

Helical Gear Flow Meters

Helical gear flow meters are typical volumetric flow measuring instruments which directly measure the quantity of flowing liquid by means of a couple of rotors. It is a kind of positive displacement flow meters, and has features as below:

- No pulsation
- Low noise
- High accuracy
- High reliability
- Large turn down ratio
- Small pressure loss
- Can measure fluids with max 3500cp viscosity
- Can work on high temperature fluids
- Easy calibration and easy installation



It can be mechanical type flow meter, or equipped with electronic transmitters and digital display and frequency to current converters are available for remote totalization, recording and presetting of metered volumes.

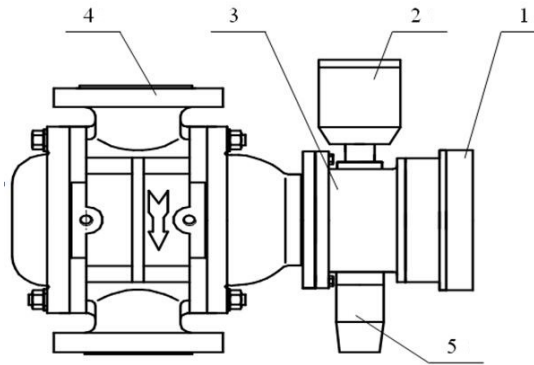
They may be used for custody transfer purposes, operating controls and for the many other needs of the petroleum, chemical, pharmaceutical industry, etc.

How it works

A complete rotors rotation generates four "base volumes". During the operating cycles the volumes which are generated between the rotors and the components of the measuring chamber determine the "base volume" of the instrument. By transmitting the number of rotors rotations to the register the volume flown through the PD flowmeters is displayed.



Helical gear flow meter Constructions



1. Register
2. Pulser
3. Accuracy adjuster
4. Flow sensor
5. External fine adjuster

Technical Specifications

1. Accuracy level: 0.5%, 0.2%
2. The temperature of the measured liquid;
With high temperature radiator, max temperature can reach 250 °C
3. Ambient temperature can be -41 °C ~ +60 °C
4. Repeatability error: the repeatability error of the flowmeter does not exceed 1/3 of the basic error
5. Flange standard: DIN Standard, JIS standard, ANSI standard.,etc
6. Flow range

Accuracy 0.5%

Flow unit: m3/h

Table 1

Model	Size (mm)	Viscosity: mPa.s						
		0.3~0.8	0.8~2	2~15	15~400	400~1000	1000~2000	2000~3500
		Petro	Kerosene	Diesel & engine oil	Heavy oil	High viscosity fluids		
LLT-0252	25	3~9	1.5~10	1~10	1~10	1~8	1~8	1~6
LLT-0401	40	3~9	1.5~10	1~10	1~10	1~8	1~8	1~6
LLT-0402		7~20	3~22	2.5~25	2.5~25	2~18	2~18	3~12
LLT-0501	50	7~20	3~22	2.5~25	2.5~25	2~18	2~18	3~12
LLT-0502		9~36	4.5~36	3.6~36	3.6~36	2.8~25	2.8~25	4.5~18
LLT-0801	80	9~36	4.5~36	3.6~36	3.6~36	2.8~25	2.8~25	4.5~18
LLT-0802		20~80	10~80	10~100	10~100	6.5~56	6.5~56	5~40
LLT-1001	100	20~80	10~80	10~100	10~100	6.5~56	6.5~56	5~40
LLT-1002		25~100	20~100	15~150	15~150	8.5~80	8.5~80	6.5~55
LLT-1501	150	25~100	20~100	15~150	15~150	8.5~80	8.5~80	6.5~55

LLT-1502		55~225	30~250	25~250	25~250	18~150	18~150	10~100
LLT-2001	200	55~225	30~250	25~250	25~250	18~150	18~150	10~100
LLT-2002		90~360	50~400	40~400	40~400	28~240	28~240	20~160
LLT-2501	250	90~360	50~400	40~400	40~400	28~240	28~240	20~160
LLT-2502		130~5400	65~540	60~600	60~600	42~360	42~360	30~240
LLT-3001	300	130~5400	65~540	60~600	60~600	42~360	42~360	30~240
LLT-3002		220~800	110~900	95~950	95~950	70~600	70~600	54~450
LLT-3501	350	220~800	110~900	95~950	95~950	70~600	70~600	54~450

Flow range (accuracy 0.2%, 0.3%)

Flow unit: m3/h

Table 2

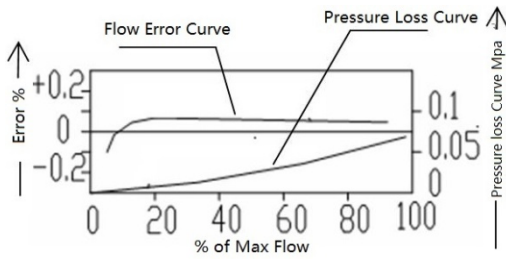
Model	Size (mm)	Viscosity: mPa.s						
		0.3~0.8	0.8~2	2~15	15~400	400~1000	1000~2000	2000~3500
		Petro	Kerosene	Diesel &	Heavy	High viscosity fluids		
LLT-0252	25	3.5~8	3~10	2~10	2~10	2~8	2~8	2~6
LLT-0401	40	3.5~8	3~10	2~10	2~10	2~8	2~8	2~6
LLT-0402		8~20	5.5~22	4.5~22	4.5~22	4~18	4~18	3~12
LLT-0501	50	8~20	5.5~22	4.5~22	4.5~22	4~18	4~18	3~12
LLT-0502		15~36	9~36	7~36	7~36	6~25	6~25	4.5~18
LLT-0801	80	15~36	9~36	7~36	7~36	6~25	6~25	4.5~18
LLT-0802		30~80	20~80	15~80	15~80	14~56	14~56	10~40
LLT-1001	100	30~80	20~80	15~80	15~80	14~56	14~56	10~40
LLT-1002		40~100	25~100	20~120	20~120	18~72	18~72	14~55
LLT-1501	150	40~100	25~100	20~120	20~120	18~72	18~72	14~55
LLT-1502		88~220	57~225	44~220	44~220	38~150	38~150	25~100
LLT-2001	200	88~220	57~225	44~220	44~220	38~150	38~150	25~100
LLT-2002		150~360	90~360	72~360	72~360	50~210	50~210	40~160
LLT-2501	250	150~360	90~360	72~360	72~360	50~210	50~210	40~160
LLT-2502		180~540	135~540	100~540	100~540	90~360	90~360	60~240
LLT-3001	300	180~540	135~540	100~540	100~540	90~360	90~360	60~240
LLT-3002		250~800	220~900	180~900	180~900	150~600	150~600	110~450
LLT-3501	350	250~800	220~900	180~900	180~900	150~600	150~600	110~450

7. Material

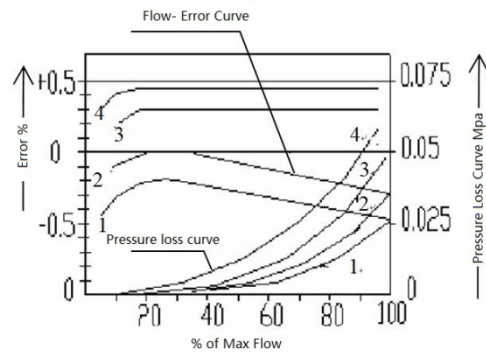
The two rotors engineered and manufactured in such a way they never touch each other nor the measuring unit components, are alternatively driven by the timing gears coupled on rotor's shaft just outside the measuring chamber.

Model	Housing, front cover Back cover	Cover	Spiral rotor	Axle	Bushing	Nominal pressure (MPa)
LLT-E	Cast steel	Cast iron	Cast iron, aluminum alloy, stainless steel	Stainless steel	Graphite	Below DN100 4.0 Mpa; Above DN150 :2.5 Mpa
LLT-B/C	Stainless steel	Stainless steel		Stainless steel	Graphite/ball bearing	1.6,2.0,2.5 Mpa
LLT-S	Double body flow meter. DN80, DN100, DN150 nominal pressure 6.3MPa; DN200 nominal pressure 4.0MPa.					
Remark	LLT-C material :316 stainless steel;LLT-B material : 304 Stainless steel					

8. Error and pressure loss



0.2% Accuracy



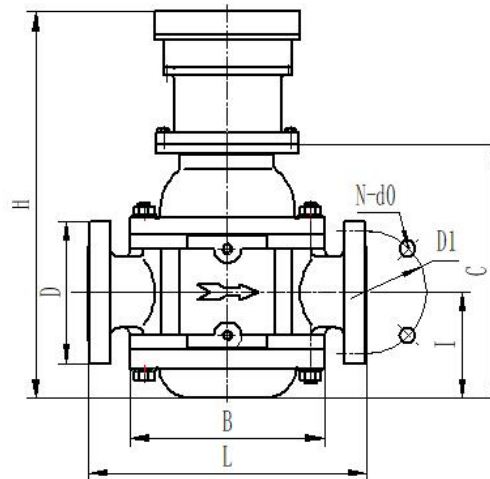
0.5% Accuracy

Model Selection

Item	Code	Description
Mark	LLT	Helical gear flow meter
Flow meter size and flow range		Refer to table 1 & table 2
Special function	S	Double bodies
	U	With heating jacket
	T1	High temperature:120~250 °C
	T2	High temperature : 60~120 °C
Housing Material	E	Cast steel
	B	Stainless steel 304
	C	Stainless steel 316
Rotor Material	A	Cast iron
	B	Stainless steel 304
	C	Stainless steel 316
	L	Aluminium alloy
Special Flange	S	Flange shrink
	K	Flange expand
Pressure Rating	.2/	1.6Mpa
	.3/	2.5Mpa
	.4/	4.0 Mpa
	.6/	6.3Mpa
Register	A5	Mechanical register
	A6	Mechanical register with return to zero function
	BELZ-0	Digital indicator, instant and totalized flow ,battery power, no output, Explosion proof.
	BELZ-1	Digital indicator, instant and totalized flow ,24V DC, Pulse output,3-wire, Explosion proof.
	BELZ-2	Digital indicator, instant and totalized flow ,24V DC, 4-20mA output,2-wire, Explosion proof.
	BELZ-3	Digital indicator, instant and totalized flow ,24V DC, 4-20mA output,4-wire, Explosion proof.
	BELZ-4	Digital indicator, instant and totalized flow ,24V DC, 4-20mA output, Hart, Explosion proof.
	M	Big digits register with return to zero function
	X	Other functions
Adjuster	GF	External Fine adjuster
Signal Generator	GF-1	Only for A or A6 register, Pulse output,3-wire, Explosion proof.12V DC power supply
	GF-II	Only for A or A6 register, Pulse output,3-wire, Explosion proof.24 V DC power supply
	MF	Only for A or A6 register, 4-20mA output, Explosion proof.24 V DC

		power supply
Accuracy	J	High accuracy 0.2%
	J2	High accuracy 0.3%

Flow meter Dimensions



Model	Size	L		H	B	C	I	D	D1	N	d ₀	Pressure MPa	Weight
		Standard	Double Body										
LLT0252	25	300		420	175	228	90	115	85	4	14	Reference 4.0Mpa	29
LLT0401	40	300		420	175	228	90	150	110	4	18		33
LLT0402		300		450	200	258	112	150	110	4	18		40
LLT0501	50	300		450	200	258	112	165	125	4	18		42
LLT0502		340		525	240	333	150	165	125	4	18		62
LLT0801	80	340		525	240	333	150	200	160	8	18		64
LLT0802		380	400	580	285	388	175	200	160	8	18		94
LLT1001	100	380	400	580	285	388	175	235	190	8	22		98
LLT1002		440	450	660	339	468	250	235	190	8	22		146
LLT1501	150	440	450	660	339	468	250	300	250	8	26		152
LLT1502		500	560	740	410	548	270	300	250	8	26		238
LLT2001	200	500	560	740	410	548	270	360	310	12	26		245
LLT2002		550	700	820	455	628	285	360	310	12	26		337
LLT2501	250	550	700	820	455	628	285	425	370	12	30		350
LLT2502		700		910	550	718	350	425	370	12	30	570	
LLT3001	300	700		910	550	718	350	485	430	16	30	600	
LLT3002		800		1010	645	818	415	485	430	16	30	855	
LLT3501	350	800		1010	645	818	415	555	490	16	30	Reference 2.5Mpa	890