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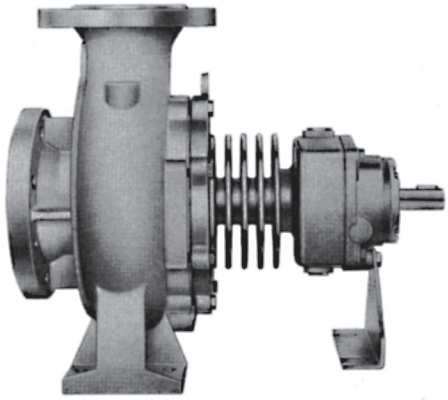


Volute Casing Centrifugal Pumps for Heat-Transfer Oils up to 350 °C

Series NHT / CHT

Application
For the circulation of heat-transfer oils in heat-transfer plants (DIN 4754). They also handle ill or non-lubricating oils which do not chemically attack the pump materials.

Pump ranges
Both ranges NHT and CHT are provided for heat-transfer oil up to 350 °C. For the limits of application as a function of temperature, series and casing material, please refer to the diagram Pressure and temperature limits as influenced by the casing material at bottom right of page.

Design/Construction
Horizontal, single-stage, single-flow volute casing centrifugal pump in back pull-out design with modified bearing bracket (consisting of casing cover with throttling/cooling stretch and bearing bracket).
Shaft bearing: medium-lubricated silicon carbide sliding bearing at the non-drive side, grease-lubricated groove ball bearing at the drive side.
Volute casing with cast-on feet, bearing bracket with support foot.

Branch position/Flanges
Suction branch: axial
Discharge branch: radially upwards

Flanges NHT series:	DN_d 25 to 150 mm DIN 2501, PN 16
Flanges CHT series:	DN_d 25 to 100 mm DIN 2501, PN 25

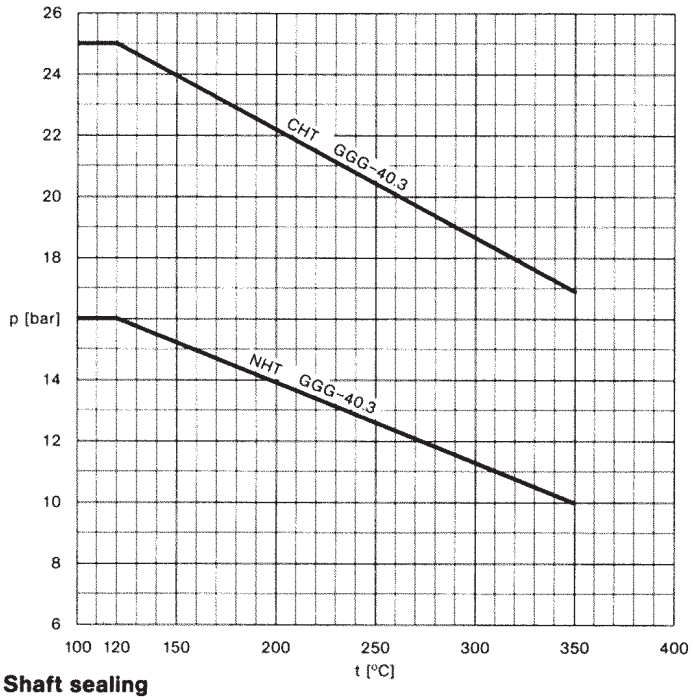
Max. performance data

Capacity		Q	up to	650 m^3/h
Delivery head	NHT series	H	up to	100 m
	CHT series	H	up to	140 m
Temperature of pumped liquid		t	up to	350 °C
permissible internal pump pressure ①	NHT series	p_d	up to	16 bar
	CHT series	p_d	up to	25 bar

① Inlet pressure plus pressure at maximum delivery head must not exceed the stated values. For admissible values of the individual pump range please refer to the diagram below.

The stated performance data are to be understood only as an outline of performance of our products. For exact limits of application please refer to the quotation and acceptance of order.

Pressure and temperature limits as influenced by the casing material



Shaft sealing
By uncooled, balanced and maintenance-free mechanical seal with chambered O-ring.

Drive
Surface-cooled, three-phase squirrel-cage induction motors, IM B3 type of construction, enclosure IP 54 according to IEC standard, class B insulation, performances and main dimensions according to DIN 42673.

Materials

Description	Series NHT/CHT
max. admissible temperature of pumped liquid 350 °C	
Material design	W 112
Volute casing	GGG-40.3
Impeller	GG-20
Casing cover	GGG-40.3
Shaft	1.4021
Bearing bracket	GGG 40.3
Bearing cover	GG-25

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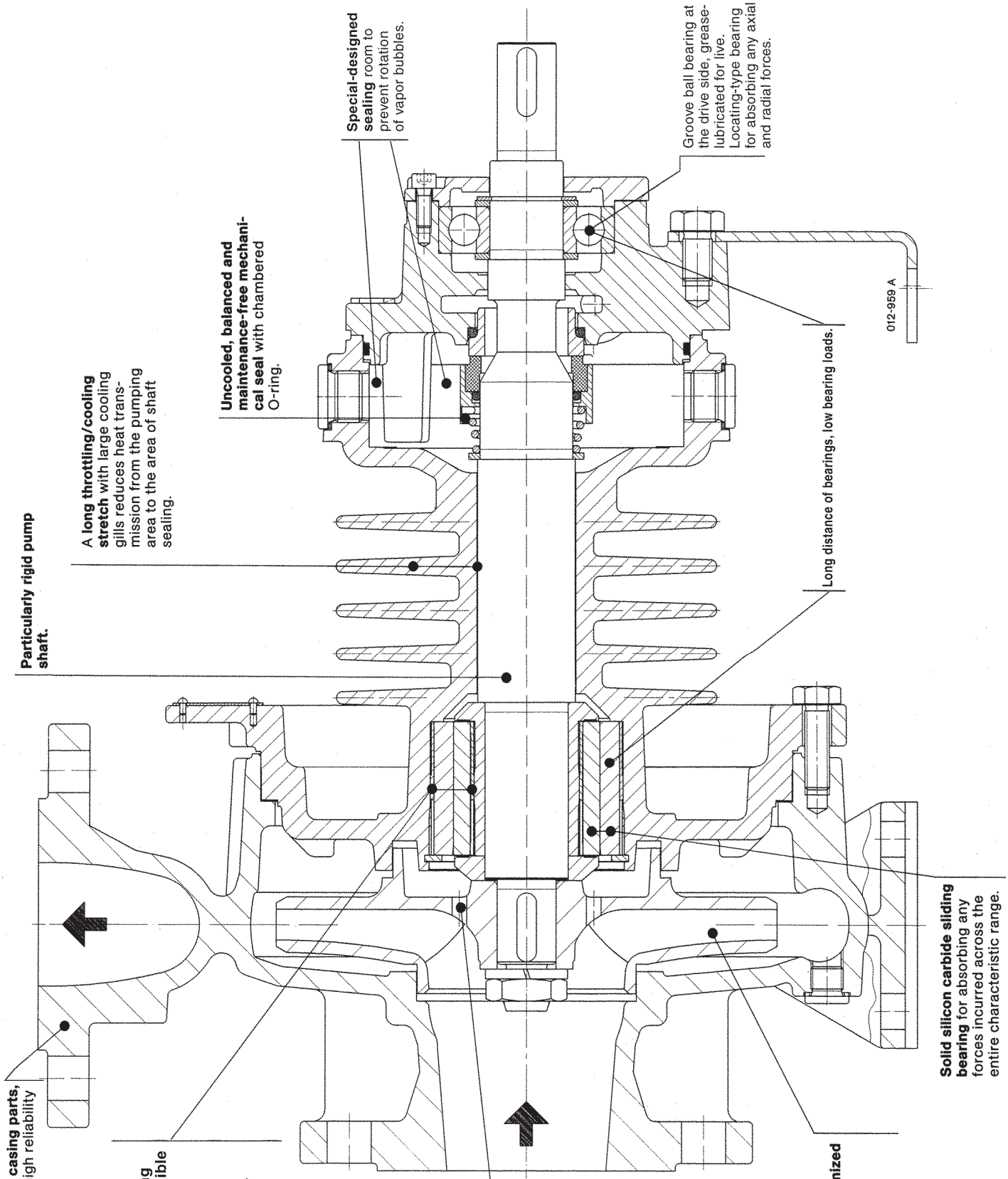
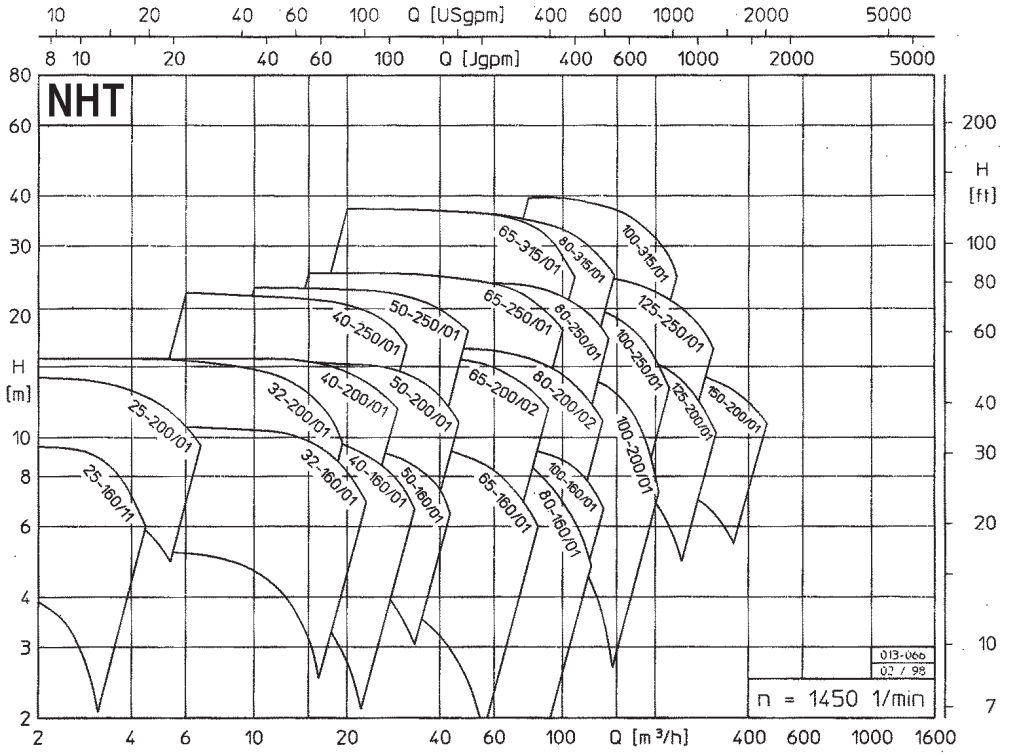
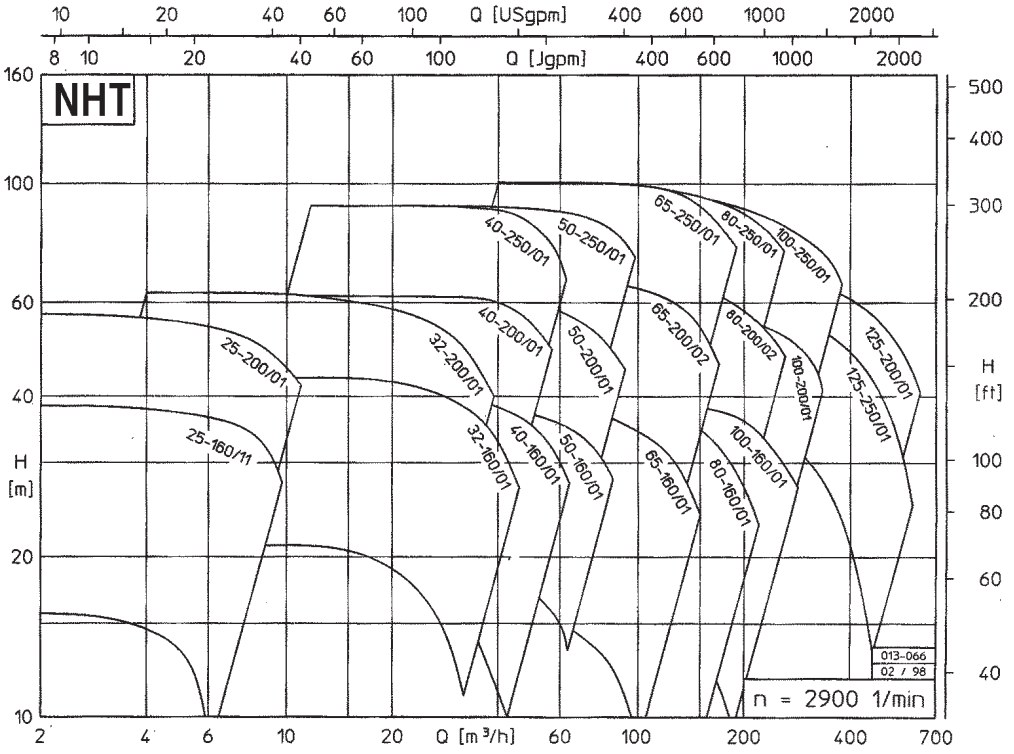

Special-designed sealing room to prevent rotation of vapor bubbles.
Groove ball bearing at the drive side, grease-lubricated for live. Locating-type bearing for absorbing any axial and radial forces.
Uncooled, balanced and maintenance-free mechanical seal with chambered O-ring.
A **long throttling/cooling stretch** with large cooling gills reduces heat transmission from the pumping area to the area of shaft sealing.
Particularly rigid pump shaft.
012-959 A
Long distance of bearings, low bearing loads.
Pressure safe casing parts, designed for high reliability of operation.
Bearing rings of the sliding bearing guided in the flexible elements. Thus, thermal expansion compensation and load-dependent adjustment to optimum lubricating gap conditions.
Hydraulically balanced impeller, **low axial thrust** to the shaft bearing.
Impeller with optimized hydraulic design, very good efficiencies.
Solid silicon carbide sliding bearing for absorbing any forces incurred across the entire characteristic range.

Performance charts

n = 1450 1/min



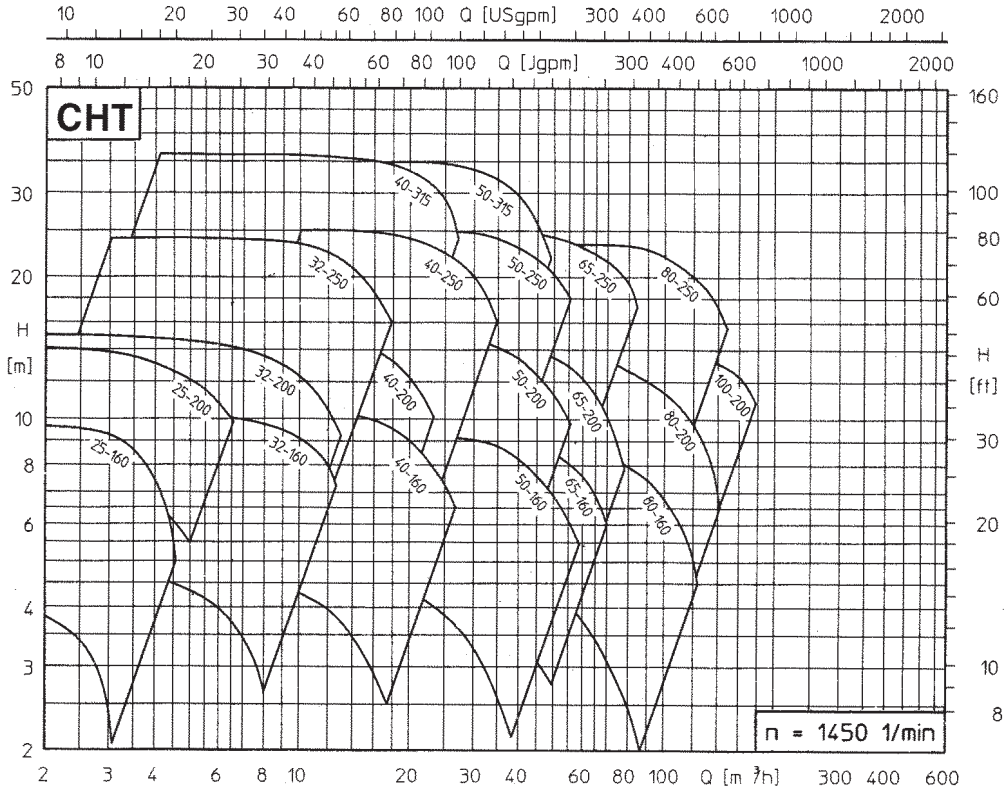
n = 2900 1/min



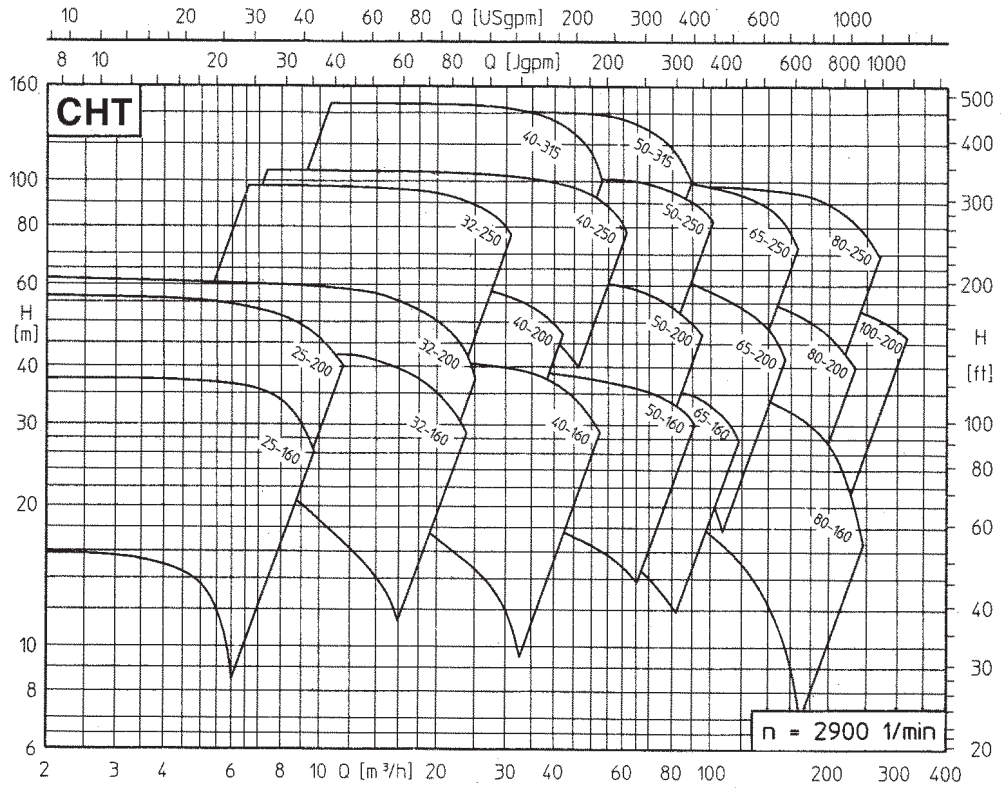
For exact performance data, refer to the individual characteristics.

Performance charts

n = 1450 1/min

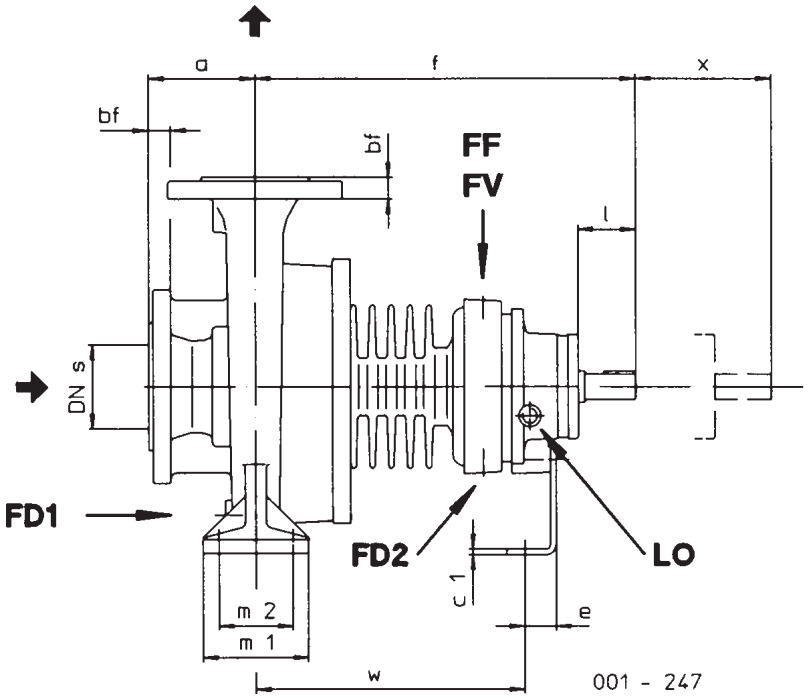


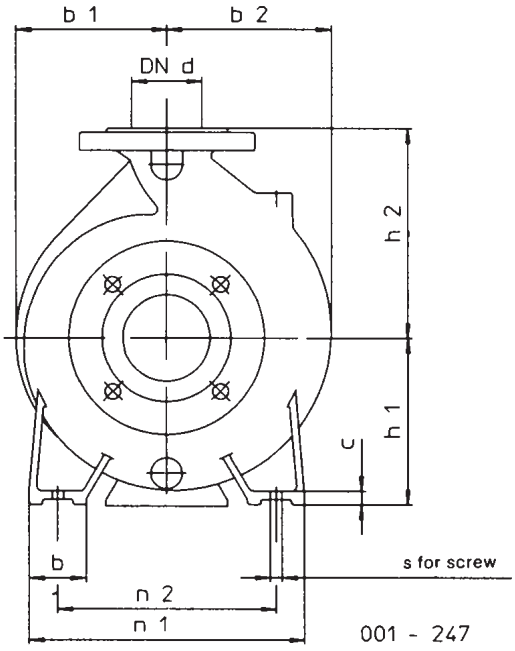
n = 2900 1/min



For exact performance data, refer to the individual characteristics.

Pump dimensions
Size at bearing bracket sizes 360 and 470





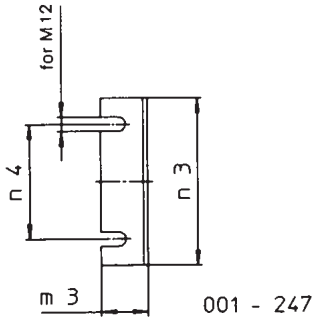
Tolerances of companion dimensions
acc. to DIN EN 735

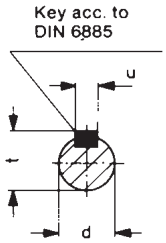
Sense of rotation: clockwise, as seen
from the driving side

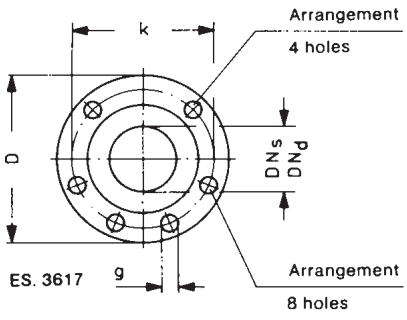
Dimensions in mm without commitment

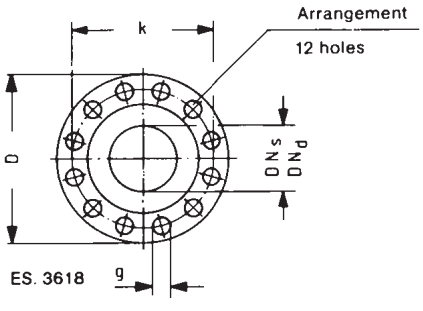
Bearing bracket size	Connections				
	Draining		Filling	Venting	Leak-age outlet
	FD1 ①	FD2	FF	FV	LO
360	G 1/4	G 1/2	G 1/2	G 1/2	G 1/4
470	G 3/8	G 1/2	G 1/2	G 1/2	G 1/4

① Connection FD1 in size 25-160/11
and 25-200/01 each G 1/2









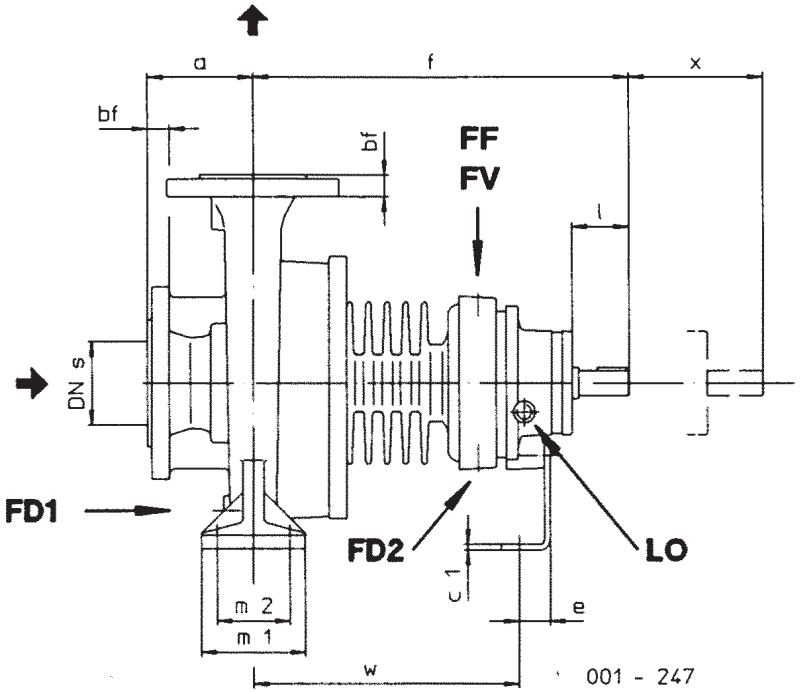
Flanges acc. to EN 1092-2 PN16					
DN_s DN_d	D	bf	k	g	No. of holes
25	115	16	85	14	4
32	140	18	100	19	4
40	150	18	110	19	4
50	165	20	125	19	4
65	185	20	145	19	4
80	200	22	160	19	8
100	220	24	180	19	8
125	250	26	210	19	8
150	285	26	240	23	8
200	340	30	295	23	12

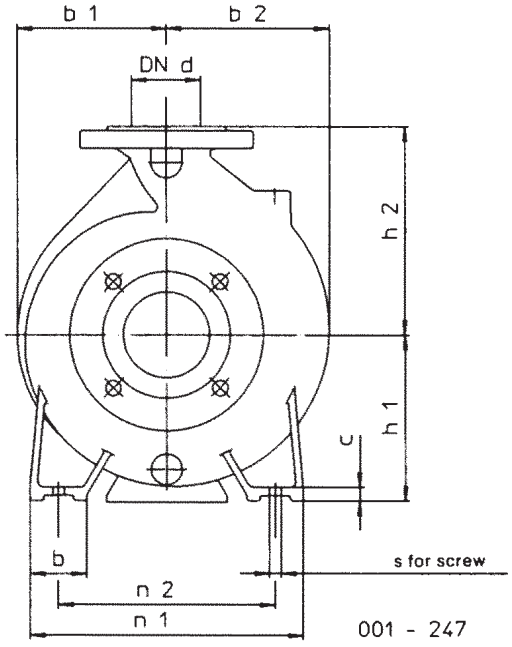
Tolerances of companion dimensions according to DIN EN 735

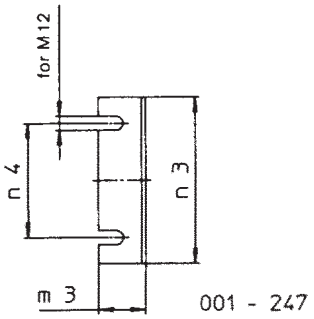
Dimensions in mm without commitment

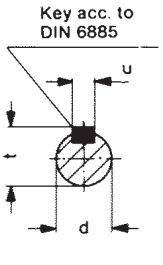
Bearing bracket size	Pump size	Suction flange	Delivery flange	Pump dimensions						Feet dimensions												Extension dimension	Shaft end acc. to DIN 748			
																					for screw					
		DN_s	DN_d	a	f	b_1	b_2	h_1	h_2	b	c	c_1	e	m_1	m_2	m_3	n_1	n_2	n_3	n_4	w	s	x	d	l	t	u
360	25-160/11	40	25	80	360	125	125	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M 12	80	24	50	27	8
	25-200/01	40	25	80	360	132	132	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M 12	80	24	50	27	8
	32-160/01	50	32	80	360	130	130	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M 12	80	24	50	27	8
	32-200/01	50	32	80	360	124	130	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M 12	80	24	50	27	8
	40-160/01	65	40	80	360	130	130	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M 12	80	24	50	27	8
	40-200/01	65	40	100	360	125	135	160	180	50	15	4	28	100	70	45	265	212	160	110	260	M 12	80	24	50	27	8
	40-250/01	65	40	100	360	150	156	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M 12	80	24	50	27	8
	50-160/01	65	50	100	360	125	130	160	180	50	15	4	28	100	70	45	265	212	160	110	260	M 12	80	24	50	27	8
	50-200/01	65	50	100	360	133	145	160	200	50	15	4	28	100	70	45	265	212	160	110	260	M 12	80	24	50	27	8
	50-250/01	65	50	100	360	156	169	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M 12	80	24	50	27	8
	65-160/01	80	65	100	360	133	162	160	200	65	15	4	28	125	95	45	280	212	160	110	260	M 12	80	24	50	27	8
	65-200/02	80	65	100	360	150	170	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M 12	100	24	50	27	8
	80-160/01	100	80	125	360	136	170	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M 12	100	24	50	27	8
	100-160/01	125	100	125	360	165	200	200	280	65	15	4	28	125	95	45	320	250	160	110	260	M 12	100	24	50	27	8
470	65-250/01	80	65	100	470	164	184	200	250	80	18	4	28	160	120	45	360	280	160	110	340	M 16	100	32	80	35	10
	65-315/01	80	65	125	470	202	219	225	280	80	25	6	30	160	120	47	400	315	160	110	340	M 16	100	32	80	35	10
	80-200/02	100	80	125	470	172	190	180	250	65	18	4	28	125	95	45	345	280	160	110	340	M 12	100	32	80	35	10
	80-250/01	100	80	125	470	182	208	200	280	80	18	4	28	160	120	45	400	315	160	110	340	M 16	100	32	80	35	10
	80-315/01	100	80	125	470	210	231	250	315	80	25	6	30	160	120	47	400	315	160	110	340	M 16	100	32	80	35	10
	100-200/01	125	100	125	470	165	203	200	280	80	18	4	28	160	120	45	360	280	160	110	340	M 16	120	32	80	35	10
	100-250/01	125	100	140	470	189	224	225	280	80	18	6	30	160	120	47	400	315	160	110	340	M 16	120	32	80	35	10
	100-315/01	125	100	140	470	220	250	250	315	80	25	6	30	160	120	47	400	315	160	110	340	M 16	120	32	80	35	10
	125-200/01	150	125	140	470	196	236	250	315	80	18	6	30	160	120	47	400	315	160	110	340	M 16	120	32	80	35	10
	125-250/01	150	125	140	470	212	255	250	355	80	18	6	30	160	120	47	400	315	160	110	340	M 16	120	32	80	35	10
	150-200/01	200	150	160	470	214	268	280	370	100	27	6	30	200	150	47	550	450	160	110	340	M 20	120	32	80	35	10

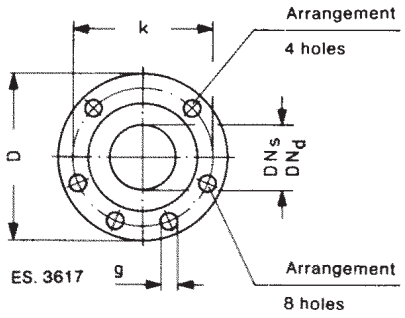
Pump dimensions
Size at bearing bracket sizes 360 and 470











Tolerances of companion dimensions
acc. to DIN EN 735

Sense of rotation: clockwise, as seen
from the driving side

Dimensions in mm without commitment

Bearing bracket size	Connections				
	Draining		Filling	Venting	Leak-age outlet
	FD1	FD2	FF	FV	LO
360	G 1/2	G 1/2	G 1/2	G 1/2	G 1/4
470	G 1/2	G 1/2	G 1/2	G 1/2	G 1/4

Flanges DIN EN 1092-2 PN16					
DNs DNd	D	bf	k	g	No. of holes
25	115	16	85	14	4
32	140	18	100	19	4
40	150	18	110	19	4
50	165	20	125	19	4
65	185	20	145	19	4
80	200	22	160	19	8
100	220	24	180	19	8
125	250	26	210	19	8

Flanges EN 1092-2 PN25					
DNs DNd	D	bf	k	g	No. of holes
25	115	18	85	14	4
32	140	20	100	19	4
40	150	20	110	19	4
50	165	22	125	19	4
65	185	24	145	19	8
80	200	26	160	19	8
100	235	28	190	23	8
125	270	30	220	28	8

Tolerances of companion dimensions according to DIN EN 735

Dimensions in mm without commitment

Bearing bracket size	Pump size	Suction flange	Delivery flange	Pump dimensions						Feet dimensions												Extension dimension	Shaft end acc. to DIN 748			
																					for screw					
		DN_S	DN_d	a	f	b_1	b_2	h_1	h_2	b	c	c_1	e	m_1	m_2	m_3	n_1	n_2	n_3	n_4	w	s	x	d	l	t	u
360	25-160	40	25	80	360	128	128	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M 12	100	24	50	27	8
	25-200	40	25	80	360	132	132	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M 12	100	24	50	27	8
	32-160	50	32	80	360	130	130	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M 12	100	24	50	27	8
	32-200	50	32	80	360	130	135	160	180	50	15	4	28	100	70	45	240	190	160	110	260	M 12	100	24	50	27	8
	40-160	65	40	80	360	130	130	132	160	50	15	4	28	100	70	45	240	190	160	110	260	M 12	100	24	50	27	8
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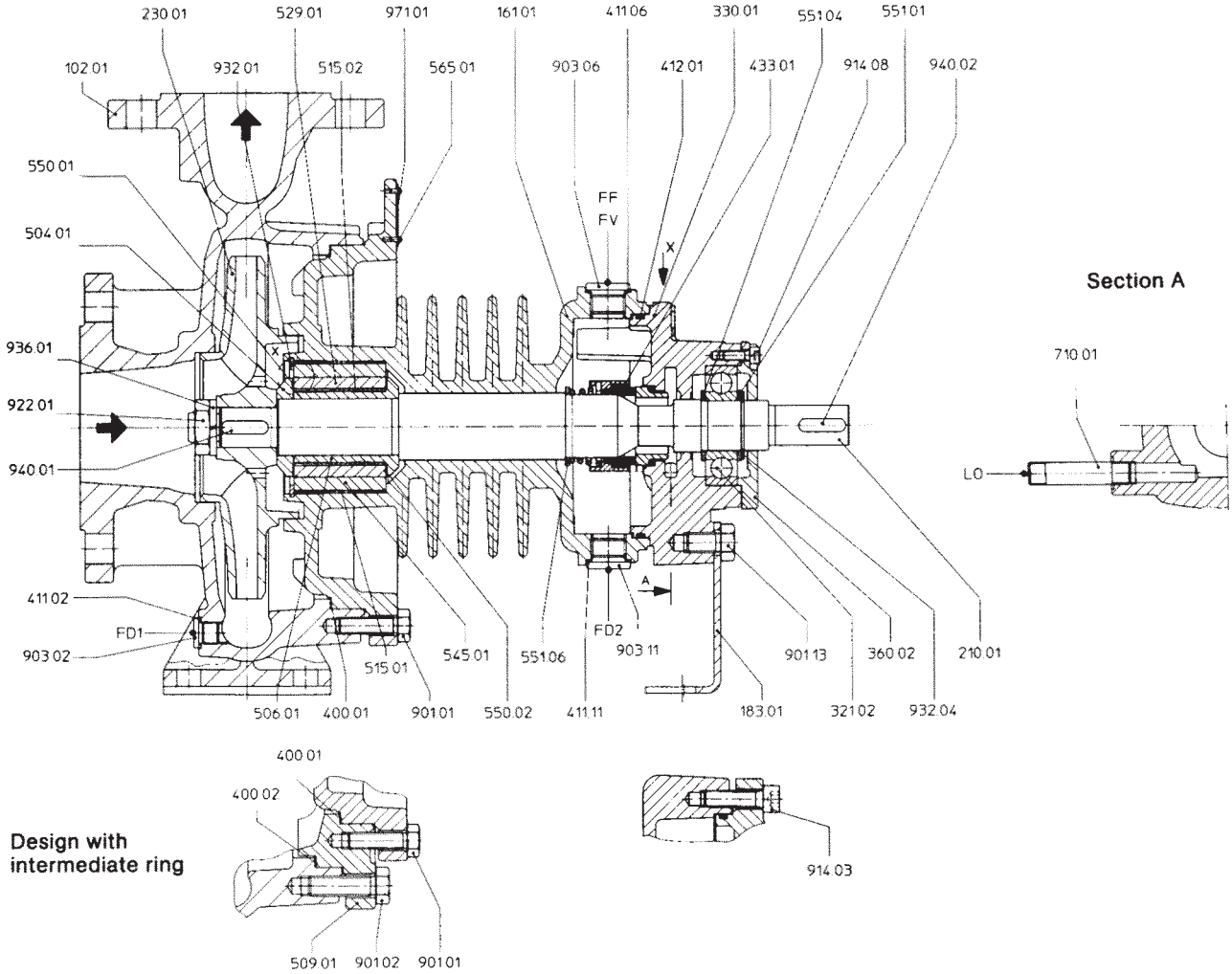
	50-200	80	50	100	360	135	150	160	200	50	15	4	28	100	70	45	265	212	160	110	260	M 12	100	24	50	27	8
	65-160	100	65	100	360	130	155	160	200	65	15	4	28	125	95	45	280	212	160	110	260	M 12	100	24	50	27	8
	80-160	125	80	125	360	145	180	180	225	65	15	4	28	125	95	45	320	250	160	110	260	M 12	140	24	50	27	8
470	32-250	50	32	100	470	170	170	180	225	65	15	4	28	125	95	45	320	250	160	110	340	M 12	100	32	80	35	10
	40-250	65	40	100	470	170	170	180	225	65	15	4	28	125	95	45	320	250	160	110	340	M 12	100	32	80	35	10
	40-315	65	40	125	470	200	200	200	250	65	20	4	28	125	95	45	345	280	160	110	340	M 12	100	32	80	35	10
	50-250	80	50	125	470	170	170	180	225	65	15	4	28	125	95	45	320	250	160	110	340	M 12	100	32	80	35	10
	50-315	80	50	125	470	200	200	225	280	65	20	6	30	125	95	47	345	280	160	110	340	M 12	100	32	80	35	10
	65-200	100	65	100	470	170	170	180	225	65	15	4	28	125	95	45	320	250	160	110	340	M 12	140	32	80	35	10
	65-250	100	65	125	470	170	190	200	250	80	18	4	28	160	120	45	360	280	160	110	340	M 16	140	32	80	35	10
	80-200	125	80	125	470	170	190	180	250	65	18	4	28	125	95	45	345	280	160	110	340	M 12	140	32	80	35	10
	80-250	125	80	125	470	185	210	225	280	80	18	6	30	160	120	47	400	315	160	110	340	M 16	140	32	80	35	10
	100-200	125	100	125	470	170	205	200	280	80	18	4	28	160	120	45	360	280	160	110	340	M 16	140	32	80	35	10

Sectional drawing
Sizes at bearing bracket sizes 360 and 470



Design with intermediate ring

Shaft seal: Uncooled, balanced mechanical seal with pre-mounted throttling and cooling line

Abbreviation: **U2.10A** (max. admissible temperature of pumped liquid 207°C; O-ring EPDM)
U2.9A (max. admissible temperature of pumped liquid 350°C; O-ring Viton)

Description	Part No.	Description	Part No.
Volute casing	102.01	Disc	550.01
Casing cover	161.01	Disc	550.02
Supporting foot	183.01	Spacer disc	551.01
Shaft	210.01	Spacer disc	551.04
Impeller	230.01	Spacer disc	551.06
Groove ball bearing	321.02	Rivet	565.01
Bearing bracket	330.01	Pipe	710.01
Bearing cover	360.02	Hexagon screw	901.01
Gasket	400.01	Hexagon screw	901.02
Gasket	400.02	Hexagon screw	901.13
Joint ring	411.02	Screw plug	903.02
Joint ring	411.06	Screw plug	903.06
Joint ring	411.11	Screw plug	903.11
O-ring	412.01	Socket-head cap screw	914.03
Mechanical seal	433.01	Socket-head cap screw	914.08
Spacer ring	504.01	Impeller nut	922.01
Retaining ring	506.01	Circlip	932.01
Intermediate ring	509.01	Circlip	932.04
Clamping ring	515.01	Spring ring	936.01
Clamping ring	515.02	Key	940.01
Bearing sleeve	529.01	Key	940.02
Bearing bush	545.01	Name plate	971.01

Connections	
FD1, FD2	Fluid drain
FF/FV	Filling/Bleeding
LO	Leakage outlet

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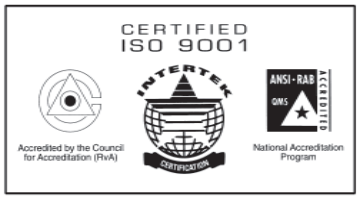

Quality Management System

BROCHURE: VM822-823 REV 08-03 5-16-2006

Imo Pump
1710 Airport Road
PO Box 5020
Monroe, NC USA
28111.5020

tel 704.289.6511
fax 704-289-9273
email Imo.Pump@ColfaxCorp.com
web www.Imo-Pump.com