

### Flow Measurement of Liquids at High Temperatures

The WaveInjector extends the application range of the ultrasonic clamp-on flow measurement to temperatures of over 392 °F and below -40 °F.

The patented mounting fixture thermally separates the ultrasonic transducers from the hot or cold pipe and at the same time ensures good acoustic contact. Therefore, FLEXIM's standard transducers are suitable for long-term operation even at extreme temperatures.

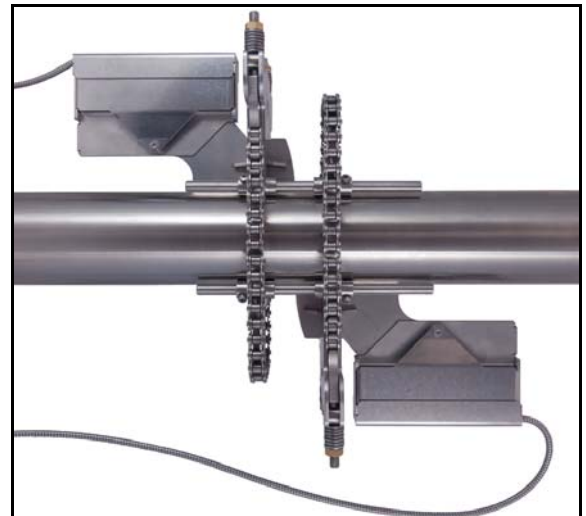
Because the transducers are mounted on the outside of the pipe, it is not necessary to cut the pipe or interrupt the operation of the facility for the setup of a flow measuring point.

#### Features

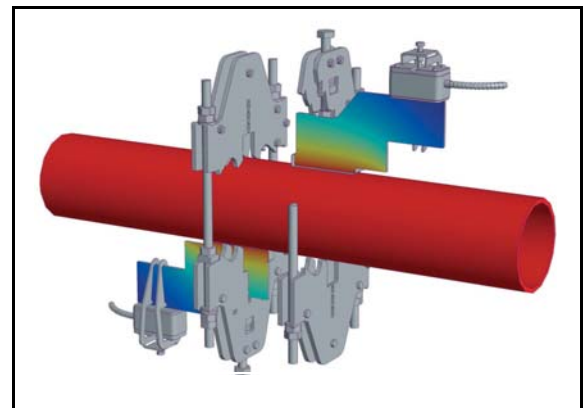
- Use of FLEXIM's standard clamp-on transducers at extreme temperatures of up to 752 °F
  - Special solutions for temperatures of max. 1112 °F possible
  - Special solutions for temperatures of min. -328 °F possible
- Transducers available for flow measurement in explosive atmospheres
- Installation without cutting the pipe and without interrupting the production process
- Permanent and reliable coupling of the transducers to the pipe
- Operation without wear and therefore maintenance-free, no drift

#### Applications

- Flow measurement in the chemical industry and petrochemical industries, e.g.
  - Bitumen
  - Vacuum distillate
  - Pressurized water
  - Heat transfer oils



WaveInjector WI-400 with chains



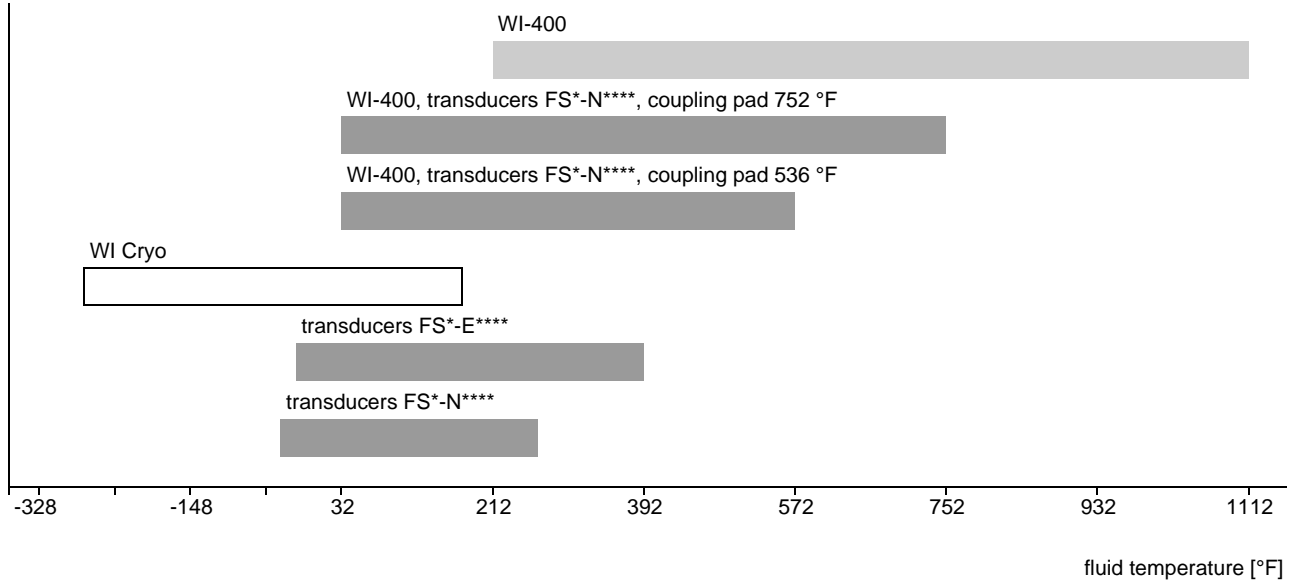
Temperature profile of WI-400

## Order code

1 to 6	7	8	9	10	11 to 14	15	16	17	no. of character	description			
WaveInjector	transducer	-	measurement arrangement	size	-	fixation	outer pipe diameter <sup>1</sup>	-	coupling pad	tool	/	option	
WI-400													type
	K												shear wave transducers with transducer frequency G, K
	M												shear wave transducers with transducer frequency M, P (connection system TS)
	Q												shear wave transducers with transducer frequency Q (connection system TS)
	1												shear wave transducers with transducer frequency M, P (connection system NL)
	4												shear wave transducers with transducer frequency Q (connection system NL)
			D										reflect arrangement or diagonal arrangement/direct mode
				S									small
				M									medium
				L									large
						C							chains
						T							threaded rods
							004						0.47 to 2.8 in
							010						2.8 to 5.1 in
							012						1.6 to 4.7 in
							015						2.8 to 9.1 in
							017						2.8 to 6.7 in
							022						2.8 to 15 in
							023						3.1 to 9.1 in
							038						3.1 to 15 in
							056						13.8 to 22 in
							085						13.8 to 33.5 in
							100						23.6 to 39.4 in
									A				coupling pad max. 536 °F
									C				coupling pad max. 536 °F and coupling pad max. 752 °F
										A			automatic WI tool
										M			mechanical WI tool (pipe planer)
										O			WIT-R tool 110 V DC
										R			WIT-R tool 230 V DC
										N			without tool
											Z		special design
example													
WI-400	M	-	D	L	-	C	017	-	C	M			WaveInjector for shear wave transducers with transducer frequency M, with chains, coupling pad and mechanical WI tool
		-			-			-			/		

<sup>1</sup> outer pipe diameter > 39.4 in on request

### Application ranges



FS\*-N\*\*\*\* - shear wave transducer, normal temperature range

FS\*-E\*\*\*\* - shear wave transducer, extended temperature range

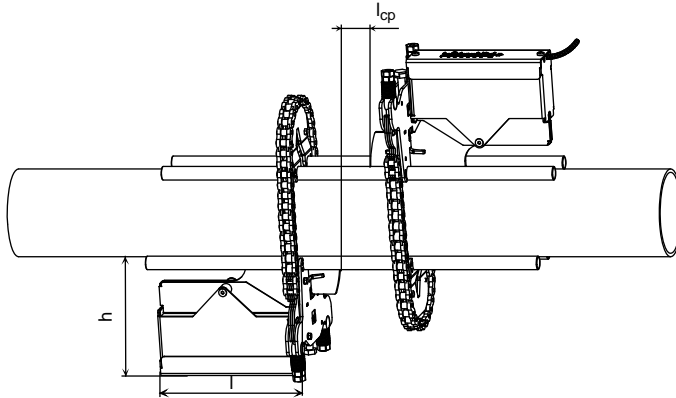
recommended

depending on application, on request

for LNG, others on request

## Transducer mounting fixture

### pipe mounting fixtures und chains WI-400\*-\*L-C



dimensions:

- length:  $2 \cdot l + l_{cp}$

**WI-400K:**  $l = 9.57$  in

**WI-400M, WI-400Q, WI-4001, WI-4004:**  
 $l = 10.98$  in

$l_{cp} =$  depending on application

- width:

outer pipe diameter + 1.26 in  
(min. 7.9 in)

- height:

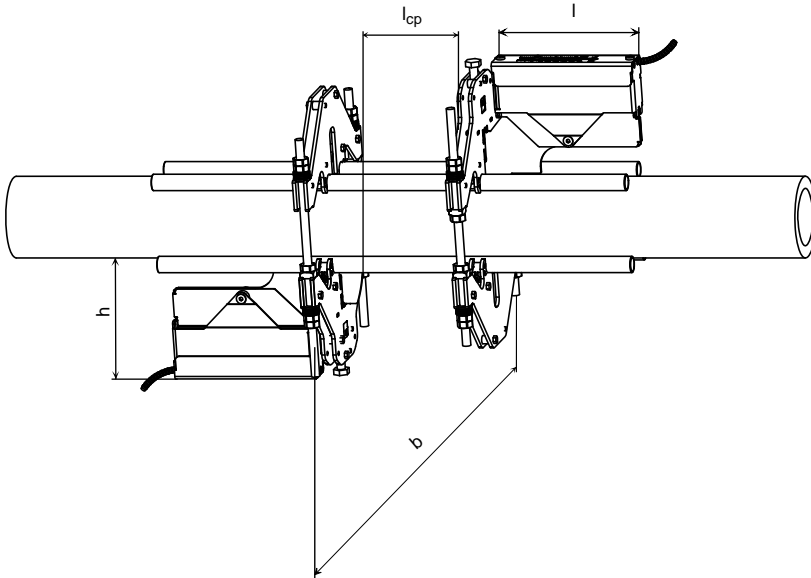
outer pipe diameter +  $2 \cdot h$

**WI-400K:**  $h = 7.01$  in

**WI-400M, WI-4001, WI-400Q, WI-4004:**  
 $h = 7.9$  in

material: stainless steel 304

### pipe mounting fixtures with threaded rods WI-400\*-\*T



dimensions:

- length:  $2 \cdot l + l_{cp}$

**WI-400K:**  $l = 9.57$  in

**WI-400M, WI-400Q, WI-4001, WI-4004:**  
 $l = 10.98$  in

$l_{cp} =$  depending on application

- width b:

**WI-400\*-\*S:** 6.69 in

**WI-400\*-\*M:** 10.63 in

**WI-400\*-\*L:** 16.54 in

- height: outer pipe diameter +  $2 \cdot h$

**WI-400K:**  $h = 7.01$  in

**WI-400M, WI-4001:**  $h = 5.94$  in

**WI-400Q, WI-4004:**  $h = 5.8$  in

material: stainless steel 304



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Subject to change without notification. Errors excepted.