

## **CENTRIFUGAL PUMPS**

### **Type IN**

**According with EN 22858 / ISO 2858 / ISO 5199**

## Standard centrifugal Pumps type IN

### Fields of Application

Pumps type IN are suitable for all kinds of non-agresive and agresive liquids, chemicals including oil and oil products and liquid gases with solid particles up to 0,2% per mass to size 0,2 mm. These pumps can be used in water supply, Industry and Power plants, on ships and sailing vessels, chemical plants, refineries etc.

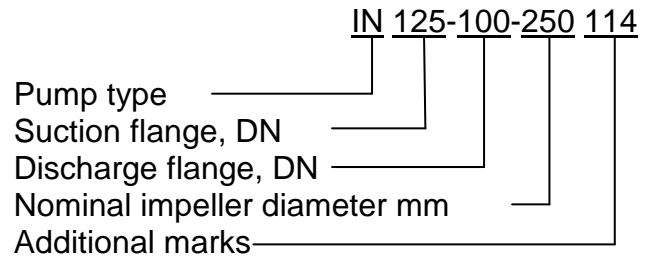
### Design

Horizontal Pump with radially split volute casing in "back pull-out" design has single inlet, singlestage radial impeller in accordance with standard:

EN 22858 / ISO 2858 / ISO 5199.

**Materials** (EN standard):

### Designation



### Technical characteristics

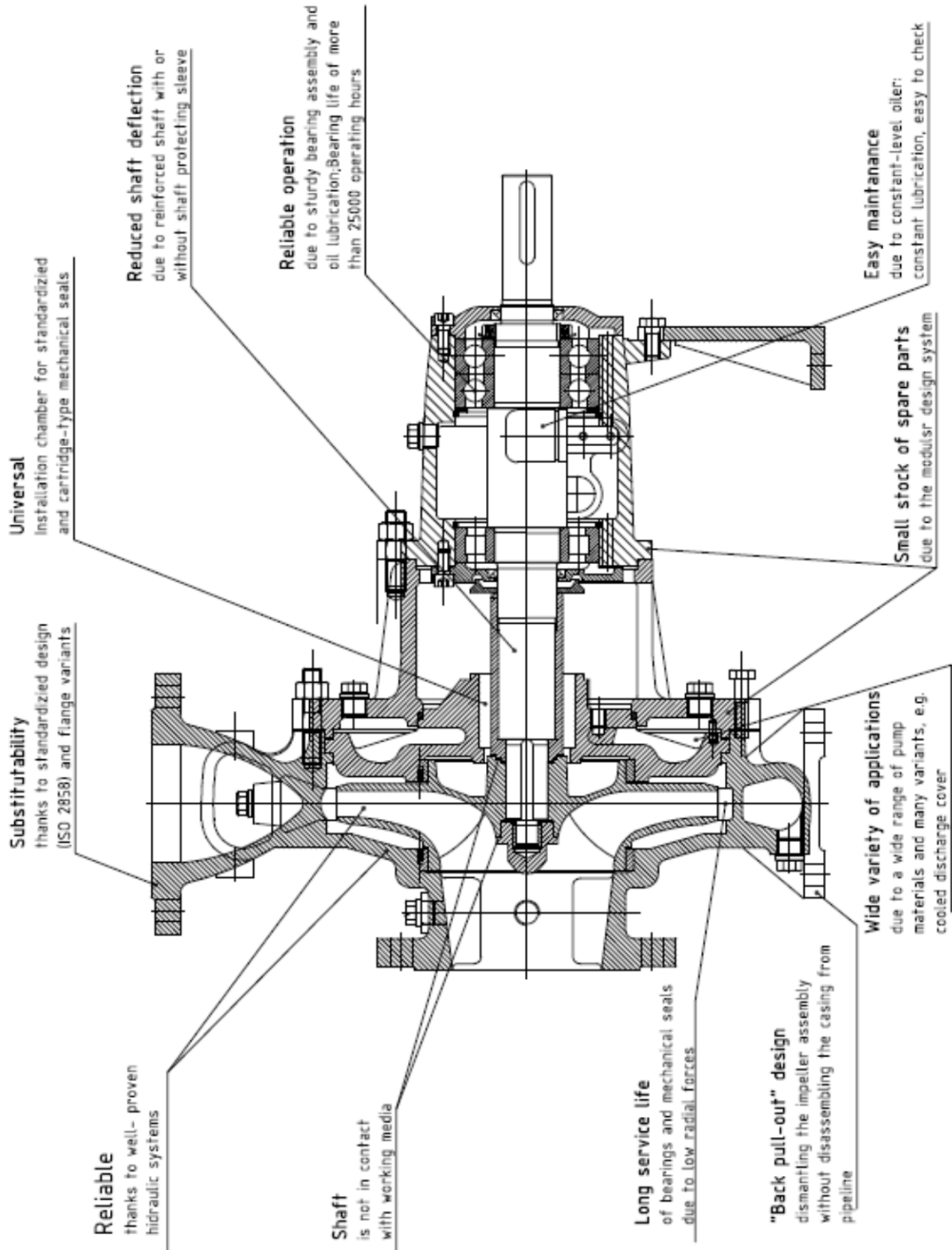
Capacity: do 500 m<sup>3</sup>/h  
Head: do 150 m  
Upišite tekst ili adresu web-lokacije ili prevedite dokument.  
Operating pressure: do 16 (25) bar  
Operating temperature: od -40 do +350°C  
Velocity: do 3600 o/min

### Certification

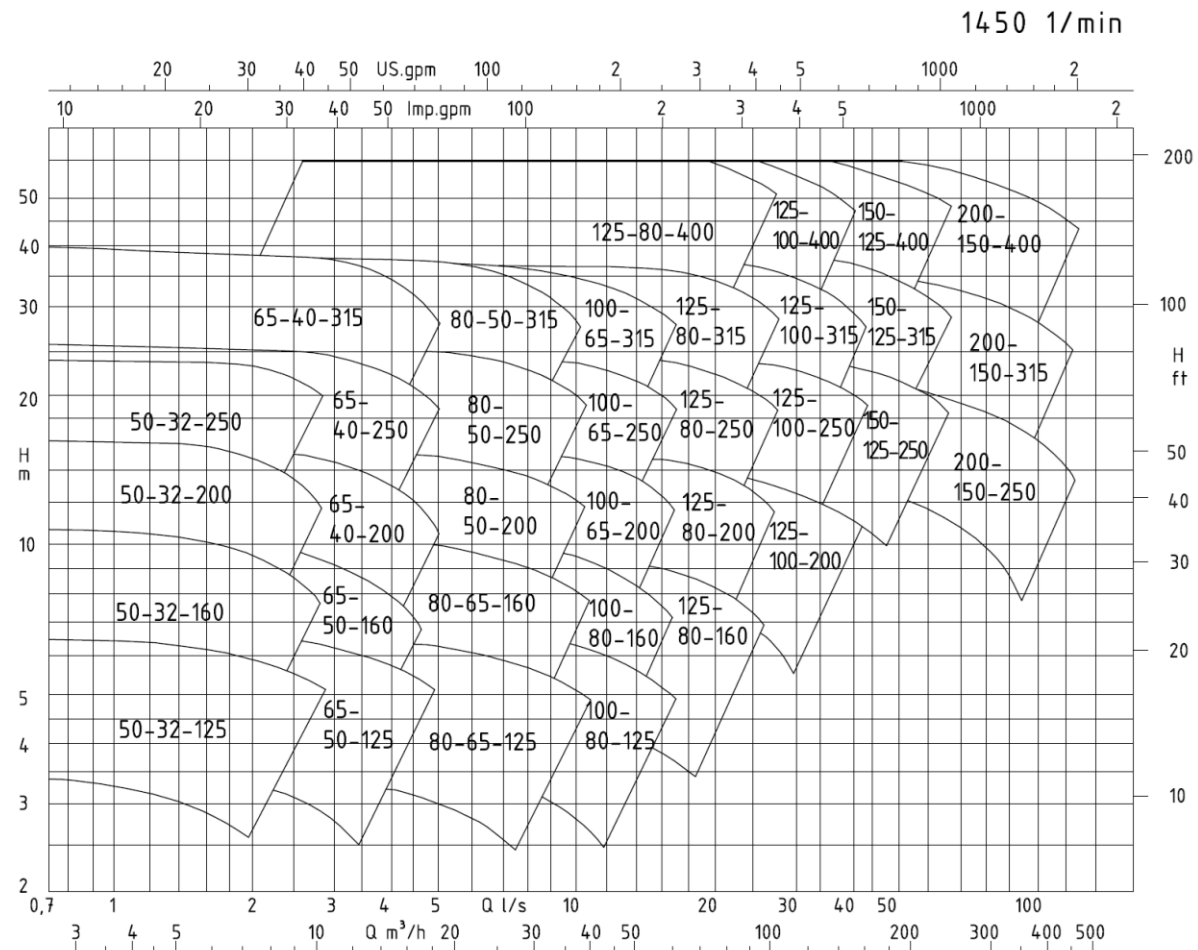
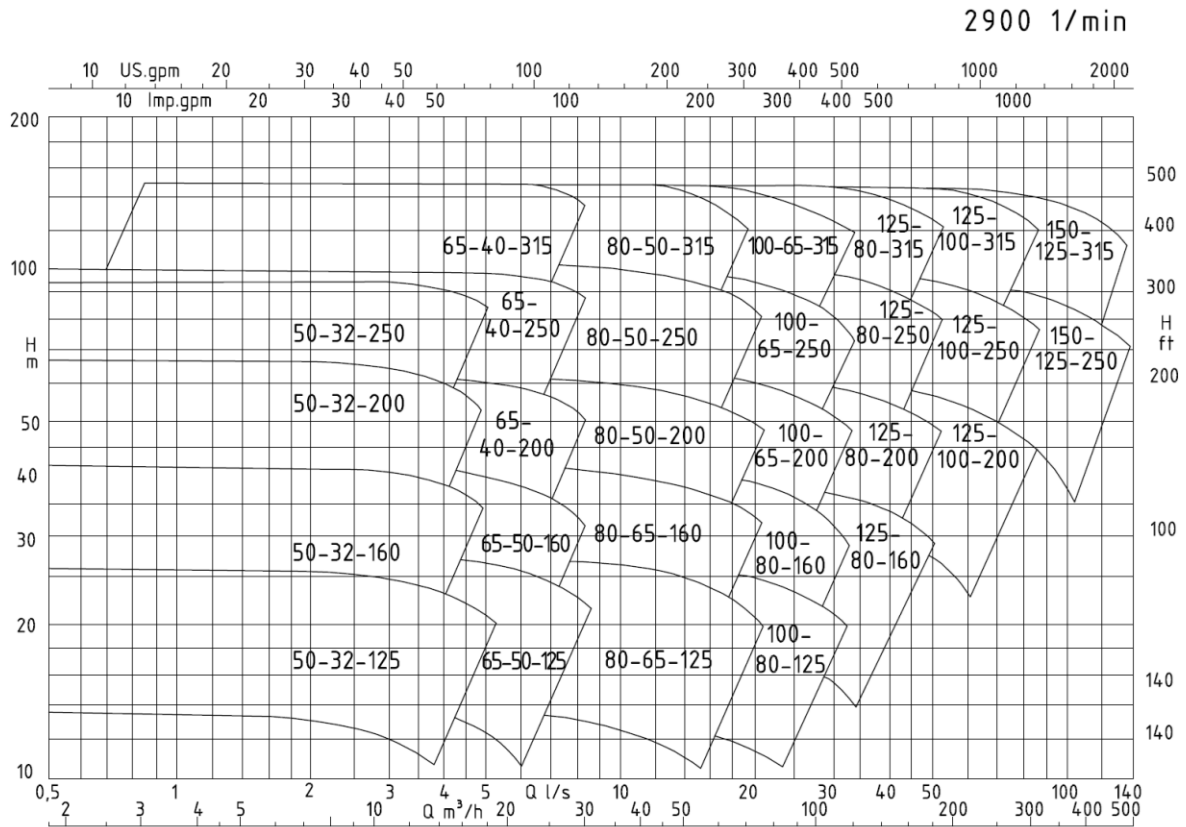
Certified quality management ISO 9001

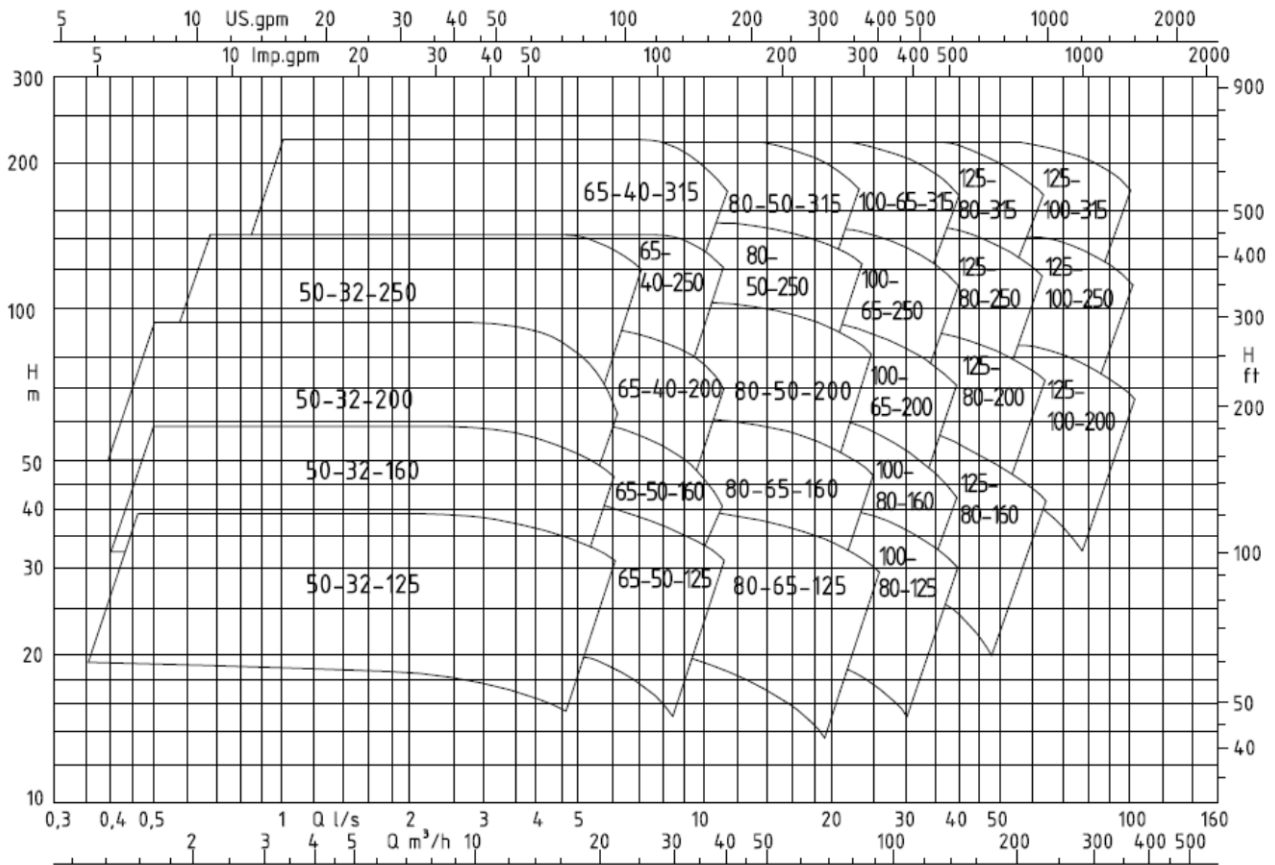
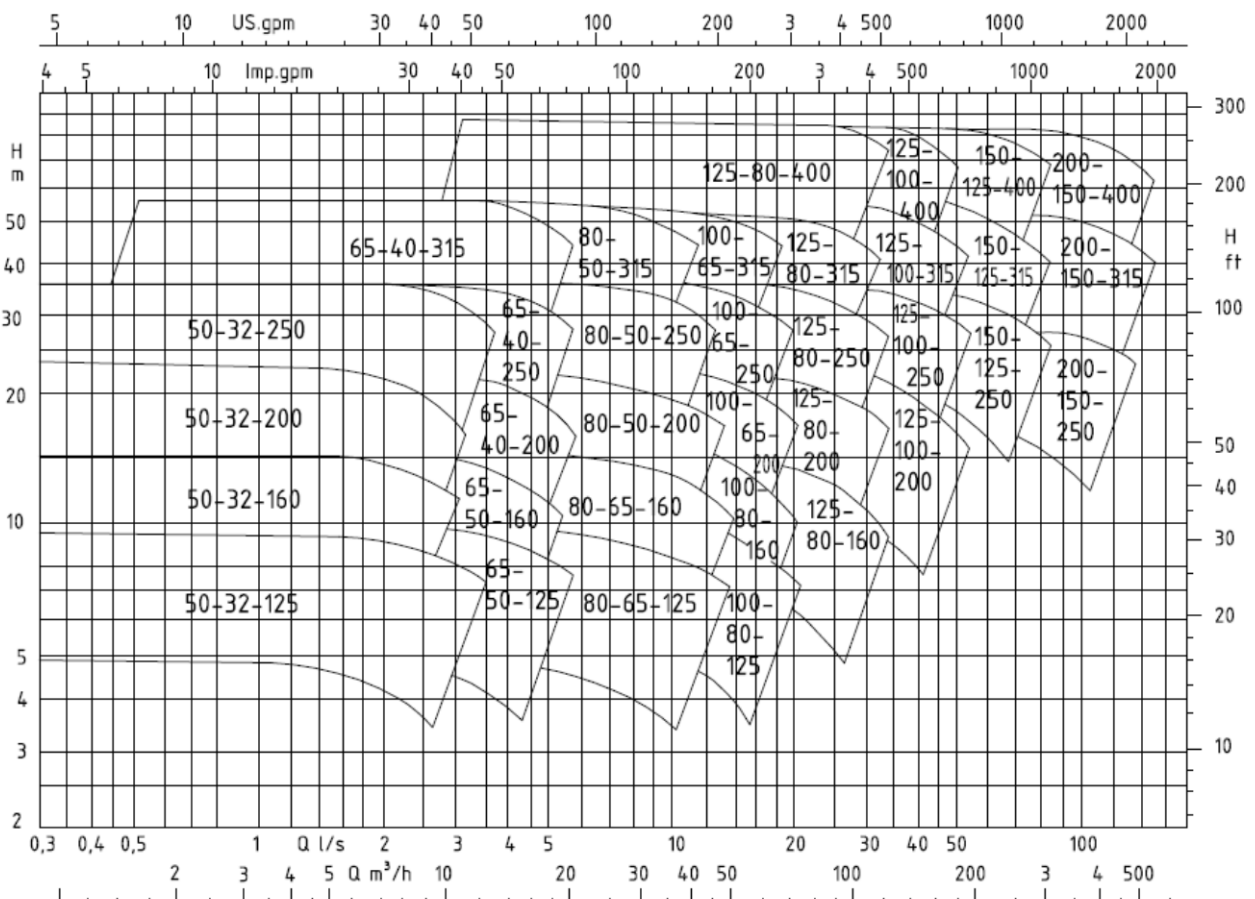
Part description	Material variant – standard programme			
	1	2	3	4
Volute casing	EN-GJL-250	CuAl10Fe5Ni5-C	GP240GH	GX5CrNiMoNb19-11-2
Casing cover	EN-GJL-250	CuAl10Fe5Ni5-C	GP240GH	GX5CrNiMoNb19-11-2
Impeller	EN-GJL-250	CuAl10Fe5Ni5-C	GP240GH	GX5CrNiMoNb19-11-2
Shaft	42CrMo4			X17CrNi16-2
Wearing ring	EN-GJL-250	CuAl10Fe5Ni5-C	GP240GH	GX5CrNiMoNb19-11-2
Shaft sleeve	X20Cr13			GX5CrNiMoNb19-11-2
Housing support	EN-GJL-250			
Bearing housing	EN-GJL-250			
Mech.seal cover	X17CrNi16-2			
Impeller nut	X17CrNi16-2			
Pedestal foot	EN-GJL-250			

Another combination of material are supplied at the customer's request.



Selection Charts



**3500 1/min**

**1750 1/min**


## IN pumps benefits

### Technical datas

#### Casing

Radially split, consisting of volute casing and casing cover.

The casing cover and the bearing bracket lantern form a chamber which can be used for heating and cooling depending of pump purpose.

#### Impeller

Impeller is keyed between two support roller bearings. Front support is one cylindrical roller bearing, and back supports are two ball bearings with obliquely contacts facing one to another.

Axial force is balanced with unburdening holes and wearing rings.

#### Shaft Seal

The shaft seal can be designed as a gland packing or a mechanical seal.

Conversion from gland to mechanical seal and vice versa is possible without any rework on the casing cover.

Mechanical seal are standard single and double seals according to standard DIN 24960.

#### Recommended Spare Parts Stock for Two years`operation

#### Acceptance Tests / Guarantees

- **Material tests**  
Test report 2.2 on request
- **Product tests**  
Inspection certificate 3.1, on request,for:  
pressure test of complete pump as per EN 10204
- **Hydraulic tests**  
Each pump is subjected to a performance test run, and its duty point is guaranteed according to ISO 9906 / 2A.
- **NPSH test**

Warranties are given within the scope of valid delivery conditions.

#### Forces and moments

IN pumps are designed for handling forces and moments in accordance with ISO 5199

#### Documentation

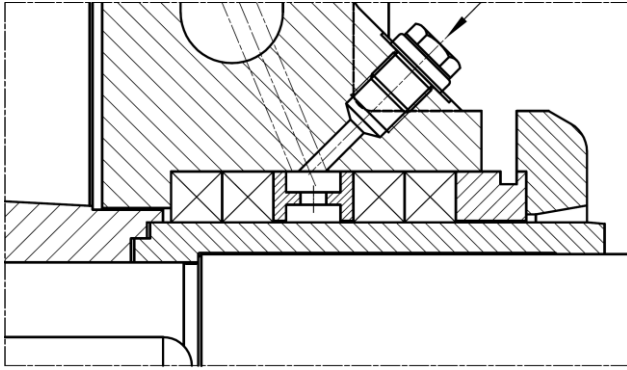
Delivered documentation with pump:

- Sectional drawing whit list of component
- Technical data sheet
- Installation plan / Measuring sketch
- Operating instructions

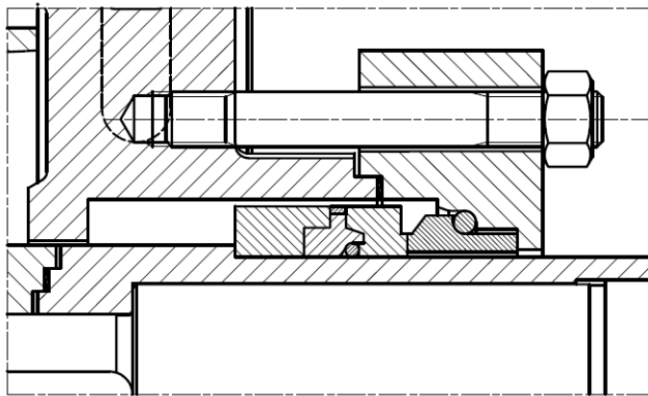
Pos. Nr.	Part Description	Number of pumps (including standby pumps)						
		2	3	4	5	6+7	8+9	10 and more
		Quantity of spare parts						
	Shaft	1	1	1	2	2	2	20%
	Impeller	1	1	1	2	2	2	20%
	Bearings with obliquely contact (set)	1	1	2	2	2	3	25%
	Roller bearing	1	1	2	2	2	3	25%
	Mechanical seal, set	1	1	2	2	2	3	25%
	Sealing ring	1	1	2	2	2	3	25%
	Gland packing	4	4	6	6	6	8	100%
	Casing wearing ring	2	2	2	3	3	4	50%
	Shaft sleeve	2	2	2	3	3	4	50%
	Sealing for pump casing (set)	4	6	8	8	9	12	150%
	Coupling (set)	1	1	2	2	3	4	30%

#### Example of Seal Arrangements:

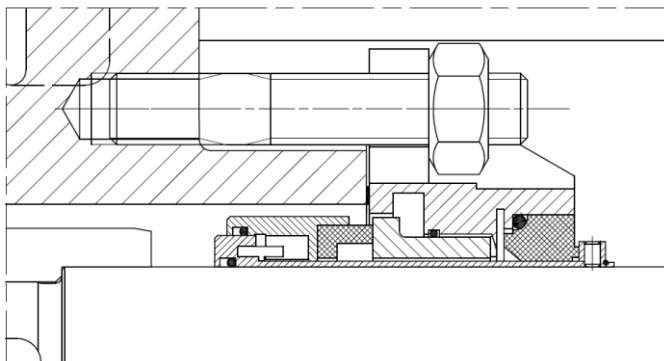
## 1. Gland packing



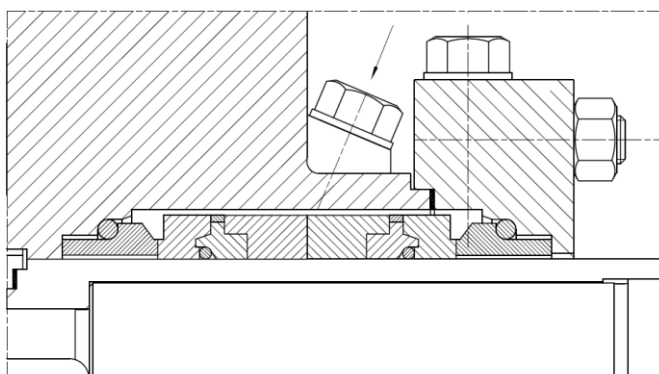
## 2. Cylindrical seal chamber

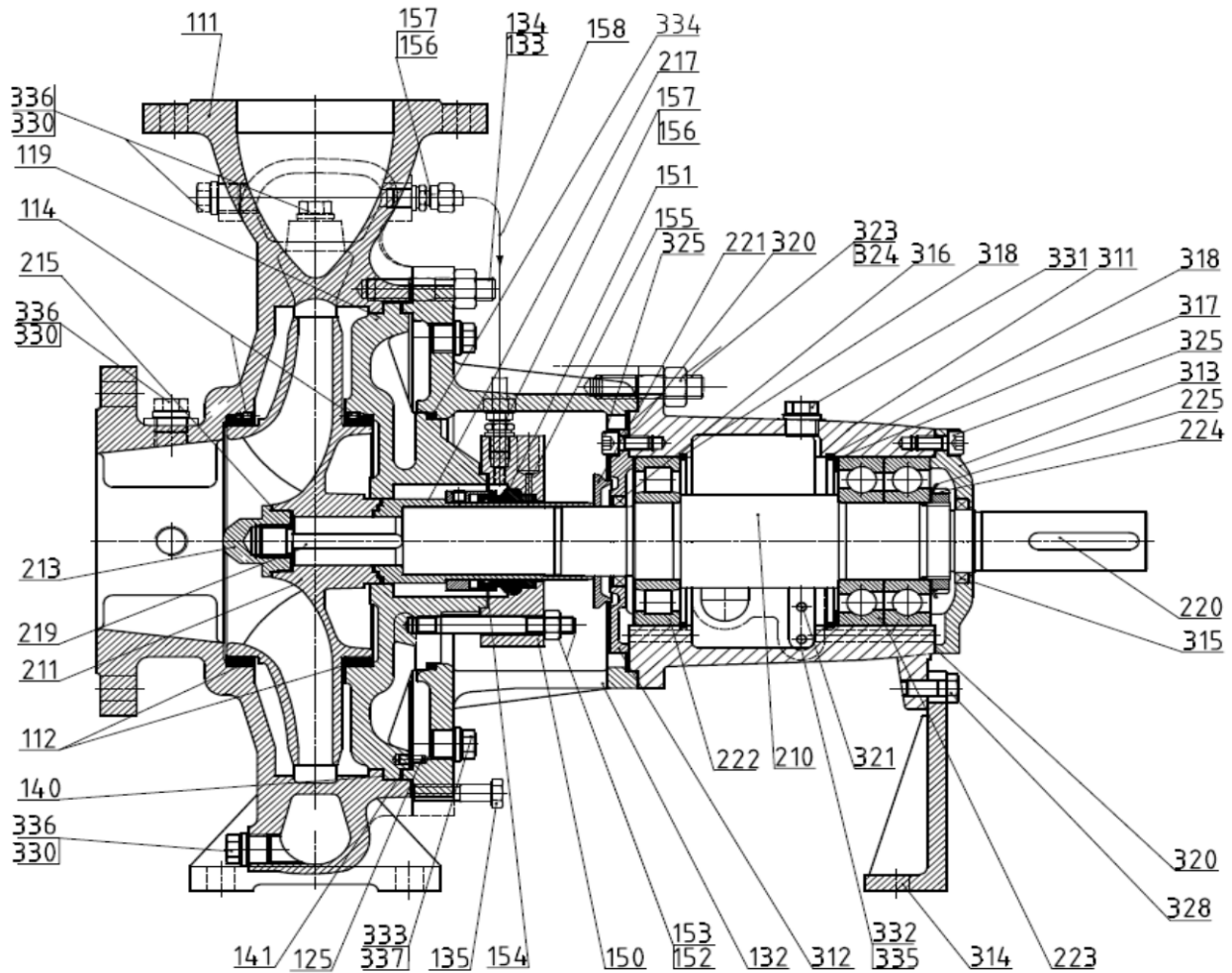


## 3. Cartridge seal



## 4. Double-acting mechanical seal



**Pumps section view with part list**

**IN Pumps Part list**

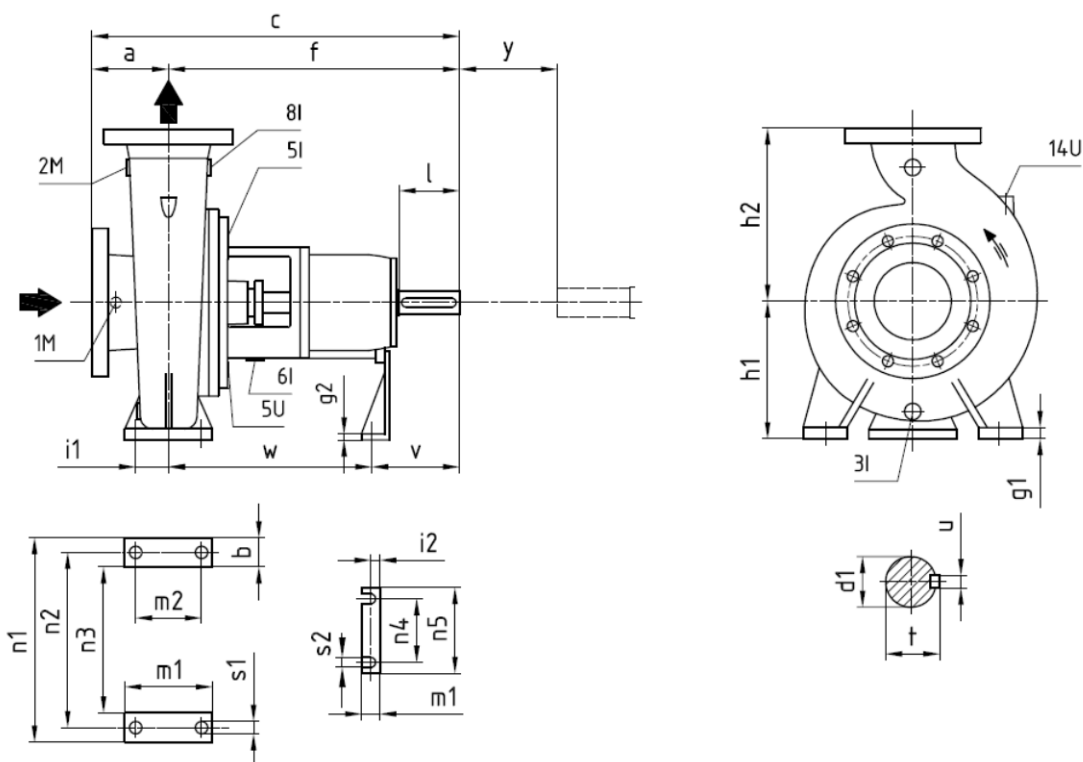
111	Volute casing	157	Sealing ring	316	Shaft seal
112	Wearing ring	158	Pipe	317	Distant ring
114	Screw	210	Shaft	318	Circlip
119	Casing cover	211	Impeller	320	Seal
125	Pin	213	Impeller nut	321	Oil level regulator
132	Housing support	215	Sealing ring	323	Screw
133	Screw	217	Mechanical seal sleeve	324	Nut
134	Nut	219	Shaft key	325	Screw
135	Screw	220	Shaft key	328	Screw
140	Seal	221	Centrifugalni odvajac	330	Plug
141	Seal	222	Bearing	331	Plug
150	Mechanical seal cover	223	Bearing	332	Plug
151	Mechanical seal	224	Nut	334	O-ring
152	Nut	225	Lock washer	333	Plug
153	Screw	311	Bearing housing	335	Sealing ring
154	Seal	312	Bearing cover	336	Sealing ring
155	Pin	313	Bearing cover	337	Sealing ring
156	Connection	314	Pump foot		
		315	Shaft seal		



Technical Data sheet

Technical data sheet		Pump sizes																																																																																																																																																																																																																																																																																																																																																																																																					
		See individual curve																																																																																																																																																																																																																																																																																																																																																																																																					
		Depends of pump construction type																																																																																																																																																																																																																																																																																																																																																																																																					
		NU 307										NU 308										NU 311										NU 313										NU 415																																																																																																																																																																																																																																																																																																																																																													
		2x 7907 BUA										2x 7307 BUA										2x 7311 BUA										2x 7313 BUA										2x 7316 BE																																																																																																																																																																																																																																																																																																																																																													
		50-32-125										50-32-160										50-32-200										50-32-250										50-50-125										50-50-160										50-50-200										50-50-250										65-40-125										65-40-160										65-40-200										65-40-250										80-50-125										80-50-160										80-50-200										80-50-250										80-50-315										100-80-125										100-80-160										100-80-200										100-80-250										100-80-315										100-65-315										125-80-315										125-80-400										125-100-250										125-100-315										125-100-400										125-100-450										125-125-250										125-125-315										125-125-400										150-150-250										150-150-315										150-150-400										200-150-315										200-150-400										250-200-400										300-250-500									
		Units																																																																																																																																																																																																																																																																																																																																																																																																					
Impeller	impeller outlet width bz	5,5	4	5,6	6,4	8	6,7	7,5	18	10	10	23	7	8	9,5	9	17	12	18	27	22	18	29	12	13	10	21,5	22	15	35	27	19	46	43	34	35	49																																																																																																																																																																																																																																																																																																																																																																		
	impeller inlet diameter	50	50	52	52	65	61	75	74	82	77	90	65	65	93	80	99	96	100	100	114	118	122	115	113	123	123	151	146	143	151	150	180	178	193	197	280																																																																																																																																																																																																																																																																																																																																																																		
	max. impeller diameter	135	165	209	254	130	165	209	135	164	209	135	260	320	260	320	209	260	164	169	209	260	209	320	320	320	409	320	408	260	320	404	260	324	409	410	519																																																																																																																																																																																																																																																																																																																																																																		
	min. impeller diameter																																																																																																																																																																																																																																																																																																																																																																																																						
Shaft diameter	in stuffing box housing	28	28	38	28	28	28	28	28	28	28	28	38	38	38	38	38	38	38	38	38	38	38	48	48	45	48	48	48	48	48	48	48	58	58	58	70																																																																																																																																																																																																																																																																																																																																																																		
	at bearings	35	35	35	35	35	35	35	35	35	35	35	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	58																																																																																																																																																																																																																																																																																																																																																																		
	standard shaft	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	40																																																																																																																																																																																																																																																																																																																																																																		
	at coupling	24	24	24	32	24	24	24	24	24	24	24	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	40																																																																																																																																																																																																																																																																																																																																																																		
Shaft protective sleeve	packing	38	38	38	45	38	38	38	38	38	38	38	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45																																																																																																																																																																																																																																																																																																																																																																		
	mechanical seal																																																																																																																																																																																																																																																																																																																																																																																																						
Bearings	standard																																																																																																																																																																																																																																																																																																																																																																																																						
	at pump end																																																																																																																																																																																																																																																																																																																																																																																																						
	at motor end																																																																																																																																																																																																																																																																																																																																																																																																						
Stuffing box housing	hole diameter	58	58	58	65	58	58	58	58	58	58	58	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65																																																																																																																																																																																																																																																																																																																																																																		
	hole length	62	62	60	63	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62																																																																																																																																																																																																																																																																																																																																																																		
	stuffing box ring width	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10																																																																																																																																																																																																																																																																																																																																																																		
Shaft deflection		At 0,05mm at the shaft seal, max shaft deflection is in compliance with ISO 5199																																																																																																																																																																																																																																																																																																																																																																																																					
Pressure limit	max. operating pressure	Depends on material																																																																																																																																																																																																																																																																																																																																																																																																					
	max. test pressure	1.5x max. Permissible pump discharge pressure																																																																																																																																																																																																																																																																																																																																																																																																					
Temp. limitation	max. product temperature	Depends on material																																																																																																																																																																																																																																																																																																																																																																																																					
Drive		Depends on material and temperature-on request																																																																																																																																																																																																																																																																																																																																																																																																					

### Dimensions and Connections



y=distance required for dismantling of the rotor without removing el.motor

### Dimensions

Veličina pumpe	Naz. otvor		Dimenzije pumpe (mm)																											
	Usis	tlak	a	b	c	f	g1	g2	h1	h2	m1	m3	m	n3	n5	dk6	l	t	u	y	i1	i2	m2	n2	n4	s1	s2	v	w	
50-32-125	50	32	80	50	465	385	12	8	112	140	100	45	190	90	160	24	50	27	8	100	35	28	70	140	110	14	14	100	285	
50-32-160			80	50	465	385	14	8	132	160	100	45	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285	
50-32-200			80	50	465	385	14	8	160	180	100	45	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285	
50-32-250			100	65	600	500	16	8	180	225	125	47	320	190	160	32	80	35	10	100	42,5	30	95	250	110	14	14	130	370	
65-50-125			65	50	80	50	465	385	12	8	112	140	100	45	210	110	160	24	50	27	8	100	35	28	70	160	110	14	14	100
65-50-160	80	50			465	385	14	8	132	160	100	45	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285	
65-40-200	100	50			485	385	14	8	160	180	100	45	265	165	160	24	50	27	8	100	35	28	70	212	110	14	14	100	285	
65-40-250	100	65			600	500	16	8	180	225	125	47	320	190	160	32	80	35	10	100	47,5	30	95	250	110	14	14	130	370	
65-40-315	125	65			625	500	18	8	200	250	125	47	345	215	160	32	80	35	10	100	47,5	30	95	280	110	14	14	130	370	
80-65-125	80	65	100	50	485	385	14	8	132	160	100	45	240	140	160	24	50	27	8	100	35	28	70	190	110	14	14	100	285	
80-65-160			100	50	485	385	14	8	160	180	100	45	265	165	160	24	50	27	8	100	35	28	70	212	110	14	14	100	285	
80-50-200			100	50	485	385	14	8	160	200	100	45	265	165	160	24	50	27	8	100	35	28	70	212	110	14	14	100	285	
80-50-250			125	65	625	500	16	8	180	225	125	47	320	190	160	32	80	35	10	100	47,5	30	95	250	110	14	14	130	370	
80-50-315			125	65	625	500	18	8	225	280	125	47	345	215	160	32	80	37	10	100	47,5	30	95	280	110	14	14	130	370	
100-80-125	100	80	100	65	485	385	14	8	160	180	125	45	280	150	160	24	50	27	8	100	47,5	28	95	212	110	14	14	100	285	
100-80-160			100	65	600	500	15	8	160	200	125	47	280	150	160	32	80	35	10	100	47,5	30	95	212	110	14	14	130	370	
100-65-200			100	65	600	500	16	8	180	225	125	47	320	190	160	32	80	35	10	140	47,5	30	95	250	110	14	14	130	370	
100-65-250			125	80	625	500	18	8	200	250	160	47	360	200	160	32	80	35	10	140	60	30	120	280	110	18	14	130	370	
100-65-315			125	80	625	530	18	12	225	280	160	52	400	240	160	42	110	45	12	140	60	33	120	315	110	18	14	160	370	
125-80-160	125	80	125	65	625	500	15	8	180	225	125	47	320	190	160	32	80	35	10	140	47,5	30	95	250	110	14	14	130	370	
125-80-200			125	65	625	500	16	8	180	250	125	47	345	215	160	32	80	35	10	140	47,5	30	95	280	110	14	14	130	370	
125-80-250			125	80	625	500	18	8	225	280	160	47	400	240	160	32	80	35	10	140	60	30	120	315	110	18	14	130	370	
125-80-315			125	80	655	530	18	12	250	315	160	52	400	240	160	42	110	45	12	140	60	33	120	315	110	18	14	160	370	
125-80-400			125	80	655	530	20	12	280	355	160	52	435	275	160	42	110	45	12	140	60	33	120	355	110	18	14	160	370	
125-100-200	125	100	125	80	625	500	16	8	200	280	160	47	360	200	160	32	80	35	10	140	60	30	120	280	110	18	14	130	370	
125-100-250			140	80	670	530	18	12	225	280	160	52	400	240	160	42	110	45	12	140	60	33	120	315	110	18	14	160	370	
125-100-315			140	80	670	530	18	12	250	315	160	52	400	240	160	42	110	45	12	140	60	33	120	315	110	18	14	160	370	
125-100-400			140	100	670	530	20	12	280	355	200	52	500	300	160	42	110	45	12	140	75	33	150	400	110	23	14	160	370	
150-125-250			150	125	140	80	670	530	18	12	280	355	160	52	400	240	160	42	110	45	18	140	60	33	120	315	110	18	14	160
150-125-315	140	100			670	530	20	12	280	355	200	52	500	300	160	42	110	45	12	140	75	33	150	400	110	23	14	160	370	
150-125-400	140	100			670	530	20	12	315	400	200	52	500	300	160	42	110	45	12	140	75	33	150	400	110	23	14	160	370	
200-150-250	200	150	160	100	690	530	20	12	280	375	200	52	500	300	160	42	110	45	12	180	75	33	150	400	110	23	14	160	370	
200-150-315			160	100	830	670	22	12	315	400	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	
200-150-400			160	100	830	670	22	12	315	450	200	60	550	350	200	48	110	51	14	180	75	39	150	450	140	23	18	170	500	

