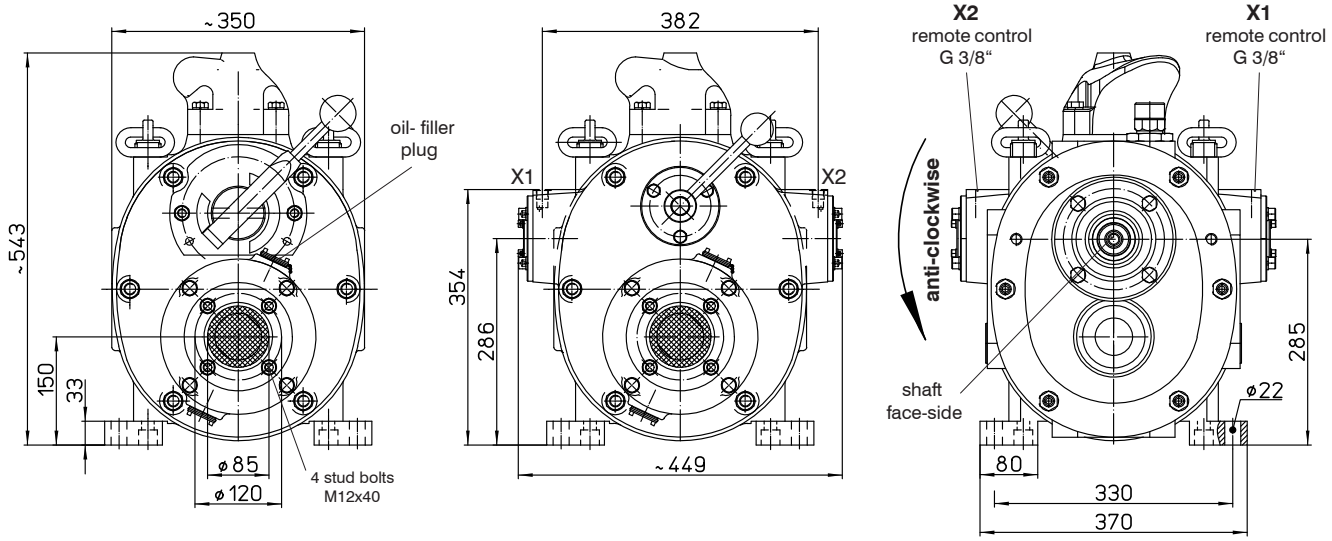


X
control **M**

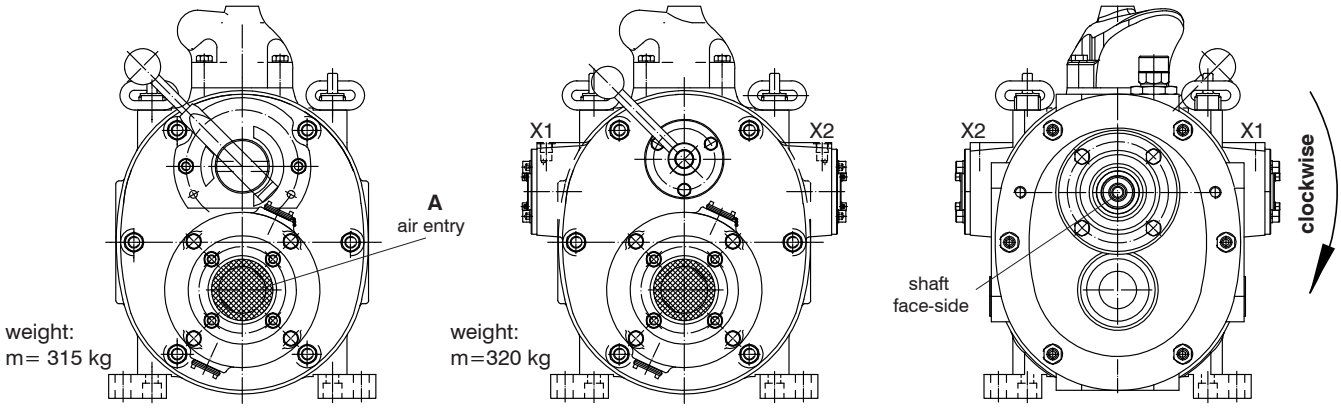
X
control **MP**

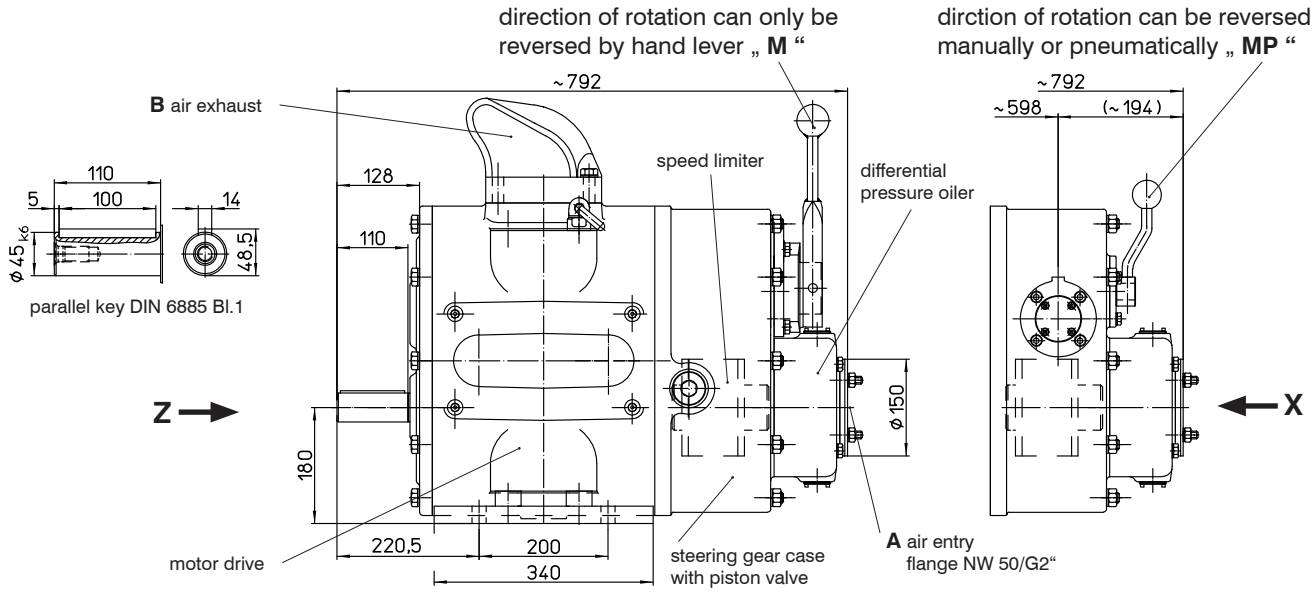
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



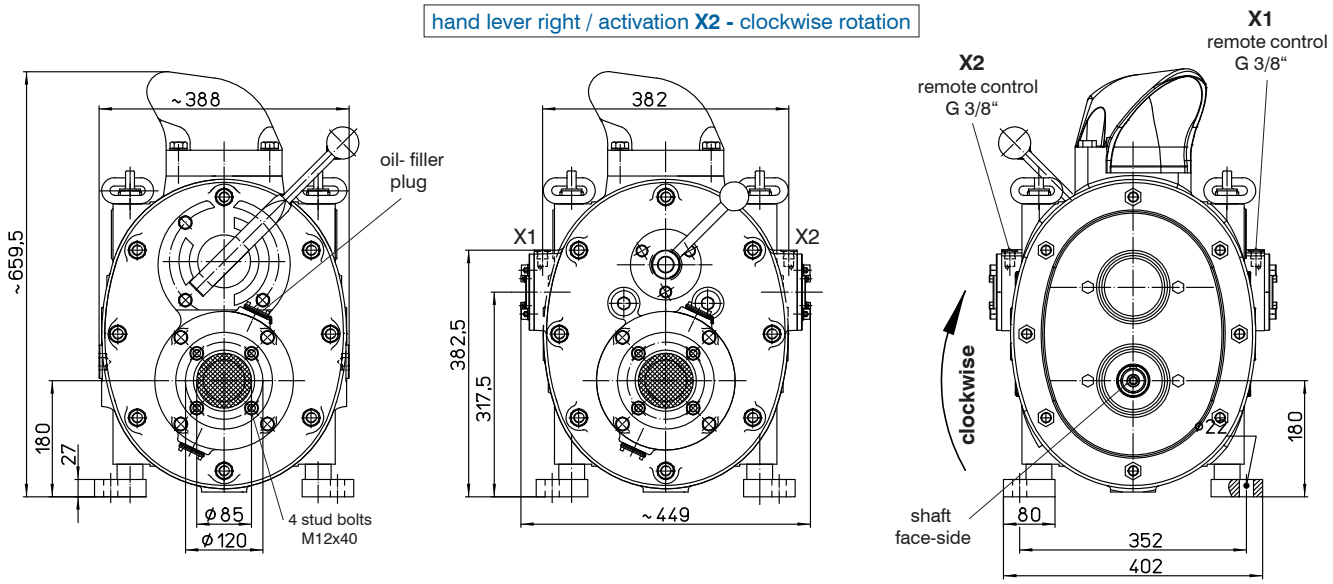


X
control **M**

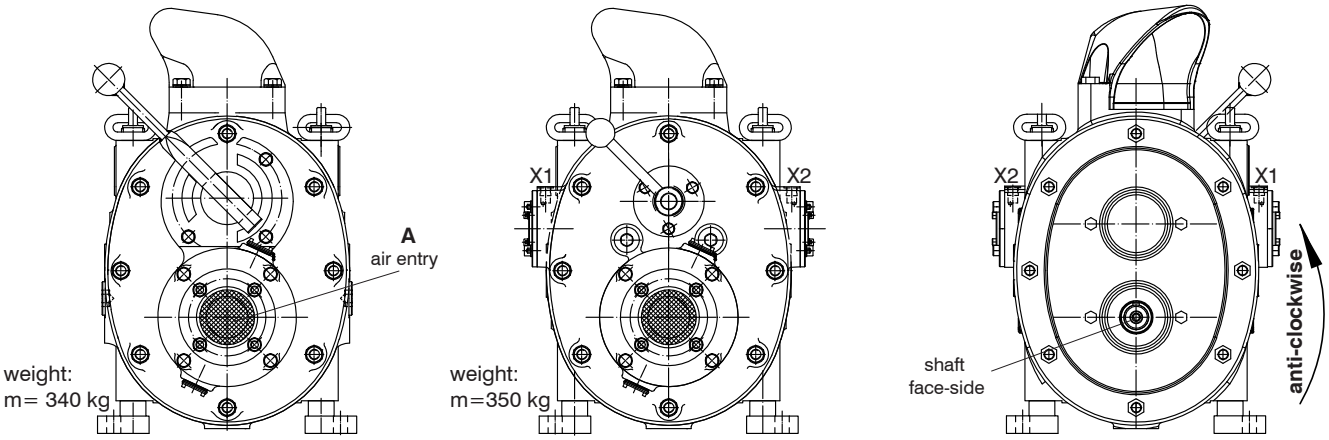
X
control **MP**

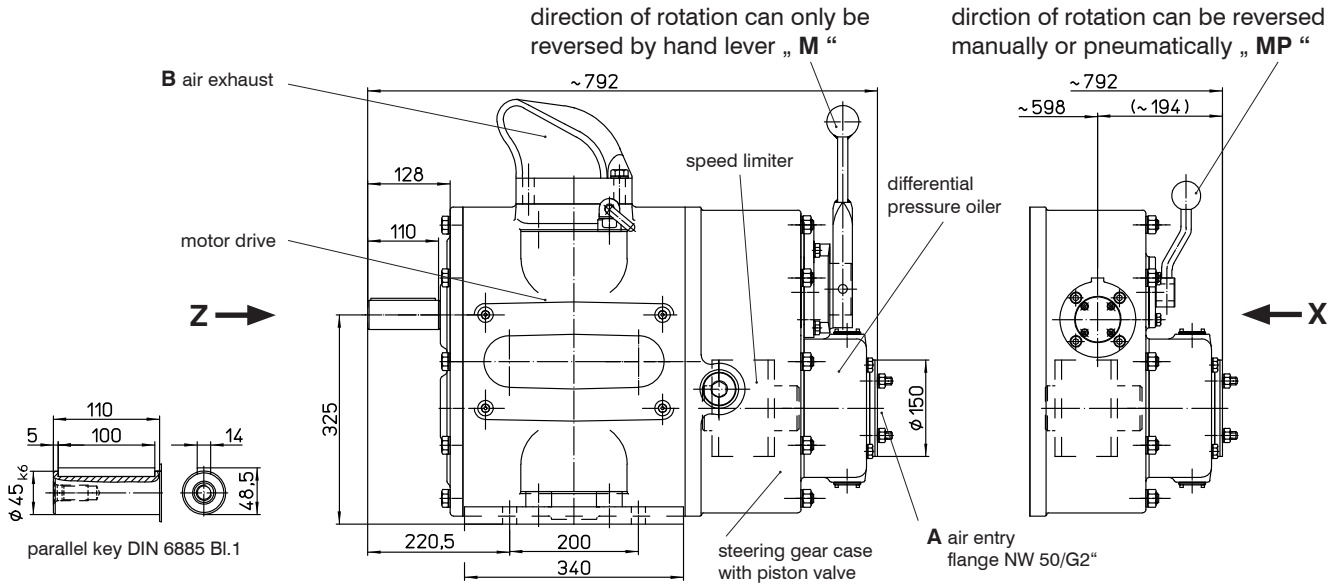
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



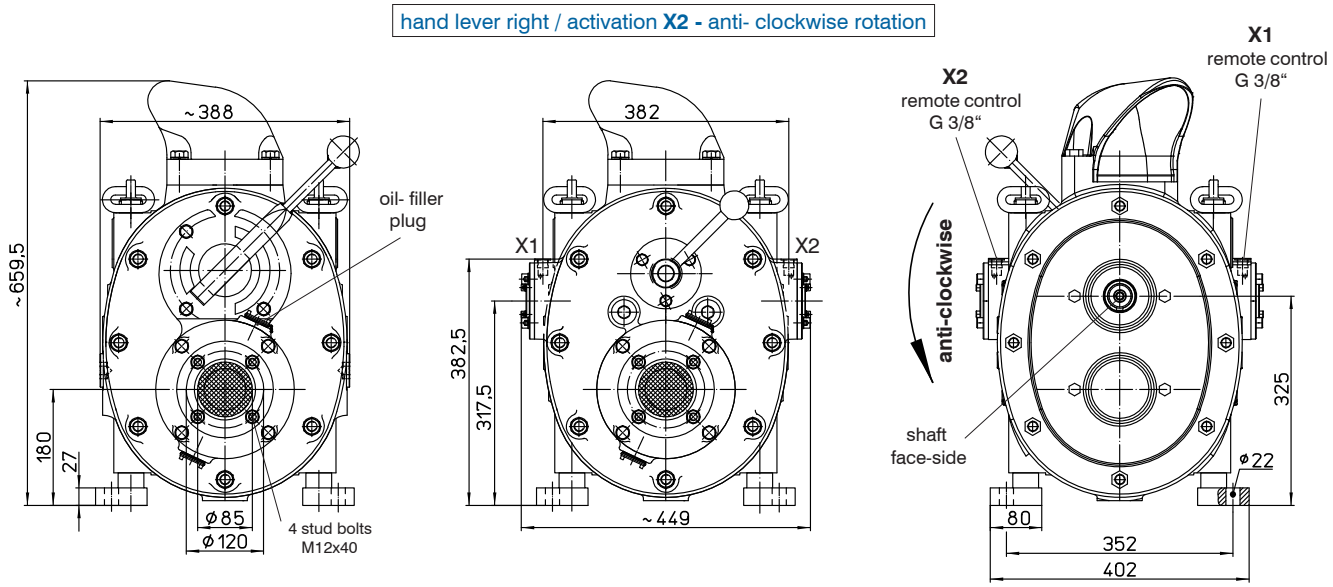


X
control **M**

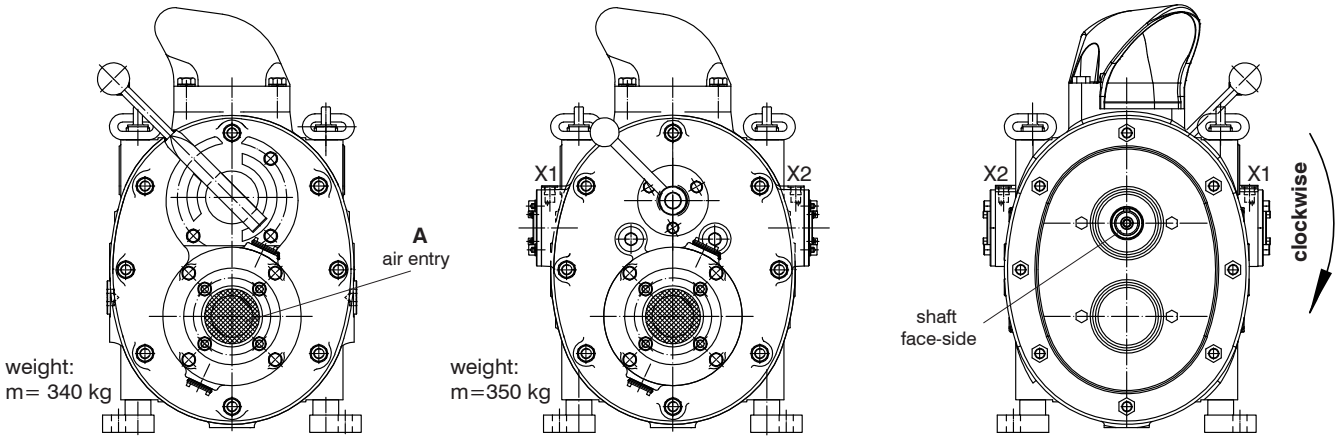
X
control **MP**

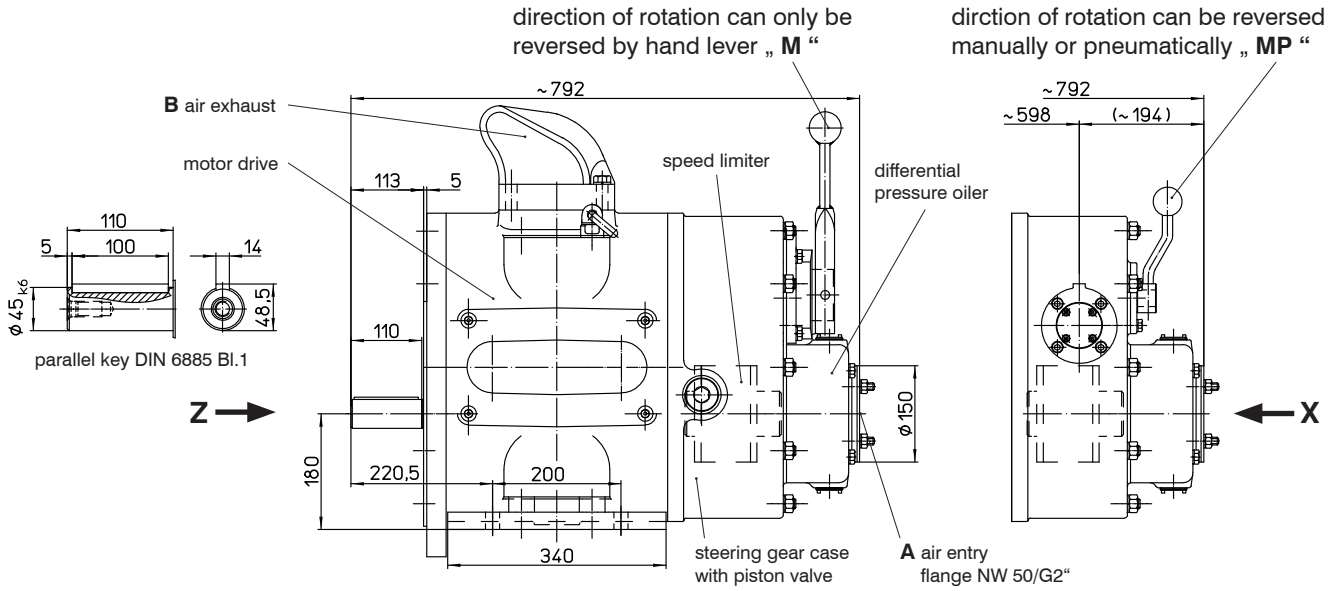
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation

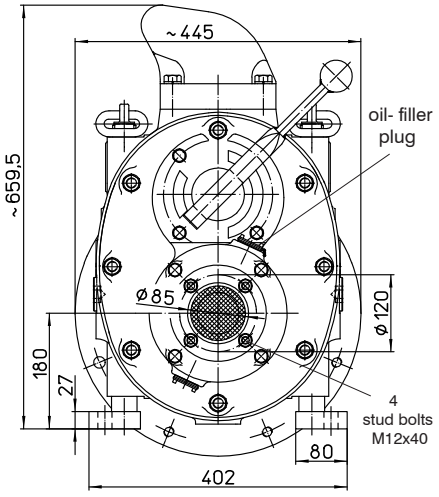


hand lever left / activation **X1 -** clockwise rotation



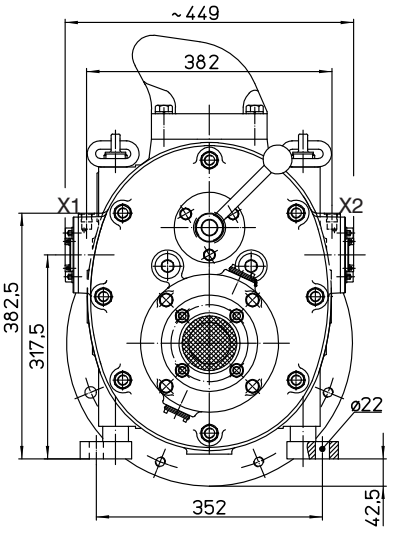


X
control **M**

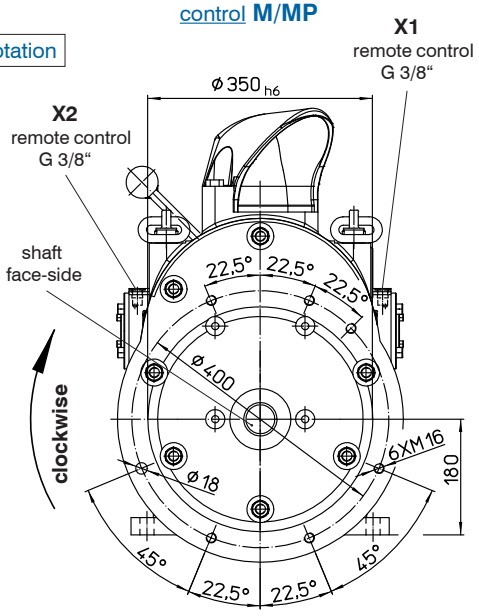


X
control **MP**

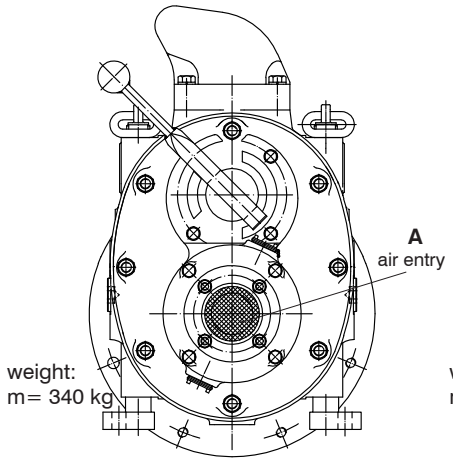
hand lever right / activation **X2 -** clockwise rotation



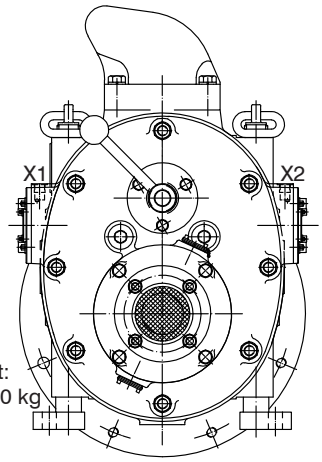
Z
control **M/MP**



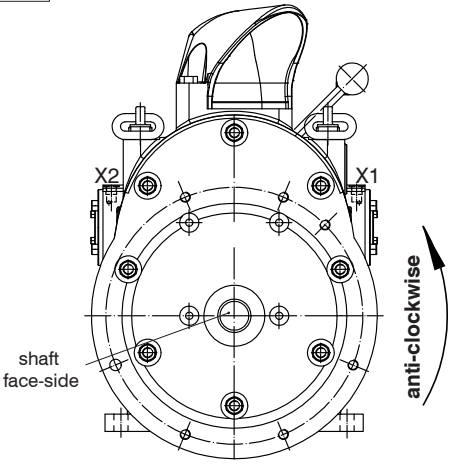
hand lever left / activation **X1 -** anti- clockwise rotation

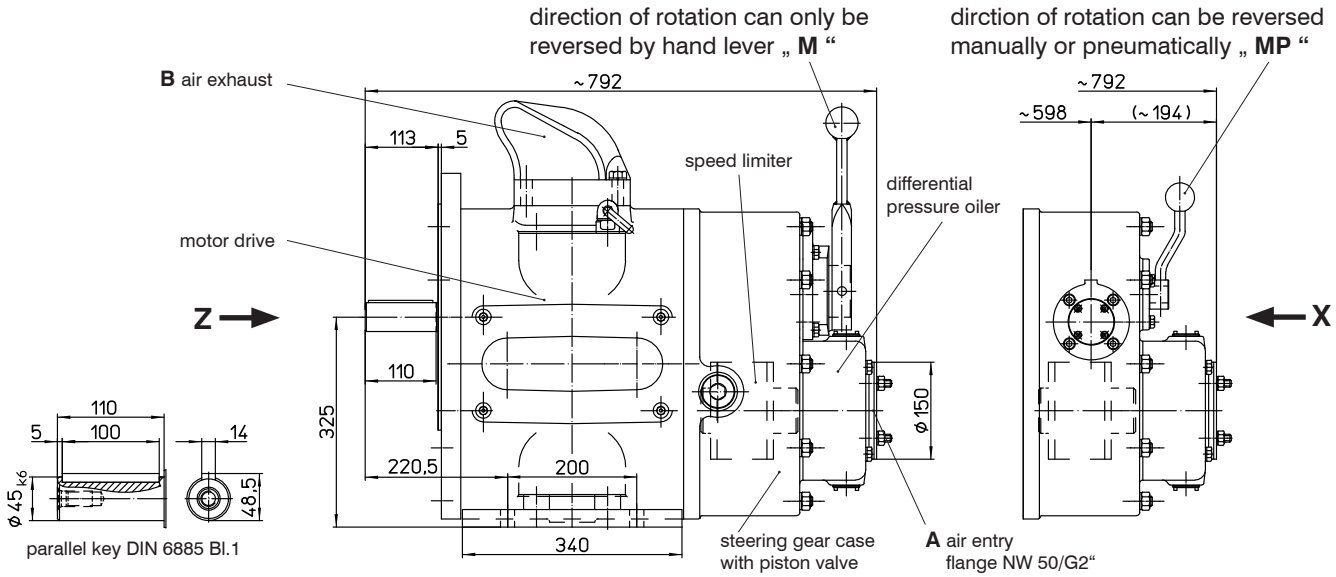


weight:
m= 340 kg



weight:
m=350 kg



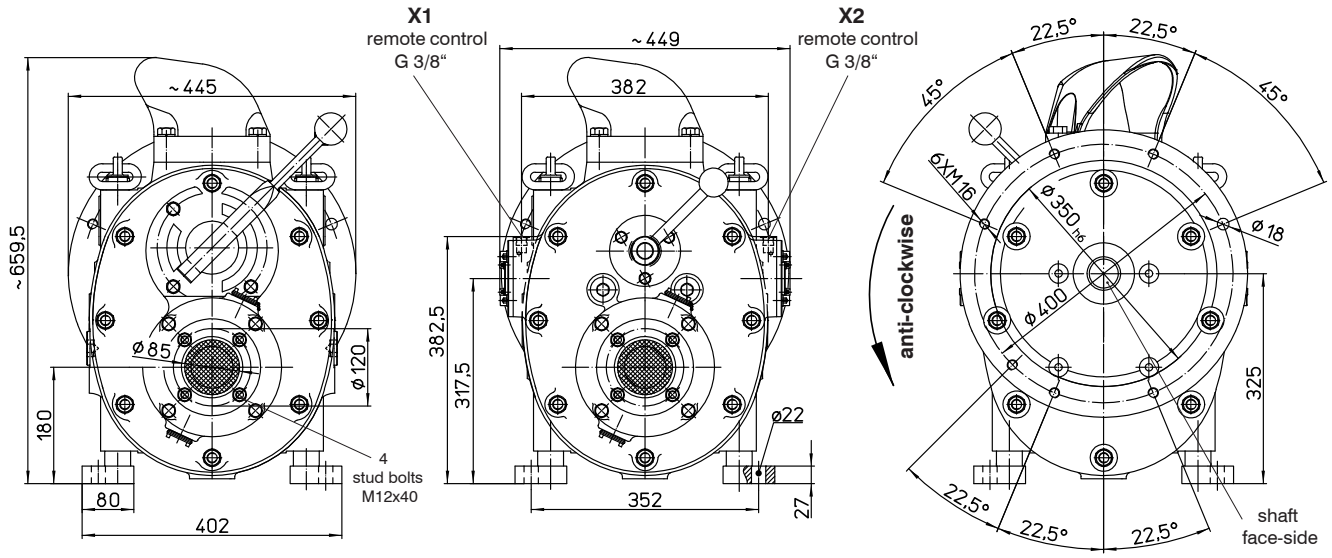


X
control **M**

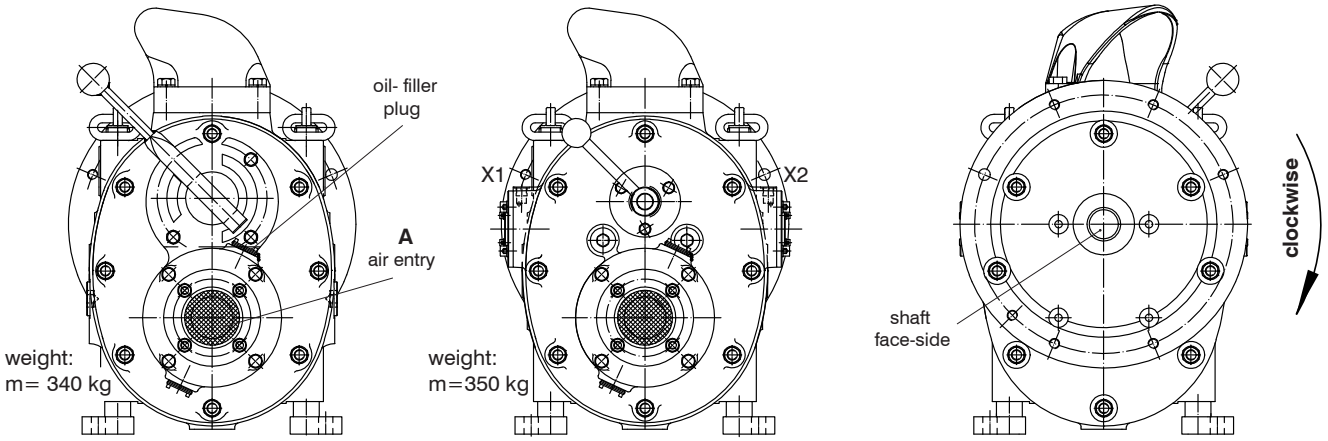
X
control **MP**

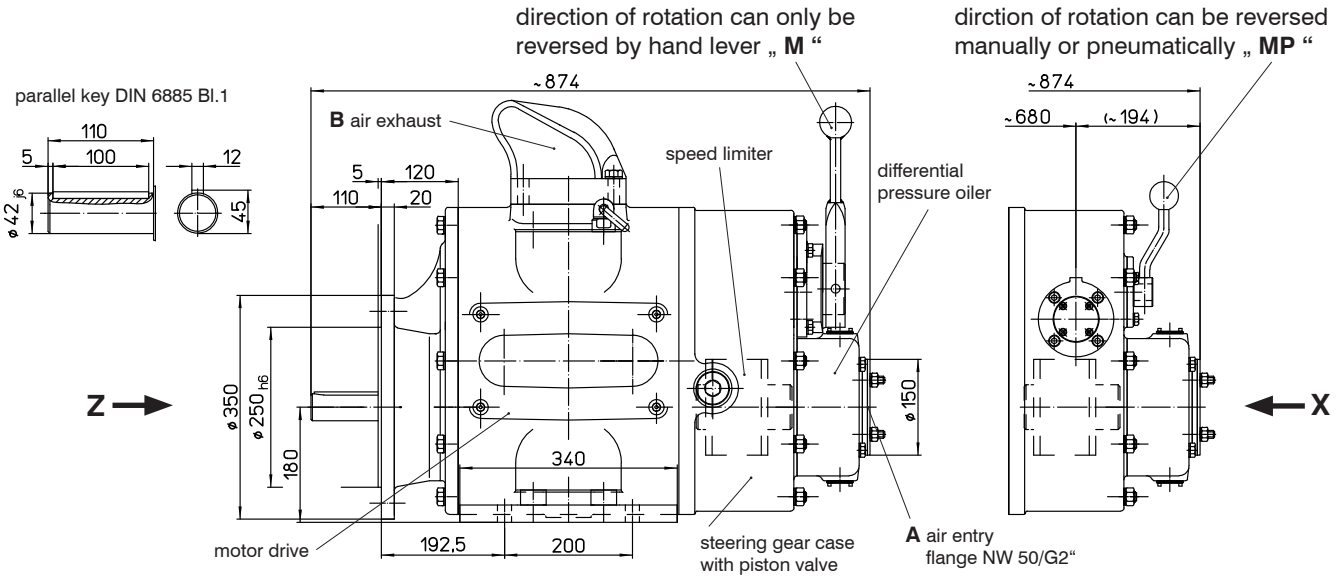
Z
control **M/MP**

hand lever right / activation **X2** - anti- clockwise rotation



hand lever left / activation **X1** - clockwise rotation



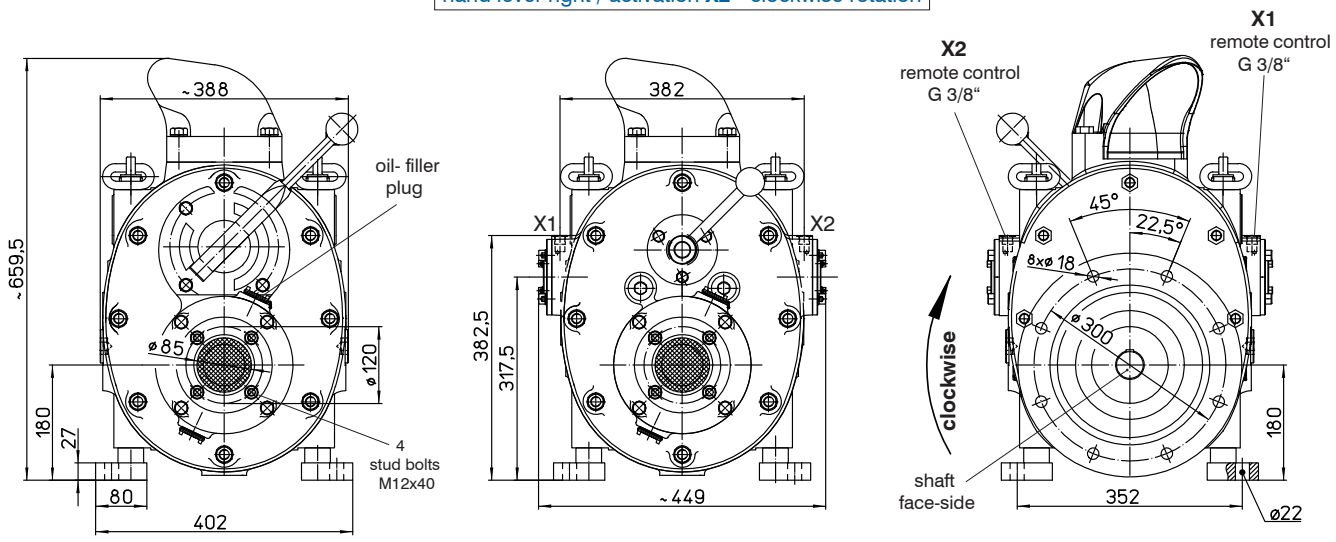


X
control **M**

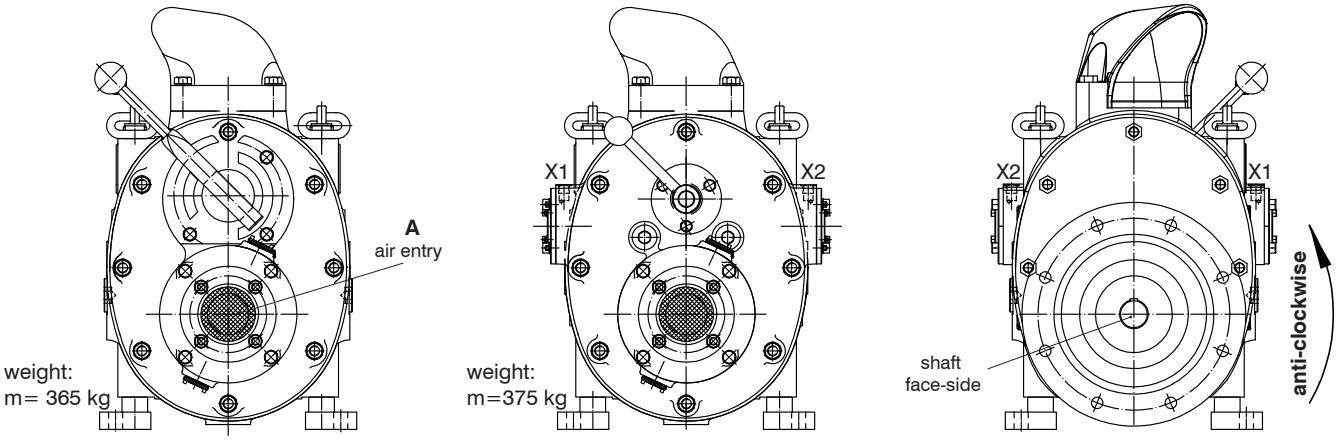
X
control **MP**

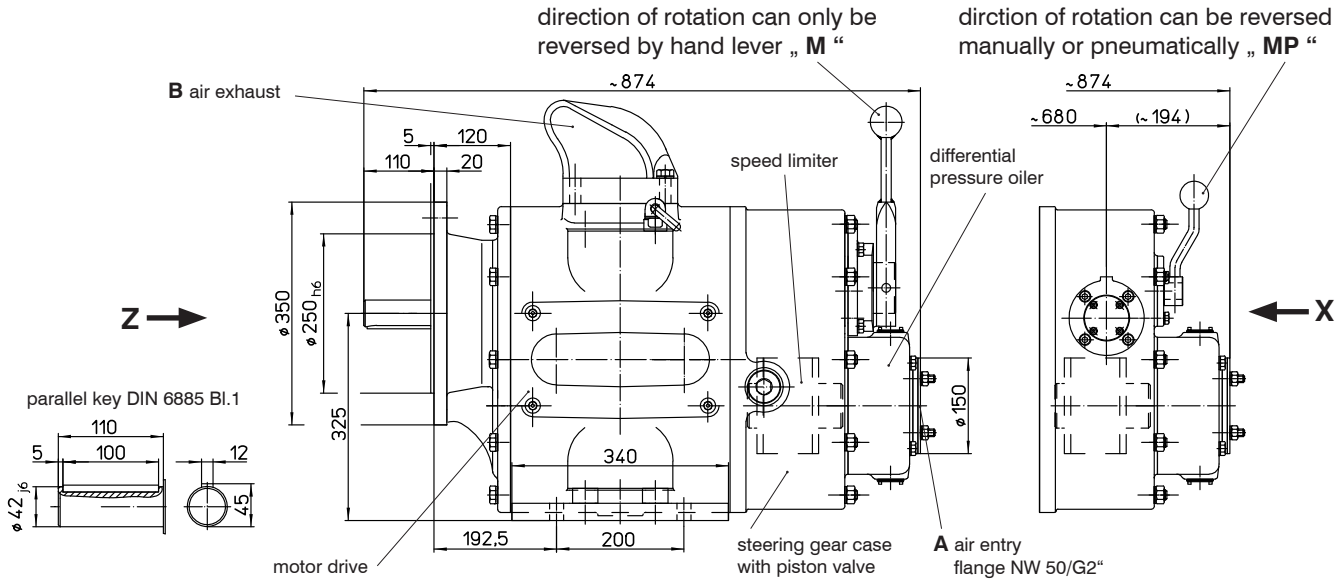
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



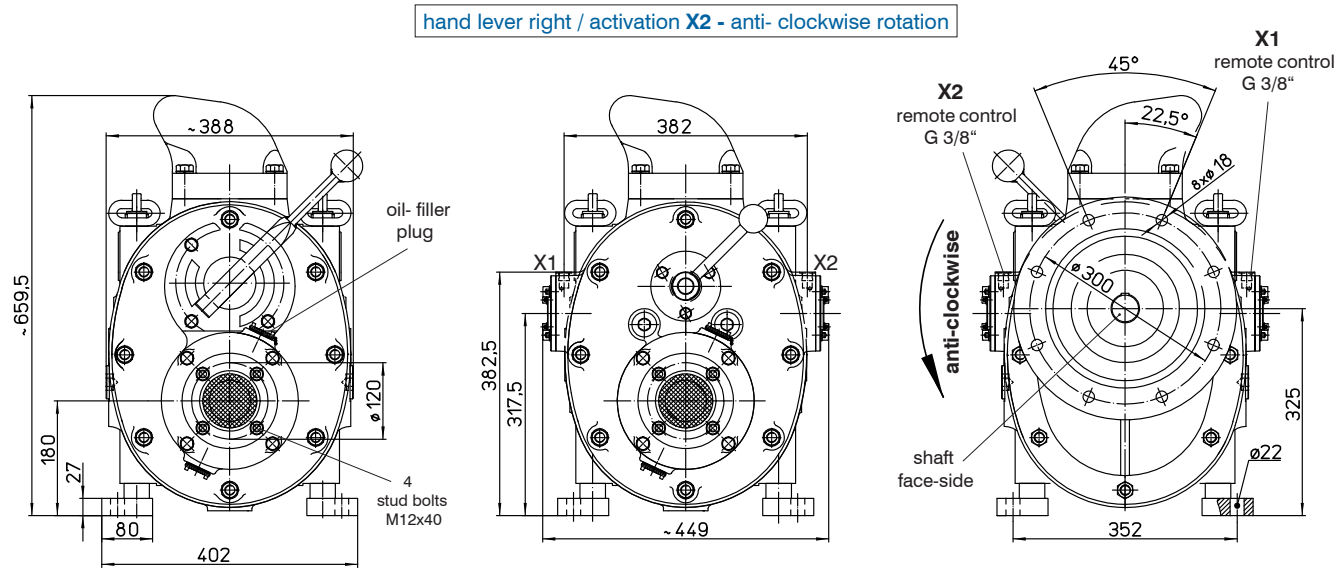


X
control **M**

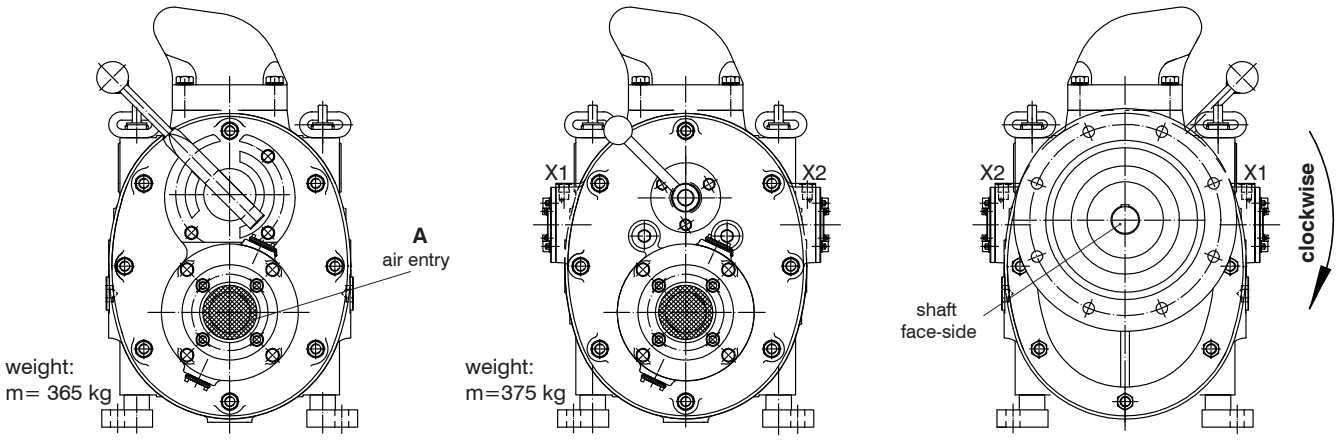
X
control **MP**

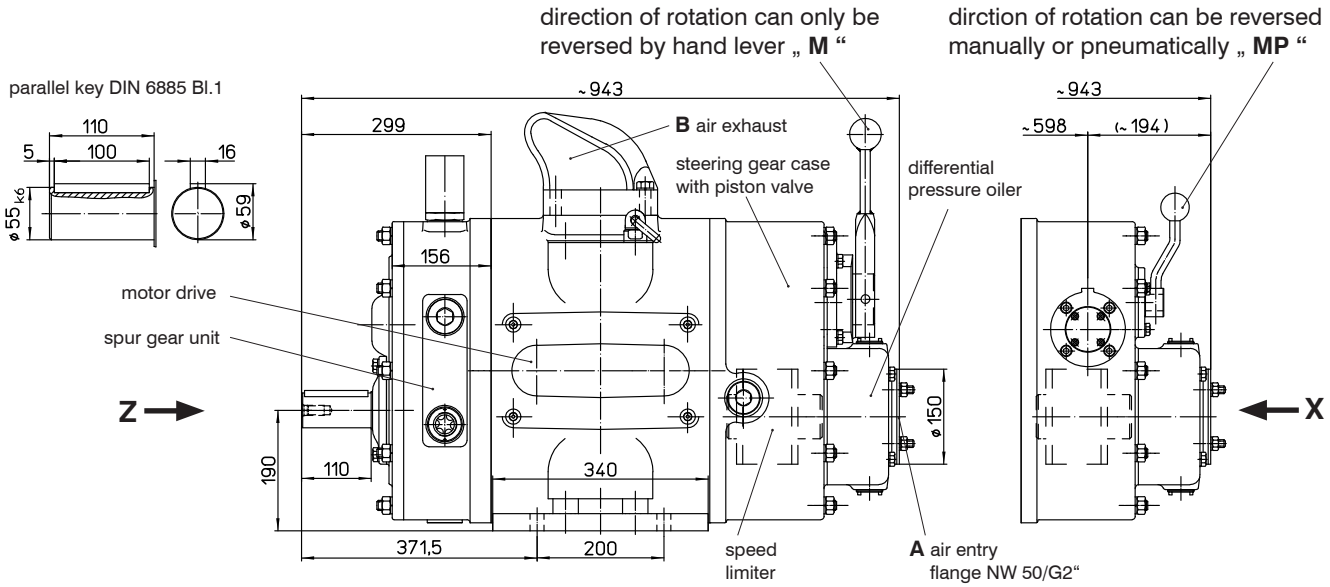
Z
control **M/MP**

hand lever right / activation **X2 -** anti- clockwise rotation



hand lever left / activation **X1 -** clockwise rotation



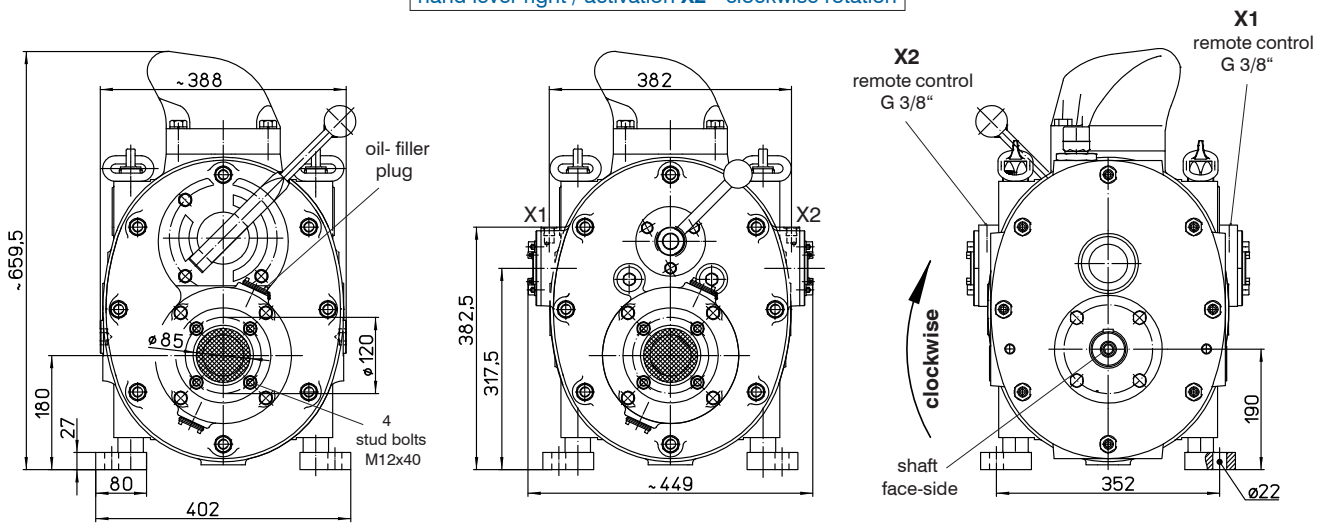


X
control **M**

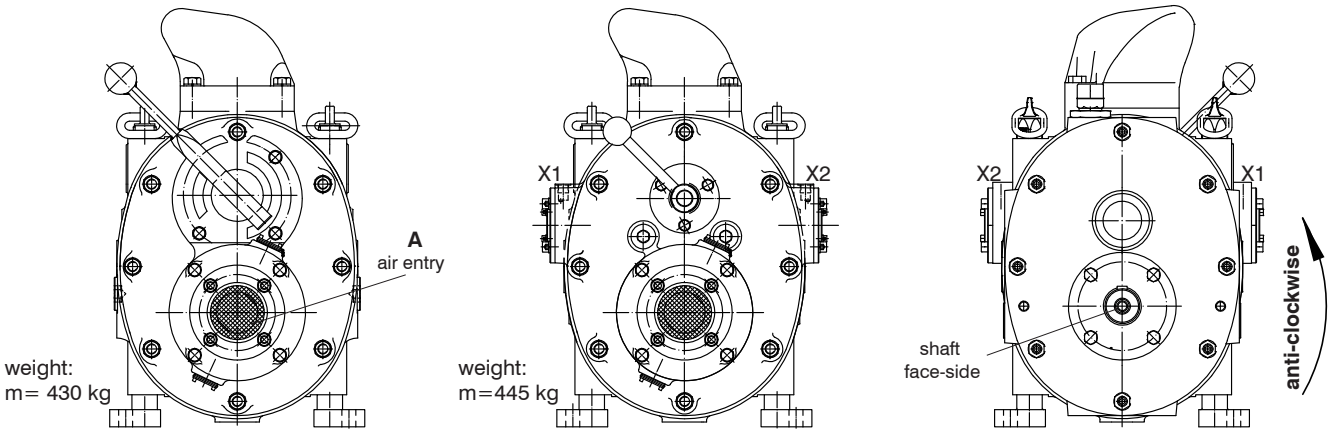
X
control **MP**

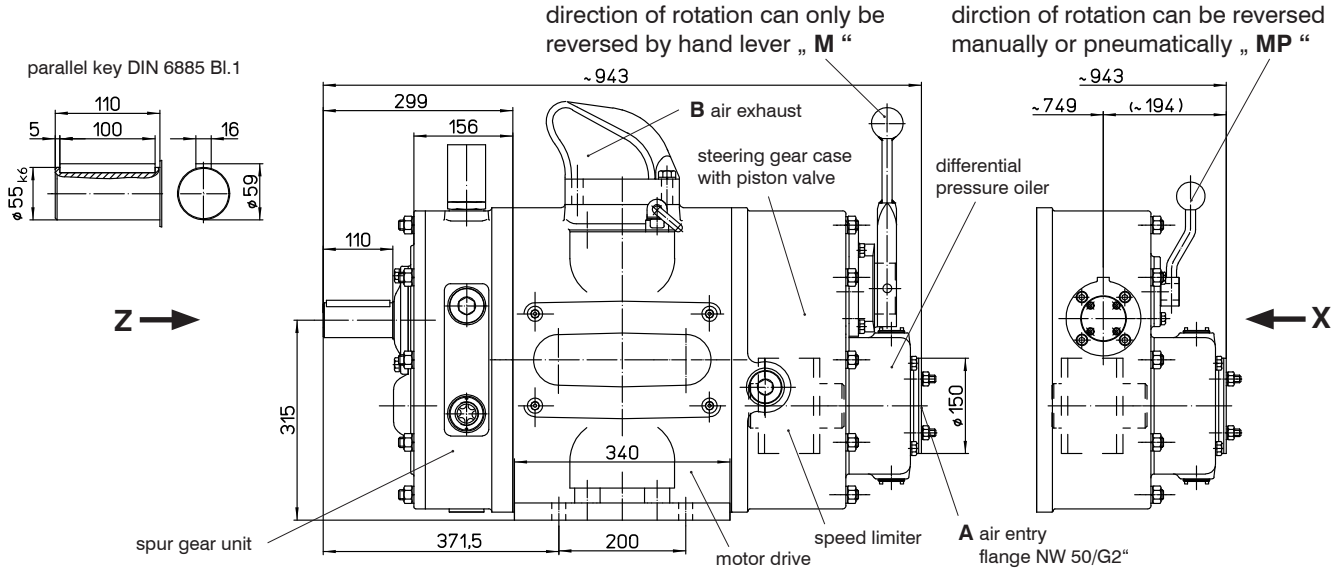
Z
control **M/MP**

hand lever right / activation **X2 -** clockwise rotation



hand lever left / activation **X1 -** anti- clockwise rotation



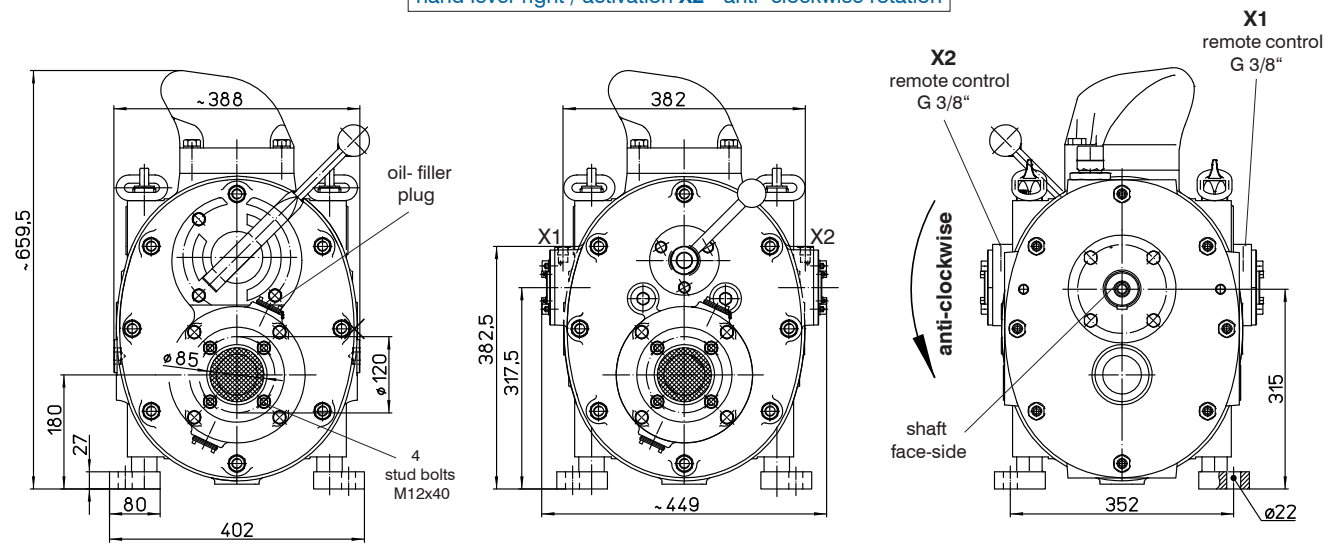


X
control **M**

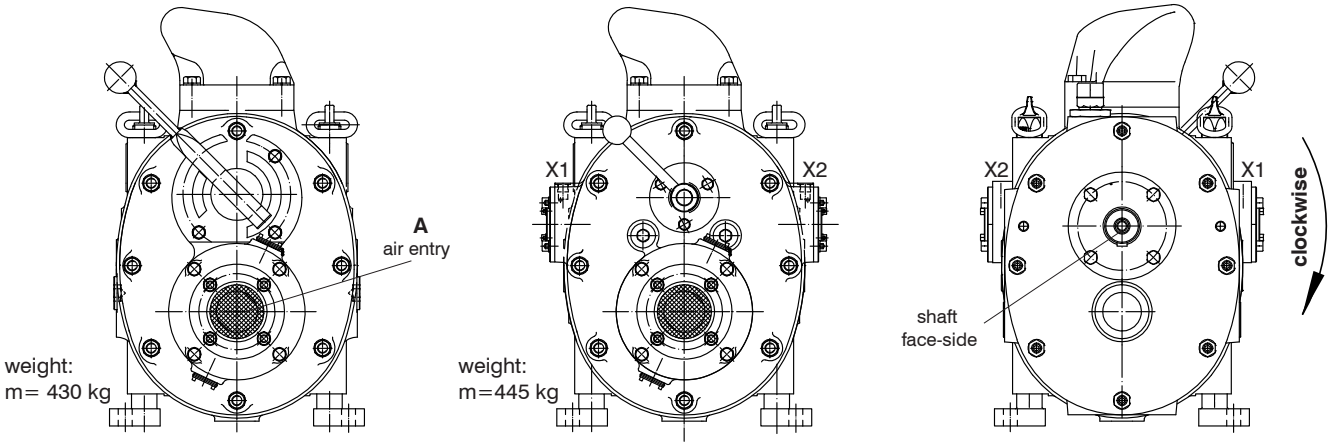
X
control **MP**

Z
control **M/MP**

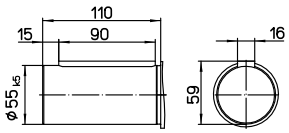
hand lever right / activation **X2 -** anti- clockwise rotation

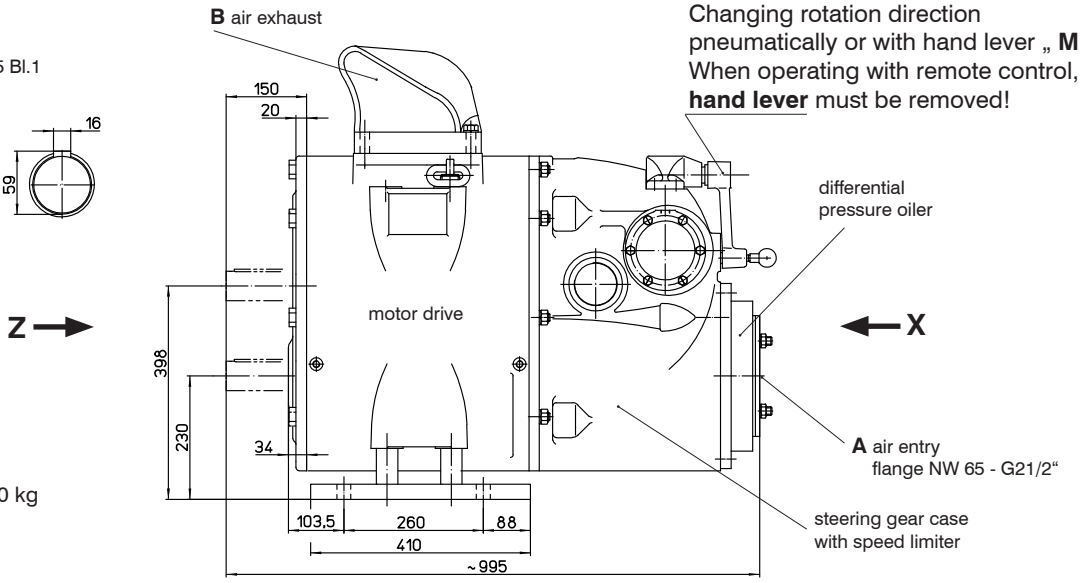


hand lever left / activation **X1 -** clockwise rotation



parallel key DIN 6885 Bl.1

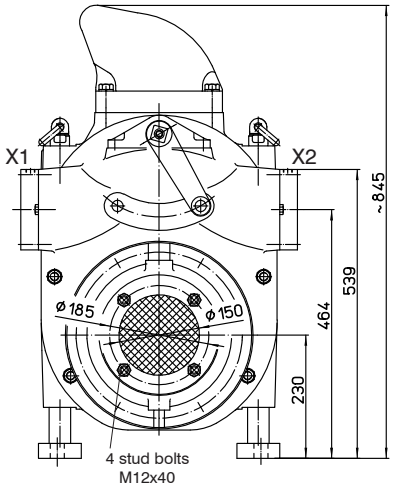




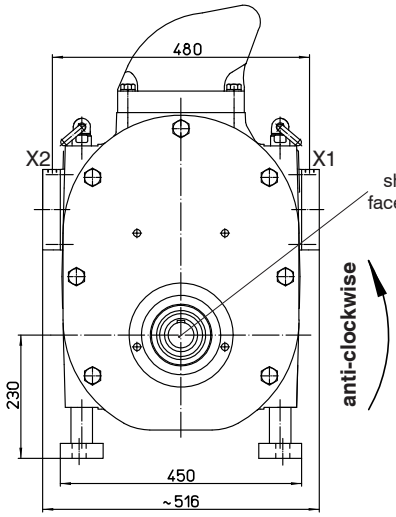
Changing rotation direction pneumatically or with hand lever „ **MP** “. When operating with remote control, the **hand lever** must be removed!

weight: m= 630 kg

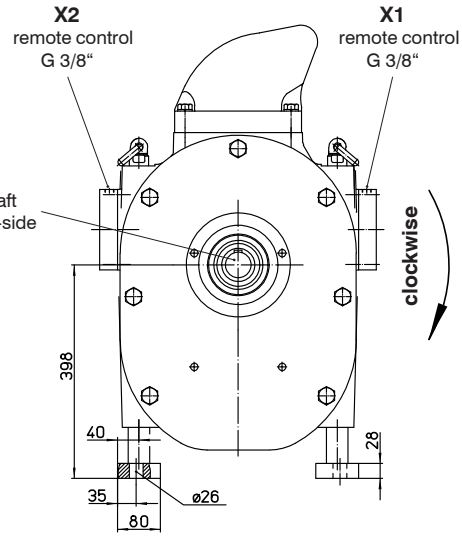
X
hand lever right or activation **X2**



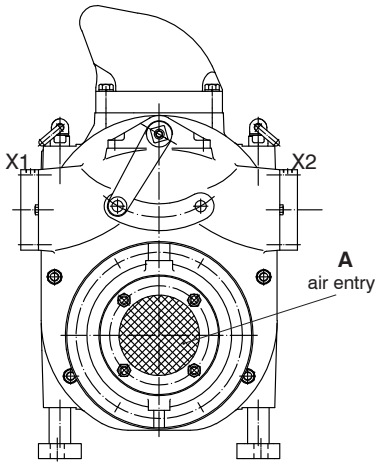
Z
shaft bottom



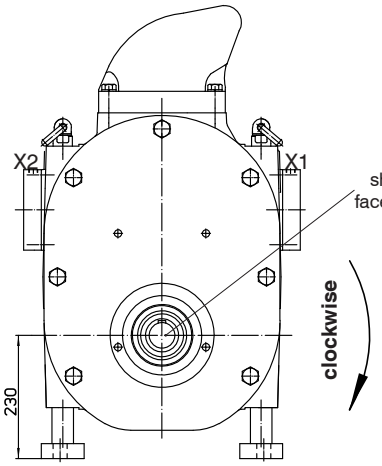
Z
shaft above



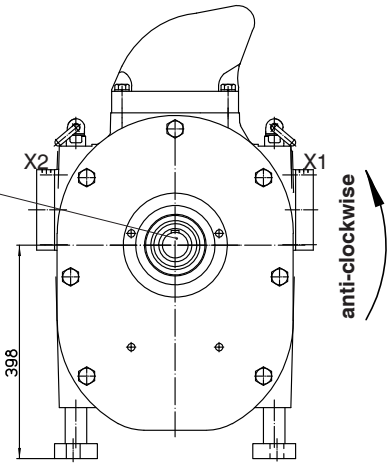
X
hand lever left or activation **X1**



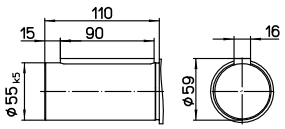
Z
shaft bottom

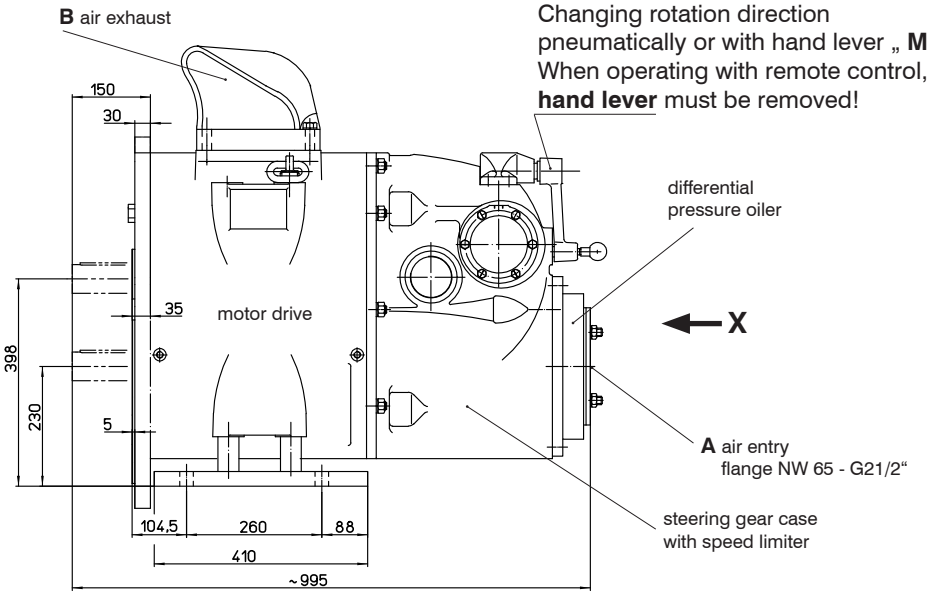


Z
shaft above



parallel key DIN 6885 Bl.1



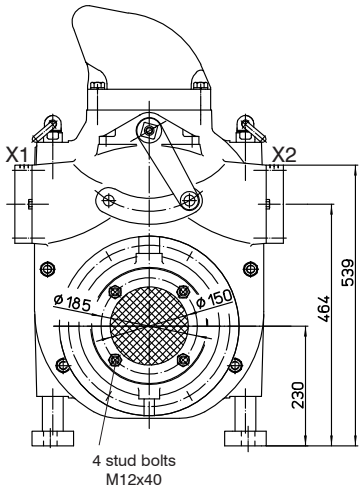


Changing rotation direction pneumatically or with hand lever „ **MP** “. When operating with remote control, the **hand lever** must be removed!

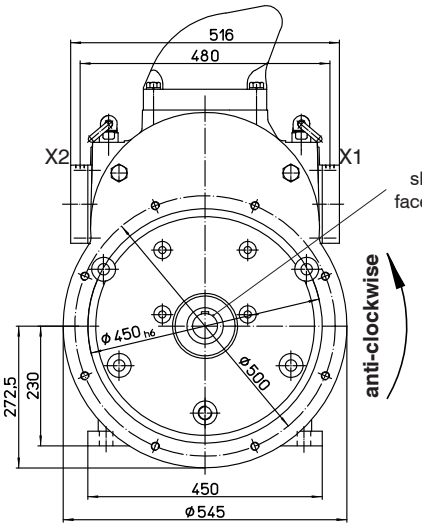
weight: m= 640 kg

X Representation without flange

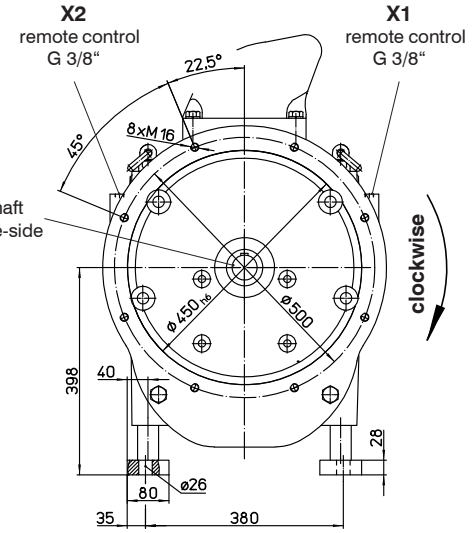
hand lever right or activation **X2**



Z
shaft bottom

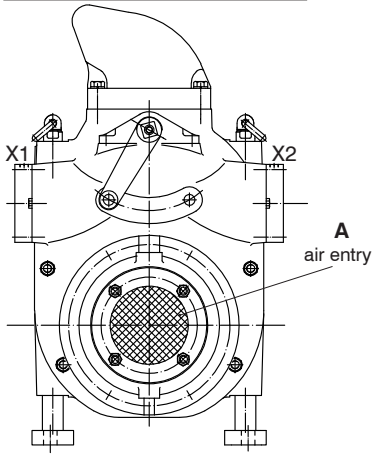


Z
shaft above

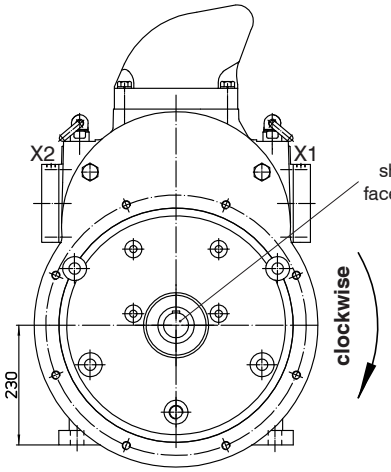


X Representation without flange

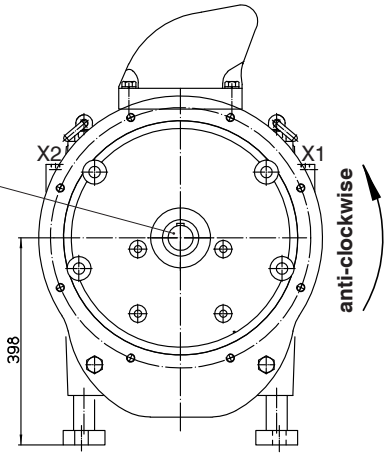
hand lever left or activation **X1**



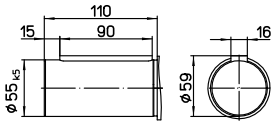
Z
shaft bottom

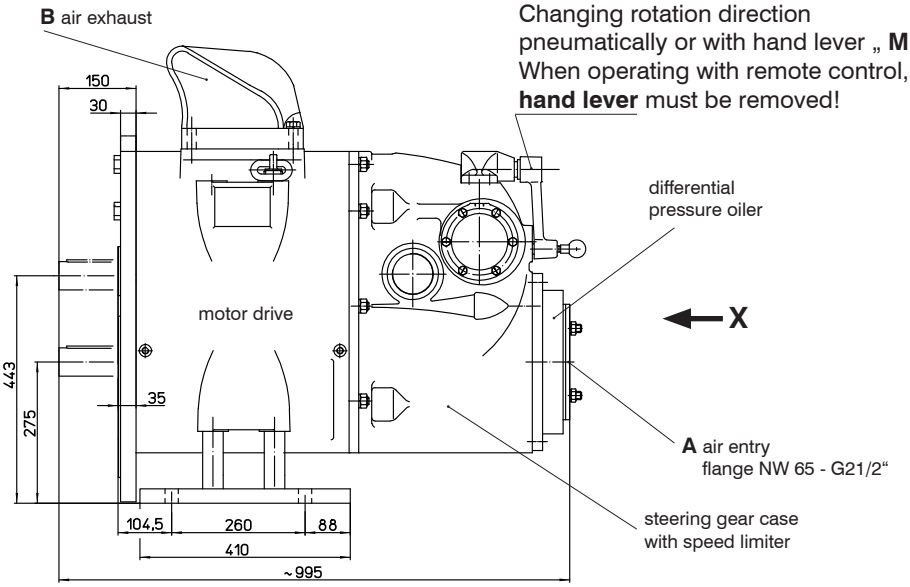


Z
shaft above



parallel key DIN 6885 Bl.1



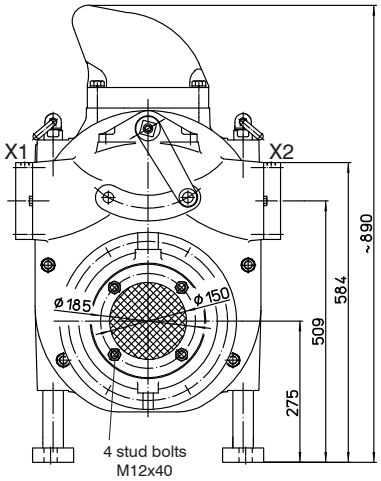


Changing rotation direction pneumatically or with hand lever „ **MP** “. When operating with remote control, the **hand lever** must be removed!

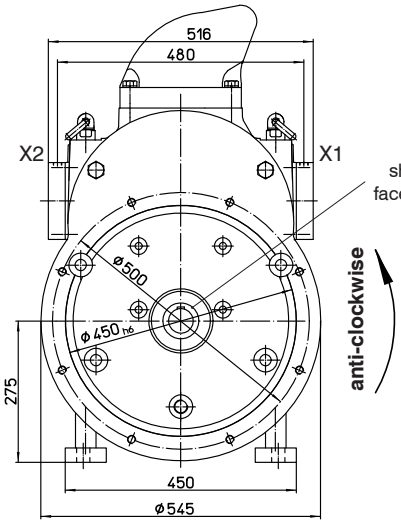
weight: m= 640 kg

X Representation without flange

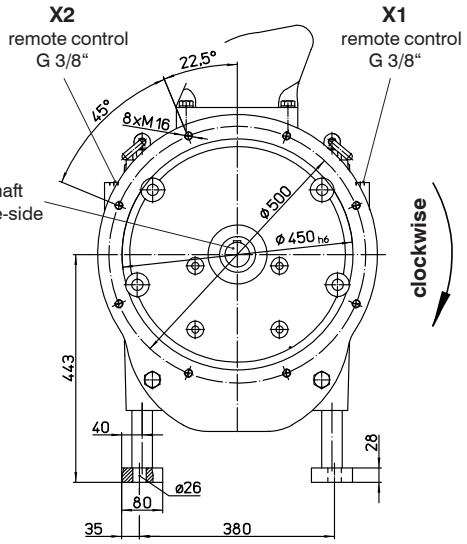
hand lever right or activation **X2**



Z
shaft bottom

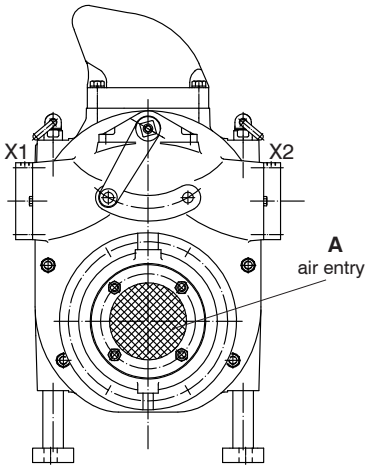


Z
shaft above

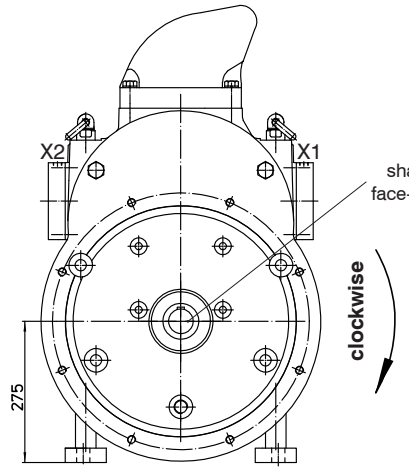


X Representation without flange

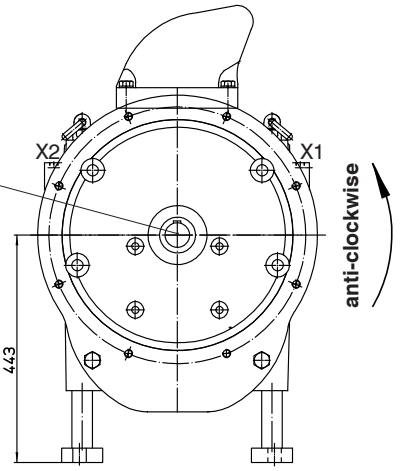
hand lever left or activation **X1**

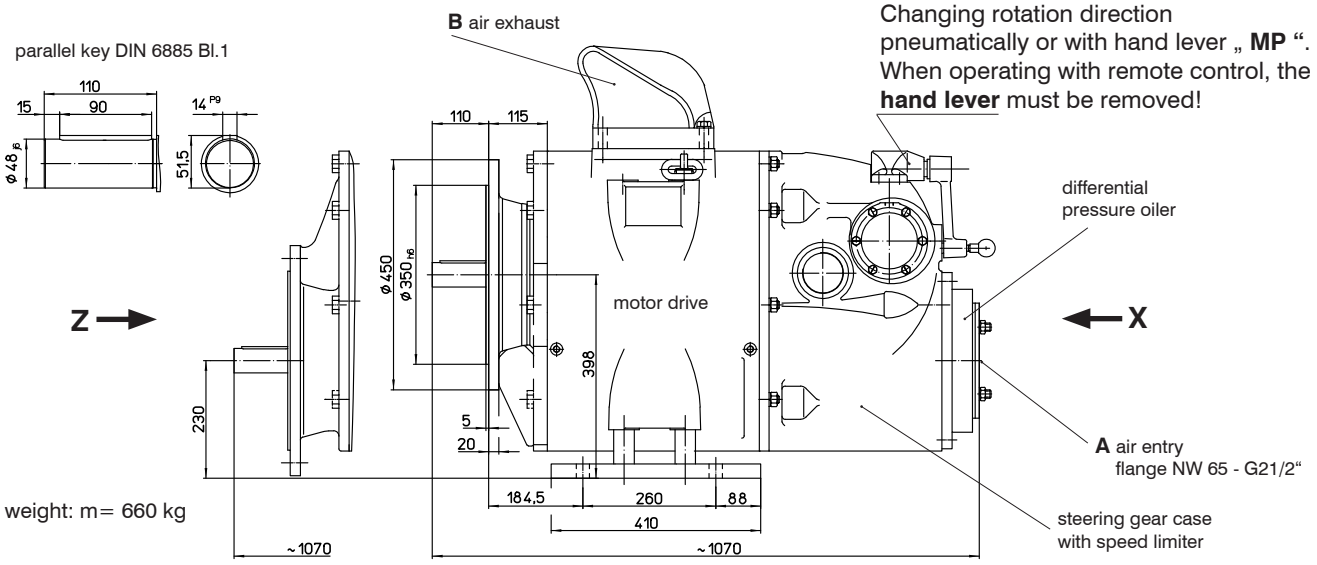


Z
shaft bottom



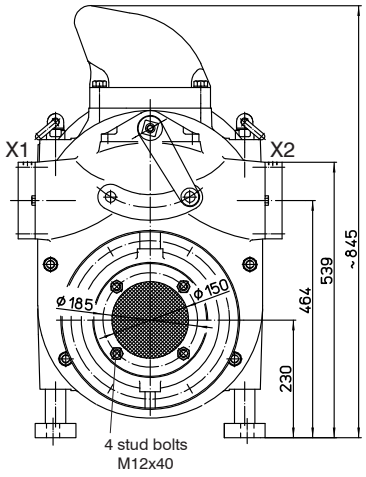
Z
shaft above



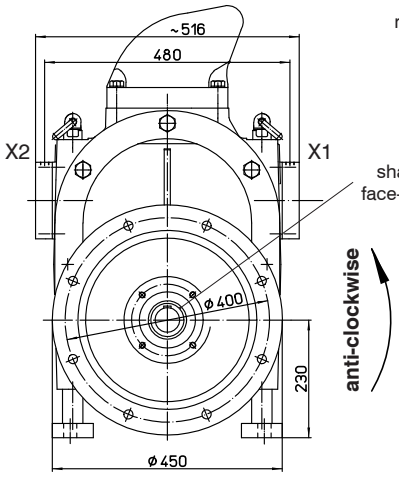


X Representation without flange

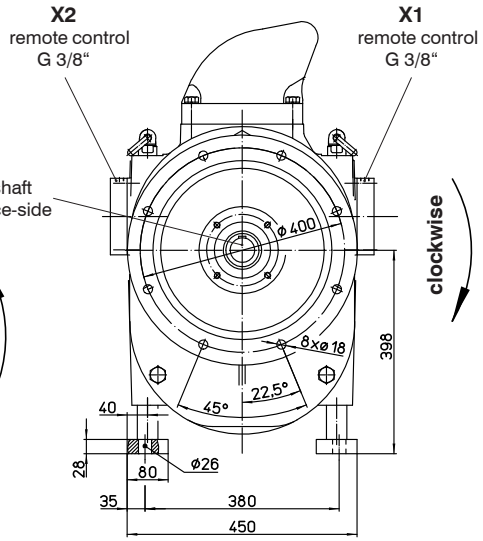
hand lever right or activation **X2**



Z
shaft bottom

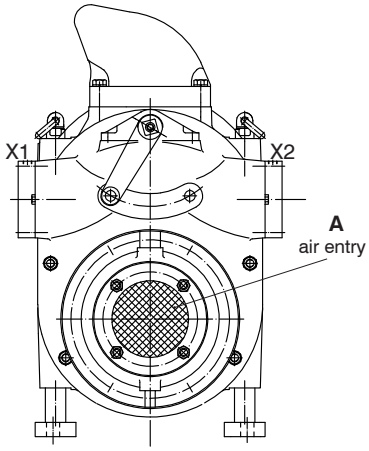


Z
shaft above

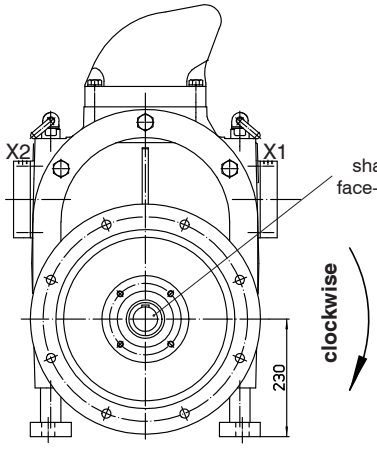


X Representation without flange

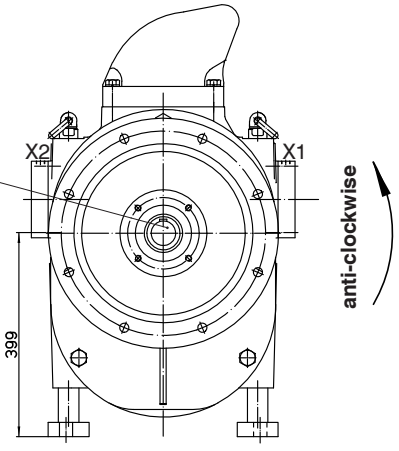
hand lever left or activation **X1**



Z
shaft bottom

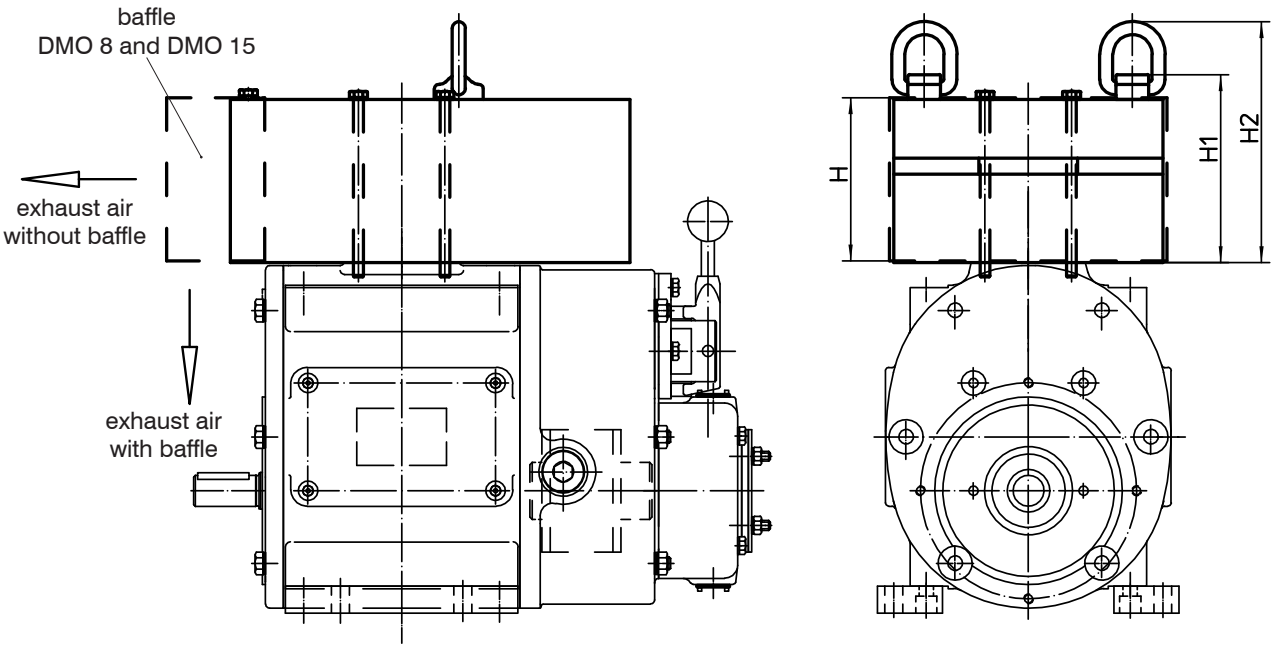


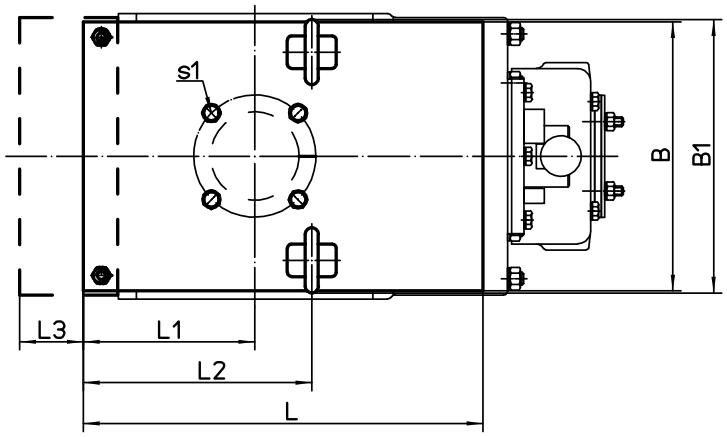
Z
shaft above



model: KS

When the compact silencer is used with air motors of type DMO..., the **noise level is reduced by approx. 10 dBA** at 4 bar operating pressure and a speed of 1500 min-1.





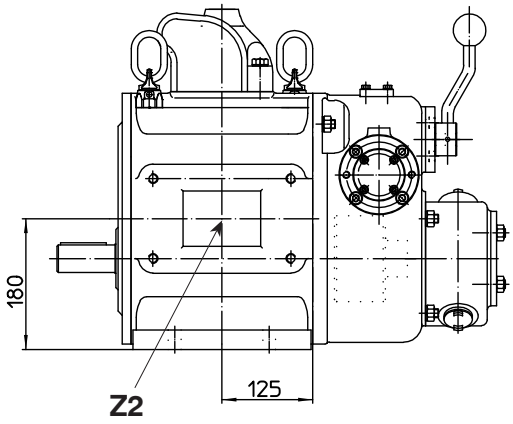
model	order nr.	B (mm)	B1 (mm)	H (mm)	H1 (mm)	H2 (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	s1	m (kg)
DMO 08 KS	02.3501.70	330	~335	200	230	~295	490	210	280	80	M12	45
DMO 15 KS	02.3501.70	330	~335	200	230	~295	490	210	280	80	M12	45
DMO 20 KS	02.5404.70	430	~455	250	280	~345	540	200	300	-	M16	74
DMO 35G KS	02.6483.71	515	~530	380	410	~478	800	235	345	-	M20	95

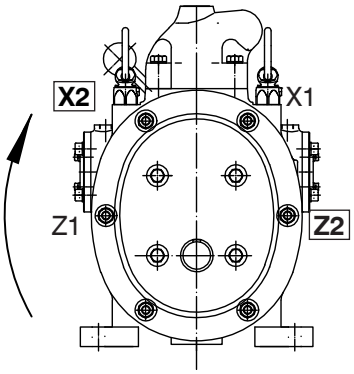
DMO 8

both sides: Measuring and pulse connect G3/8
- the upcoming operating pressure on the rotors can be tapped for measurement and control purposes.

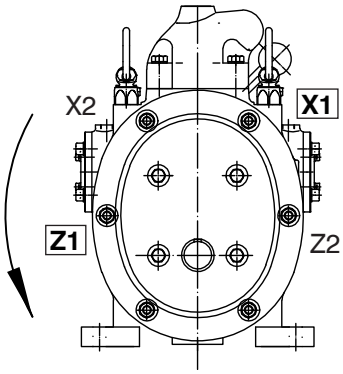
or: Check valve for air-suction
- when the motor rotates caused by external influences, by. size 1 (5.9 kW)

DMO 8 shaft bottom



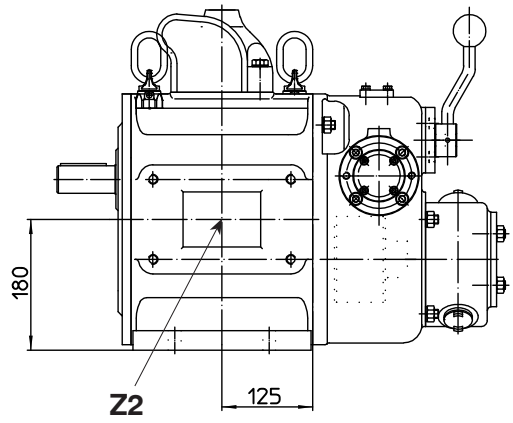


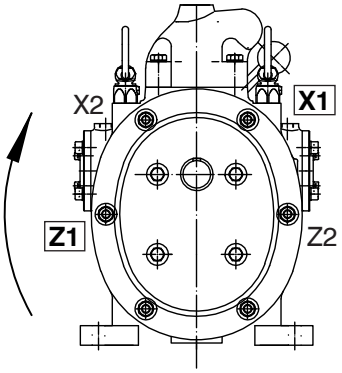
rotation **CLOCKWISE**
connection **X2**
pressure at **Z2**



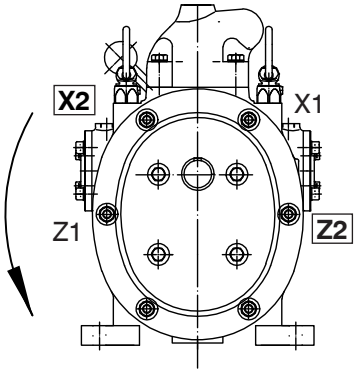
rotation **ANTI CLOCKWISE**
connection **X1**
pressure at **Z1**

DMO 8 shaft above





rotation **CLOCKWISE**
connection **X1**
pressure at **Z1**



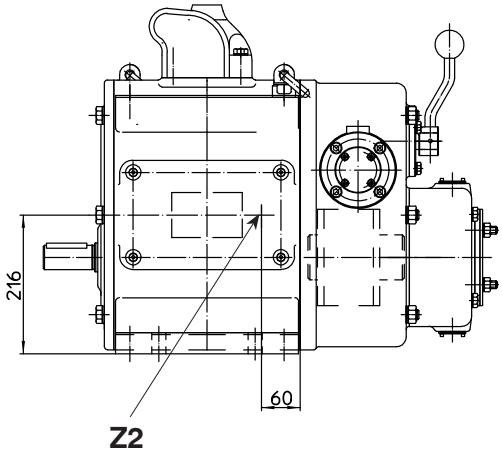
rotation **ANTI CLOCKWISE**
connection **X2**
pressure at **Z2**

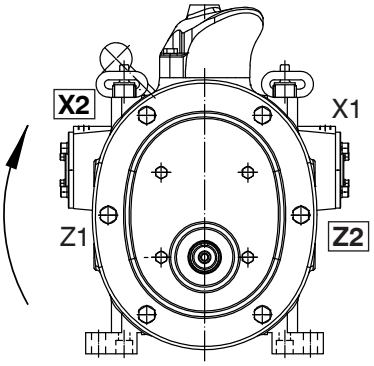
DMO 15

both sides: Measuring and pulse connect G3/8
- the upcoming operating pressure on the rotors can be tapped for measurement and control purposes.

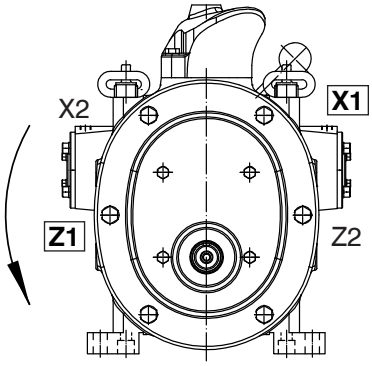
or: Check valve for air-suction
- when the motor rotates caused by external influences, by. size 2 (11 / 17,5 kW)

DMO 15 shaft bottom



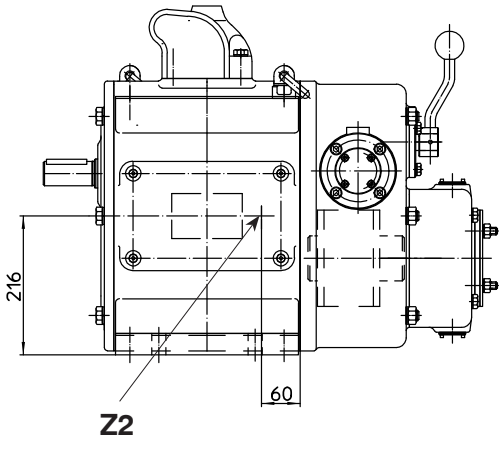


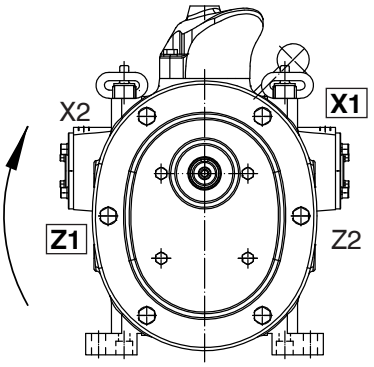
rotation **CLOCKWISE**
connection **X2**
pressure at **Z2**



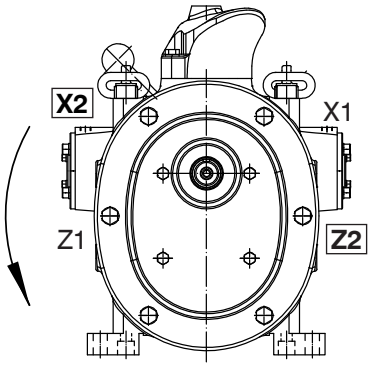
rotation **ANTI CLOCKWISE**
connection **X1**
pressure at **Z1**

DMO 15 shaft above





rotation **CLOCKWISE**
connection **X1**
pressure at **Z1**



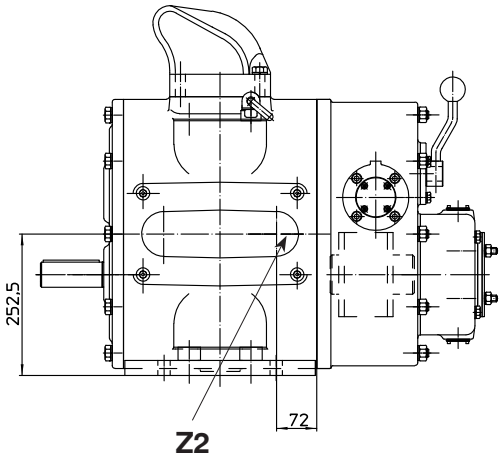
rotation **ANTI CLOCKWISE**
connection **X2**
pressure at **Z2**

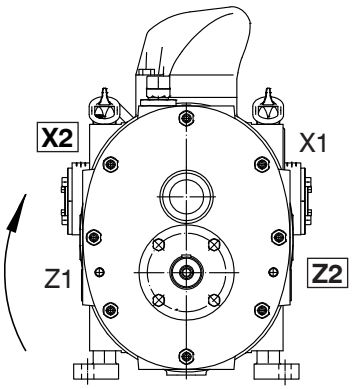
DMO 20

both sides: Measuring and pulse connect G3/8
- the upcoming operating pressure on the rotors can be tapped for measurement and control purposes.

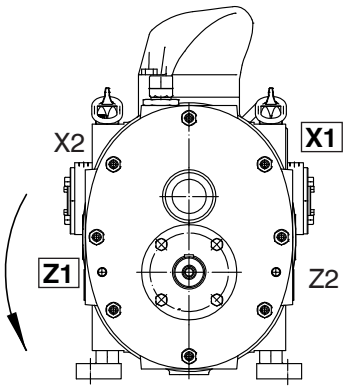
or: Check valve for air-suction
- when the motor rotates caused by external influences, by. size 3 (26 / 44 kW)

DMO 20 shaft bottom



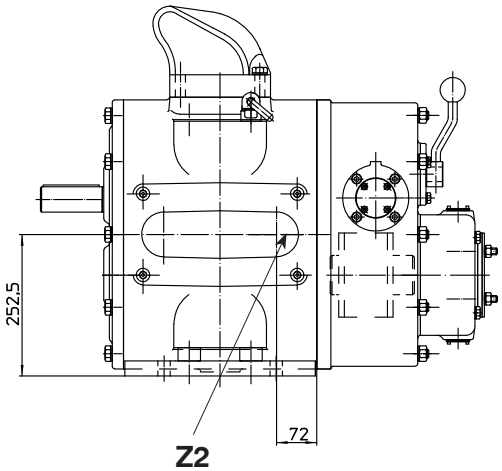


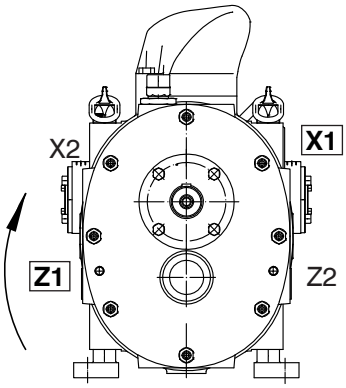
rotation **CLOCKWISE**
connection **X2**
pressure at **Z2**



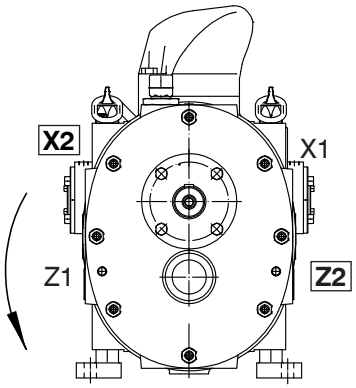
rotation **ANTI CLOCKWISE**
connection **X1**
pressure at **Z1**

DMO 20 shaft above





rotation **CLOCKWISE**
connection **X1**
pressure at **Z1**



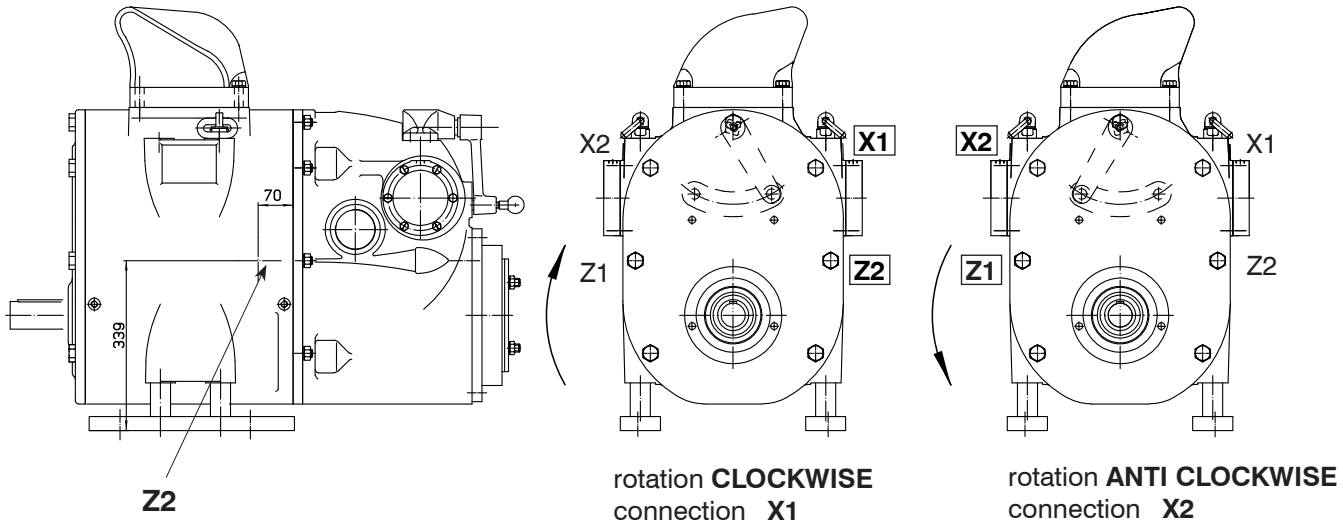
rotation **ANTI CLOCKWISE**
connection **X2**
pressure at **Z2**

DMO 35G

both sides: Measuring and pulse connect G3/8
- the upcoming operating pressure on the rotors can be tapped for measurement and control purposes.

or: Check valve for air-suction
- when the motor rotates caused by external influences, by. size 3 (26 / 44 kW)

DMO 35G shaft bottom

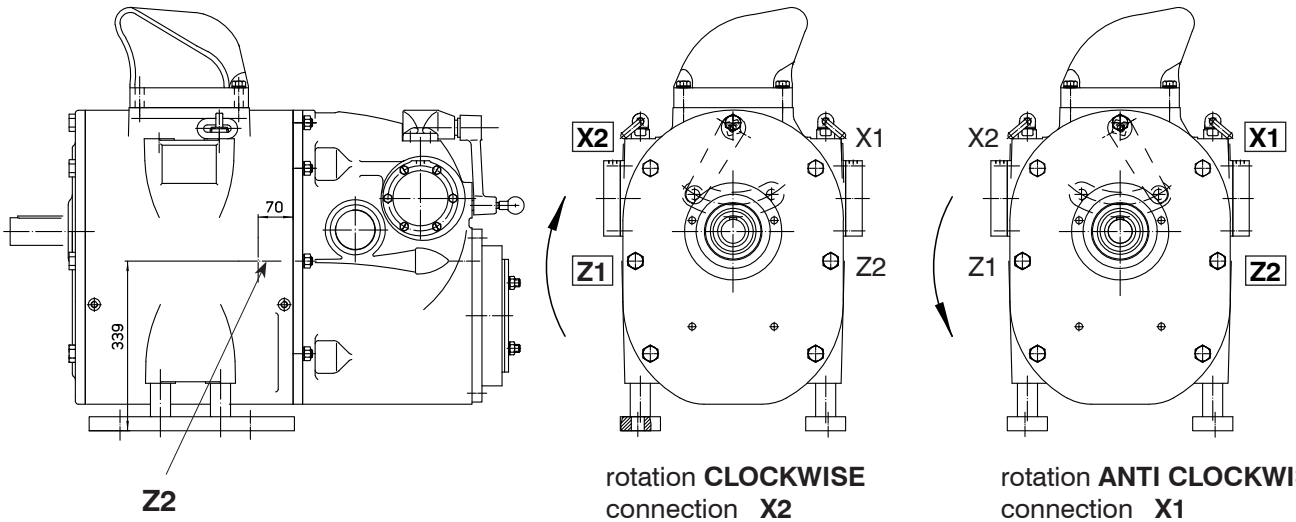


rotation **CLOCKWISE**
connection **X1**
pressure at **Z2**

rotation **ANTI CLOCKWISE**
connection **X2**
pressure at **Z1**

Changing rotation direction pneumatically or with hand lever „MP“, when operating with remote control, the hand lever must be removed.

DMO 35G shaft above

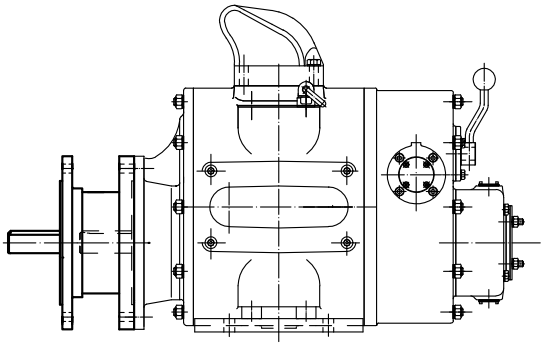


rotation **CLOCKWISE**
connection **X2**
pressure at **Z1**

rotation **ANTI CLOCKWISE**
connection **X1**
pressure at **Z2**

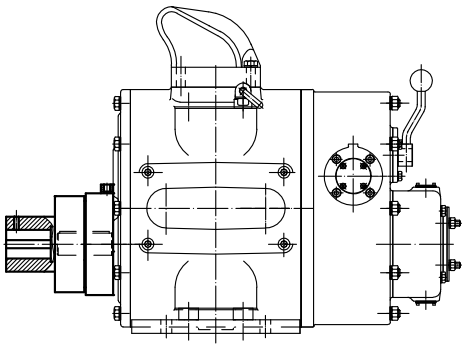
Spring- loaded multi- disc brake

The standstill holding brake holds the drive in position under load with depressurized pneumatic motor. It opens pneumatically via a valve (4bar) and closes by means of spring force when the pneumatic pressure is switched off.



Clutch coupling

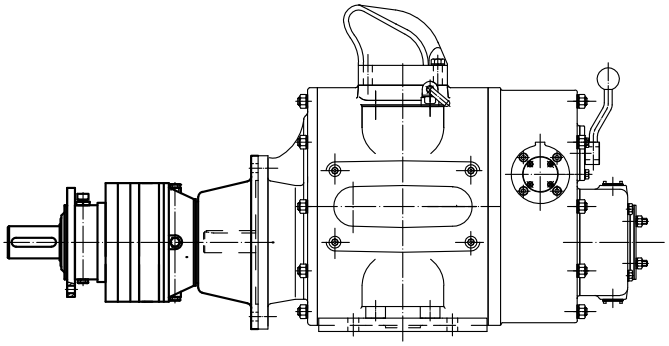
A pneumatic clutch is for example used for emergency drive, wich not run permanently. In the unpressurized state, the clutch is open by spring force. By pneumatic pressure (which can be accessed at the measuring terminals of the pneumatic motor), the frictional clutch and puts into effect the emergency drive. Once the pneumatic motor that delivers its torque is due to the pressure rotors, clutch switches on, initiation of the test, the applied pressure. This says that in an emergency, the clutch and accepts the pneumatic motor, switched on the frictional clutch, the drive.



Planetary gear

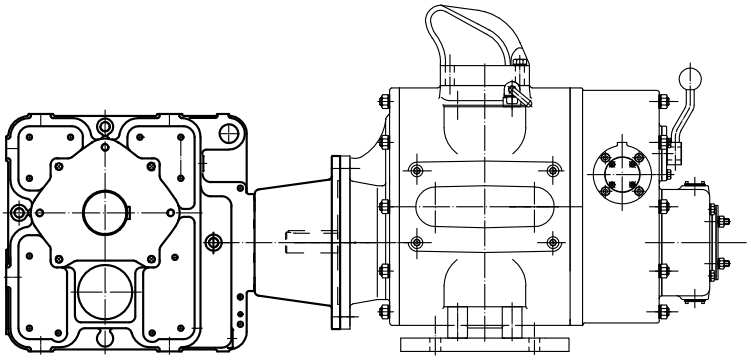
Commercially available planetary gear units may be installed downstream of the pneumatic motor. The dimensions of these coaxial gear units are significantly smaller than those of the pneumatic motor, and the gears have very tight gear shifting.

1-shift i= 3,08 - 7,25
2-shift i= 10,04 - 50,30
3-shift i= 60,00 - 320,00



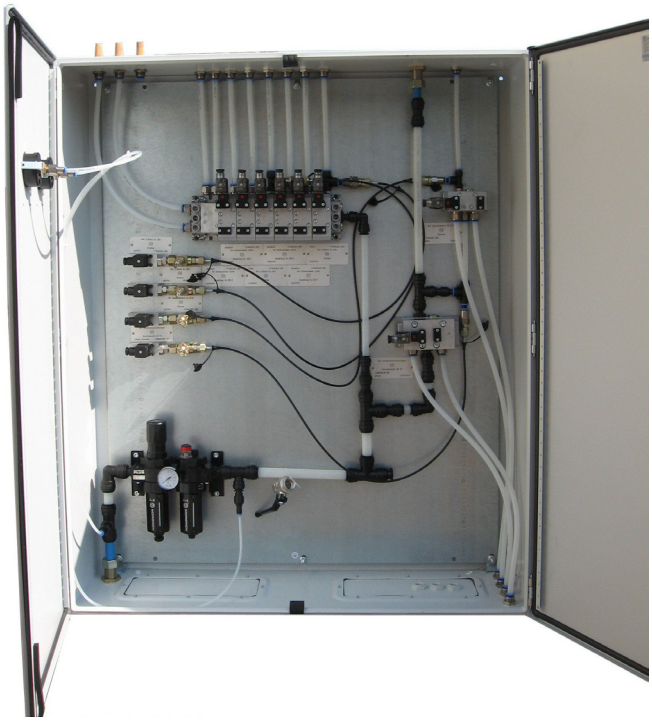
Bevel spur gear

The output of bevel spur gears is 90° offset vis-a-vis the pneumatic motor. The output shaft is either on the right or the left side, or o both sides. Thanks to its rectangular output, the pneumatic motor stands rectangular to the drive axis, with coaxially reduces the overall length. Because of their weight, the bevel spur gears must be fixed to the same frame as the pneumatic motor.
i= 4,4 - 730



Pneumatic control cabinet

For applications involving the pneumatic gear motors type DMO..., we offer complete, pneumatic controls dimensioned, in accordance with your specifications.



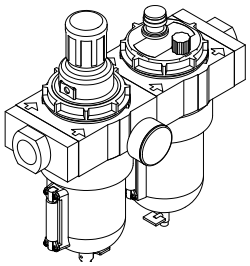
Example for a pneumatic control cabinet for an emergency function designed to move a melting furnace into the safety zone automatically by means of the pneumatic gear motor following main drive failure.

All switching functions are available as redundant units to ensure safety in case of valve failure.

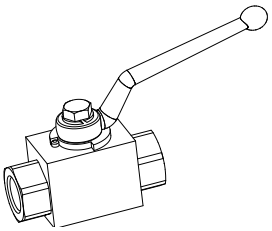
The emergency manual operation is provided as an additional last safety function.

Other accessories, such as .....

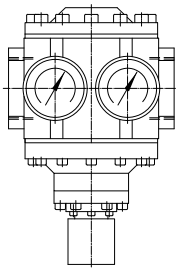
maintenance unit



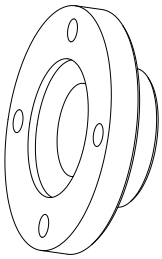
ball valve



pressure reducer



air connection flange



..... etc. are to find in the catalog **LM1-009UK**.

DÜSTERLOH has been developing fluid technology products for more than 100 years.
The drives, controls and hydraulic power units from Hattingen are appreciated throughout the world for their complete reliability; including under extreme conditions. The owner-managed company´s own development and construction department and the wide range of products cater for distinctive flexibility and customer-orientation.

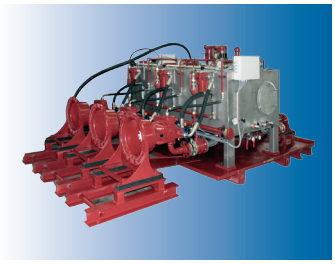
Products

- Hydraulic radial piston motors
- Hydraulic axial piston motors
- Pneumatic motors
- Pneumatic starters
- Hydraulic and pneumatic controls
- Hydraulic power units

Designing controls and hydraulic power units specific to the customer is our company´s major strength. Vast product diversity is also available for standardized products.

Industrial areas of application

- Machine tools
- Smelting and rolling mill equipment
- Foundry machines
- Testing machines
- Shipbuilding (diesel engines)
- Offshore technology
- Printing and paper technology
- Vehicle construction
- Manipulators
- Environmental technology
- Mining equipment
- Materials handling equipment



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