

**OIL & GAS DEVELOPMENT COMPANY LIMITED**  
**PROCUREMENT DEPARTMENT, ISLAMABAD**  
**FOREIGN SECTION A**

(To be completed, filled in, signed and stamped by the principal)

3/4

ANNEXURE 'A'

**Material** DRY GAS SEALS FOR PERMEATE TURBO COMPRESSORS LP/HP K-2721 MAN  
**Tender Enquiry No** PROC/FA/CB/P&P/QAD-3382/2018  
**Due Date**  
**Evaluation Criteria** FULL

**SCHEDULE OF REQUIREMENT**

Sr No	Description	Unit	Quantity	Unit Price (FOB)	Total Price (FOB)	Unit Price C & F BY AIR	Total Price C & F BY AIR	Deviated From Tender Spec. If Any
1	Flowsolve- seal type : Gaspac L -52, drawing no. : 49701 91 0 1, FS Ident# 49701 91 1 1, Tandem with internal labyrinth, Circpac standard & Process Carbon Ring Seal. (Complete seal assy.) Or Equivalent as attached TOR	Number	2					
2	Flowsolve- seal type : Gaspac L -66, drawing no. : 51360 90 0 1, FS Ident no. : 51360 90 1 1, Tandem with internal labyrinth, Circpac standard & Process Carbon Ring Seal (Complete Assy in all aspects) Or Equivalent as attached TOR	Number	2					

**Note:**

- 1) PURSUANT TO TENDER CLAUSE # 2.2, 11.4, 13 & 35.3.2, BID BOND AMOUNTING TO USD 11,500/- OR EQUIVALENT TO PAK RUPEES MUST BE SUBMITTED WITH THE TECHNICAL BID AND VALID FOR 150 DAYS FROM THE DATE OF OPENING OF THE BID.
- 2) EVALUATION CRITERIA: FULL CONSIGNMENT WISE ON CFR KARACHI BASIS.
- 3) **TERMS AND CONDITIONS:** BIDDERS ARE ADVISED TO CAREFULLY READ ALL THE TERMS AND CONDITIONS OF THE TENDER DOCUMENT AVAILABLE AT OGDCL WEBSITE IN THE MASTER TENDER DOCUMENT.
- 4) **SHIPMENT FROM ACU MEMBER COUNTRIES:** IN CASE OF SHIPMENT FROM ACU MEMBER COUNTRIES, THE LC BENEFICIARY SHOULD BE OF THAT PARTICULAR COUNTRY FROM WHERE THE CONSIGNMENT IS BEING SHIPPED.
- 5) **SUMMARY REJECTION CRITERIA:** THE SUMMARY REJECTION CRITERIA AT CLAUSE 35 OF THE TENDER DOCUMENT MAY ALSO BE EXAMINED CAREFULLY. ANY BID NOT MEETING THE CRITERIA SPELLED IN THE CLAUSE # 35 SHALL BE SUMMARILY REJECTED WITHOUT ANY RIGHT OF APPEAL.
- 6) **DELIVERY PERIOD:** THE LEAD TIME OF THE QUOTED PRODUCT SHOULD NOT BE MORE THAN 120 DAYS AFTER OPENING OF LETTER OF CREDIT (LC).  
**Payment Terms: Clause No: 4 of Section-III (Part-B) i.e. Conditions of Contract "Special" of Tender Document has been amended and following will be the payments methods.**
- 7) **TENDER VALUE LESS THAN OR EQUAL TO US\$ 200,000:-** PAYMENT TO THE CONTRACTOR/ BIDDER IN FOREIGN CURRENCY SHALL BE MADE BY ESTABLISHING IN FAVOR OF THE CONTRACTOR AN IRREVOCABLE LETTER OF CREDIT (HEREINAFTER CALLED THE L/C). 70 % PAYMENT (S) UNDER THE L/C WILL BE MADE FOR THE FOB/ CFR / CPT (AS THE CASE MAY BE) PRICE OF MATERIAL OF EACH SHIPMENT UPON SUBMISSION OF THE SHIPPING DOCUMENTS. BALANCE 30% PAYMENT WILL BE RELEASED AFTER RECEIPT, INSPECTION AND ACCEPTANCE OF MATERIAL.
- 8) **TENDER VALUE MORE THAN US\$ 200,000:** PAYMENT TO THE CONTRACTOR/ BIDDER IN FOREIGN CURRENCY SHALL BE MADE BY ESTABLISHING IN FAVOR OF THE CONTRACTOR AN IRREVOCABLE LETTER OF CREDIT (HEREINAFTER CALLED THE L/C). 80 % PAYMENT (S) UNDER THE L/C WILL BE MADE FOR THE FOB/ CFR / CPT (AS THE CASE MAY BE) PRICE OF MATERIAL OF EACH SHIPMENT UPON SUBMISSION OF THE SHIPPING DOCUMENTS. BALANCE 20% PAYMENT WILL BE RELEASED AFTER RECEIPT, INSPECTION (IN ADDITION OF PRE-SHIPMENT INSPECTION) AND ACCEPTANCE OF MATERIAL.

2/4

## TOR

### Eligibility Criteria

**Dry Gas Seals required for Man Diesel and Turbo turbines.**

**Make: Flow Serve**

**Sr# 01 Model# Flowserve- seal type: Gaspac L -66, drawing no. : 51360 90 0 1**

**Sr#02 Model# Flowserve- seal type: Gaspac L -52, drawing no. : 49701 91 0 1**

1. Original Authority Letter for participation in the bid from M/S Flow Serve will be provided with technical bid.
2. In case of local representative Original Authorization Letter from principle to participate in the bid should be provided with the technical bid.
3. In case of equivalent items or superseded part number, 100 % replacement with same fits & tolerances is required. Bidder has to provide the literature and relevant documents regarding equivalent items. Bidder must provide documentary evidence proof from OEM that supplied item is exact replacement of Dry Gas Seals.
4. Parts must be in original OEM Packing.
5. Parts must new & free from any defect.
6. Bidder arrange the witness of dynamic Balancing of Dry Gas Seals at Flowserve to verify.
7. If bidder found any ambiguity in part nos., it should be cleared prior to bid opening date.
8. Parts must have standard OEM warranty/guarantee.
9. Delivery period must not exceeds from <sup>120</sup>90 days. Partial Delivery will not be acceptable, in any case. *ds*
10. All the participating bidders should have at least 05 years (2012-2017) experience in supply of Dry Gas Seals. Experience of packages supply is not considered.
11. Bidders to submit their company profiles, experience of similar supplies (Previous Purchase Orders) in Pakistan along with technical bids.
12. Should submit the complete compliance of TOR duly signed and stamped, any deviation from Bid and T&C is not acceptable.

*Noted*

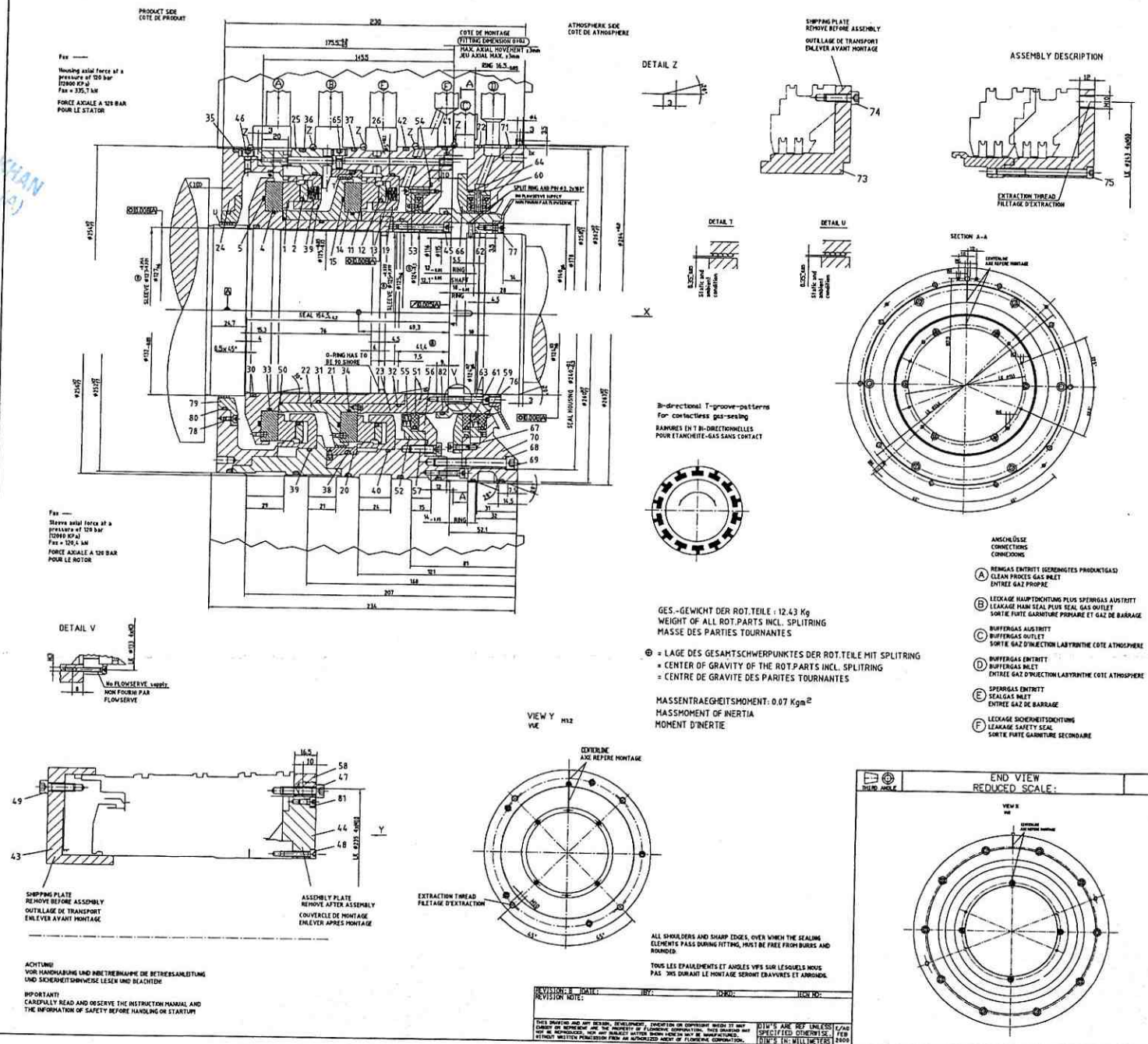
*ds*

**M. AHSAN WAKHTO KHAN**  
Sr. Engr (Mech) - P-5 (A)  
Ext: 2584

49701 91 0 1 1  
REV 8

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ANSAN WAC...  
... (Mech...)

49701 91 0 1 1 (MM) REV: 8 EUROPE ENG WEICHLER 10-SEP-2007 11:04:38

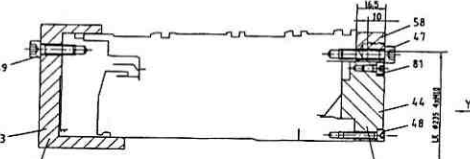


PRODUCT USE  
CÔTE DE PRODUIT

For —  
Mounting axial force at a pressure of 125 bar (12500 kPa)  
Fax = 335,7 kN  
FORCE AXIALE A 125 BAR POUR LE STATON

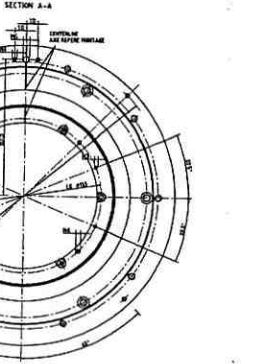
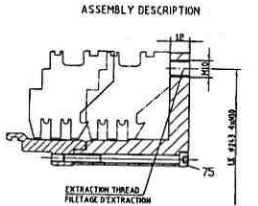
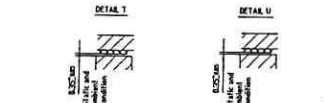
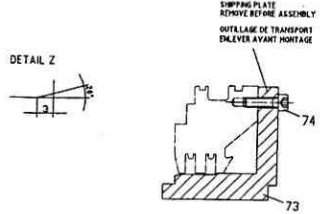
For —  
Mounting axial force at a pressure of 125 bar (12500 kPa)  
Fax = 335,7 kN  
FORCE AXIALE A 125 BAR POUR LE ROTON

DETAIL V  
No FLOWERVE usage  
NON FOURM PAR FLOWERVE



ACHTUNG  
VOR HANDHABUNG UND INBETRIEBNAHME DIE BETRIEBSANLEITUNG UND SICHERHEITSINSTRUKTIONEN LESEN UND BEACHTEN

IMPORTANT!  
CAREFULLY READ AND OBSERVE THE INSTRUCTION MANUAL AND THE INFORMATION OF SAFETY BEFORE HANDLING OR STARTUP!

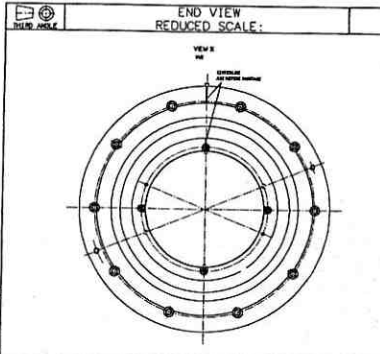


GES - GEWICHT DER ROT.TEILE : 12,43 Kg  
WEIGHT OF ALL ROT.PARTS INCL. SPLITRING  
MASSE DES PARTIES TOURNANTES

CG = LAGE DES GESAMTSCHWERPUNKTES DER ROT.TEILE MIT SPLITRING  
= CENTER OF GRAVITY OF THE ROT.PARTS INCL. SPLITRING  
= CENTRE DE GRAVITE DES PARTIES TOURNANTES

MASSENTRAEGHEITSMOMENT: 0,07 Kg m<sup>2</sup>  
MASS MOMENT OF INERTIA  
MOMENT D'INERTIE

- A ANSCHLÜSSE CONNECTIONS
- B RINGAS ENTRITT (GERINGSTES PRODUKTIONSG) CLEAN PRODS GAS INLET
- C LEAKAGE SAFETY SEALING PLUS SPERRGAS AUSSTIFT LEAKAGE HAM SEAL PLUS SEAL GAS OULET
- D RUFFERGAS ENTRITT RUFFERGAS INLET
- E SPERRGAS ENTRITT SEALGAS INLET
- F LEAKAGE SHERNESSITZBEITUNG LEAKAGE SAFETY SEAL



REVISIONS: DATE: BY: ITEM NO:

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BILL OF MATERIAL NO: 49701 91 1 1

NO	PART NUMBER	QTY	DESCRIPTION	MATERIAL
0001	0221542 4418	A	SLEAVE RING 135 SILICON CARBIDE	
0002	0221543 4500	B	SLEAVE ELEMENT 117 T.4006/7 FLOKARBON	
0003	0300 41 73 8	B	SPRING W/11 4.4818	
0004	0221552 1830	A	IMITING RING 018 FLOW MGS 180	
0005	0226 29 4300	B	SLEAVE ELEMENT 111 T.4006/7 4111 HGS RESISTAN	
0006	0221553 3490	B	SPRING W/11 4.4818	
0011	0221552 4418	A	SLEAVE RING 135 SILICON CARBIDE	
0012	0221553 4500	B	SLEAVE ELEMENT 117 T.4006/7 FLOKARBON	
0013	0226 21 13 2	B	SLEAVE ELEMENT 111 T.4006/7 4111 HGS RESISTAN	
0014	0221552 1800	A	IMITING RING 018 FLOW MGS 180	
0015	0226 29 4300	B	SLEAVE ELEMENT 111 T.4006/7 4111 HGS RESISTAN	
0019	0221553 3490	B	SPRING W/11 4.4818	
0020	48701 82 1 2	B	SLEAVE AL	
0021	48701 80 1 2	B	SPRING STROKE 277 1.4006	
0022	48701 81 1 2	B	SPRING RING 147 1.4006	
0023	48701 23 1 2	B	SLEAVE T.4006/7 UNFINISHED CARBIDE COATED	
0024	48701 24 1 2	B	SPRING 277 1.4006	
0025	48701 25 1 2	B	SPRING 277 1.4006	
0026	48701 26 1 2	B	SPRING 277 1.4006	
0027	0200 95 3740	B	10-RING W/7 FLOKARBON	
0028	0200 35 3740	B	10-RING W/7 FLOKARBON	
0029	0200 37 3740	B	10-RING W/7 FLOKARBON	
0031	0200 01 08 8	B	10-RING W/7 FLOKARBON	
0032	0200 01 08 8	B	10-RING W/7 FLOKARBON	
0033	0200 01 08 8	B	10-RING W/7 FLOKARBON	
0034	0200 01 08 8	B	10-RING W/7 FLOKARBON	
0035	0200 16 3740	B	10-RING W/7 FLOKARBON	
0036	0200 16 3740	B	10-RING W/7 FLOKARBON	
0037	0200 17 3740	B	10-RING W/7 FLOKARBON	
0038	0200 17 3740	B	10-RING W/7 FLOKARBON	
0039	0200 48 3740	B	10-RING W/7 FLOKARBON	
0040	0200 48 3740	B	10-RING W/7 FLOKARBON	
0041	0200 17 3740	B	10-RING W/7 FLOKARBON	
0042	0200 17 3740	B	10-RING W/7 FLOKARBON	
0043	48701 43 1 2	B	SHIPPING PLATE PVC	
0044	48701 44 1 2	B	SHIPPING PLATE 101 1.4120	
0045	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0046	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0047	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0048	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0049	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0050	14260 51 1 2	B	10-RING T.4006/7 4111 HGS RESISTAN	
0051	48378 83 1 2	B	10-RING T.4006/7 4111 HGS RESISTAN	
0052	48378 83 1 2	B	10-RING T.4006/7 4111 HGS RESISTAN	
0053	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0054	0200 45 3740	B	10-RING W/7 FLOKARBON	
0055	14260 51 2 0	B	SPRING FEM 1.4510	
0056	14260 51 2 0	B	SPRING FEM 1.4510	
0057	070020030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0058	48701 56 1 2	B	10-RING 277 1.4006	
0059	48701 56 1 2	B	10-RING 277 1.4006	
0060	48701 84 1 2	B	10-RING 277 1.4006	
0061	0200 37 48 8	B	SPRING FEM 1.4510	
0062	48701 82 1 2	B	SLEAVE T.4006/7 UNFINISHED CARBIDE COATED	
0063	070020030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0064	0200 43 3740	B	10-RING W/7 FLOKARBON	
0065	070014260 8	B	12 SPCS O-RING 190 4760 W/MSD 1.4571	
0066	48701 86 1 2	B	10-RING 277 1.4006	
0067	0700 07 30 8	B	4 SPCS O-RING 190 4760 W/MSD 1.4571	
0068	070020030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0069	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0070	48701 85 1 2	B	10-RING 277 1.4006	
0071	0200 16 3740	B	10-RING W/7 FLOKARBON	
0072	0200 35 3740	B	10-RING W/7 FLOKARBON	
0073	48701 73 1 2	B	SHIPPING PLATE PVC	
0074	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0075	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0076	48701 78 1 2	B	SPRING RING 277 1.4006	
0077	070014260 8	B	12 SPCS O-RING 190 4760 W/MSD 1.4571	
0078	070014260 8	B	12 SPCS O-RING 190 4760 W/MSD 1.4571	
0079	48701 90 1 2	B	SLEAVE 3.3047 ALUMINUM	
0080	0200 37 3740	B	10-RING W/7 FLOKARBON	
0081	070010030 8	B	3 SPCS O-RING 4760 W/MSD 1.4571	
0082	0200 35 3740	B	10-RING W/7 FLOKARBON	

SCALE: A 1:1 B 1:2

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

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SCALE: A 1:1 B 1:2 WITH CONFIRMED E

SCALE: A 1:1 B 1:2 WITH CONFIRMED E

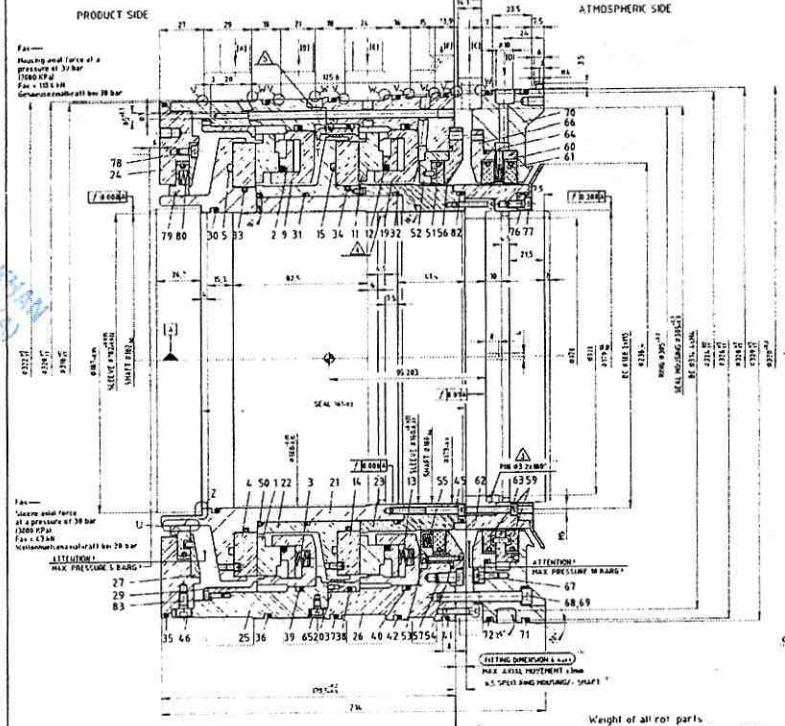
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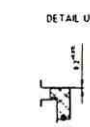
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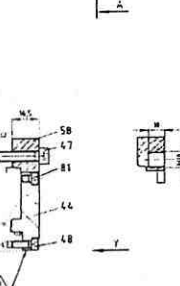
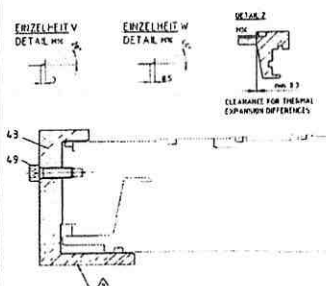
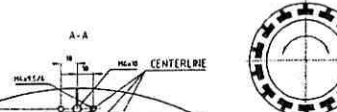
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UNDER STATIC AND AMBIENT CONDITIONS AT 20°C

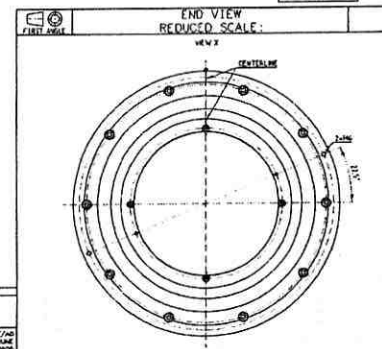
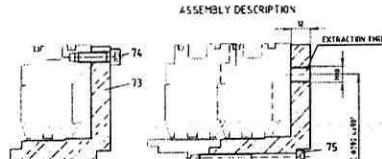


UNDER AMBIENT CONDITIONS AT 20°C



Weight of all rot parts:  
 Ges.-Gewicht der rot. Teile: 70kg  
 (excl. Splitring)  
 = Center of Gravity of the rot parts  
 (excl. split ring)  
 = Lage des Gesamtschwerpunktes der rot. Teile

Massmoment of Inertia:  
 Massenträgheitsmoment: 0,222 Kgm²



Bi-directional T-groove-patterns for contactless gas-sealing

BILL OF MATERIAL NO: 51360 00 1 1

NO	DESCRIPTION	QTY	REMARKS	MARKING
0001	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0002	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0003	003047 1 2	2	1/2 SPRING 1.4008	
0004	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0005	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0006	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0007	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0008	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0009	003047 1 2	2	1/2 SPRING 1.4008	
0010	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0011	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0012	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0013	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0014	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0015	003047 1 2	2	1/2 SPRING 1.4008	
0016	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0017	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0018	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0019	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0020	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0021	003047 1 2	2	1/2 SPRING 1.4008	
0022	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0023	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0024	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0025	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0026	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0027	003047 1 2	2	1/2 SPRING 1.4008	
0028	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0029	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0030	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0031	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0032	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0033	003047 1 2	2	1/2 SPRING 1.4008	
0034	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0035	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0036	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0037	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0038	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0039	003047 1 2	2	1/2 SPRING 1.4008	
0040	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0041	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0042	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0043	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0044	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0045	003047 1 2	2	1/2 SPRING 1.4008	
0046	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0047	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0048	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0049	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0050	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0051	003047 1 2	2	1/2 SPRING 1.4008	
0052	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0053	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0054	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	
0055	0021266 8410	1	SEAL RING 183 SILICON CARBIDE	
0056	0030244 1590	1	TOTAL ELEMENT 117 1.4005/FILICARBON	
0057	003047 1 2	2	1/2 SPRING 1.4008	
0058	11360 84 1 2	2	1/2 RING RING DIA FLUON VCS 110	
0059	00302 21 1 2	2	TOTAL ELEMENT 111 1.4005/FILICARBON	
0060	0030384 1000	1	1/2 RING RING DIA FLUON VCS 110	

- ⚠️ WHEN ASSEMBLING WITH PRELUBRICATED ELEMENTS REMOVE ASSEMBLY PLATE AT 1/2 TURN ASSEMBLY
- ⚠️ CLEAN AND DISINFECT THE SEALING ELEMENTS AFTER REMOVAL OF THE ASSEMBLY PLATE BEFORE ASSEMBLY
- ⚠️ NO FLOWERVE DELIVERY
- ⚠️ O-RING HAS TO BE 90° ANGLE
- ⚠️ RING 26, 84
- ⚠️ ALL SHOULDERS AND SHARP EDGES, OVER WHICH THE SEALING ELEMENTS PASS SHOULD FITTING. IT IS TO BE FREY FROM BURRS AND BURIED
- ⚠️ IMPORTANT: CAREFULLY READ AND OBSERVE THE INSTRUCTIONS PARALLEL AND 1-9 OF INFORMATION OF SAFETY BEFORE HANDLING OR STARTUP!

REV. NO.	DATE	BY	CHKD.	DESCRIPTION

COOKS:  
 A ENH2264-3, 1 B WITH CONFIRMED E  
 = 8 x 2 2 2 2 2 2 2 2 2 2 2 2  
 FOR M21, 1 008-1151 410

AND-3382

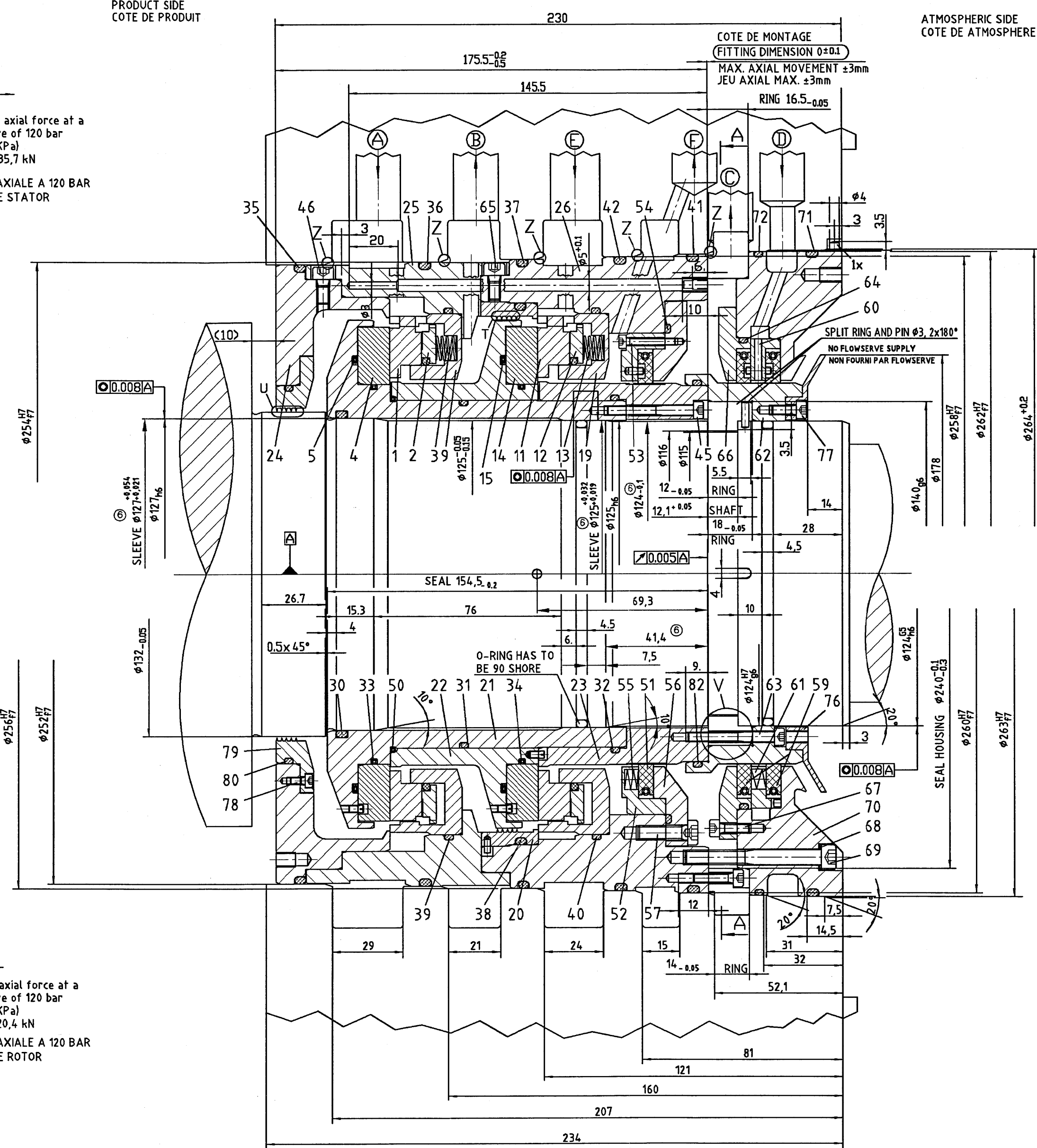
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49701 91 0 1 (MM) REV: 8 EUROPE ENG WEICHLER 10-SEP-2007 11:04:38

NO: 49701 91 0 1 REV: 8

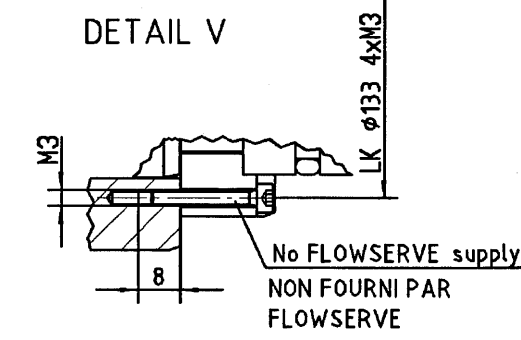
PRODUCT SIDE  
COTE DE PRODUIT

Fax —  
Housing axial force at a pressure of 120 bar (12000 kPa)  
Fax = 335,7 kN  
FORCE AXIALE A 120 BAR POUR LE STATOR

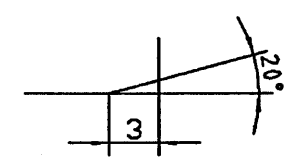


Fax —  
Sleeve axial force at a pressure of 120 bar (12000 kPa)  
Fax = 120,4 kN  
FORCE AXIALE A 120 BAR POUR LE ROTOR

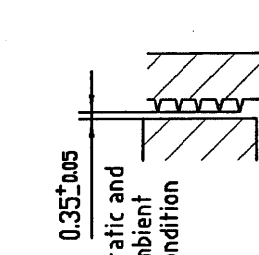
DETAIL V



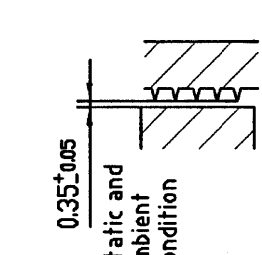
DETAIL Z



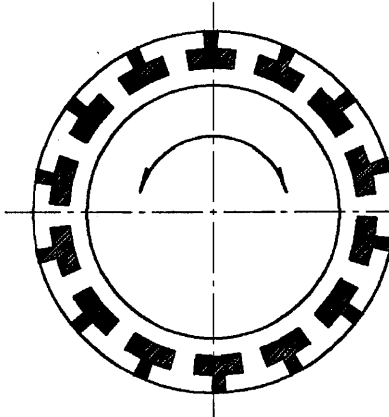
DETAIL T



DETAIL U



Bi-directional T-groove-patterns for contactless gas-sealing  
RAINURES EN T BI-DIRECTIONNELLES POUR ETANCHEITE-GAS SANS CONTACT

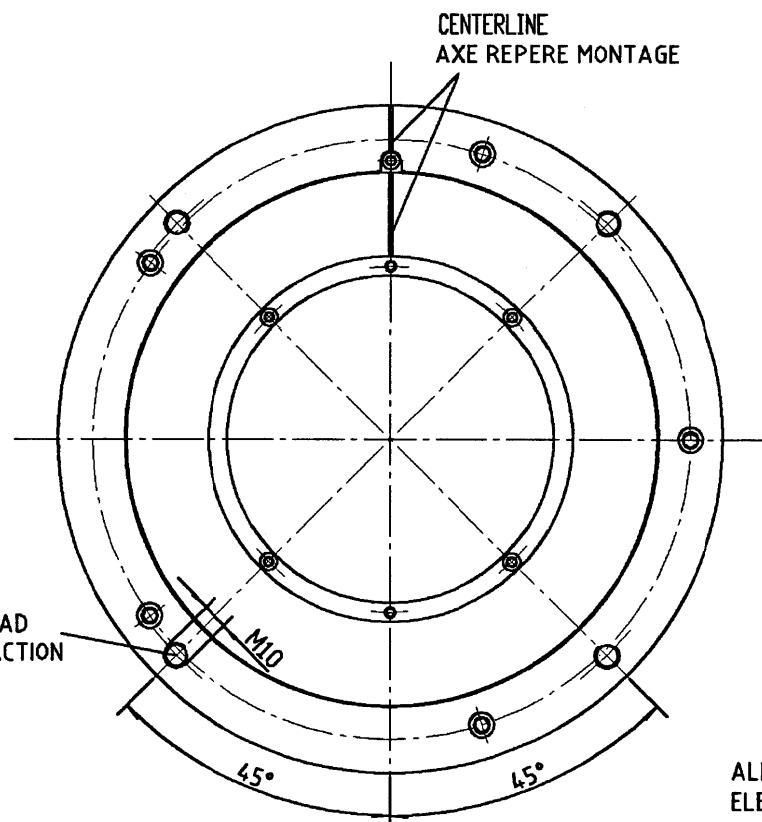


GES.-GEWICHT DER ROT.TEILE : 12.43 Kg  
WEIGHT OF ALL ROT.PARTS INCL. SPLITRING  
MASSE DES PARTIES TOURNANTES

⊕ = LAGE DES GESAMTSCHWERPUNKTES DER ROT.TEILE MIT SPLITRING  
= CENTER OF GRAVITY OF THE ROT.PARTS INCL. SPLITRING  
= CENTRE DE GRAVITE DES PARTIES TOURNANTES

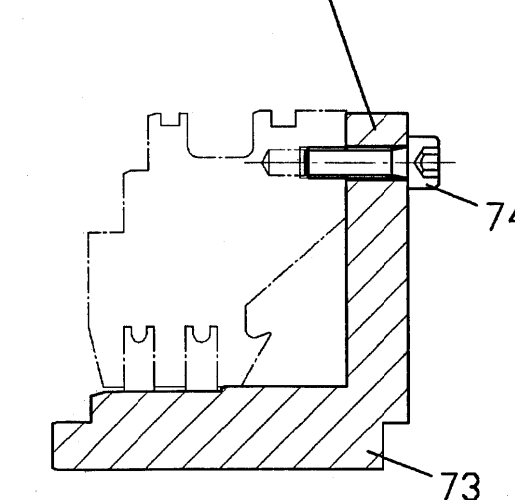
MASSENTRAEGHEITSMOMENT: 0.07 Kg m<sup>2</sup>  
MASSMOMENT OF INERTIA  
MOMENT D'INERTIE

VIEW Y

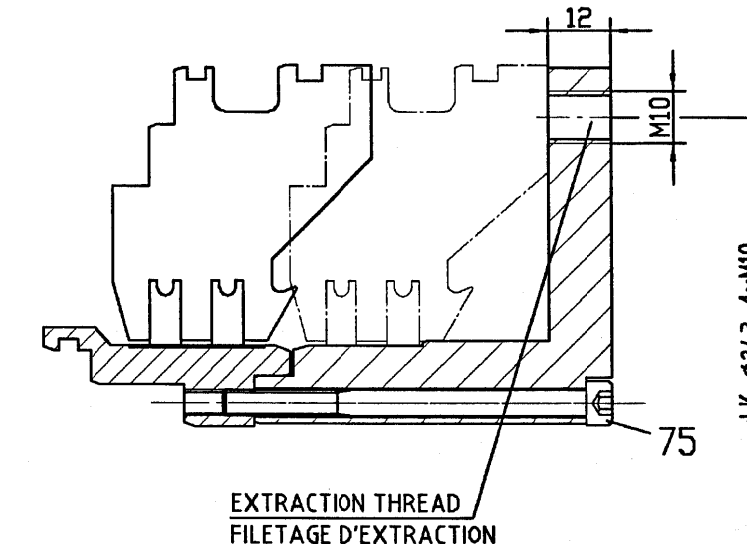


ALL SHOULDERS AND SHARP EDGES, OVER WHICH THE SEALING ELEMENTS PASS DURING FITTING, MUST BE FREE FROM BURRS AND ROUNDED.  
TOUS LES EPAULEMENTS ET ANGLES VIFS SUR LESQUELS NOUS PASSONS DURING LE MONTAGE SERONT EBAVURES ET ARRONDES.

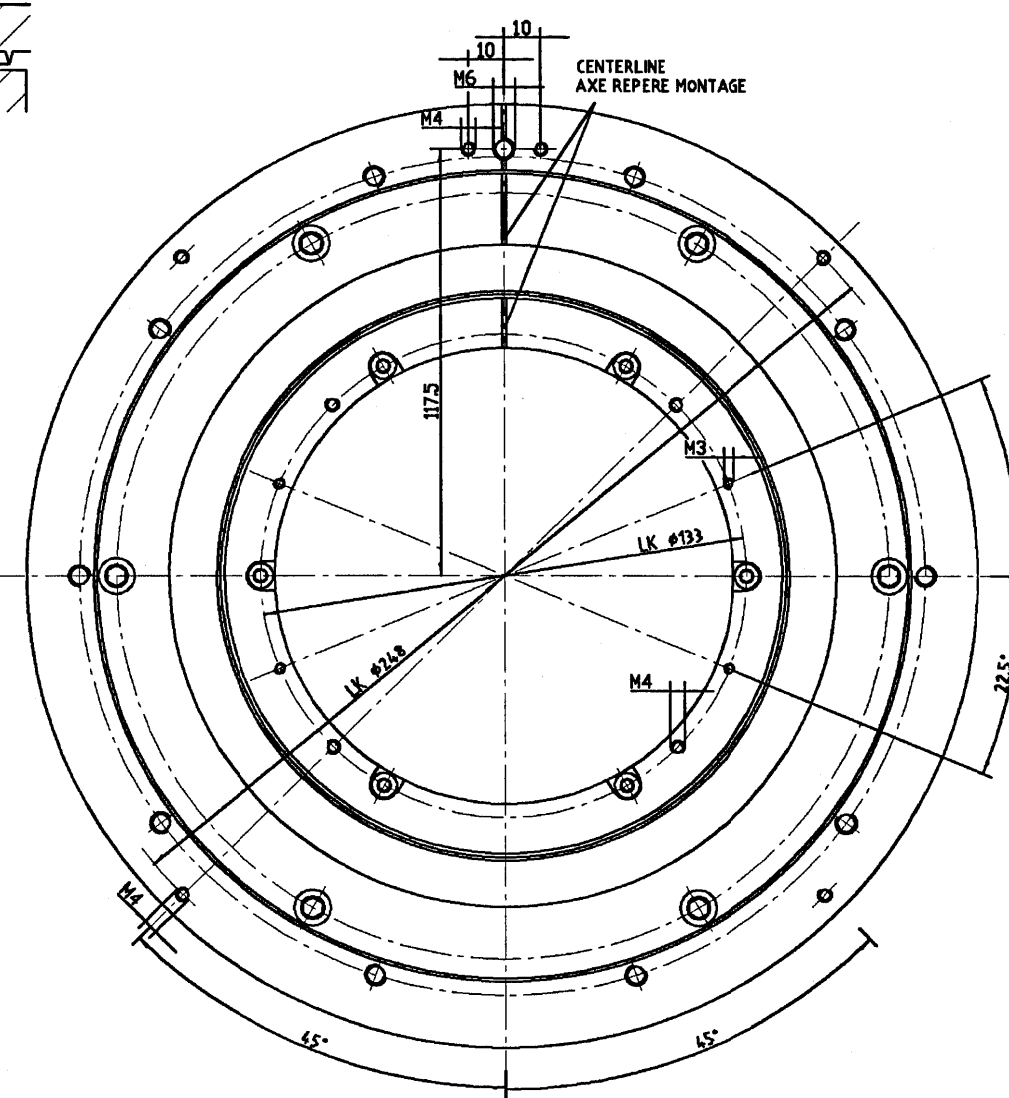
SHIPPING PLATE  
REMOVE BEFORE ASSEMBLY  
OUTILLAGE DE TRANSPORT  
ENLEVER AVANT MONTAGE



ASSEMBLY DESCRIPTION



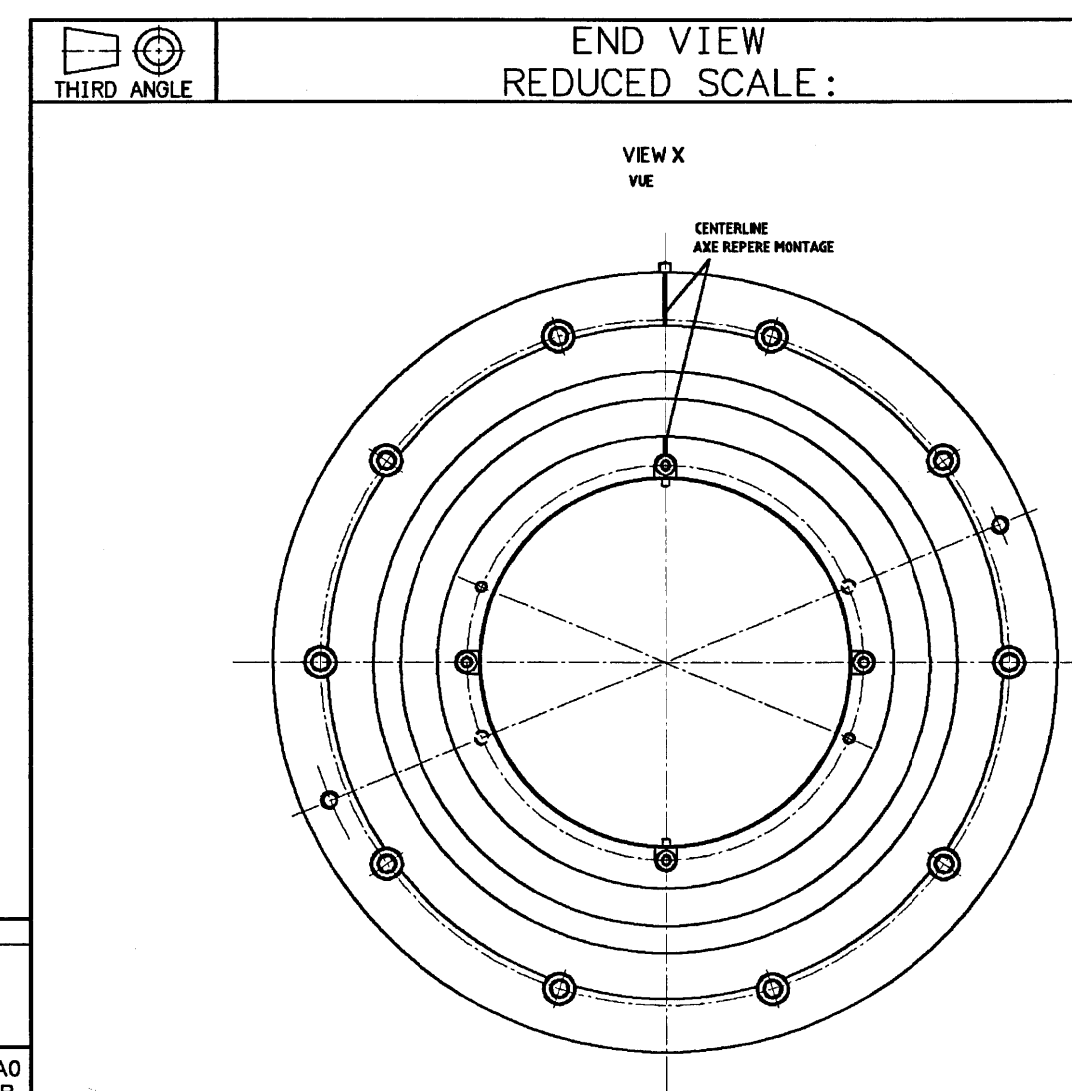
SECTION A-A



ANSCHLÜSSE  
CONNECTIONS  
CONNEXIONS

- (A) REINGAS EINTRITT (GERENIGTES PRODUKTGAS)  
LEAKAGE MAIN SEAL PLUS SEAL GAS OUTLET  
ENTREE GAZ PROPRE
- (B) LECKAGE HAUPTDICHTUNG PLUS SPERRGAS AUSTRITT  
SORTIE FUITE GARNITURE PRIMAIRE ET GAZ DE BARRAGE
- (C) BUFFERGAS AUSTRITT  
SORTIE GAZ D'INJECTION LABYRINTHE COTE ATMOSPHERE
- (D) BUFFERGAS EINTRITT  
BUFFERGAS INLET  
ENTREE GAZ D'INJECTION LABYRINTHE COTE ATMOSPHERE
- (E) SPERRGAS EINTRITT  
SEAL GAS INLET  
ENTREE GAZ DE BARRAGE
- (F) LECKAGE SICHERHEITSDICHTUNG  
LEAKAGE SAFETY SEAL  
SORTIE FUITE GARNITURE SECONDAIRE

END VIEW  
REDUCED SCALE:



NO	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SUGGESTED SPARE PARTS
0001	0221452 4410	A	1 SEAL RING I03 SILICON CARBIDE		
0002	0232552 4590	B	1 SEAL ELEMENT X17 1.4006/FLUORCARBON		
0003	0300 47 13 0	16	16 SPRING M13 2.4610		
0004	0221552 1800	A	1 MATING RING Q16 FLOMA MCS 180		
0005	0225 22 4390	A	1 SEAL ELEMENT Y11 FM1700/2.4711 H2S RESISTANT		
0009	0233652 3490	B	1 RETAINER E27 1.4006		
0011	0221452 4410	A	1 SEAL RING I03 SILICON CARBIDE		
0012	0232552 4590	B	1 SEAL ELEMENT X17 1.4006/FLUORCARBON		
0013	0300 47 13 0	16	16 SPRING M13 2.4610		
0014	0221552 1800	A	1 MATING RING Q16 FLOMA MCS 180		
0015	0225 22 4390	A	1 SEAL ELEMENT Y11 FM1700/2.4711 H2S RESISTANT		
0019	0233652 3490	B	1 RETAINER E27 1.4006		
0020	49701 82 1 2	1	1 SLEEVE AL		
0021	49701 80 1 2	B	1 SHAFT SLEEVE E27 1.4006		
0022	49701 81 1 2	B	1 DISTANCE RING E27 1.4006		
0023	49701 23 1 2	B	1 SLEEVE 1.4006/TUNGSTEN CARBIDE COATED		
0024	49701 24 1 2	B	1 COVER E27 1.4006		
0025	49701 25 1 2	B	1 HOUSING E27 1.4006		
0026	49701 26 1 2	B	1 HOUSING E27 1.4006		
0030	0205 95 3740	1	1 O-RING V07 FLUORCARBON		
0031	0205 35 3740	1	1 O-RING V07 FLUORCARBON		
0032	0205 37 3740	1	1 O-RING V07 FLUORCARBON		
0033	0230851 68 0	1	1 CENTERRING M68 2.4819		
0034	0230851 68 0	1	1 CENTERRING M68 2.4819		
0035	0206 16 3740	1	1 O-RING V07 FLUORCARBON		
0036	0206 16 3740	1	1 O-RING V07 FLUORCARBON		
0037	0206 17 3740	1	1 O-RING V07 FLUORCARBON		
0038	0206 11 3740	1	1 O-RING V07 FLUORCARBON		
0039	0205 48 3740	1	1 O-RING V07 FLUORCARBON		
0040	0205 48 3740	1	1 O-RING V07 FLUORCARBON		
0041	0206 17 3740	1	1 O-RING V07 FLUORCARBON		
0042	0206 17 3740	1	1 O-RING V07 FLUORCARBON		
0043	49701 43 1 2	1	1 SHIPPING PLATE PVC		
0044	49701 44 1 2	1	1 ASSEMBLY PLATE T51 1.4122		
0045	0700216930 0	6	6 SHCS G30 ISO 4762 M4X35 1.4571		
0046	0700142630 0	12	12 SHCS G30 ISO 4762 M5X10 1.4571		
0047	0700138530 0	5	5 SHCS G30 ISO 4762 M6X20 1.4571		
0048	0700114630 0	4	4 SHCS G30 ISO 4762 M6X25 1.4571		
0049	0700103930 0	4	4 SHCS G30 ISO 4762 M6X20 1.4571		
0050	45689 53 1 2	1	1 CENTERRING 2.4819		
0051	48379 85 1 2	1	1 GASKET SEALRING CARBON/1.4571		
0052	49701 83 1 2	B	1 HOUSING E27 1.4006		
0053	0700043730 0	4	4 SHCS G30 ISO 4762 M3X20 1.4571		
0054	0205 45 3740	1	1 O-RING V07 FLUORCARBON		
0055	0300 53 26 0	6	6 SPRING F26 1.4310		
0056	49701 56 1 2	B	1 COVER E27 1.4006		
0057	0700209230 0	6	6 SHCS G30 DIN 6912 M6X20 1.4571		
0058	49701 58 1 2	1	1 ASSEMBLY PLATE T51 1.4122		
0059	48379 85 1 2	2	2 GASKET SEALRING CARBON/1.4571		
0060	49701 84 1 2	B	1 HOUSING E27 1.4006		
0061	0300 53 26 0	6	6 SPRING F26 1.4310		
0062	49701 62 1 2	B	1 SLEEVE 1.4006/TUNGSTEN CARBIDE COATED		
0063	0700216930 0	4	4 SHCS G30 ISO 4762 M4X35 1.4571		
0064	0205 43 3740	1	1 O-RING V07 FLUORCARBON		
0065	0700142630 0	12	12 SHCS G30 ISO 4762 M5X10 1.4571		
0066	49701 66 1 2	B	1 COVER E27 1.4006		
0067	0700 07 30 0	6	6 SHCS G30 ISO 4762 M4X12 1.4571		
0068	070027822100	10	10 USIT-RING X12 GU/STEEL UB.7X10X1		
0069	0700105430 0	10	10 SHCS G30 ISO 4762 M6X55 1.4571		
0070	49701 85 1 2	B	1 HOUSING E27 1.4006		
0071	0206 18 3740	1	1 O-RING V07 FLUORCARBON		
0072	0205 53 3740	1	1 O-RING V07 FLUORCARBON		
0073	49701 73 1 2	1	1 SHIPPING PLATE PVC		
0074	0700103930 0	2	2 SHCS G30 ISO 4762 M5X70 1.4571		
0075	0700041930 0	2	2 SHCS G30 ISO 4762 M5X70 1.4571		
0076	49701 76 1 2	B	1 SPIN RING E27 1.4006		
0077	0700114830 0	4	4 SHCS G30 ISO 4762 M4X10 1.4571		
0078	0700103830 0	6	6 SHCS G30 ISO 4762 M3X6 1.4571		
0079	49701 50 1 2	1	1 SLEEVE 3.3547 ALUMINUM		
0080	0205 37 3740	1	1 O-RING V07 FLUORCARBON		
0081	0700103530 0	1	1 SHCS G30 ISO 4762 M4X8 1.4571		
0082	0205 38 3740	1	1 O-RING V07 FLUORCARBON		

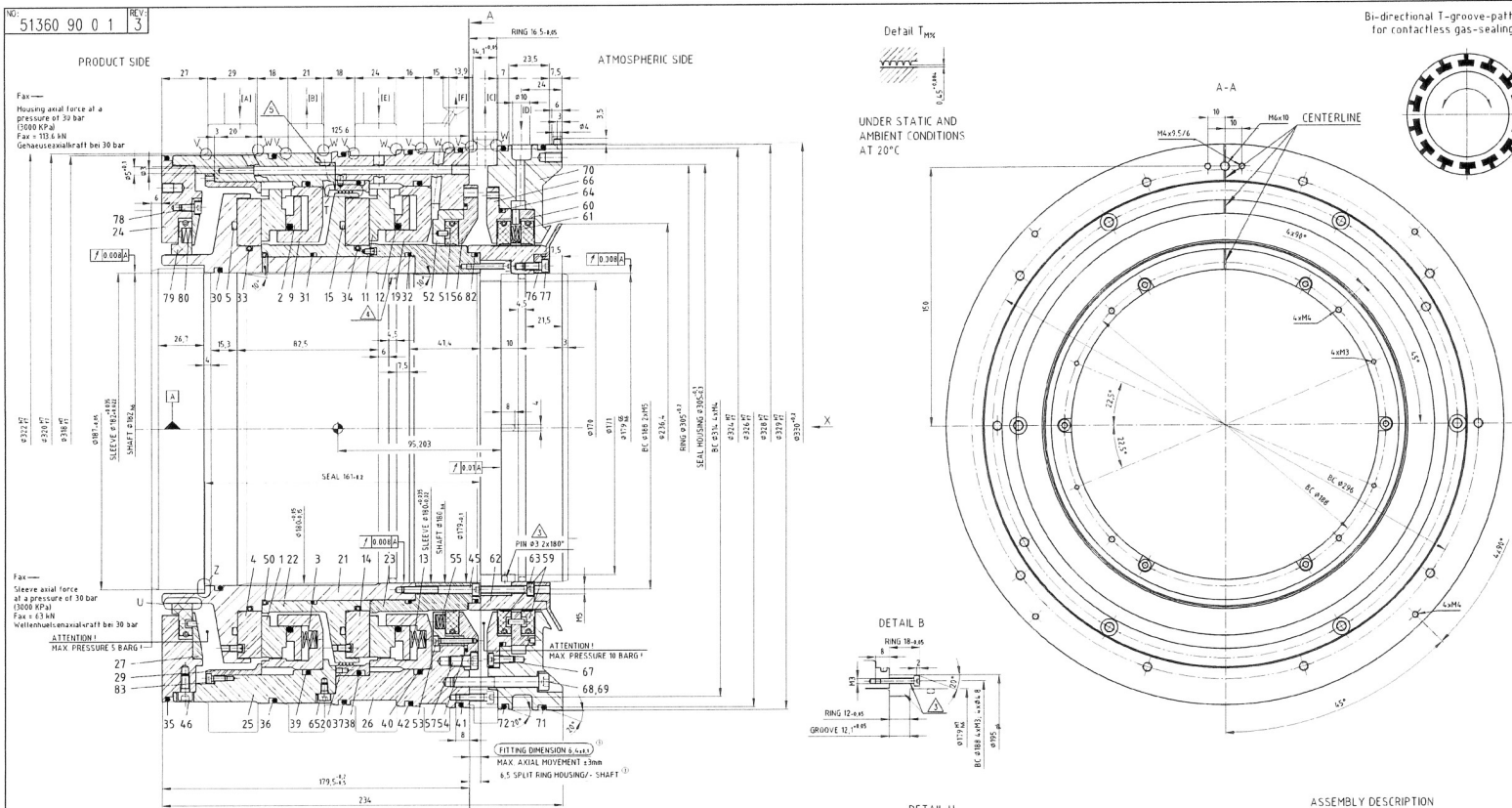
CODES:	A	EN10204-3.1 B
	B	EN10204-3.1 B WITH CONFIRMED E - RP 0.2 550-620 N/MM2 AND HRC22 FOR H2S 1.4006-AISI 410

SEAL TYPE: GASPAC TYPE L	SEAL SIZE: 170
SEAL CONFIG:	SIZE CODE: 52
MATL CODE:	WEIGHT: 50 KG
EQUIP MFR: MAN TURBOMASCHINEN AG, SCHWEIZ	INSTR:
EQUIP MODEL:	DESIGN:
EQUIP DWG: 1-837 003 832-C	SCALE: 1:1
DESIGNER:	DATE: 28-MRZ-03
DRAWN: B1	REF DWG: 49700 90 0 1
FORM DWG:	REV:
CHKD: NOL	ASSY/ORDER NO: 49701 91 0 1
APPVD: 16-MAI-03	8
F.O. NO:	

ACHTUNG!  
VOR HANDHABUNG UND INBETRIEBNAHME DIE BETRIEBSANLEITUNG UND SICHERHEITSHINWEISE LESEN UND BEACHTEN!  
IMPORTANT!  
CAREFULLY READ AND OBSERVE THE INSTRUCTION MANUAL AND THE INFORMATION OF SAFETY BEFORE HANDLING OR STARTUP!

REVISION: 8	DATE:	BY:	CHKD:	TECN NO:
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DIM'S ARE REF UNLESS SPECIFIED OTHERWISE				
DIM'S IN: MILLIMETERS				

51360 90 0 1 (MM) REV. 3 EUROPE ENG WEICHLER 17-APR-2008 10:22:43



Bi-directional T-groove-patterns for contactless gas-sealing

NO	PART/LOC	QTY	DESCRIPTION	MATERIAL
0001	0221466 4410	1	SEAL RING 103 SILICON CARBIDE	
0002	0223566 4500	1	SEAL LEAKING X17 1.4006/FLUORCARBON	
0003	0300 47 13 0	24	SPRING M13 2.4610	
0004	51360 04 1 2	1	MATING RING 014 FLOMA M3 140	
0005	0225 32 4300	1	SEAL ELEMENT Y11 TFM700/2.4711 HPS RESISTAN	
0009	0223666 3400	1	RETAINER E27 1.4006	
0011	0221466 4410	1	SEAL RING 103 SILICON CARBIDE	
0012	0223566 4500	1	SEAL ELEMENT X17 1.4006/FLUORCARBON	
0013	0300 47 13 0	24	SPRING M13 2.4610	
0014	51360 04 1 2	1	MATING RING 014 FLOMA M3 140	
0015	0225 32 4300	1	SEAL ELEMENT Y11 TFM700/2.4711 HPS RESISTAN	
0019	0223666 3400	1	RETAINER E27 1.4006	
0020	51360 82 1 2	1	SLEEVE ALUMINUM 3.3547	
0021	51360 80 1 2	1	SHMFT SLEEVE E27 1.4006	
0022	51360 81 1 1 2	2	LOSTASK'S SLEEVE E27 1.4006	
0023	51360 23 1 2	1	SLEEVE 1.4006/COATED	
0024	51360 24 1 2	1	COVER E27 1.4006	
0025	51360 25 1 2	1	HOUSING E27 1.4006	
0026	51360 26 1 2	1	HOUSING E27 1.4006	
0027	51360 85 1 2	1	COVER E27 1.4006	
0028	51360 29 1 2	1	COVER E27 1.4006	
0030	0205 07 3740	1	O-RING V07 FLUORCARBON	
0031	0205 46 3740	1	O-RING V07 FLUORCARBON	
0032	0205 46 3740	1	O-RING V07 FLUORCARBON	
0033	0223665 68 0	1	CENTERRING 2.4819	
0034	0223665 68 0	1	CENTERRING 2.4819	
0035	0206 22 3740	1	O-RING V07 FLUORCARBON	
0036	0206 22 3740	1	O-RING V07 FLUORCARBON	
0037	0206 22 3740	1	O-RING V07 FLUORCARBON	
0038	0206 20 3740	1	O-RING V07 FLUORCARBON	
0039	0206 20 3740	1	O-RING V07 FLUORCARBON	
0040	0206 20 3740	1	O-RING V07 FLUORCARBON	
0041	0206 22 3740	1	O-RING V07 FLUORCARBON	
0042	0206 22 3740	1	O-RING V07 FLUORCARBON	
0043	51360 43 1 2	1	SHIPPING PLATE PVC	
0044	51360 44 1 2	1	ASSEMBLY PLATE T51 1.4122	
0045	0702017030 0	6	SHCS G30 150 4762 M4X40 1.4571	
0046	0701042630 0	12	SHCS G30 150 4762 M6X10 1.4571	
0047	0701043530 0	5	SHCS G30 150 4762 M6X25 1.4571	
0048	0700 07 30 0	4	SHCS G30 150 4762 M4X12 1.4571	
0049	070103930 0	4	SHCS G30 150 4762 M6X20 1.4571	
0050	0223665 68 0	1	CENTERRING 2.4819	
0051	50569 88 1 2	2	GASKET SEALING CARBON/T.4571	
0052	51360 81 1 2	1	HOUSING E27 1.4006	
0053	0700043750 0	4	SHCS G30 150 4762 M4X20 1.4571	
0054	0205 53 86 0	1	O-RING V86 FLUORCARBON	
0055	0300 48 26 0	12	SPRING F26 1.4310	
0056	51360 58 1 2	1	COVER E27 1.4006	
0057	0702174030 0	6	SHCS G30 DIN 6912 M6X12 1.4571	
0058	51360 58 1 2	1	ASSEMBLY PLATE T51 1.4122	
0059	50569 88 1 2	2	GASKET SEALING CARBON/T.4571	
0060	51360 84 1 2	1	HOUSING E27 1.4006	
0061	0300 48 26 0	12	SPRING F26 1.4310	
0062	51360 62 1 2	1	SLEEVE 1.4006/COATED	
0063	070103930 0	4	SHCS G30 150 4762 M6X15 1.4571	
0064	0205 53 86 0	1	O-RING V86 FLUORCARBON	
0065	0701045730 0	8	SHCS G30 150 4762 M4X6 1.4571	
0066	51360 66 1 2	1	COVER E27 1.4006	
0067	070103130 0	10	SHCS G30 DIN 6912 M4X12 1.4571	
0068	070105530 0	10	SHCS G30 150 4762 M6X10 1.4571	
0069	07000436100	10	US1-RING XYZ DUSTEEL 07.3X10.ZX1	
0070	51360 68 1 2	1	HOUSING E27 1.4006	
0071	0206 22 3740	1	O-RING V07 FLUORCARBON	
0072	0206 22 3740	1	O-RING V07 FLUORCARBON	
0073	51360 13 1 2	1	SHIPPING PLATE PVC	
0074	070103930 0	2	SHCS G30 150 4762 M6X20 1.4571	
0075	070104530 0	2	SHCS G30 150 4762 M6X20 1.4571	
0076	51360 76 1 2	1	SPIN RING E27 1.4006	
0077	070114830 0	4	SHCS G30 150 4762 M4X10 1.4571	
0078	070103530 0	6	SHCS G30 150 4762 M4X8 1.4571	
0079	51360 87 1 2	1	GASKET SEALING CARBON/T.4571	
0080	0300 63 13 0	1	SPRING M13 2.4610	
0081	0701045730 0	1	SHCS G30 150 4762 M4X6 1.4571	
0082	0205 45 3740	1	O-RING V07 FLUORCARBON	
0083	070107630 0	6	SHCS G30 150 4762 M4X6 1.4571	

ASSEMBLY DESCRIPTION

EXTRACTION THREAD

BE 0763-1489\*

END VIEW REDUCED SCALE:

VIEW X

CENTERLINE

2xM6

2x12

TOTAL WEIGHT 721kg

CONNECTIONS

- (A) PRIMARY SEAL GAS SUPPLY
- (B) PRIMARY SEAL GAS LEAKAGE
- (C) SEPARATION GAS LEAKAGE
- (D) SEPARATION GAS INLET
- (E) SECONDARY SEAL GAS SUPPLY
- (F) SECONDARY SEAL GAS LEAKAGE

SEAL TYPE: GASPAC TYPE L	SEAL SIZE: 230
SEAL COMP: 1	SIZE CODE: K266
HAUL CODE:	DESIGN 1
EQUIP WFR:	INSTR.
EQUIP MODEL:	
EQUIP DWG: B37 067 215	

SCALE: TO SCALE

OPTIONS:

REF DWG: 49702 91-50902 0 1

DATE: 01-FEB-08

FORM DWG: REV:

CHKD: NDL

ASST/ORDER NO: 041: 01 REV:

APPLIC: 51360 90 0 1 3

F.O. NO:

INZELHEIT V DETAIL MX

INZELHEIT W DETAIL MX

DETAIL 2

CLEARANCE FOR THERMAL EXPANSION DIFFERENCES

DETAIL M12

VIEW Y M12

EXTRACTION THREAD

BE 0763-1489\*

Weight of all rot. parts  
(Ges.-Gewicht der rot. Teile: 20kg  
lexkl. Splitring)

Center of Gravity of the rot. parts  
(excl. split ring)  
= Lage des Gesamtschwerpunktes der rot. Teile

Massmoment of Inertia  
Massenträgheitsmoment: 0,222 Kgm<sup>1</sup>

UNDER AMBIENT CONDITIONS AT 20°C

REVISION: DATE: 08/11/07

DESIGN: 10/01/07

SCALE: 1:1

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