

ANNEX

0	31.01.2005	Gezeichnet Dessiné	C.M.	Geprüft Contrôlé
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Gezeichnet Dessiné	Geprüft Contrôlé
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Arrangement drawing : LAR Truck Filling Pump P44001

Air Liquide AGS GmbH

4500023387

"Kosice"

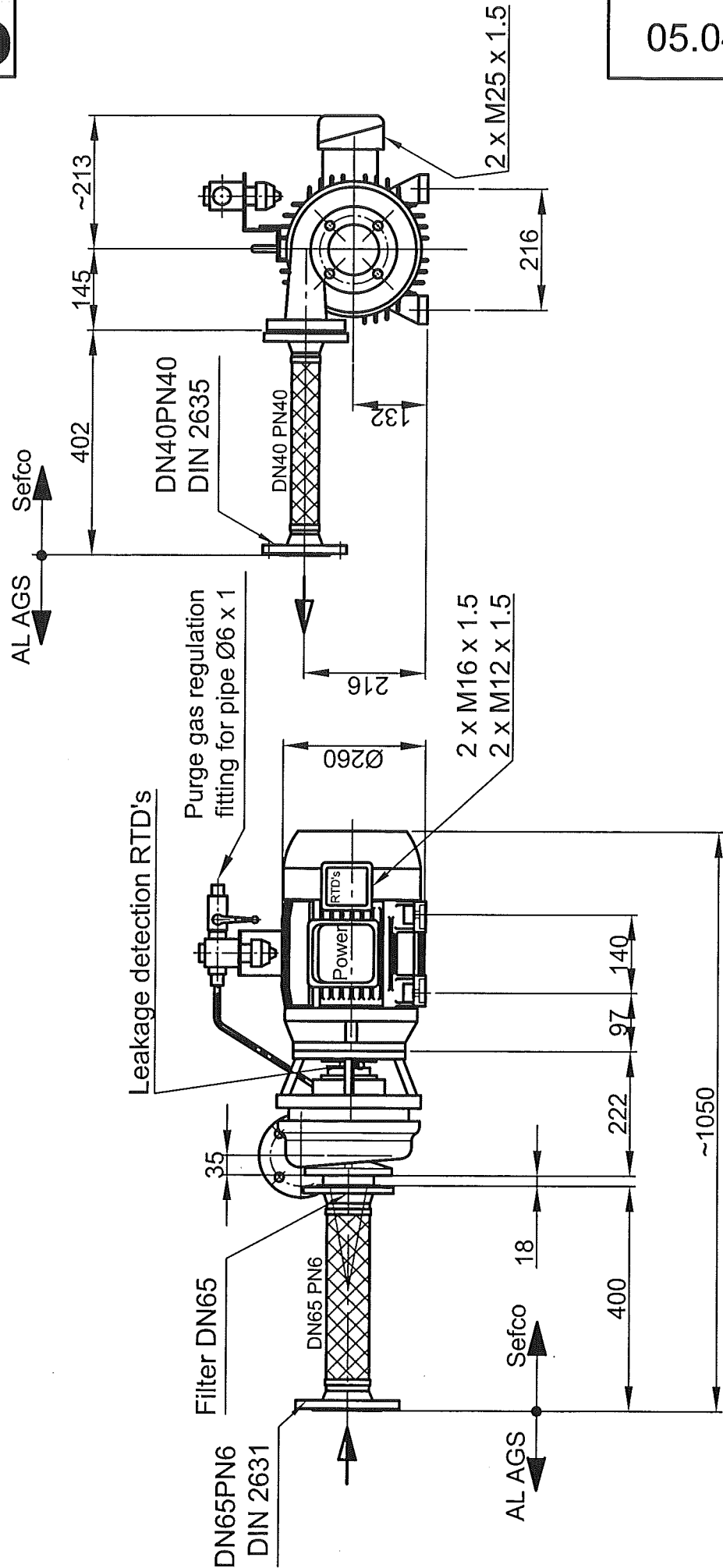
Pump type : C - 19 / EM - 7.5

Motor type : 132S - 7.5 kW

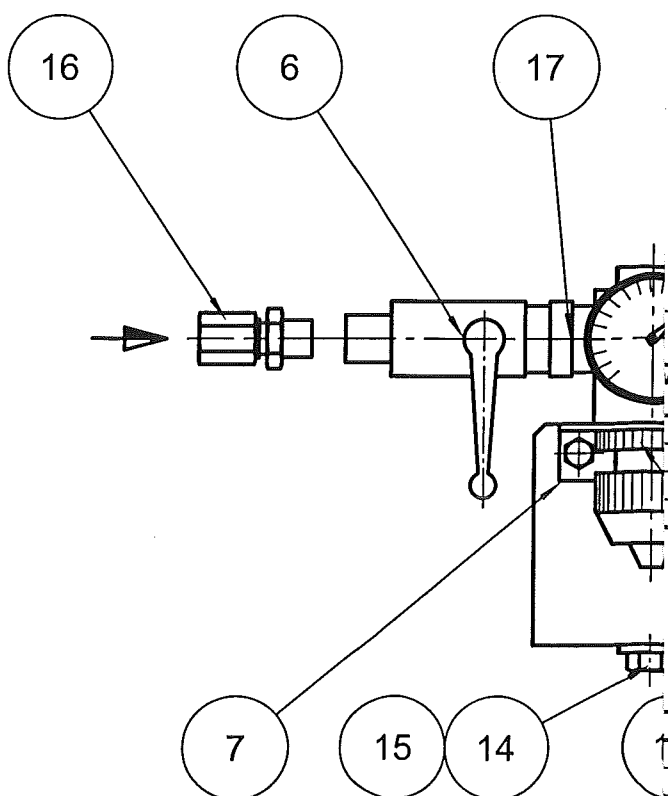
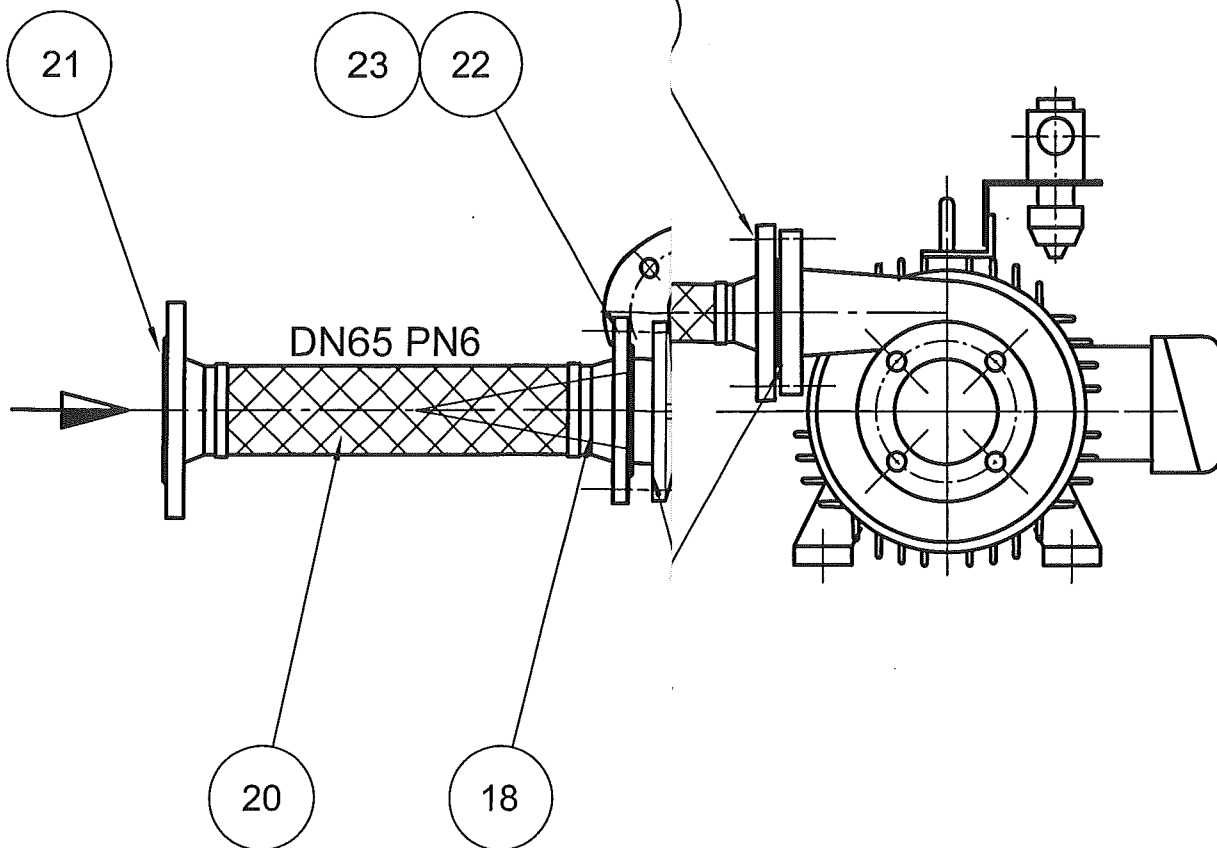
Weight : approx. 125 Kg

sefco

05.042



Max nozzle loadings according to drawing 4 13576



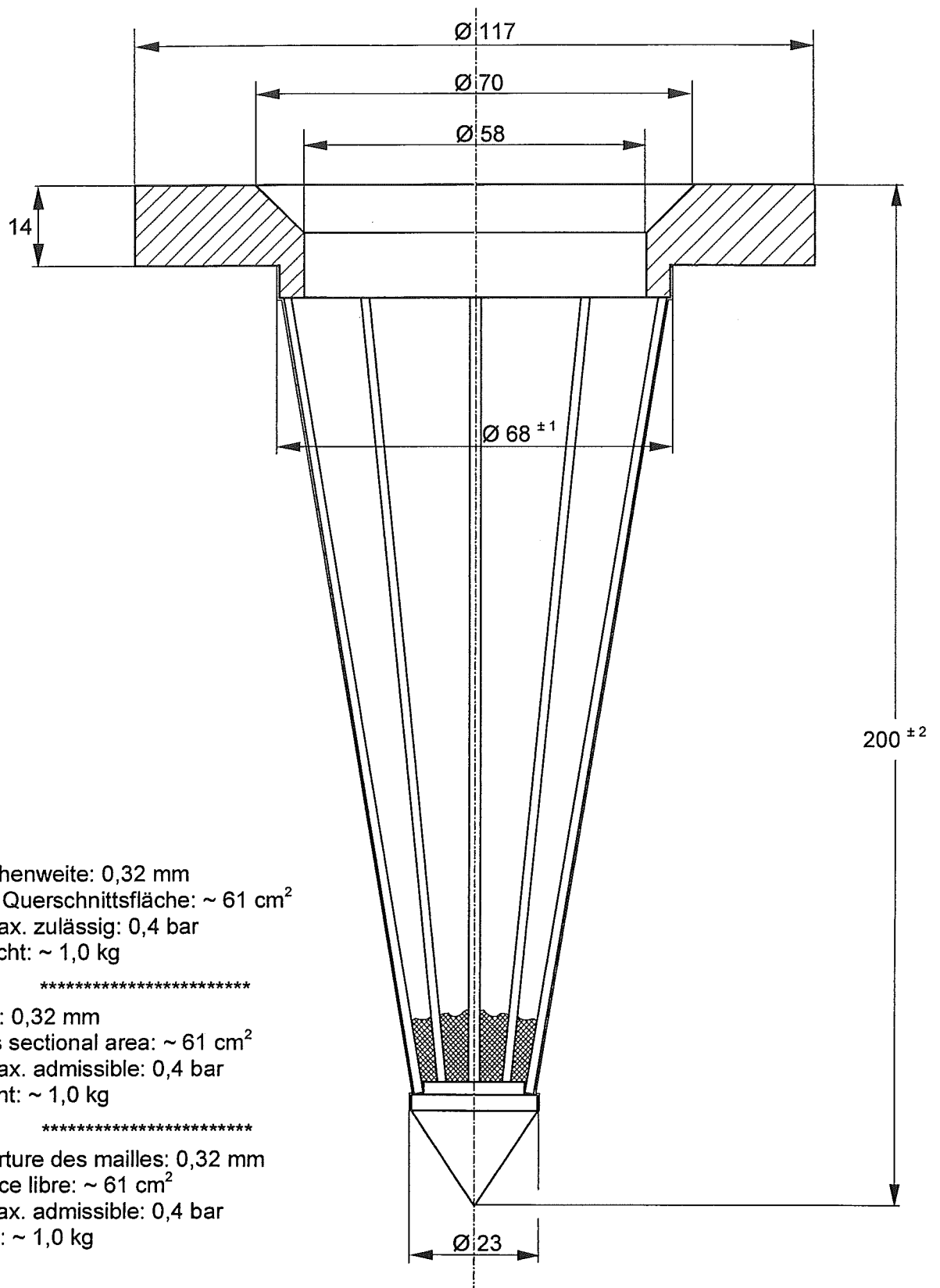
LAR Truck Filling Pump P44001
Air Liquide AGS GmbH - 4500023387
"Kosice"

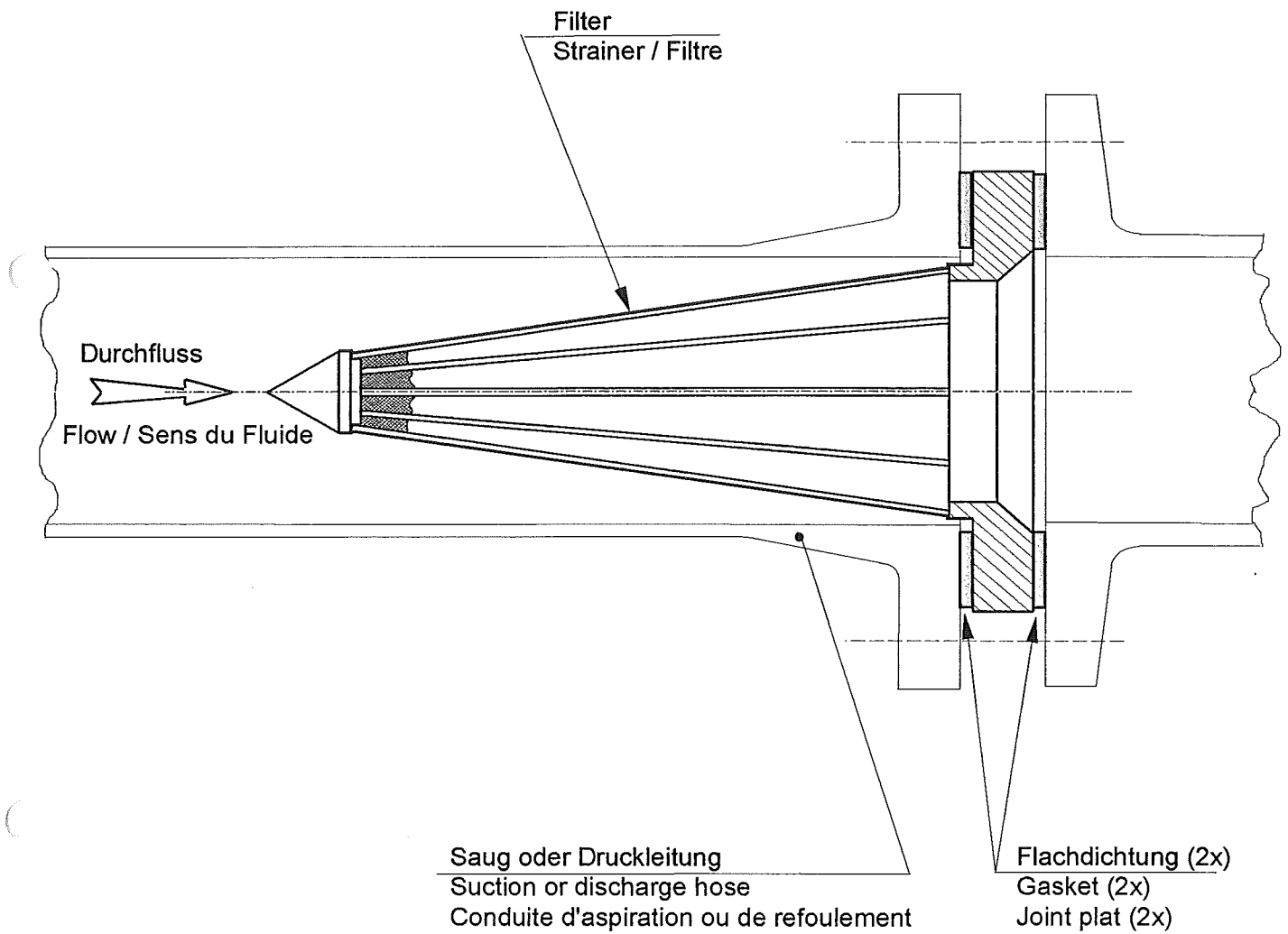
Werkstoff Matière				Modell Modèle		Bemerkungen Observations	
Änderungen				Ersetzt durch : _____			
				Remplacé par : _____			
				Ersatz für : _____			
				Remplace : _____			
Massstab Echelle 1:1				Gezeichnet Dessiné	N.S.	27.04.2005	
				Geprüft Contrôlé			
				Normgeprüft Conforme aux normes			
				Gesehen Vu			
				05.042/14			

Drawing: 05.042/14

Accessories P44001

1	1	T female Ø 1/4"		
2	2	Male adaptor union Ø 6 - 1/4"		
3	1	Temperature probe union Ø 6 - 1/4"		
4	1	RTD's for seal leakage detection		
5	1	Pressure regulator		
6	1	Ball valve 1/4"		
7	1	Support		
8	1	Nut		
9	2	Socket head cap screw M6 x 16		
10	2	Washer M6		
11	2	Spring washer M6		
12	2	Hexagon nut M6		
13	1	Support		
14	1	Socket head cap screw M10 x 30		
15	1	Split lock washer M10		
16	2	Male adaptor Ø 6 - 1/4"		
17	1	Double nipple 1/4" - 1/4"		
18	1	Suction strainer DN 65		
19	2	Gasket Ø 115 x 77 x 2		
20	1	Flexible suction hose DN65 PN6		
21	1	Gasket Ø 115 x 77 x 2		
22	4	Washer M12		
23	4	Hexagon cap screw M12 x 50		
24	1	Flexible discharge hose DN40 PN40		
25	2	Gasket Ø 92 x 49 x 2		
26	4	Washer M16		
27	4	Hexagon cap screw M16 x 45		
28				
29				
30				
31				
32				
33				
		Nomenclature	Material	
		Parts per Unit	Rev:	Date
Item-No.			0	26.05.2005





Temperaturüberwachung an der Pumpe
Temperature control at the pump
Protection thermique de la pompe

Die Pumpe *kann* mit folgenden Fühlern ausgerüstet sein :
The pump *can* be equipped with the following sensors :
La pompe *peut* être équipée des sondes suivantes :

Funktion	Fühler Typ	Wellendichtung Typ	Empfohlene Schaltpunkte
Function	Sensor type	Shaft seal type	Recommended set point
Fonction	Type de sonde	Etanchéité type	Réglage recommandé

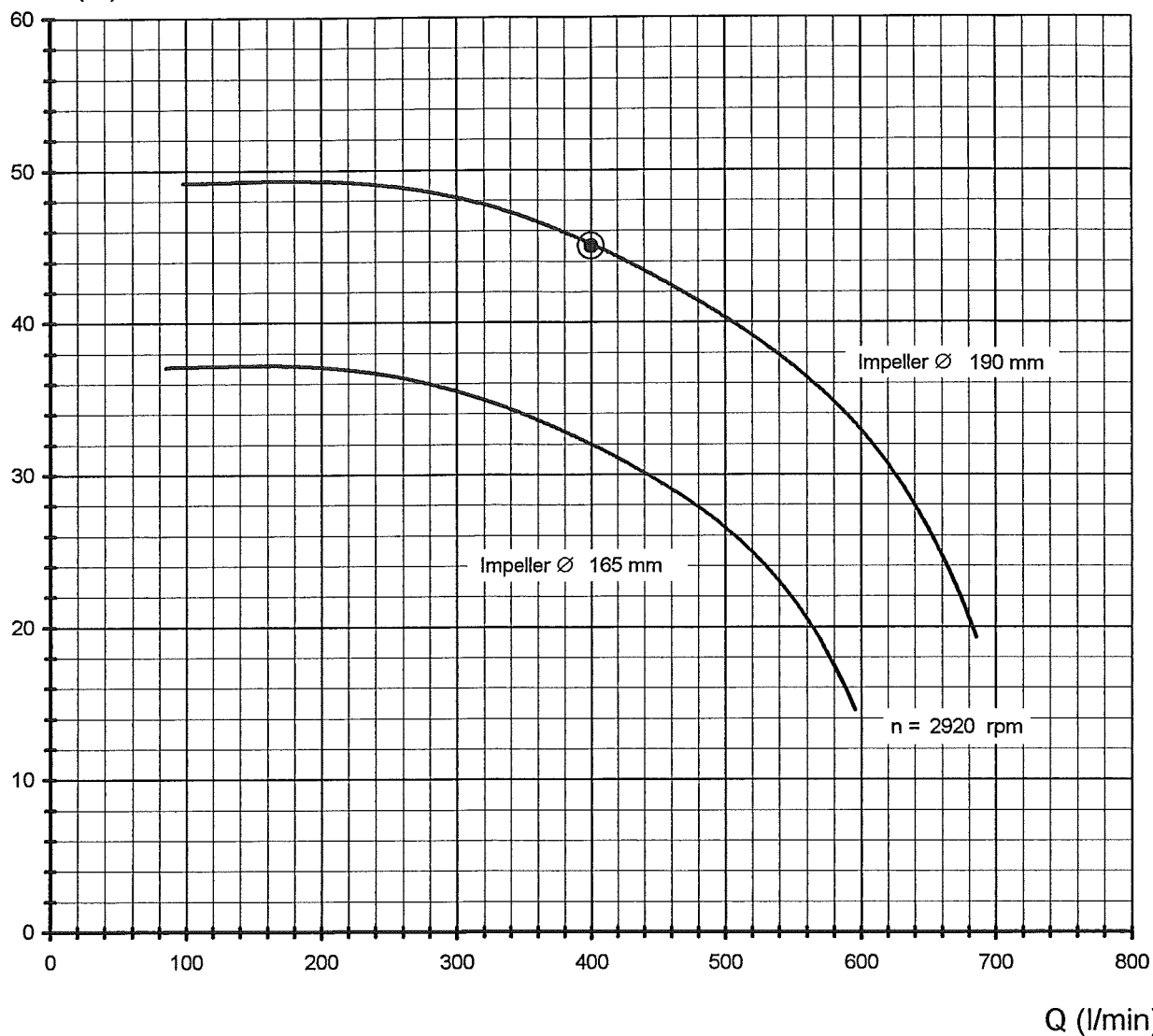
Kaltfahrüberwachung	PT100		-140°C
Cool down survey	RTD		
Contrôle de mise à froid	PT100		

Leakage an der Dichtung	PT100	GRD oder Labyrinth	Alarm, alarme : -130° C Abschalten, shutdown, arrêt : -150° C
Seal leakage detection	RTD	Mechanical or labyrinth	
Détection de fuite à l'étanchéité	PT100	Mécanique ou à labyrinthes	

Leakage an der Dichtung	PT100	GRS (abhebende Dichtung)	Alarm, alarme : -160° C Abschalten, shutdown, arrêt : -180° C
Seal leakage detection	RTD	GRS (gas riding seal)	
Détection de fuite à l'étanchéité	PT100	GRS (à film gazeux)	

Impeller Ø 190 and 165 / 6.5 mm with Inducer, Blade-ring
Diffuser 600

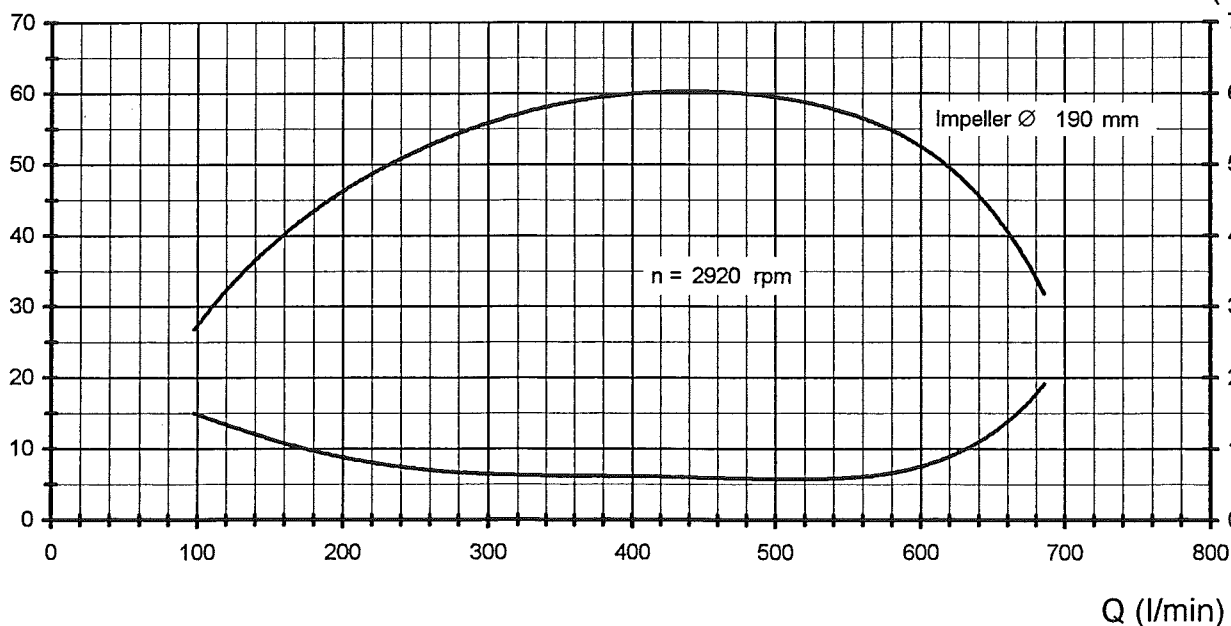
ΔH (m)



Q (l/min)

η (%)

NPSH (m)



Q (l/min)

Gezeichnet
Dessiné

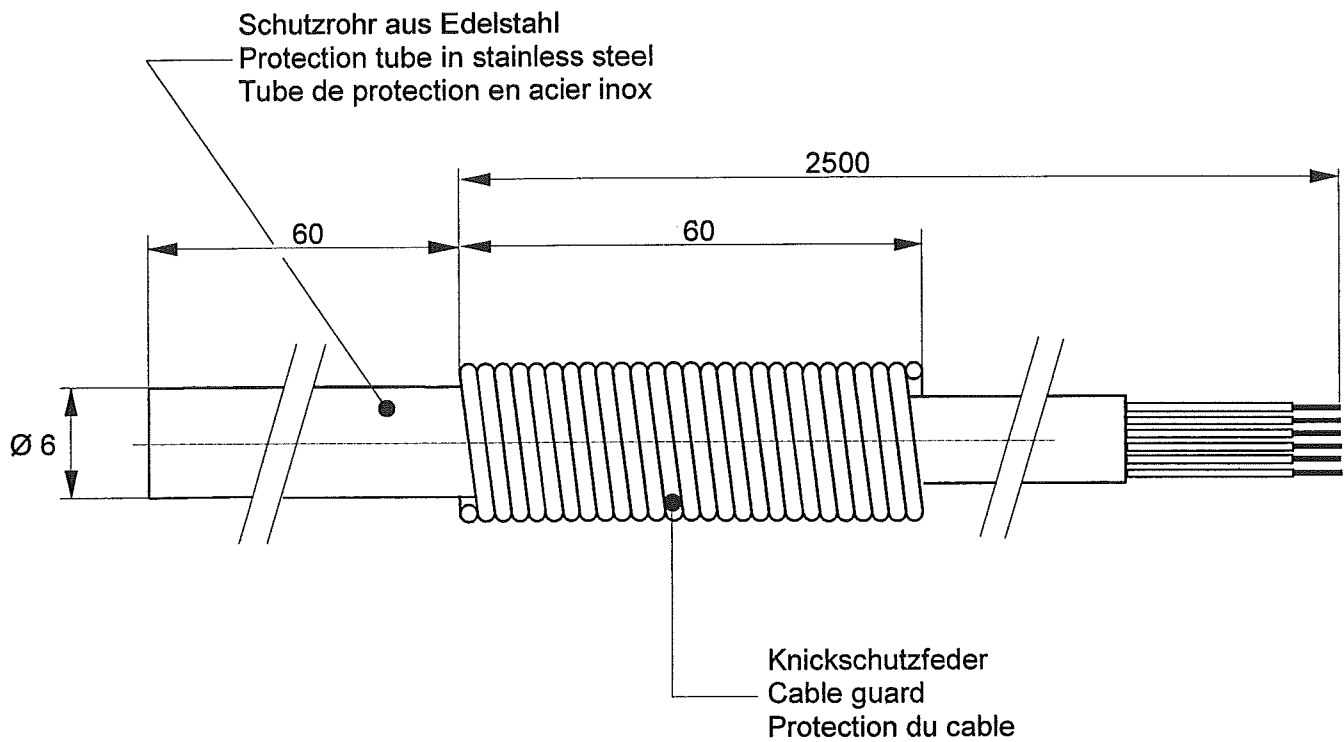
Geprüft
Contrôlé

Gezeichnet
Dessiné

Geprüft
Contrôlé

CM

20.08.2004

**Typ - Type**

- Widerstandsfühler 2x PT100, 2x 3 Leiter Klasse B
- Temperature sensor 2x PT100 (dual RTD's), 2x 3 wires class B
- Sonde de température 2x PT100, 2x 3 conducteurs classe B

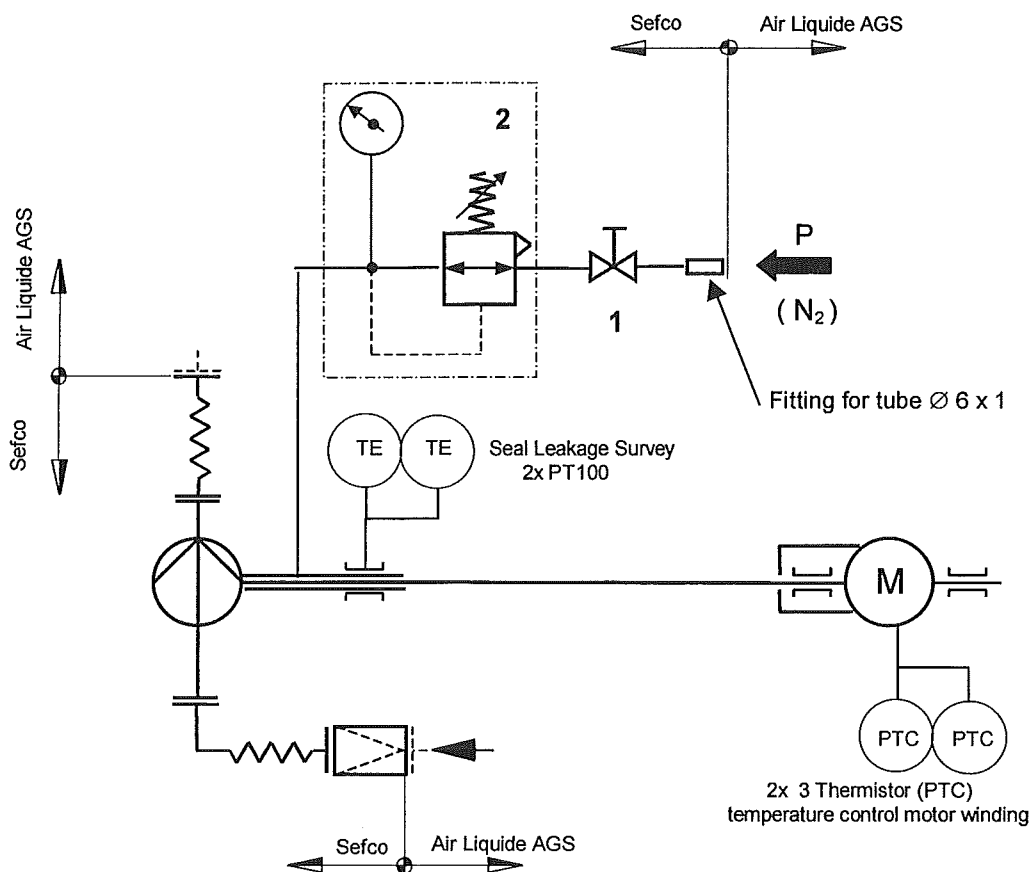
Temperatur :
Temperature: $\pm 200^{\circ}\text{C}$
Température:

Air Liquide AGS GmbH

Order- Nr. : 4500023387

Tag -Nr. : P44001

Project Name: „ASU Kosice“



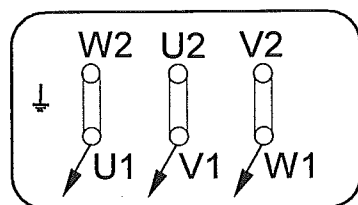
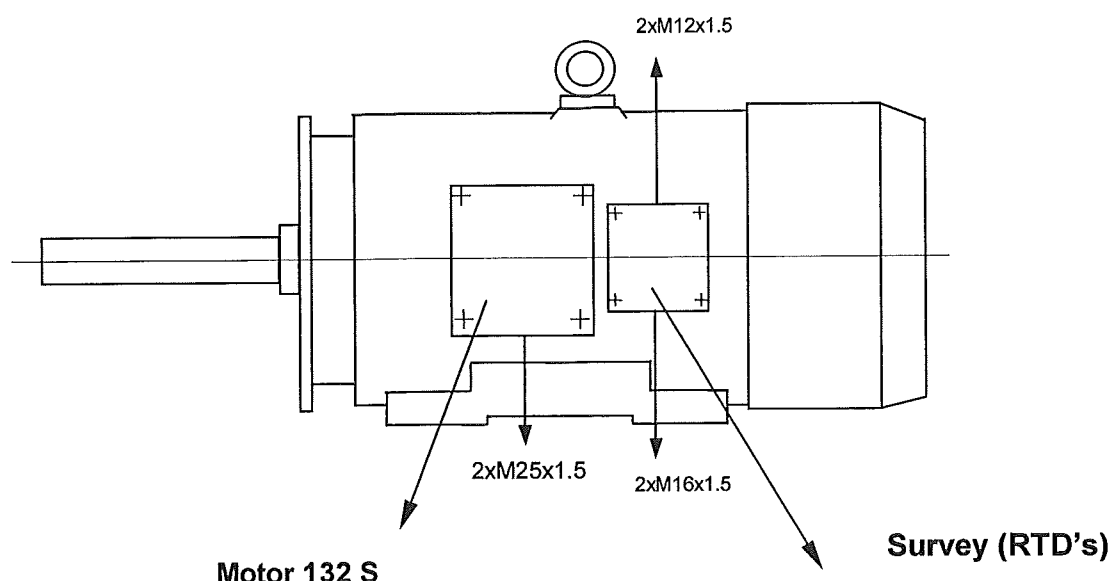
P : Purge gas feeding
Medium : Dry nitrogen at 15-20°C
Pressure : min. 0,1 bar at pump inlet
 1< P <17 bar at Regulator inlet
Capacity : approx. 0,5 Nm³ / h

0	26.01.2005	WP	
REV	DATE	DWG	CHECKED

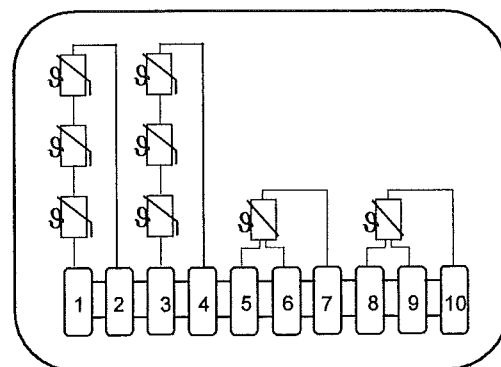
[illegible]

Air Liquide AGS GmbH
Order No.: 4500023387
Tag No.: P44001
Project Name: „ASU Kosice“

0	26.05.2005	MR	MR		
REV	Date	Drawn	Checked		



Δ -Connection 400V / 14.5 A / 7.5 kW



Wiring-Table

1-2	PTC alarm	Winding	ISO F
3-4	PTC disconnecting	Winding	ISO F
5-6-7 8-9-10	Temperature Detector RTD	Seal leakage detection	Dual

- ! RTD : Measuring current: 1 mA
- ! PTC thermistor sensors: Do not apply more than 2.5V!

Air Liquide AGS GmbH
 Best.Nr.: 4500023387
 Tag Nr.: **P44001**
 Project Name: „ASU Kosice“

0	16.03.2004	GL	
REV	DATE	DWG	CHECKED

Temperaturüberwachung E-Motor Motor temperature control Protection thermique du moteur

Der Motor *kann* mit folgenden Fühlern ausgerüstet sein :
The motor *can* be equipped with the following sensors :
Le moteur *peut* être équipé des sondes suivantes :

Messstelle	Fühler Typ	Schaltpunkt Werte können von Hersteller zu Hersteller leicht ändern	Empfohlene Schaltpunkte Alarm Zwischenwerte können nach belieben gesetzt werden
Control point	Sensor type	Trip point Values can change slightly by different manufacturers	Recommended set point Alarm points can be set in between upon need
Point de contrôle	Type de sonde	Température de commutation Ces valeurs peuvent différer légèrement suivant le fabricant du moteur	Réglage recommandé Les points d'alarme peuvent être placés au choix entre ces extrêmes

Lager AS	PT100		-40°C .. +120°C
Bearing DE	RTD		
Palier entraînement	PT100		

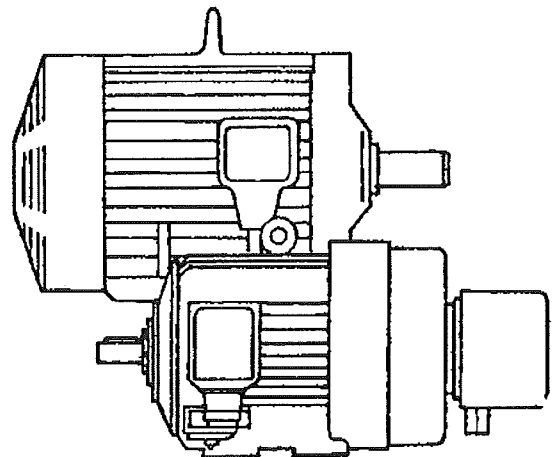
Lager BS	PTC	max. +120°C	
Bearing NDE	Thermistor		
Palier ventilateur	Thermistor		

Lager BS	PT100		-40°C .. +120°C
Bearing NDE	RTD		
Palier ventilateur	PT100		

Wicklung	PTC	Isolationsklasse F Alarm : +130°C Abschaltung : +150°C	
Winding	Thermistor	Insulation class F Alarm : +130°C Trip : +150°C	
Bobinage	Thermistor	Isolation svt. F Alarme : +130°C Arrêt : +150°C	

Threephase Induction Motors Type DDA/DDG

Mounting & Maintenance



halter

www.halter-motoren.de
e-mail: info@halter-motoren.de

THREEPHASE INDUCTION MOTORS TYPE DDA/DDG

- MOUNTING & MAINTENANCE -

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1. GENERAL INFORMATION

This manual concerns normal three phase induction motors with an output varying from small to middle size; they are externally cooled, totally enclosed, supplied in a cast iron frame and provided with ball bearings or roller bearings lubricated with grease.

2. DELIVERY

After receipt, remove the package material if any and mind the parts that have been delivered loose. In the case of unpacked motors, the glands are often put in the terminal box to protect them against damage.

Check the motor to see whether transport damage has occurred.
You should be able to rotate the shaft easily and smoothly with the hand.

Compare the details on the rating plate with those of the power network and with the requirements of the motor.

3. MOUNTING

The motor must be fixed on a stable, clean and flat foundation with good fitting foundation bolts, using washers.

Never mount a motor manufactured for a horizontal mounting on a surface with an angle of inclination of more than 15 degrees without consulting the supplier in advance.

Foot & flange motors always have to be mounted in such a way that the drain holes, if any, are situated at the bottom, otherwise you run the risk that moisture has condensed into the motor and cannot be drained off. To this end you need to remove the drain plugs.

Under no circumstance must the free flow of air be obstructed to the cooling fan or the motor will overheat.

This has also to be borne in mind when you are mounting motors in enclosed spaces of small size.

The ambient temperature must not exceed 40 degrees centigrade, unless otherwise agreed upon at the time of ordering.

4. COUPLING

4.1 Direct coupling

The motor and driven shafts must be accurately aligned. In case of a flexible coupling, the manufacturers distance between the parts to be coupled must be adhered to, also the degree of misalignment must be within the makers tolerance. We do not recommend using solid couplings.

4.2 Indirect coupling

4.2.1. Flat or V Belts

Mount the motor on slide rails in order to adjust belt tension.

The belt pulley has to be fitted hard up the shoulder of the shaft. The pulley center line should be within the shaft center line. Use correctly sized belts with a correct profile and in sufficient numbers to drive without slip and undue tension. Align both pulleys accurately in such a way that the center of both pulleys are in line.

Multi V belt drives need to be matched sets.

**A belt pulley, which is either too small or too wide, or too high, a tension on the belt may damage the bearing or cause a shaft break.
In case of doubt, consult the supplier.**

4.2.2. Spur Gear Drives

The motor and the driven machine have to be positioned in such a way that the two gears mesh correctly. The motor should then be fixed with dowels.

4.3. Shaft couplings and pulleys etc.

Remove the corrosion protection from the shaft extension and the coupling elements. The coupling parts, belt pulleys and gear wheels need to be dynamically balanced and fit easily on the shaft and to be provided with good fitting keyway.

In the factory the rotor has already been dynamically balanced including a half key in the shaft.

The dimension and the tolerances of the shaft extension and the key are indicated on the motor dimension sheet.

Assembling the coupling elements has to be done with great care. Careless handling may damage the bearings, shaft or end shields.

Do not file or emery the shaft to achieve a fit!

When fitting pulleys couplings or bearings, we recommend using heat to elements; therefore the part to be mounted has to be heated till ± 80 degrees above the ambient temperature.

A large washer and set screw can be useful for pushing on pulleys using the tapped hole in the shaft. Only use proper tools for removing the above mentioned parts e.g. pulley drawers.

5. ELECTRICAL CONNECTION

5.1. General information

On delivery the motor will rotate clockwise looking at the drive when the phases L1, L2 and L3 are connected respectively to the connection terminals U1, U2 and U3.

Exchanging any two-phase lines can change the direction of rotation.

When a motor is only suited for one direction of rotation, it is indicated with an arrow on the motor fan cowl.

Connecting cables must conform to IEE regulations, as must earthing requirements.

Line fuses only protect the cables in case of short-circuiting and do not constitute a safeguard against the overheating of the winding caused by overload. Therefore it is recommended that a motor starter and overload is fitted, giving single phasing and overload protection.

5.2. Circuit

Normally our motors are provided with a terminal box with six connections, to which six leads from the winding are connected either in a delta connection or in a star connection by means of connection links.

Usually two voltages are indicated on the rating-plate of these motors, which means that the motor can be connected to a circuit having one of these voltages.

If the mains voltage is corresponding with the lowest indicated voltage, the winding has to be connected in delta connection (see figure 1); if it is corresponding with the highest indicated voltage, the winding has to be connected in star connection (see figure 2).

A motor with e.g. 230/400 V on its rating-plate is suited to be switched on directly, on a circuit with a voltage of 230 V between phases with the winding connected in a delta connection, or on a circuit with a voltage of 400 V with the winding connected in a star connection.

But if the motor is switched on with a star-delta starter the motor is only suited for a mains voltage on the rating-plate, this is the delta voltage. In this case, the connection strips on the terminal box have to be removed when the motor is connected; the star and delta connection will be made successively in the starter during the run up.

If only one voltage is indicated on the rating-plate together with the delta sign, the motor can be switched on directly at the indicated voltage or with a star/delta starter.

Pole change motors (for two or more speeds) are connected according to a diagram sent together with the motor.

6. PUTTING INTO SERVICE

Before putting a motor into service, one should check especially when the motor has not been used for a long time that the insulation resistance of the winding is sufficient. The insulation resistance has to be at least 10 meg/ohms on a 1000V megger.

If the insulation resistance is not high enough, the motor has to be dried out and revarnished or rewound.

Check all connections and adjust the thermal protection units to the correct current. Switch the motor on in a no load state to determine the direction of rotation. Load the motor gradually and check whether it runs without vibration.

The motor can be used under deviation of the main voltage $\pm 5\%$ or frequency of max. $\pm 2\%$ compared to the nominal frequency or nominal voltage, in compliance with the international regulations for electric machines.

7. MAINTENANCE

The totally enclosed and fan cooled three phase squirrel cage induction motors require very little maintenance.

Nevertheless it is recommended to check the motor regularly in order to prevent a breakdown caused by dust, moisture, vibrations, too much or too little greasing.

7.1. Dust

The outer parts of the totally enclosed motors, especially the cooling ribs or cooling channels, have to be kept as clean as possible in order not to obstruct the cooling air from the fan extracting the heat from the motor frame.

7.2. Moisture

Motors, which are not often run, should be started from time to time to prevent moisture affecting the windings in the long term.

7.3. Wear & vibration

To prevent abnormal wear & vibration, one should:

- a. take care that the tension of the belt or the chain is not too high;
- b. check whether the mounting of directly coupled machines is correct;
- c. Check whether the foundation bolts the bolts to fasten the motor and the slide rails are tight.

7.4. Greasing

Before they leave the factory, the bearings of the HALTER Motors are filled with a high quality Lithium base grease.

The sizes 56 up to and including 250 are provided with shielded/sealed bearings (ZZ-C3), witch have been filled with life-time grease by the manufacture of the bearings.

Motors with sealed bearings and no re-lubrication system require no maintenance other than checking for noise & temperature during their lifetime.

Sizes 280 up to and including 400, has been provided with a permanent lubrication system containing a grease valve.

The lubrication must take place when the machine is running.

The old grease is ejected from the grease valve thus maintaining the correct level and avoiding overfilling which would be harmful.

7.5. Replacement of ball or roller-bearings

When a bearing has to be replaced, the old bearing has to be removed from the shaft with proper tools in order not to damage the shaft. Thereupon the bearing location on the shaft has to be cleaned and checked thoroughly.

To fit a new bearing correctly, heat to 80 – 90 degrees centigrade with an electric induction heater, then slip quickly onto the shaft up to the stop. In the case of a roller bearing only fit the inner race in this manner.

A suitable sleeve may be used to help by tapping gently to seat the bearing home. Note that under no circumstances must a bearing be driven home cold with excess force. We must also stress that pressure must not be applied to the outer race of a ball bearing.

Do not mount the end shield until the bearing has cooled down.

8. Bearing type and bearing inside diameter

! Only for standard motors

HALTER Motor type	Poles	Driven end	type of bearing Non Driven end	Bearing inside diameter(mm)
DDA-56	2/4	6201 ZZ C3	6201 ZZ C3	12/12
DDA-63	2/4	6202 ZZ C3	6202 ZZ C3	15/15
DDA-71	2/4/6	6203 ZZ C3	6202 ZZ C3	17/15
DDA/DDG-80	2/4/6/8	6204 ZZ / 6204 ZZ C3	6204 ZZ / 6203 ZZ C3	20/20/20/17
DDA/DDG-90	2/4/6/8	6205 ZZ / 6205 ZZ C3	6205 ZZ / 6204 ZZ C3	25/25/25/20
DDA/DDG-100	2/4/6/8	6206 ZZ / 6206 ZZ C3	6206 ZZ / 6206 ZZ C3	30/30/30/30
DDA/DDG-112	2/4/6/8	6306 ZZ / 6306 ZZ C3	6306 ZZ / 6306 ZZ C3	30/30/30/30
DDA/DDG-132	2/4/6/8	6308 ZZ / 6308 ZZ C3	6308 ZZ / 6308 ZZ C3	40/40/40/40
DDG-160	2/4/6/8	6309 ZZ C3	6309 ZZ C3	45/45
DDG-180	2/4/6/8	6311 ZZ C3	6311 ZZ C3	55/55
DDG-200	2/4/6/8	6312 ZZ C3	6312 ZZ C3	60/60
DDG-225	2/4/6/8	6313 ZZ C3	6313 ZZ C3	65/65
DDG-250	2/4/6/8	6314 ZZ C3	6314 ZZ C3	70/70
DDG-280	2	6314 C3	6314 C3	70/70
DDG-280	4/6/8	6317 C3	6317 C3	85/85
DDG-315	2	6317 C3	6317 C3	85/85
DDG-315	4/6/8	6319 C3	6319 C3	95/95
DDG-355	2	NU317	6317 C3	85/85
DDG-355	4/6/8	NU322	6320 C3	110/100
DDG-400	4/6/8	NU326	6326 C3	130/130

Figure 1

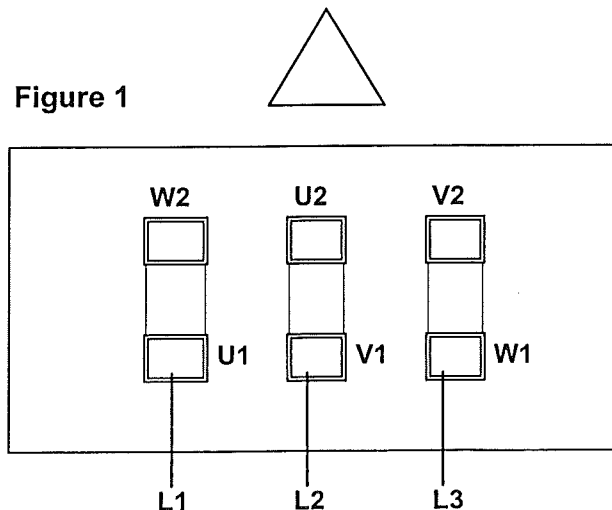
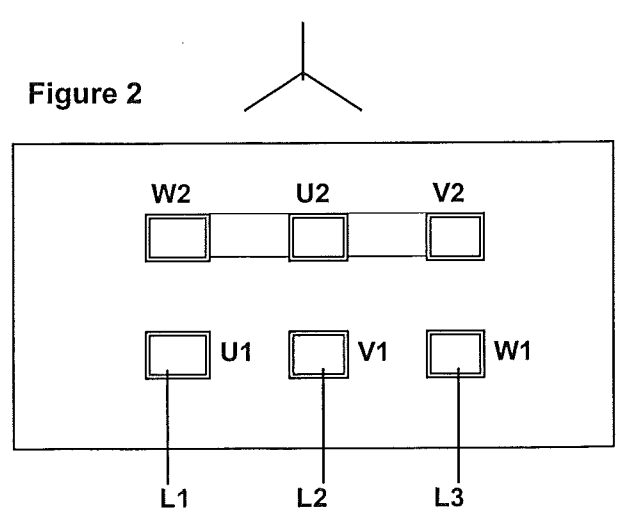


Figure 2



9 Grease-interval Bearings

By the term “greasing interval” we mean the number of working hours after which the bearing lubricant has to be replaced.

Electric motors have such a wide range of application that they must cope with many adverse conditions as for instance dust, moisture, vibration, temperature, chemicals, marine atmosphere and of course, the mounting position and loading of the driven machine.

Generally we can say lubrication life is a product of time, speed and the bearing size. Due to the impact of all these factors, it is practically impossible to determine any exact values that are valid under all circumstances. Nevertheless it is necessary to provide at least some guidelines concerning greasing to the user.

Under normal load and environmental conditions the quality of the grease ensures proper operation of the motor for about 10000 service hours with 2-pole designs and 20000 service hours with multi pole designs. If not otherwise agreed upon the grease need not be refilled during this period. Nevertheless the condition of the grease filling should be occasionally checked also within the said lubricating intervals.

The stated service hours are only current under operation with rated speed. For relubrication thoroughly clean the bearings with a suitable solvent and use the same or substitute grades specified by the motor manufacturer. Bear in mind, however, that the bearings should be filled only up to about 2/3 of their free space as a complete filling of the bearings and bearing covers results in an increased bearing temperature and therefore in increased wear. For bearings with relubricating facility regrease at the grease fitting with the motor running according to the grease amount required for the motor in case. The relubrication intervals should be looked up in the following table:

A chemically aggressive environment, extreme moistness, strong vibrations, high or low ambient temperatures are not normal circumstances and such conditions must be taken into account.

Motortype	Bearing	Grease	Regreasing	Amount
DDA132 SB2	2 x 6308 Z P6 CN	Klüber Isoflex Alltime SL 2		

Motor Type:	DDA 132 SB2
Customer:	Sefco AG
Motor – No:	05038524
Output Power:	7,5 Kw
Speed:	2860 min/1
Voltage:	400 / 690 V
Frequency:	50 Hz
Full - load power factor:	0,90
Connection:	Delta
Rated current at 400 / 690 V	13,8 / 7,94 A
Full – load efficiency	87,4 %
Protection class	IP 55
Insulation class	F to be of use B
Operating mode	S1
Constuction type	IMB 34
Weight	44 kg

DDA 132 SB2

Spare - List

[illegible]

Certificates

sefco	Delivery Certificate						Ref. No.: 05.042/1			
Customer:	Air Liquide AGS GmbH - 4500023387 - ASU Košice - K70101									P44001
Pump Type:	C-19/EM-7,5									
Motor:	Manufacture :		Halter		Type:		DDA132SB2		No.: 05038524	
	P:		7,5 [KW]		U:		Δ 400 [V]		I: 13,8 [A]	
	n _{range} :		2860		/ f _{range} :		[Hz]		f _{field weakening point} : 50 [Hz]	
Gearbox:	Manufacture :		Type:		Nr:		i:			
Pressure Test (EN 13275:2000/§5.2.2)	Hydraulic pressure test of pump casing completed at 60 bar for 5 min									
	Date: 18.01.05				Signature: CP					
Degreasing (EN 12300:1999)	Pump cold end has been degreased with Trichlorethylene for LOX Operation.									
	Date: 26.04.05				Signature: Mü					
LIN-Test										
γ	0.7729 [daN/l]									
Q [l/min]	p_{suct} [barg]	p_{del} [barg]	Δp [bar]	ΔH [m]	P_{el}¹⁾ [kW]	P_{mech.} [kW]	η_{pump} [%]	T [°C]	n [rpm]	f_{Converter at operation} [Hz]
100	1.30	4.40	3.10	40.1	2.4			-191.5	2970	50
150	1.30	4.45	3.15	40.8	2.6			-191.5	2970	50
200	1.29	4.40	3.11	40.2	2.9			-191.5	2970	50
250	1.29	4.30	3.01	38.9	3.1			-191.5	2970	50
300	1.29	4.15	2.86	37.0	3.3			-191.5	2970	50
330	1.29	4.10	2.81	36.4	3.5			-191.5	2970	50
340	1.29	4.10	2.81	36.4	3.7			-191.5	2970	50
1) P _{el} measured at converter inlet										
Mechanical shaft seal	Preloading by Lead - Bushing : 2 mm									
	Preloading by Rotating Sealing : 2.4 mm									
	Total Preloading : 4.4 mm									
	Date: 26.04.05				Signature: Mü					
Remarks:	Seal leakage RTD's, and motor winding PTC thermistors: functional check OK									
Impeller Ø at test:	165 mm				Vibrations: (at DE motorshield) (at 300 l/min)					
Tip width:	6,5 mm									
With Inducer	yes									
With Blade- ring	yes									
Diffusor type:	600				Sound pressure level (at 300 l/min)					
Orifice Ø :					74.5 dB(A)					
	Date : 24.05.05				Signature: B. Gutknecht					

Suction hose item 20 on drawing
n° 05.042/14

Angst+Pfister AG
Thurgauerstrasse 66
CH-8052 Zürich
Postfach Hardhofstrasse 31
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Angst+Pfister SA
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Case postale 19
CH-1219 Genève-Le Lignon
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Téléfax +41 22 979 28 78

Bankverbindung:
CS, 8050 Zürich, Kto. 570500-91, BC 4857
UBS, 8050 Zürich, Kto. 803.917.01J, BC 269

Customer No. 111219

Sefco AG
Herr F. Brodesser
Wuhrmattstr. 15

Sefco AG
Maschinen-Anlagen
Wuhrmattstr. 15

CH-4103 Bottmingen

CH-4103 Bottmingen

Official in Charge: Frau Ch. Schweri
Tel. direct: 044 306 64 05
23.05.05 13:07:05 /

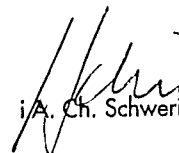
Inspection certificate EN 10204-3.1 B FT-A05.292282

Your reference Herr Brodesser / Best.Nr. 05/2629		Our reference Frau Ch.Schweri													
Job No. FT-A05.292282	Order Date 11.03.2005	Delivery Date 25.04.2005	VS A+P Zürich												
Order specification/acceptance requirements: Test item: Our part-no 80.0003.6171 Metal hose assembly ASSIWELL® 100 1.4541 DN 65, U1, NL 400 mm Fitting 1: welding flange DN 65 PN 6 Fitting 2: welding flange DN 65 PN 6 Your part/drawing-no. 4 14870 Quantity: 2 pieces Marking: A+P, ASSIWELL® 100 1.4541, 05/05, PS 6, A05.292282, 414870 Test: Tightness Test (+20° C): 2 bar air / Duration: 1 min. Pressure Test (+20° C): 10 bar water / Duration: 1 min. Test result: The hose(s) meet(s) the requirements. Remarks:															
Material certificate <table border="1"> <thead> <tr> <th>Element</th> <th>Material</th> <th>Ladle No.</th> </tr> </thead> <tbody> <tr> <td>Corrugated hose</td> <td>1.4541</td> <td>E41208/E41870</td> </tr> <tr> <td>Braid</td> <td>1.4301</td> <td>V3933</td> </tr> <tr> <td>Welding Flange DN 65 PN 6</td> <td>1.4435</td> <td>E31602</td> </tr> </tbody> </table>				Element	Material	Ladle No.	Corrugated hose	1.4541	E41208/E41870	Braid	1.4301	V3933	Welding Flange DN 65 PN 6	1.4435	E31602
Element	Material	Ladle No.													
Corrugated hose	1.4541	E41208/E41870													
Braid	1.4301	V3933													
Welding Flange DN 65 PN 6	1.4435	E31602													

We hereby certify, that the material described above has been tested and complies with the terms of the order contract.

Best regards
Angst + Pfister AG


ppa. H. Birmele


i.A. Ch. Schweri

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CH-4103 Bottmingen

CH-4103 Bottmingen

Official in Charge: Frau Ch. Schweri
Tel. direct: 044 306 64 05
23.05.05 13:08:30 /

Inspection certificate EN 10204-3.1 B FT-A05.292282

Your reference Herr Brodesser / Best.Nr. 05/2629			Our reference Frau Ch.Schweri												
Job No. FT-A05.292282	Order Date 11.03.2005	Delivery Date 25.04.2005	VS A+P Zürich												
Order specification/acceptance requirements: Test item: Our part-no 80.0003.6177 Metal hose assembly ASSIWELL® 100 1.4541 DN 40, U1, NL 400 mm Fitting 1: welding flange DN 40 PN 40 Fitting 2: welding flange DN 40 PN 40 Your part/drawing-no. 4 14866 Quantity: 1 pieces Marking: A+P, ASSIWELL® 100 1.4541, 05/05, PS 25, A05.292282, 414866 Test: Tightness Test (+20° C): 2 bar air / Duration: 1 min. Pressure Test (+20° C): 38 bar water / Duration: 1 min. Test result: The hose(s) meet(s) the requirements. Remarks:															
Material certificate <table border="1"> <thead> <tr> <th>Element</th> <th>Material</th> <th>Ladle No.</th> </tr> </thead> <tbody> <tr> <td>Corrugated hose</td> <td>1.4541</td> <td>0486309</td> </tr> <tr> <td>Braid</td> <td>1.4301</td> <td>173356</td> </tr> <tr> <td>Welding Flange DN 40 PN 40</td> <td>1.4435</td> <td>502744</td> </tr> </tbody> </table>				Element	Material	Ladle No.	Corrugated hose	1.4541	0486309	Braid	1.4301	173356	Welding Flange DN 40 PN 40	1.4435	502744
Element	Material	Ladle No.													
Corrugated hose	1.4541	0486309													
Braid	1.4301	173356													
Welding Flange DN 40 PN 40	1.4435	502744													

We hereby certify, that the material described above has been tested and complies with the terms of the order contract.

Best regards
Angst + Pfister AG

ppd. H. Birmele

Ch. Schweri

CERTIFICATE of CONFORMITY

Theo Halter GmbH
Elektromotoren
Gleisstrasse 36

68766 Hockenheim

The electrical apparatus:

Three phase asynchronous squirrel cage motors series:

DDG / DDA

are in conformity with the instructions of:

- 73 / 23 EWG

Low Voltage Directive amended by: RL 93 / 68 / EWG

- 89 / 336 / EWG

Directive on Electromagnetic Compatibility
amended by: RL 91 / 263 / EWG, 92 / 31 / EWG and 93 / 68 / EWG

The conformity with the instructions of these directives is proved by the observation of the following standards:

- | | |
|---------------------------|---|
| 1. IEC Publ. 34-1 | Rating and performance NEN 3173; 1991 |
| 2. IEC Publ. 34-5 | Degrees of protection (IP code) NEN-EN 60034-5 |
| 3. IEC Publ. 34-7 | Classification of types of construction and mounting arrangements (IM code) NEN-EN 60034-7 |
| 4. IEC Publ. 34-9 | Noise limits NEN-EN 60034-9 |
| 5. IEC Publ. 34-14 | Limits of mechanical vibrations NEN 10034-14 |
| 6. IEC Publ. 34-8 | Terminal markings and direction of rotation NEN 2248 |
| 7. IEC Publ. 72-1 | Relationships of the dimensions and output rating of totally enclosed fan cooled 3-phase cage induction motors. |

Hockenheim, 28.11.02
Theo Halter GmbH, Elektromotoren

T. Noor-Herbert

ppa. F. Heinemann

This certificate attests to the conformity with the named directives, however, it is not a guarantee of properties in the meaning of product liability.