

## Customer

## Supplier

Company name  
Editor  
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E-mail

**Fields of Application**

The in-line pumps are designed for:

Water supply and boosting,  
Watering, sprinkling and dewatering,  
Filling and discharging of tanks,  
Circulating of hot and cold water,  
In central heating and air-conditioning installations,  
Circulating in swimming pools,  
Liquid transfer applications in industry, agriculture, etc.  
Pumping of clean and sea water in ships.

**Design Specification**

The INM pumps are single-stage centrifugal pumps of non-self-priming type fitted with standard motors and mechanical shaft seals.

The nominal flow rates of the pumps comply with the DIN 24 255 standards.

Pump flanges sizes according to EN 1092, PN 16. The dimensions of the suction and discharge ports are identical. Both pump flanges have pressure gage tapings.

Single entry, closed impeller is hydraulically thrust compensated and dynamically balanced.

A drain plug is fitted in the bottom of pump housing.

The motor shaft is passed into the pump shaft for coupling and no need to use any coupling for the system.

**Bearings**

For INM series pumps, the motor shaft and pump shaft are passed into each other. The axial and the radial loads are carried by the bearing inside the motor. There is no need to use extra bearing for the pump. For high powers, a coupling system is used between the motor shaft and pump shaft.

**Technical Data**

Suction Flange	: DN 40 - DN 200
Discharge Flange	: DN 40 - DN 200
Operating Pressure	: 10 bar
Operating Temperature	: -25 – 120 °C
Flow Range	: 2 – 520 m <sup>3</sup> /h
Head Range	: 2 - 105 m
Speed Range	: 900-3600 rpm

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**Operating data specification**

Pumped fluid	Water		Rated flow		m <sup>3</sup> /h
Solids			Rated head		m
Kind			Geodetic head		m
Percentage of solid content	0		Available system NPSH		m
pH value			Inlet pressure (pin)	0	kPa
Temperature	20	°C	Altitude above sea level	100	m
Density	998.3	kg/m <sup>3</sup>	Max. operating pressure	312	kPa
Kin. viscosity	1.005	mm <sup>2</sup> /s	Max. diff. pressure	312	kPa
Vapour pressure	2.34	kPa			

**Pump**

Make	MAS DAF		Impeller type		
Pump type	INM 50-160		Impeller construction		
Frame size			Impeller Ø		
Design			Max.	184	mm
Self priming	<input checked="" type="checkbox"/> No		designed	150	mm
Speed	2930	1/min	Min.	140	mm
Stages	1		Flow		
Suction port			Nominal	34.2	m <sup>3</sup> /h
Pressure rating	PN16		Max.	48.7	m <sup>3</sup> /h
Nominal pipe size	DN50		Min.	0	m <sup>3</sup> /h
Standard	DIN		Head		
Discharge port			Nominal	27	m
Pressure rating	PN16		Min.	18.1	m
Nominal pipe size	DN50		Max.	31.9	m
Standard	DIN		Shut off head	31.9	m
Shaft power		kW	NPSH3		m
Shaft power P2(Q=max.)	4.23	kW	Efficiency		%

**Motor**

Make/Type	4 KW-2900 RPM / 100L-C	
Specific design	IE3 / 50 Hz / Pole pairs 1	
Rated power	4	kW
Electric voltage	3~ 400	V
Speed	2880	1/min
Electric current	7.4	A
Frame size	100L	
Degree of protection	IP 55	
Type of protection		
Explosion protection		

**Coupling**

Make/Type	
Series	
Spacer length	mm
Frame size	

**Materials**

Pump		Shaft seal	AQ1EGG
Pump Casing	GJL-250 (GG25)	Material code	AQ1EGG
Impeller	GJL-250 (GG25)	Seal face	Carbon graphite antimony impregnated (A)
Shaft	A 276 Type 420 (X20Cr13)	Seat	Silicon carbide (Q1, eSiC-Q7)
		Elastomer	EPDM (E)
		Metal parts	CrNiMo steel (G)

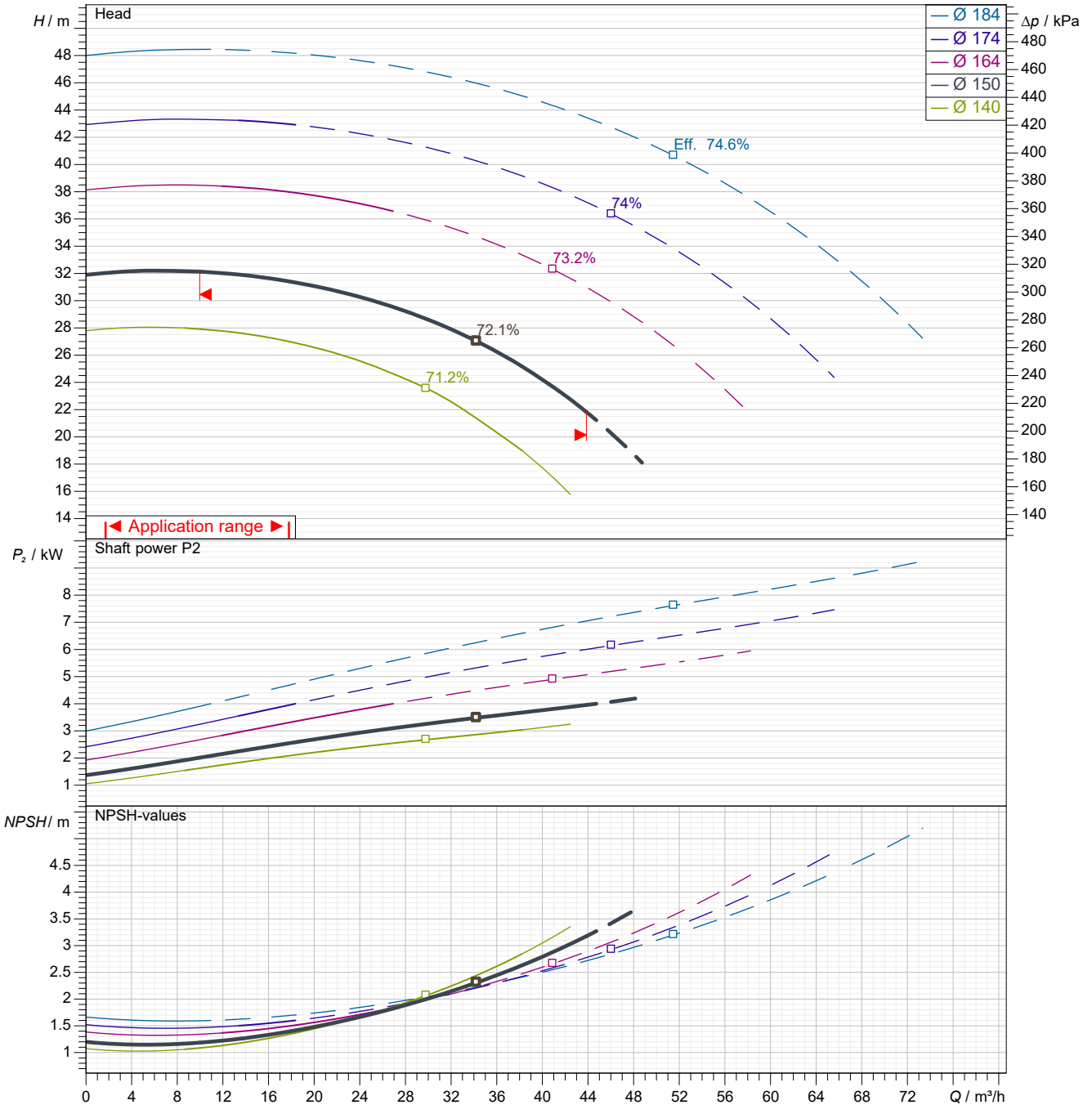
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Power data referred to: Water; 20°C; 998.3kg/m<sup>3</sup>; 1.005mm<sup>2</sup>/s Sense of rotation Clockwise from the drive end

Missing or invalid parameter (REFDIAM)



Pump curves in accordance with ISO 9906 2B

Pumped fluid	Water		Rated flow	m <sup>3</sup> /h
Temperature	20	°C	Rated head	m
Density	998.3	kg/m <sup>3</sup>	Shaft power	kW
Kin. viscosity	1.005	mm <sup>2</sup> /s	Speed	2930 1/min
Vapour pressure	2.34	kPa	NPSH3	m
Impeller Ø	150	mm	Efficiency	%

Subject to change

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2022-04-06

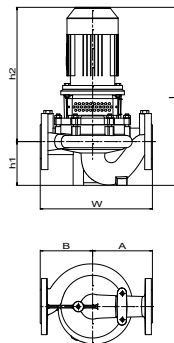
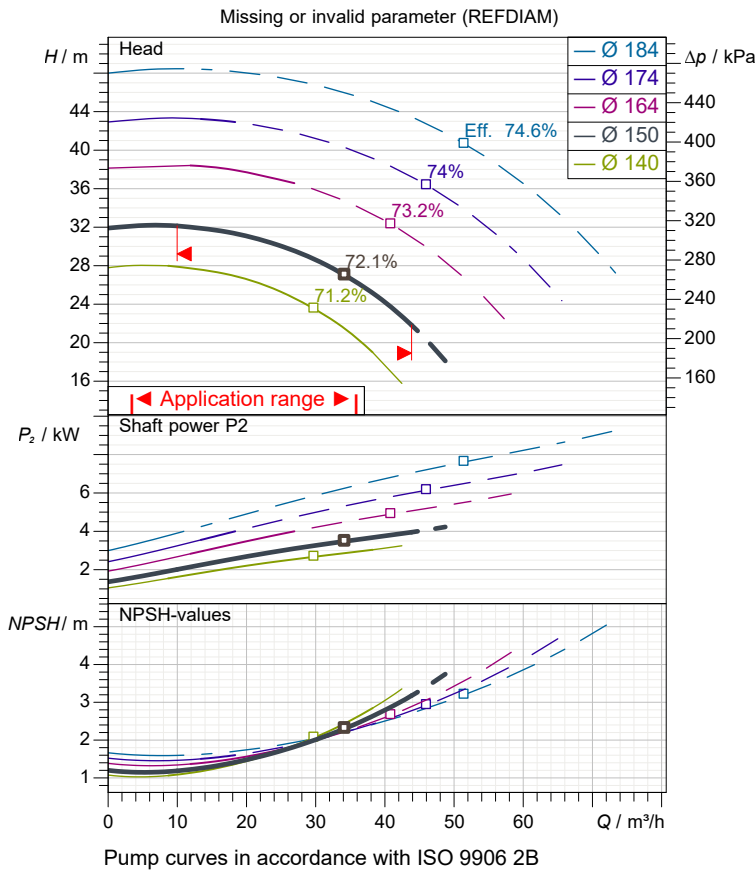
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**Performance curves**



Dimensions	mm
A	190
B	170
h1	125
h2	486
L	611
w	360

**Pump**

Make	MAS DAF
Pump type	INM 50-160
Design	
Suction port	
Pressure rating	PN16
Nominal pipe size	DN50
Standard	DIN
Discharge port	
Pressure rating	PN16
Nominal pipe size	DN50
Standard	DIN

**Operating data specification**

Pumped fluid	Water	
Temperature	20	°C
Density	998.3	kg/m <sup>3</sup>
Kin. viscosity	1.005	mm <sup>2</sup> /s
Vapour pressure	2.34	kPa
Rated flow		m <sup>3</sup> /h
Rated head		m
Shaft power		kW
Speed	2930	1/min
NPSH3		m
Efficiency		%
Impeller Ø	150	mm

**Motor**

Make/Type	4 KW-2900 RPM / 100L-C
Specific design	IE3 / 50 Hz / Pole pairs 1
Rated power	4 kW
Speed	2880 1/min
Electric voltage	3~ 400 V
Electric current	7.4 A
Degree of protection	IP 55

**Materials**

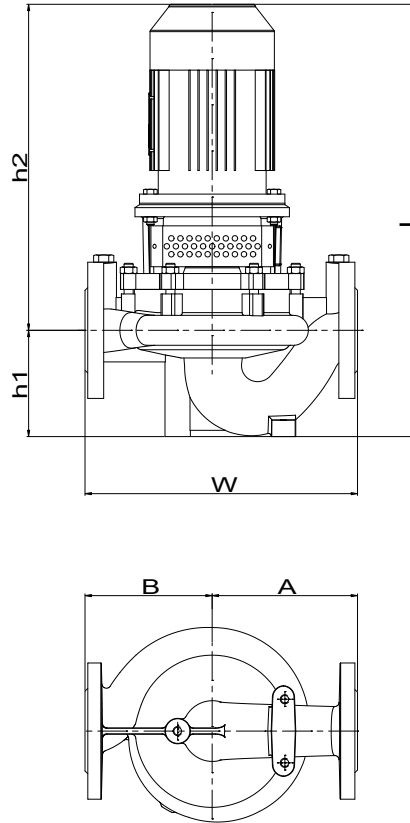
Shaft seal	AQ1EGG
Material code	AQ1EGG
Seal face	Carbon graphite antimony impregnated (A)
Seat	Silicon carbide (Q1, eSiC-Q7)
Elastomer	EPDM (E)
Metal parts	CrNiMo steel (G)

Pump Casing	GJL-250 (GG25)
Impeller	GJL-250 (GG25)
Shaft	A 276 Type 420 (X20Cr13)

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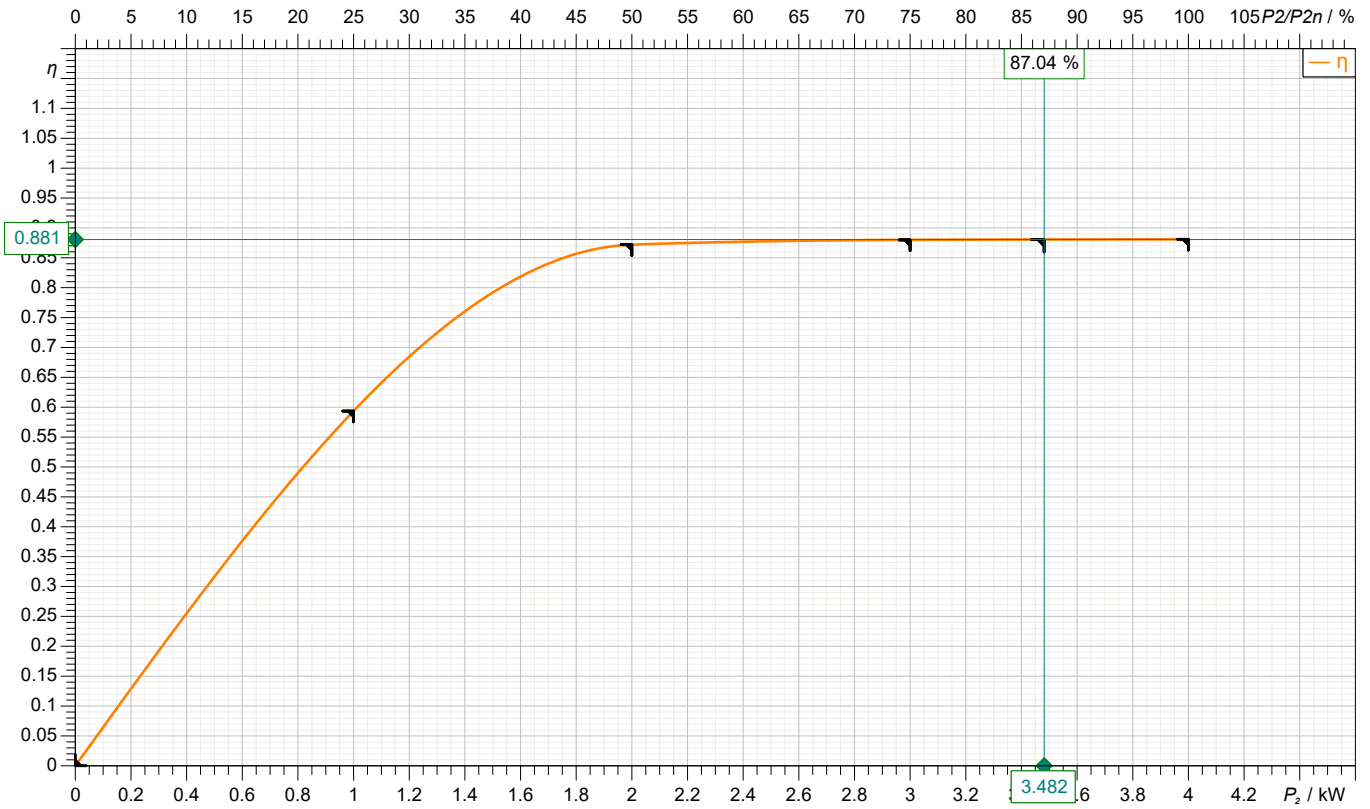
Dimensions	mm	Inlet / outlet	
A	190	Suction port	Discharge port
B	170	DN50	DN50
h1	125	PN16	PN16
h2	486		
L	611		
w	360		

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**motor data**



Symbol	No load	25 %	50 %	75 %	100 %	125 %
$P_2$ / kW	0	1	2	3	4	
$P_1$ / kW		1.684	2.294	3.409	4.54	
$\eta$ / %	0	59.36	87.2	88	88.1	

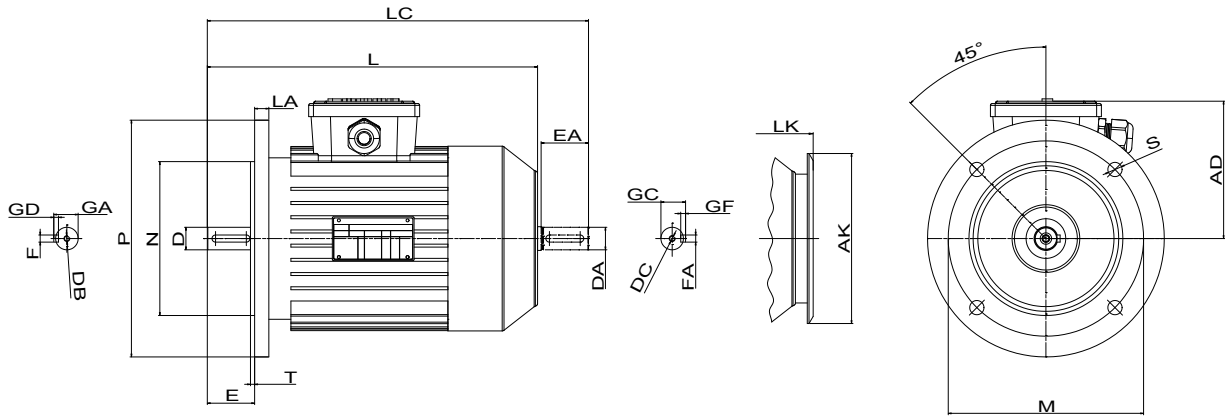
**Motor**

Make/Type	4 KW-2900 RPM / 100L-C	Degree of protection	IP 55
Specific design	IE3 / 50 Hz / Pole pairs 1	Type of protection	
Rated power	4 kW	Explosion protection	
Electric voltage	3~ 400 V	Service factor	1.15
Number of poles	2	Starting current	
Speed	2880 1/min	Starting torque	
Electric current	7.4 A	Moment of inertia	
Power factor	0.88	No. starts per hour	
Frame size	100L	Rated torque	13.3 Nm
Efficiency class	IE3	Insulation class	F (155C°)

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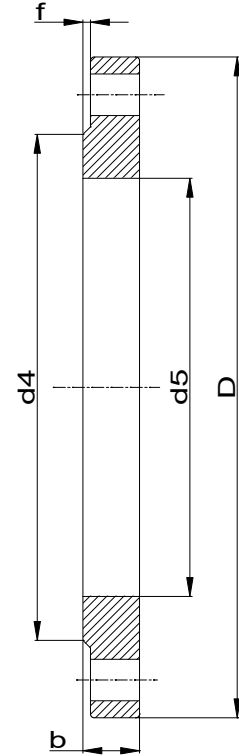
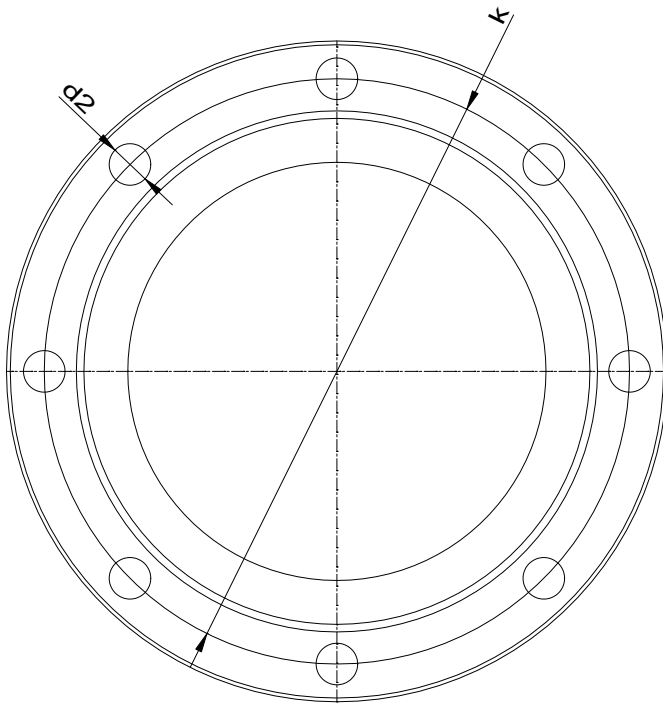


Dimensions	mm		
AD	135	LK	443
AK	189	M	215
D	28	N	180
DA	28	NO	4
DB	M10	P	250
DC	M10	S	14.5
E	60	T	4
EA	60		
FAxGF	8X7		
FxGD	8X7		
GA	31		
GC	31		
L	406		
LA	15		
LC	472		

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**Suction connection**

DN50  
PN16

**Discharge connection**

DN50  
PN16

Dimensions	mm
b	19
D	165
d2	18
d4	102
d5	61.5
DN	50
f	2
k	125
n	4

Dimensions	mm
b	19
D	165
d2	18
d4	102
d5	61.5
DN	50
f	2
k	125
n	4





**Spare part list**  
INM 50-160

Revision number

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**Subject to change**

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**Spare part list**  
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