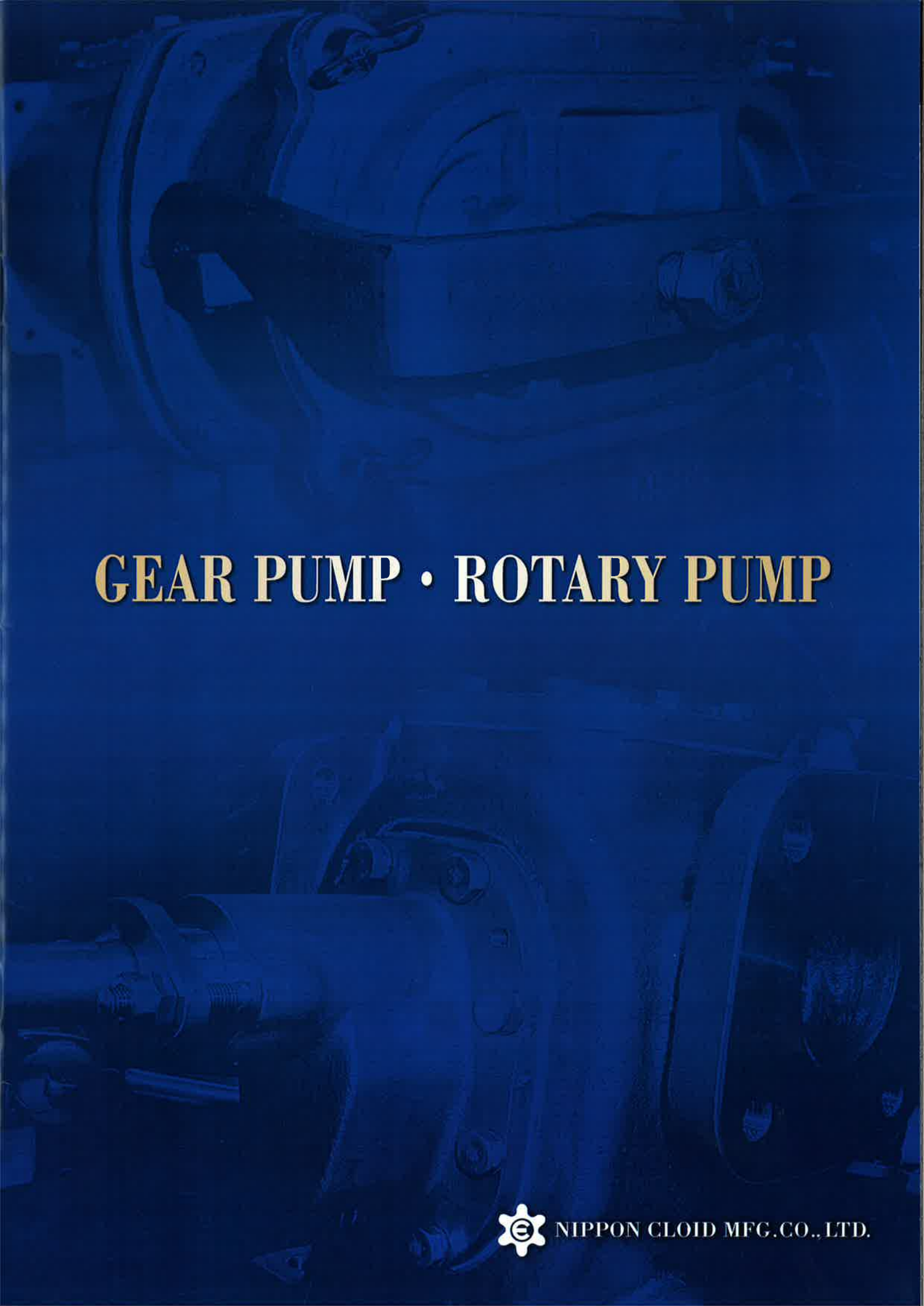

GEAR PUMP · ROTARY PUMP

NIPPON CLOID MFG.CO.,LTD.

Cloid Gear Pump and Cloid Rotary Pump have high reputation in all fields of industry since its launch for performance, durability, ease of use and economic efficiency.

For Cloid Gear Pump, we have adopted shape of Ellicloid tooth profile with one point contact continuous curve which is developed specially for fluid transportation.

In addition, it has become double helical gear which combines 2 helical gears, fluid can be passed with high efficiency and that with less vibrations and low noise.

Also, Cloid Rotary Pumps have the structure to pass high viscosity fluid which cannot be passed by the gear, and also to pass a fluid including solid material. Rotary pump is widely adopted in all fields of industry similar to gear pump.

Main Office / Assembly Center

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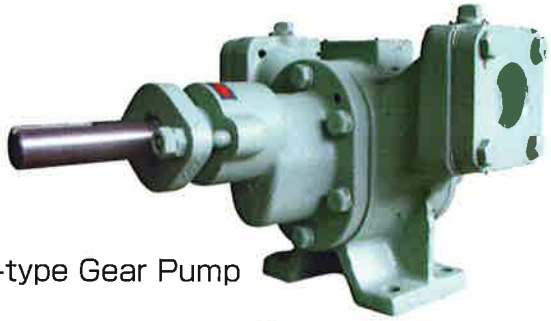
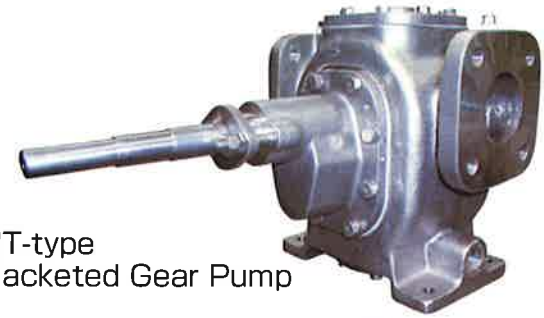
Akanehama Technical Center

Higashi-Narashino Machine Center

Gear Pump



T-type Gear Pump



JT-type
Jacketed Gear Pump

RT-type Gear Pump with Relief Valve

RJT-type Jacketed Gear Pump with Relief Valve

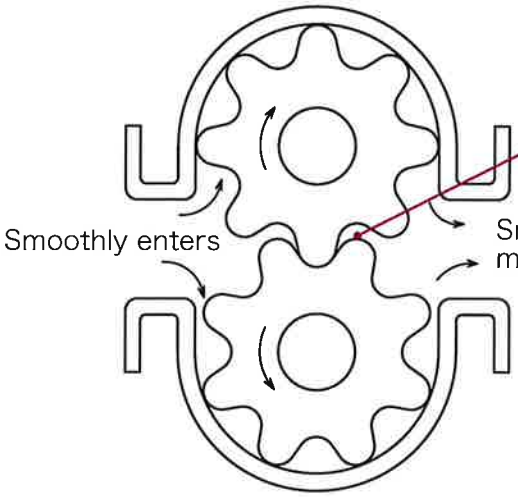
Rotary Pump

W-type Rotary Pump

JW-type
Jacketed Rotary Pump

Features of Ellicloid Gear

Ellicloid Tooth Profile



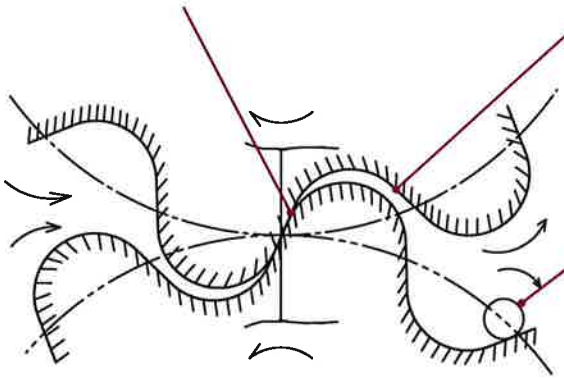
It does not get locked

- Not turn to abnormal high pressure
- Not turn to abnormal vacuum

- Unlikely to change fluid quality
- Less likely to generate air bubbles
- Less vibration noise
- Able to pass high viscosity fluid
- Not efficient in the low viscosity fluid and high pressure

Smooth due to one point contact continuous curve

- Less pulsation in helical gear hence smoother
- Stable due to double helical hence smoother



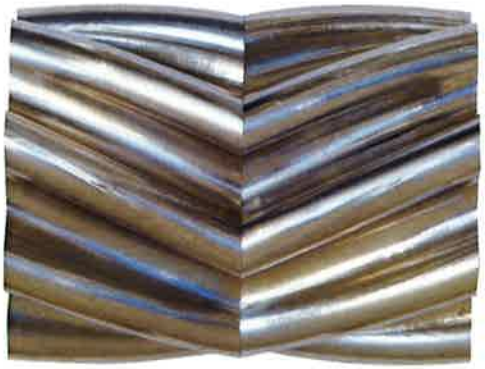
Further stable due to double helical gear

This smooth curve treats the fluid gently

- Not cutting the fluid
- Difficult to change fluid quality

Contact like rolling over ring (ball) along this curve

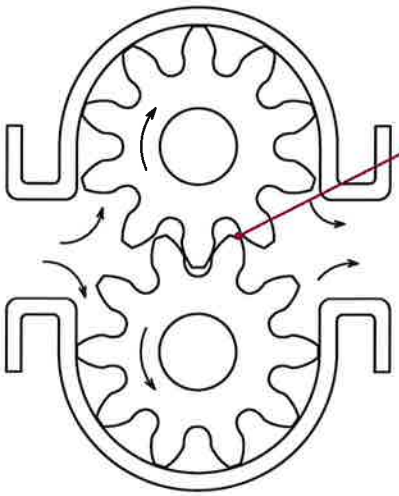
- Ratio of slipping the tooth is extremely low
- 1/20 or less of involute
- Torque fluctuations are less
- Excellent abrasion resistance
- Excellent durability



Ellicloid Tooth Profile
(Enlarged view)

Features of Involute Gear

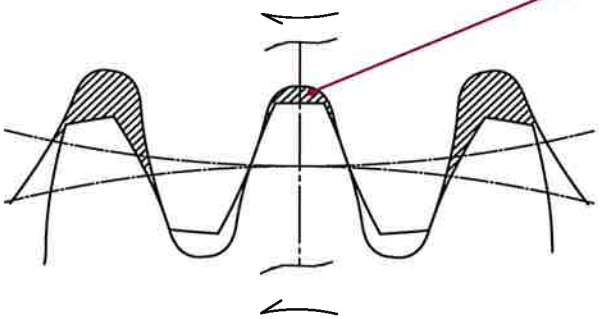
Involute Tooth Profile



It gets locked

- Easily turn into abnormal high pressure
- Easily turn into abnormal vacuum

- Fluid quality can change
- Easily forms air bubbles

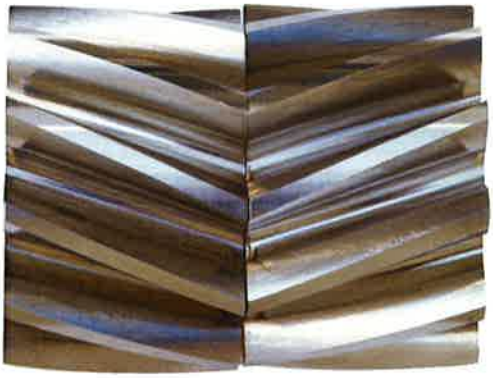


This sharp angle shape easily cuts the fluid

- Easily gets locked
- Easily changes fluid quality
- Efficient in the low viscosity fluids

- Reduces phenomenon of locking using helical gear

Involute Tooth Profile (Enlarged view)



Involute Tooth Profile
(Enlarged view)

Performance Table

Type			Pump Acceptable Revolutions(min-1)					Maximum Speed	Maximum Pressure
			300	500	750	1,000	1,500		
T	JT	RT	Discharge Rate(lit/min)					min-1	MPa
T-04			6	10	15	20	30	1,500	1
T-06		RT-06	12	20	30	40	60	1,500	1
T-10	JT-10	RT-10	30	50	75	100	150	1,500	1
T-14	JT-14	RT-14	45	75	110	150	225	1,500	1
T-20	JT-20	RT-20	60	100	150	200	300	1,500	1
T-24	JT-24	RT-24	90	150	225	300	—	1,200	1
T-30	JT-30	RT-30	150	250	375	500	—	1,200	1
T-40	JT-40	RT-40	210	350	525	700	—	1,200	1
T-50	JT-50	RT-50	270	450	675	900	—	1,200	1
T-60	JT-60	RT-60	450	750	1,125	1,500	—	1,200	1
T-70		RT-70	720	1,200	—	—	—		1
T-100		RT-100	1,350	2,250	—	—	—		1

※ Above is the outline. Maximum speed as well as pressure may vary depending on the viscosity, so for more details, arrange meeting.

Material Quality

Parts Name	Standard Material Quality		Other Material Quality
Casing	FC250	SCS13	SCS14,SCS16,FCD,SCPH
Gear	S45C	SUS304	SUS316,SUS316L,SACM,SUS440C
Shaft	S45C	SUS304	SUS316,SUS316L,SACM
Axle bearing	BC	Carbon	Teflon, Ceramic

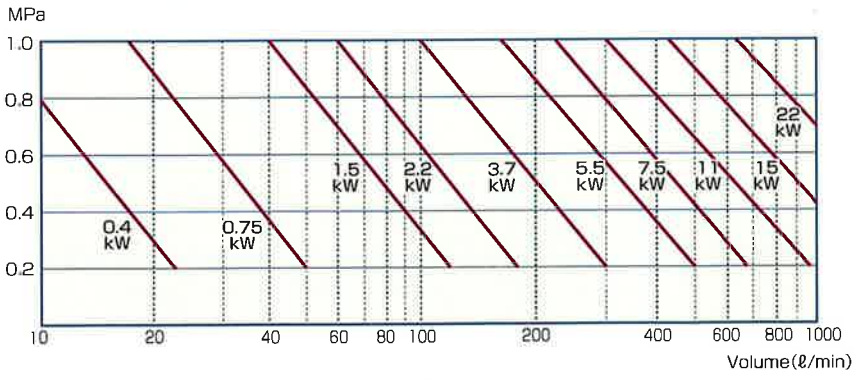
Applicable Fluid

■ **Viscosity**
More than 1 to 1 million cP

■ **Temperature**
-40~400℃

■ **Type of Fluid**
Each field like food product, chemical

Required Power



※Above is the outline, so for more details, arrange a meeting.

Selection of Pump according to Viscosity

Type			Pump Acceptable Revolutions(min-1) Viscosity(cP)				
T	JT	RT	100	1,000	5,000	10,000	100,000
T-04			1,200	1,000	800	700	400
T-06		RT-06	1,200	1,000	800	700	400
T-10	JT-10	RT-10	1,200	900	550	450	250
T-14	JT-14	RT-14	1,200	800	500	400	200
T-20	JT-20	RT-20	1,200	800	500	400	200
T-24	JT-24	RT-24	1,200	700	450	350	200
T-30	JT-30	RT-30	1,000	600	400	300	200
T-40	JT-40	RT-40	1,000	500	350	300	200
T-50	JT-50	RT-50	1,000	500	350	300	200
T-60	JT-60	RT-60	1,000	400	300	250	150
T-70		RT-70	450	350	250	200	100
T-100		RT-100	400	300	200	150	100

※ Pump acceptable revolutions may vary depending on the viscosity, fluid as well as depending on the pressure. Accordingly, discharge rate also varies so for details, please inquire.

Surface hardening

(1)Surface Finishing

1.Kanigen plating
2.Ceramic Kanigen plating
3.Chrome plating
4.Ceramic spraying

(2)Hardening Process

1.Nitriding
2.Nitrocarburizing

Shaft Seal (Seal)

It is necessary to select the method of shaft seal

(1)Gland Packing Method

1.Gland packing
2.Combination of gland packing and sealing

(2)Mechanical Seal Method

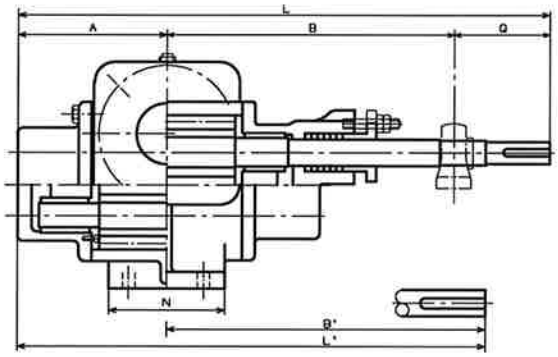
1.Single mechanical seal
2.Combination of single mechanical seal and oil seal
3.Double mechanical seal (includes cassette method)

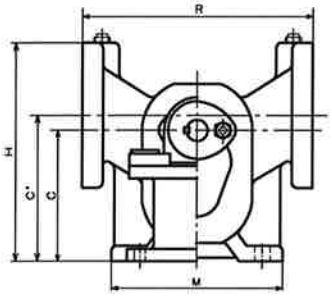
(3)Oil Seal Method

For above three methods, we offer various types and material quality from each manufacturer.

T-type Gear Pump

Standard Pump





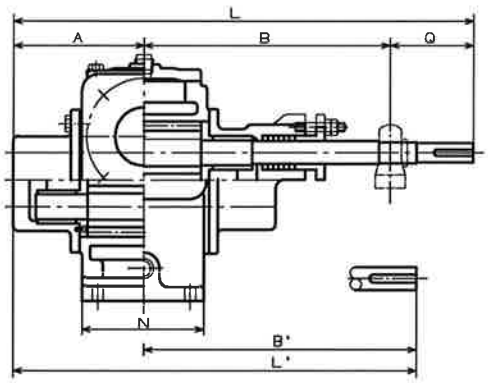
■Dimensions Table ……T-type Pump (Main unit) Structure

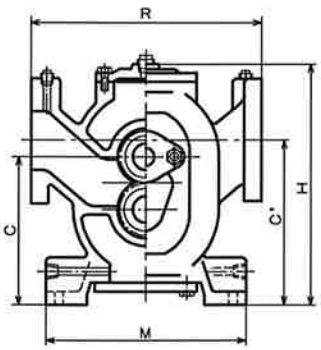
Type	Standard Nozzle		A	B	B'	C	C'	H	L	L'	M	N	Q	R
	Inlet	Outlet												
T-04	20	20	67	231	181	90	98	132	298	244	90	82	—	110
T-06	40	25	97	198	233	110	130	170	369	330	120	80	74	190
T-10	50	40	108	231	246	120	140	185	410	354	160	86	71	220
T-14	65	50	143	283	306	140	160	220	525	449	186	122	99	250
T-20	65	50	158	298	321	140	160	235	555	479	186	122	99	250
T-24	80	65	167	356	370	150	170	250	638	537	200	152	115	300
T-30	100	80	178	383	389	170	190	280	683	567	240	176	122	300
T-40	125	100	202	461	515	180	200	304	797	717	240	200	134	320
T-50	125	100	202	461	515	180	200	304	797	717	240	200	134	320
T-60	150	150	250	482	540	220	240	370	930	790	290	250	175	370

※3/4" screw holes in the flange part for T-04 type
※Square flange

JT-type Gear Pump

Jacketed Pump





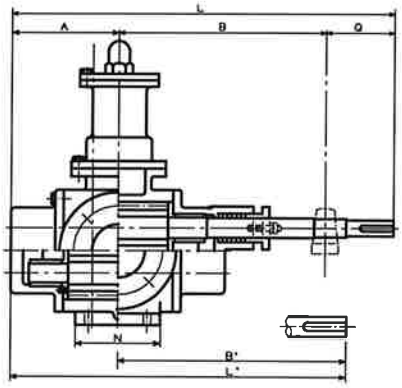
■Dimensions Table ……JT-type Pump (Main unit) Structure

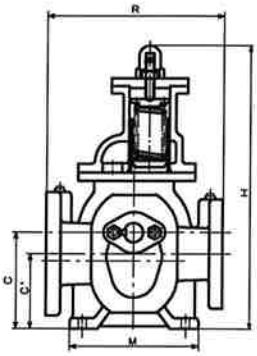
Type	Standard Nozzle		A	B	B'	C	C'	H	L	L'	M	N	Q	R
	Inlet	Outlet												
JT-10	50	40	115	233	246	163	163	265	417	361	224	104	71	190
JT-14	65	50	158	298	321	180	200	298	555	479	240	148	99	280
JT-20	65	50	158	298	321	180	200	298	555	479	240	148	99	280
JT-24	80	65	167	356	370	200	220	323	638	537	280	156	115	320
JT-30	100	80	178	383	389	230	250	363	683	567	310	176	122	340
JT-40	125	100	202	461	515	235	255	382	797	717	310	200	134	360
JT-50	125	100	202	461	515	235	255	382	797	717	310	200	134	360
JT-60	150	150	250	482	540	240	221	380	930	790	330	264	180	380

※Square flange

RT-type Gear Pump

Pump with Relief Valve



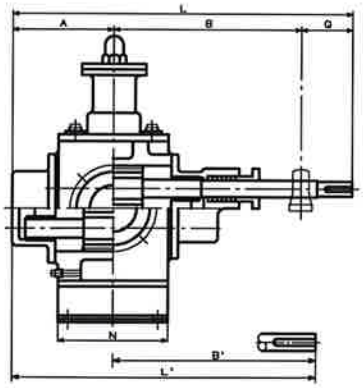


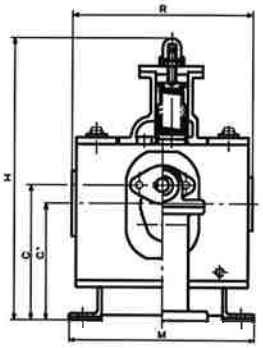
■Dimensions Table ……RT-type Pump (Main unit) Structure

Type	Standard Nozzle		A	B	B'	C	C'	H	L	L'	M	N	Q	R
	Inlet	Outlet												
RT-06	40	25	97	198	233	110	92	263	369	330	120	80	74	168
RT-10	50	40	108	231	246	120	94	310	410	354	160	86	71	220
RT-14	65	50	158	298	321	140	108	398	555	479	186	122	99	250
RT-20	65	50	158	298	321	140	108	398	555	479	186	122	99	250
RT-24	80	65	167	356	370	150	116	427	638	537	200	152	115	300
RT-30	100	80	178	383	389	170	128	485	683	567	240	176	122	300
RT-40	125	100	202	461	515	180	138	523	797	717	240	200	134	320
RT-50	125	100	202	461	515	180	138	523	797	717	240	200	134	320
RT-60	150	150	250	482	540	220	220	640	930	790	290	250	175	380
RT-70	200	200	315	564	680	300	280	750	1,055	995	380	350	176	450
RT-100	200	200	360	710	750	320	310	880	1,235	1,110	460	420	165	600

RJT-type Gear Pump

Jacketed Pump with Relief Valve





■Dimensions Table ……RJT-type Pump (Main unit) Structure

Type	Standard Nozzle		A	B	B'	C	C'	H	L	L'	M	N	Q	R
	Inlet	Outlet												
RJT-10	50	40	139	262	277	192.5	166	389	472	416	272	152	71	264
RJT-14	65	50	180	320	343	235.5	203	493	599	523	330	198	99	300
RJT-20	65	50	180	320	343	235.5	203	493	599	523	330	198	99	300
RJT-30	100	80	205	410	416	267	225	590	737	621	400	238	122	390
RJT-40	125	100	220	479	416	267	225	590	833	753	400	248	134	420
RJT-50	125	100	220	479	533	286	244	619	833	753	400	248	134	420

Features

Rotary pump is more suitable than gear pump for the transfer of fluids having very high viscosity,fluids including solid substances and sensitive fluids not favoring the metallic contact.

Types of fluids that can be transferred

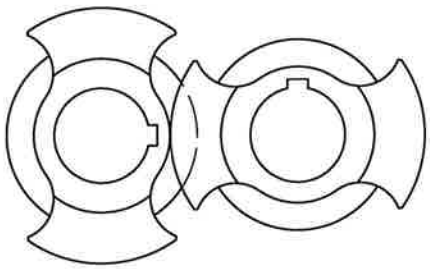
- Slurry
- Emulsion
- Fluids with very high viscosity
- Semi-solid solutions
- Fluids containing solid substances
- Fluids not well-suited for low viscosity and high pressure

Features of Rotary Pumps

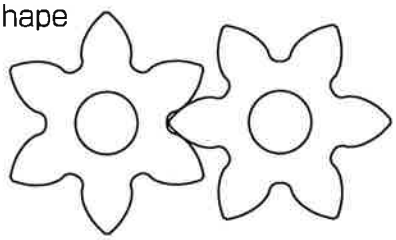
- External bearing structure
- No wetted metal contact
- Excellent abrasion resistant
- Excellent durability
- Less noise and vibrations
- Easy to decompose and assemble
- Sanitary structure

Rotor Shape

●Fan Shape

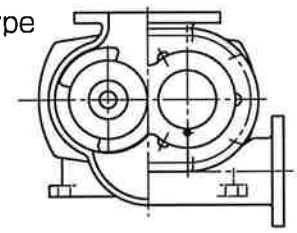


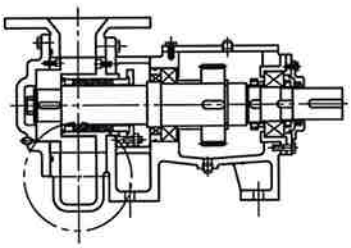
●Star Shape



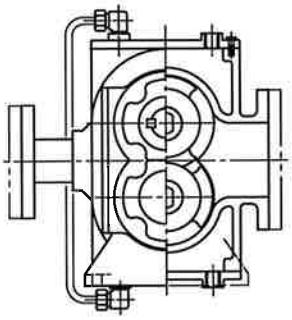
Shapes

●Standard Type

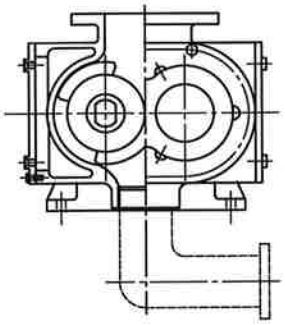




●Jacket Vertical Type



●Jacket Horizontal Type



Specifications of Rotary Pump

Type		Nozzle		Maximum Pressure MPa	Theoretical Discharge Rate Lit / 1 revolution
		Inlet	Outlet		
W-25	JW-25	100A-5k	50A-10k	1.0	0.26
W-40	JW-40	100A-5k	50A-10k	1.0	0.39
W-50	JW-50	125A-5k	65A-10k	1.0	0.55
W-70	JW-70	125A-5k	65A-10k	1.0	0.75
W-100	JW-100	125A-5k	80A-10k	1.0	1.1
W-200	JW-200	125A-5k	80A-10k	1.0	2.0
W-300	JW-300	150A-10k	125A-10k	1.0	3.2
W-600		200A-10k	150A-10k	1.0	6.0
W-1000		300A-10k	200A-30k	3.0	10.0

※W, JW-type : Made of Iron ※SW, JSW-type: Made of Stainless-steel

Applicable Fluid

- **Viscosity**
  More than 1 to 1 million cP
- **Temperature**
  -40~400℃
- **Types of Fluid**
  Each field like food products, chemicals

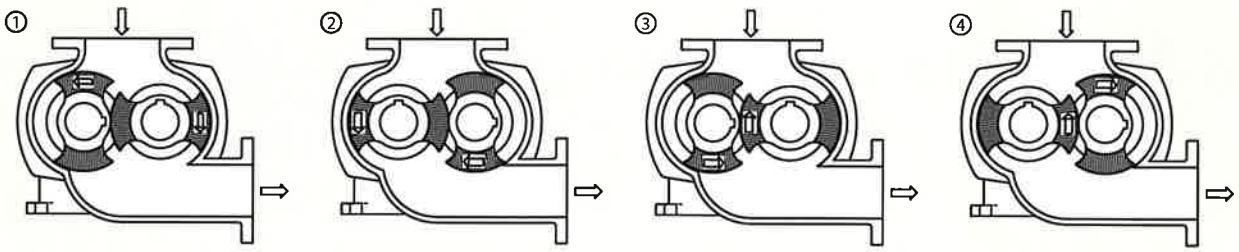
Material Quality

Parts Name	Standard Material Quality		Other Material Quality
Casing, cover	FC250	SCS13	SCS14、SCS16、SC
Rotor	FCD400	SCS13	SCS14、SCS16
Shaft	S45C	SUS304	SUS316、SUS316L、SUS440C
Axle bearing	Bearing		

Fundamental Rules of Transfer

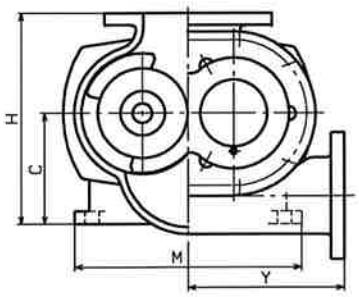
With the rotation of the rotor, the pressure in the inlet side gets lowered and fluid enters. Next with the rotation of the rotor, along inside the casing, the fluid moves to the outlet (discharge) side. Further, part of the blades of the rotor is operated and fluid will be discharged from the pump.

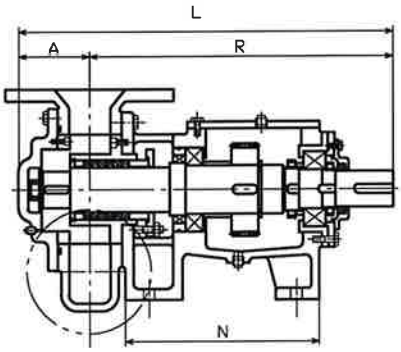
Fundamental Rules of Transfer



W-type

Standard Pump



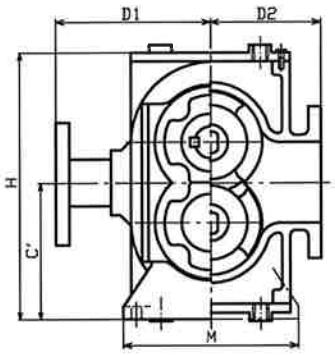


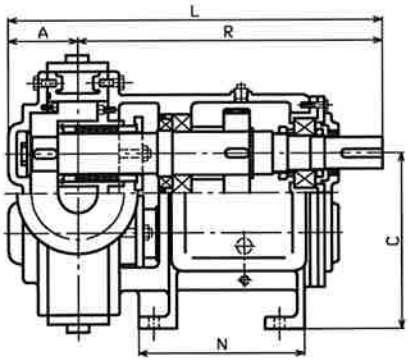
■Dimensions Table ……W-type Pump (Main unit) Structure

Type	Standard Nozzle		A	R	L	C	H	N	M	Y
	Inlet	Outle								
W-25/40	100	50	88	394	482	146	286	250	272	200
W-50/70	125	65	99	429	528	155	295	275	316	220
W-100	125	80	122	451	573	155	295	275	316	220
W-200	125	80	142	492	634	165	330	285	330	230
W-300	150	125	163	542	705	200	400	310	400	270
W-600	200	150	200	735	935	285	555	377	520	550

JW-type

Pump with Jacket (Type in which fluid is flowing from right to left)



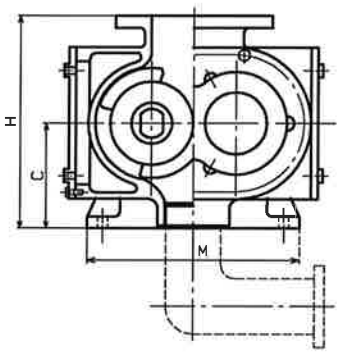


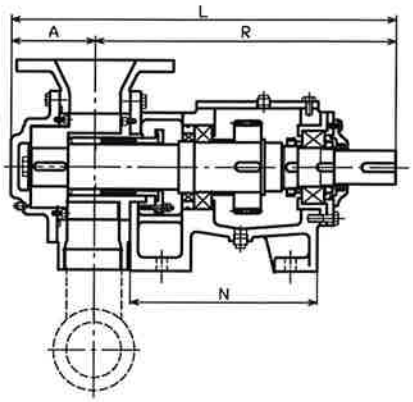
■Dimensions Table ……JW-type Pump (Main unit) Structure

Type	Standard Nozzle		A	R	L	C	C'	H	N	M	D1	D2
	Inlet	Outle										
JW-25/40	100	50	88	394	482	230	176	352	200	230	200	140
JW-50/70	125	65	122	451	573	315	252	438	275	300	220	160
JW-100	125	80	122	451	573	315	252	438	275	300	220	160
JW-200	125	80	142	495	673	315	244	443	285	330	250	180
JW-300	150	125	169	542	711	345	261	557	310	350	300	200

JW-type

Pump with Jacket (Type in which fluid is flowing from top to bottom)





■Dimensions Table ……JW-type Pump (Main unit) Structure

Type	Standard Nozzle		A	R	L	C	H	N	M
	Inlet	Outle							
JW-25/40	100	50	88	394	482	146	286	250	272
JW-50/70	125	65	99	429	528	155	295	275	316
JW-100	125	80	122	451	573	155	295	275	316
JW-200	125	80	142	492	634	165	330	285	330
JW-300	150	125	163	542	705	200	400	310	400
JW-600	200	150	200	735	935	285	555	377	520

Special Pumps

5W-type Rotary Pump

■Features

It is used for transport and supply of highly viscous food(viscous body). By installing degasifier to pusher (hopper), fluid with high viscosity can be easily transported.

■Performance

Type	Nozzle	Maximum Discharge Pressure(MPa)	Discharge Rate (L/rev)
5W82	2.5B	1.0	1.0
5W52	2.5B	1.0	0.6

DSW-1000-type Rotary Pump

■Features

Transport of fluid with very high viscosity (1 million cP) is possible.
Maximum discharge pressure is 3.0MPa, discharge rate is 10ℓ / rev.

■Performance

Type	Nozzle	Maximum Discharge Pressure(MPa)	Discharge Rate (L/rev)
DSW-1000	300A/200A	3.0	10

Ellicloid Gear Pump Lineup

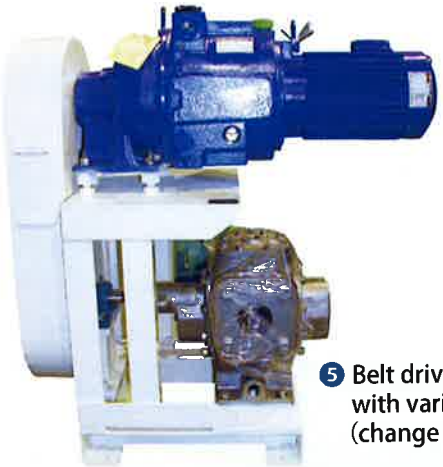
In our company you can select various types of driving methods which can satisfy the customer needs.

❶ Belt drive unit with 2-stage base

❷ Belt drive unit with 2-stage base (Special)

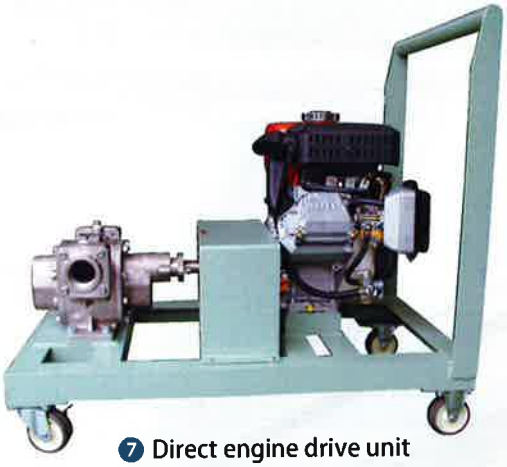
❸ Belt drive unit with flat base

❹ Direct drive unit



❺ Belt drive unit with variator (change speed)

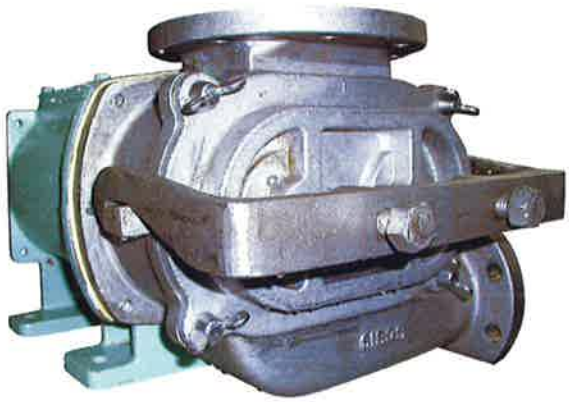
❻ Belt drive unit with inverter (change speed)



❼ Direct engine drive unit

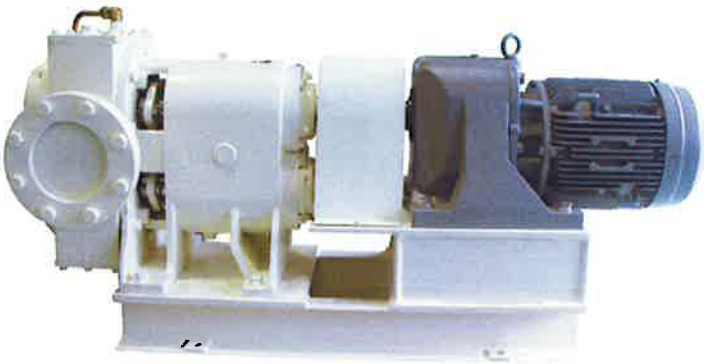
Cloid Rotary Pump Lineup

We offer various types of rotary pumps for high viscosity and very high viscosity.

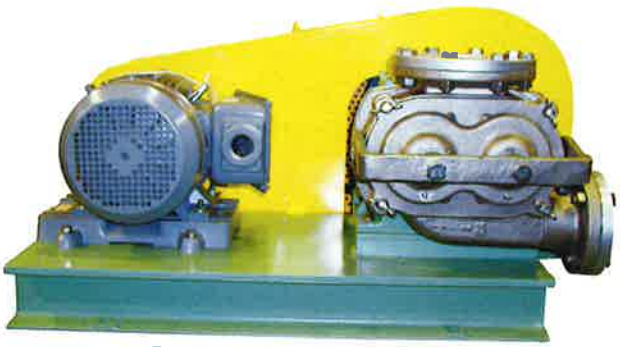


⑧ W-type Rotary Pump

⑨ JW-type Rotary Pump



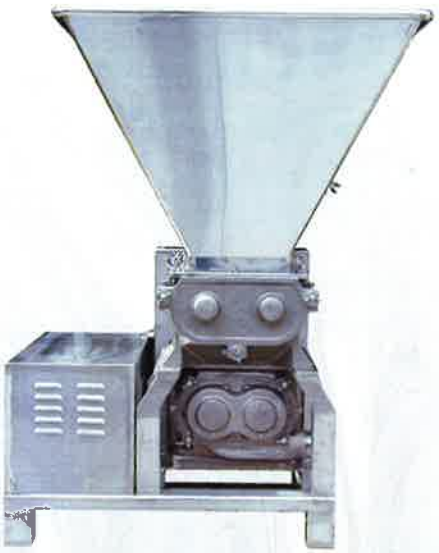
⑩ Direct drive unit



⑪ Belt drive unit with flat base

⑫ Belt-drive unit with 2-stage base

⑬ Large Rotary pump on heavy duty (DSW-1000-type)



⑭ Rotary pump for food and high viscoslty (5W-type)

NIPPON CLOID MFG.CO., LTD.

Please let us know the following specifications for selecting the pump.

Fluid	Fluid Name	
	Viscosity/Temperature	cP ／ ℃
	Solid Material Shape	Yes No %
	PH	
Specifications	Rate of Flow	lit/min
	Pressure(Outlet side)	MPa
	Pressure(Inlet side)	MPa
Pumps	Jacketed	Required / Not required
	With Relief Valve	Required / Not required
	Quality of material	
	shaft seal	
Manufacturing record	Manufacturing No.	

Agency

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