

Operating instructions compressed air motors

with explosion protection rating



Compressed air motors by MANNESMANN DEMAG protected against explosions comply with EEC Directives 94/9 EU (ATEX) and are assigned to device group II zone 1, 2 and zone 21,22.

Maximum ambient temperatures

The air motors are classified by temperature classes with a maximum ambient temperature range. The air motors are only allowed to be operated within the given ambient temperature range.

Valid Zones

Explosion protected air motors which are assigned to group II, category 2G (gas) or category 2GD (dust and gas) can be operated in zone 1 (gas) or zone 21 (gas and dust).

These zones include areas in which one can expect a potentially explosive atmosphere of gases, vapours or mists to occur occasionally.

Explosion groups:

In the case of a few protection types, some equipment assigned to Group II, which is intended for use in potentially explosive gaseous atmospheres, is assigned according to the type of potentially explosive area in which they are to be deployed. This equipment is assigned to explosion groups (sub-division) IIA, IIB and IIC.

IIA: propane, acetone, ammonia

IIB: ethylene, city gas

IIC: hydrogen, acetylene, carbon bisulphide

Mannesmann Demag air motors with explosion group II are superior to explosion group IIA, IIB and IIC and can therefore be installed and used in those subcategories.

Temperature classification:

(with data on the maximum permissible surface temperature of equipment used in compliance with EN 13463-1)

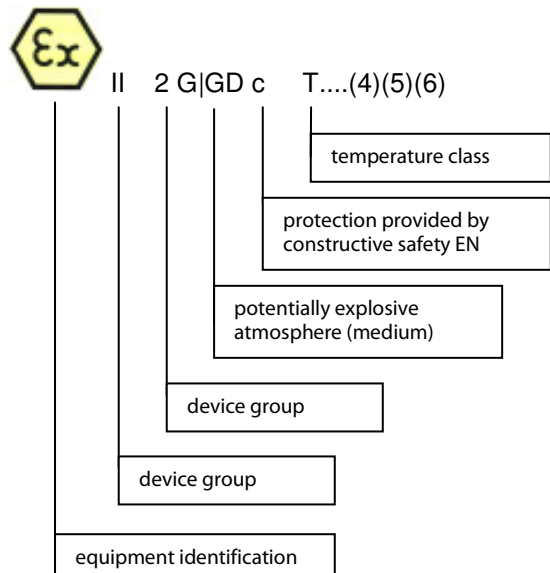
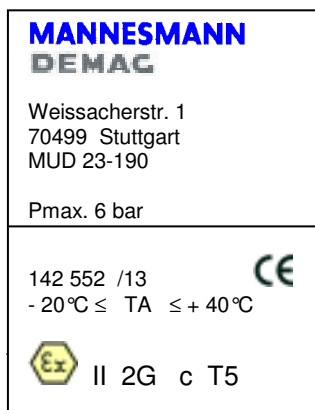
T1	450 °C
T2	300 °C
T3	200 °C
T4	135 °C
T5	100 °C
T6	85 °C

MANNESMANN DEMAG compressed air motors are rated:



II 2 G c T...(4) - 20°C ≤ TA ≤ + 50°C
 II 2 GD c T...(4) - 20°C ≤ TA ≤ + 50°C
 II 2 G c T...(4)(5) - 20°C ≤ TA ≤ + 40°C

Example of rating plate (sample)



In addition to the general operating instructions for compressed air motors, the following regulations apply to explosion protected compressed air motors.

**Safety instructions before starting up**

- The air motor may only be used / operated in the group II and category 2, Zone1 and 2 (medium G) or zone21 and 22 (medium GD) which is engraved on the motor.
- The motor may not be opened or changed in any way at all
- Please take note of the conformity certification
- Please read the operating instructions carefully and thoroughly and follow precisely whilst operating the device.
- Check whether differences in potential are possible due to the motor being fitted. If this is the case, a conductive connection must be made to equalize the potential.
- Check whether the data engraved on the motor is correct / permitted for the area in which the motor is to be used.
- We shall not be liable for damage which has occurred because the operating instructions of the explosion protection motor have not been complied with.

**Safety instructions for medium dust (D)**

- Due to the over pressure within the air motor, we cannot with reasonable certainty exclude the possibility that air is leaking at the housing or shaft of the air motor. In case of air leakage the areas have to be cleaned regularly if necessary to avoid a dust layer or cloud.

**Installation**

- The compressed air motor may only be operated at a maximum working pressure of 6 bar. The air motors can be operated at a pressure below 6 bar at any time.
- Check that there is no inadmissible heat exerted the air motor (e.g. couplings)
- The temperature of the compress air must not exceed the maximum ambient temperature range.
- The air motor must not be driven against it's normal rotating direction which is given by the incoming air due to an external torque applied to it.
- Open in or outgoing air connections must be closed by using a silencer. If a hose is connected to the exhaust, the hose must also be closed by a silencer or led to an area which is not potentially explosive.

**Maintenance intervals – replacement parts**

- To comply with safety regulations in accordance with ATEX directive 94/9, the vanes and ball bearings must be replaced immediately if the motor's performance begins to decrease. These parts may only be replaced by the manufacturer. The following are excepted: Qualified personnel trained by the manufacturer using original replacement parts, dismantling and assembly equipment etc.
- Please only use original replacement parts which have been approved for use with explosion protected motors. The incorrect ball bearings could increase friction and result in an increase in the temperature of the motor thus changing the temperature classification.

**Lubricants**

- Incorrect lubricants / greases can impair the service life of the motor.
- Always use the following oil types listed below:

Make – Designation:

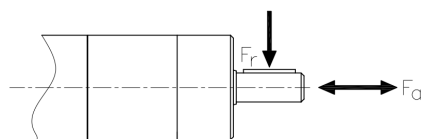
Shell – Tellus HL/HLP 32 | Aral-Vitam GF 32 | BP-Energol HL P 32 | Fuchs-Renolin B 10

- Please only use the grease listed below:

Make – Designation:

Fuchs – Renolit LX-GFL 0/00

Max. force applied to the shaft



Type			Ø shaft	max. force	
			mm	Fr max.	Fa max.
MUD 9 - 2300	bis	MUD 9 - 200	9	700	600
MUD 9 - 165	bis	MUD 9 - 24	9	700	600
MRD 12 - 3250	bis	MRD 12 - 280	9	700	600
MUD 16 - 6500	bis	MUD 16 - 140	10	1100	900
MUD 23 - 7000	bis	MUD 23 - 120	12	1300	1000
MUD 23 - 85	bis	MUD 23 - 5	12	1300	1000
MUD 23 - 70	bis	MUD 23 - 25	19	3900	1800
MUD 23 - 20	bis	MUD 23 - 7	28	5600	2800
MRD 25 - 9600	bis	MRD 25 - 235	10	1100	900
MRD 38 - 9400	bis	MRD 38 - 160	12	1300	1000
MRD 38 - 9400	bis	MRD 38 - 160	3/8"x24UNF	400	1000
MRD 38 - 100	bis	MRD 38 - 33	19	3900	1800
MRD 38 - 25	bis	MRD 38 - 10	28	5600	2800
MUD 40 - 9500	bis	MUD 40 - 220	14	2100	1500
MUD 40 - 90	bis	MUD 40 - 40	19	3900	1800
MUD 40 - 20	bis	MUD 40 - 14	28	5600	2800
MUD 53 - 8100	bis	MUD 53 - 220	16	1400	1200
MUD 53 - 110	bis	MUD 53 - 45	19	3900	1800
MUD 53 - 27	bis	MUD 53 - 20	28	5600	2800
MUD 62 - 8600	bis	MUD 62 - 230	16	1400	1200
MUD 62 - 120	bis	MUD 62 - 50	19	3900	1800
MUD 62 - 28	bis	MUD 62 - 20	28	5600	2800
MRD 55 - 11000	bis	MRD 55 - 250	14	2100	1500
MRD 55 - 105	bis	MRD 55 - 50	19	3900	1800
MRD 55 - 25	bis	MRD 55 - 16	28	5600	2800
MRD 65 - 10500	bis	MRD 65 - 290	16	1400	1200
MRD 65 - 145	bis	MRD 65 - 60	19	3900	1800
MRD 65 - 35	bis	MRD 65 - 25	28	5600	2800
MRD 84 - 10800	bis	MRD 84 - 295	16	1400	1200
MRD 84 - 145	bis	MRD 84 - 60	19	3900	1800
MRD 84 - 35	bis	MRD 84 - 25	28	5600	2800
MUD 82 - 6800	bis	MUD 82 - 200	19	3900	1800
MUD 82 - 100	bis	MUD 82 - 45	28	5600	2800
MRD 120 - 9300	bis	MRD 120 - 260	19	3900	1800
MRD 120 - 140	bis	MRD 120 - 65	28	5600	2800
MU 200 - 3000	bis	MU 200 - 1400	24	2500	2300
MU 200 - 750	bis	MU 200 - 50	35	3500	2300
MU 300 - 2800	bis	MU 300 - 1400	24	2400	2300
MU 300 - 750	bis	MU 300 - 75	35	3500	2300
MU 400 - 2800	bis	MU 400 - 1400	24	2400	2300
MU 400 - 750	bis	MU 400 - 75	35	3500	2300
MU 600 - 2800	bis	MU 600 - 1400	24	2400	2300
MU 600 - 750	bis	MU 600 - 75V	35	3500	2300

The values are also valid for air motors with anti-clockwise rotation (MLD) or air motors with integrated brakes of the same type
Max. force for 10. Million alternation loadings

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