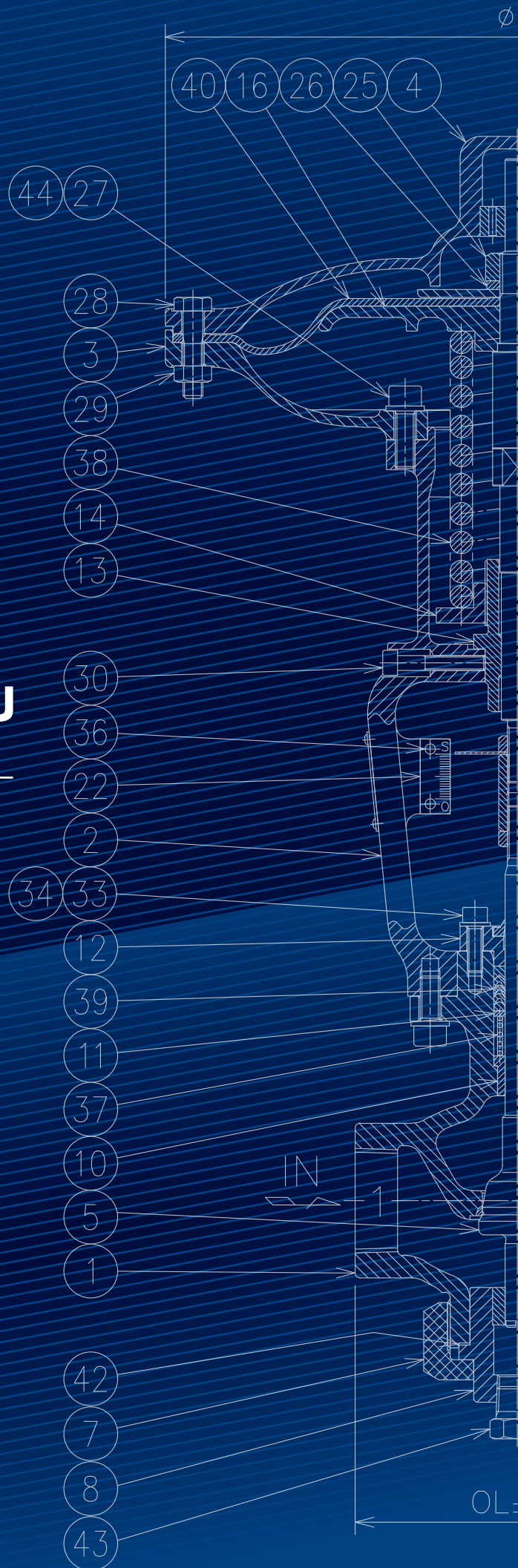


ROCKY-ICHIMARU

Tire Curing Press Valves



Knuckle Joint LJ Series

A knuckle joint is a universal joint for use between movable and non-movable pipes. Because the surface of the ball joint and the inner ball are on the same axis it will always return to its original position with accuracy, meaning no excessive force is applied to the pipes. Leaf springs are used to ensure no excessive force is applied to the springs, even when rotated in the opposite direction. The inner ball and ball washer respond to eccentricity, enabling balanced spring performance under perpendicular loads. Lifespan is further improved by the addition of a Teflon seal to the hard chrome plated seal ring on the ball joint surface.

Main Specification

Fluids	Steam, N2 Gas, Air, Hot&Cold Water	
Maximum Working Pressure	3.2MPa	
Maximum Working Temperature	205°C	
End Connection	Ports	Threaded End (Rc, NPT)
Movement Range	Movable	±6° to 10°
	Non-movable	±1°※1
Material of main parts ※2	Body, Ball Joint, Cover : FCD450	
	Seal Ring : Glass fiber reinforced PTFE	

*1. The non-movable model has limited movement in that a movable spacer ring can be inserted.

*2. See the valve assembly drawings for details.



Appearance					
Model Number	Movable	LJ1111-□□	LJ1121-□□	LJ1211-□□	LJ1221-□□
	Non-Movable	LJ1112-□□	LJ1122-□□	LJ1212-□□	LJ1222-□□
Ball Joint Shape		Straight	Angled	Straight	Angled
Body Shape		Straight	Straight	Angled	Angled

Product Coding

LJ

N1	N2	N3	N4	N5	N6	N7	N8
1	1	1	1	20	P		

Symbol	Meaning of symbol	Code	Meaning of code	Remarks
N1	Model	1	1st Model	
N2	Body Shape	1	Straight	
		2	Angled	
N3	Ball Joint Shape	1	Straight	
		2	Angled	
N4	Movement Range	1	$\pm 6^\circ$ to 10°	1: Movable Type
		2	$\pm 1^\circ$	2: Non-movable Type
N5	Nominal Size	15	DN15	DN50 available with Z1 only.
		20	DN20	
		25	DN25	
		32	DN32	
		40	DN40	
		50	DN50	
N6	Thread Connection Spec	P	Rc	Indicates thread specification of body port.
		N	NPT	
N7	Special Options	XY	Body Ball Joint SUS	Body material is SCS13 (Standard: FCD450). * DN15 and DN50 model not available in XY spec.
N8	Specialized Code	Z□□	Specialized Specification	Bespoke codes (e.g. Z1) is used for specialized options.

Specialized Options (Examples)

- Seal ring: carbon graphite reinforced PTFE (Specialized Code: Z1)
- SUS cover (Specialized Code: Z4)
- High pressure gas certification and SUS cover (Specialized Code: Z6)

Usage Cases

Knuckle joints are typically used to handle dogleg piping. Dogleg piping is a piping method which uses three knuckle joints to connect fixed pipes without stressing a horizontally movable pipe (Figure 6). A horizontally movable dogleg structure such as this allows a device which must move relative to fixed piping to be safely and accurately moved akin to using a hose.

<Cautions when using Dogleg Piping>

- The piping aperture should be no greater than 135° .
- If the aperture is too small, long pipe lengths can exert excessive stress on the joints or piping.
- When using vertical dogleg piping with a large movement range, the piping may vibrate. To avoid this, make the highest joint a non-movable joint.
- A fixed joint should be used for only one of the three joints. If two or more are used, the system will be unable to absorb the movement and excessive stress may be exerted on the joints or piping.

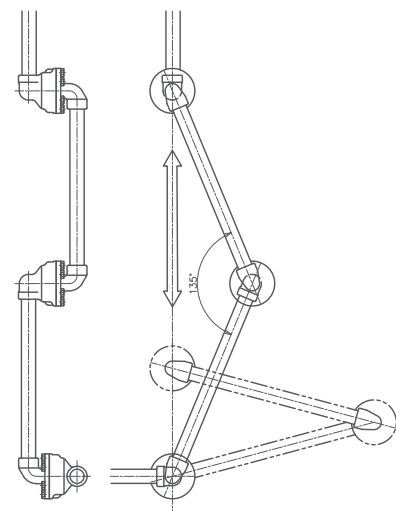
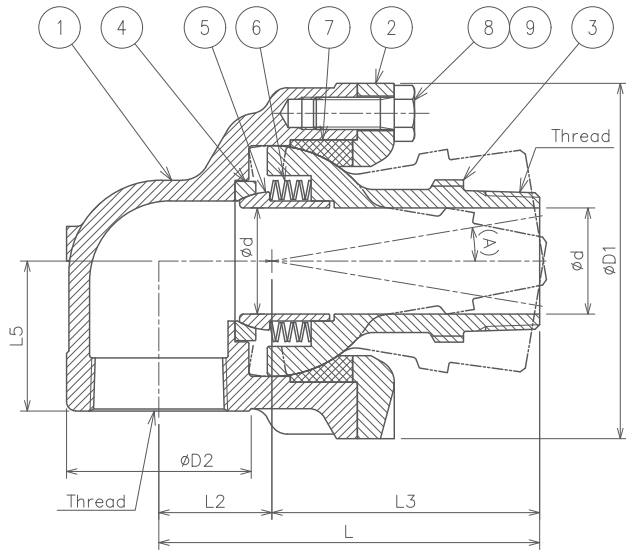


Figure 4. Example of dogleg piping

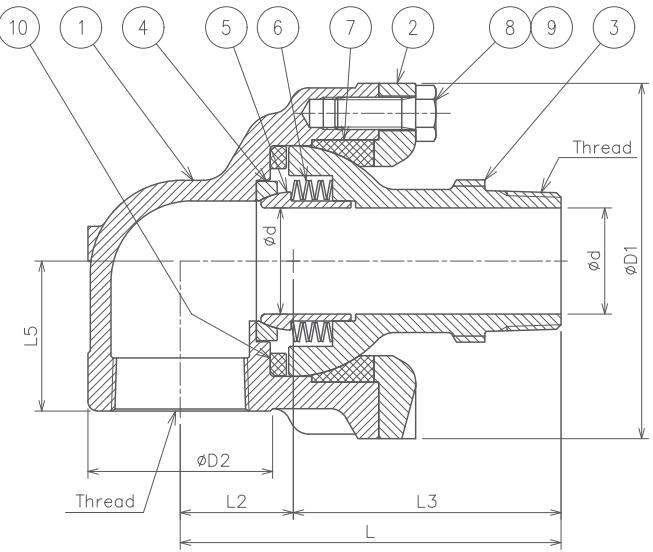
LJ1211-□□ <Movable Type>

LJ1212-□□ <Non-movable Type>

< LJ1211-□□ >



< LJ1212-□□ >



Nominal Size		Dimensions (mm)									Weight (kg)
mm	inch	ød	øD1	øD2	L	L2	L3	L5	A		
15	1/2	13	68	30	84	23	61	30	6°	0.8	
20	3/4	19	86	38	99	31	68	30	9°	1.5	
25	1	23	100	46	110	34	76	38	9°	2.5	
32	1-1/4	30	118	58	131	45	86	45	10°	4.2	
40	1-1/2	36	127	64	140	43	97	55	10°	5.2	
50	2	46	154	80	165	49	116	65	9°	10.2	

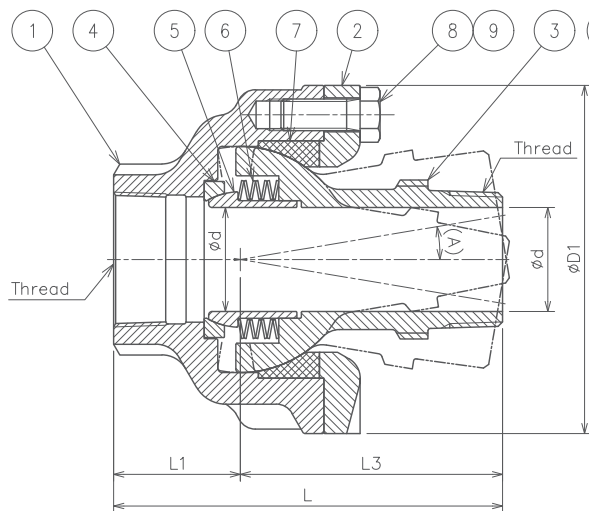
☆: Recommended Spare Parts

10	Spacer Ring
9	Spring Lock Washer (DN50)
8	Hexagon Head Screw
☆ 7	Seal Ring
6	Leaf Spring
5	Inner Ball
4	Ball Washer
3	Ball Joint-S
2	Cover
1	Body-L

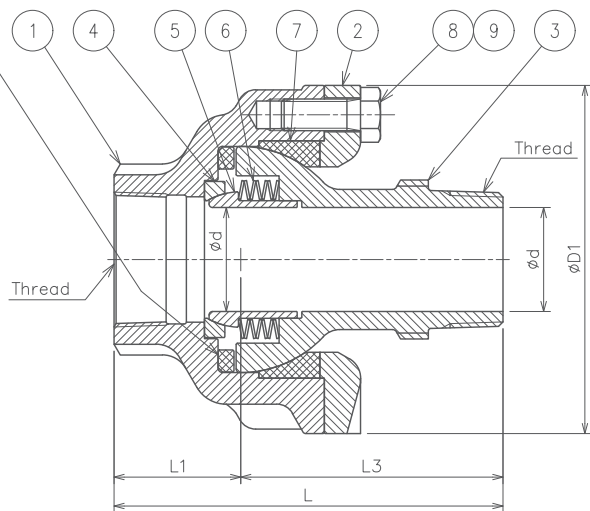
LJ1111-□□ <Movable Type>

LJ1112-□□ <Non-movable Type>

< LJ1111-□□ >



< LJ1112-□□ >



Nominal Size		Dimensions (mm)							Weight (kg)
mm	inch	ød	øD1	L	L1	L3	A		
15	1/2	13	68	91	30	61	6°	0.7	
20	3/4	19	86	101	33	68	9°	1.4	
25	1	23	100	120	44	76	9°	2.3	
32	1-1/4	30	118	136	50	86	10°	3.9	
40	1-1/2	36	127	150	53	97	10°	4.8	
50	2	46	154	172	56	116	9°	9.5	

☆: Recommended Spare Parts

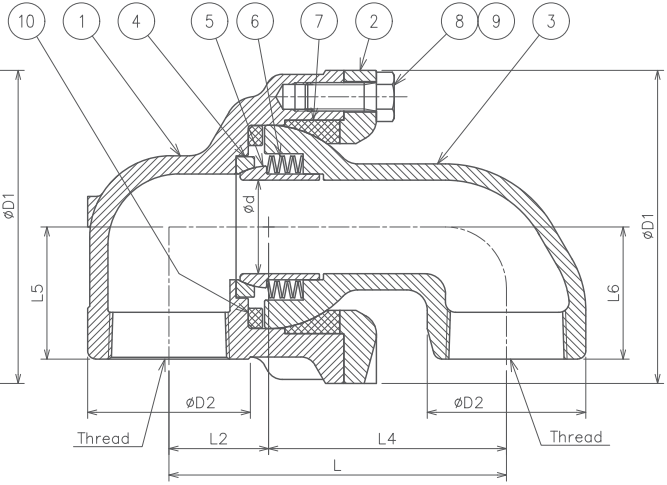
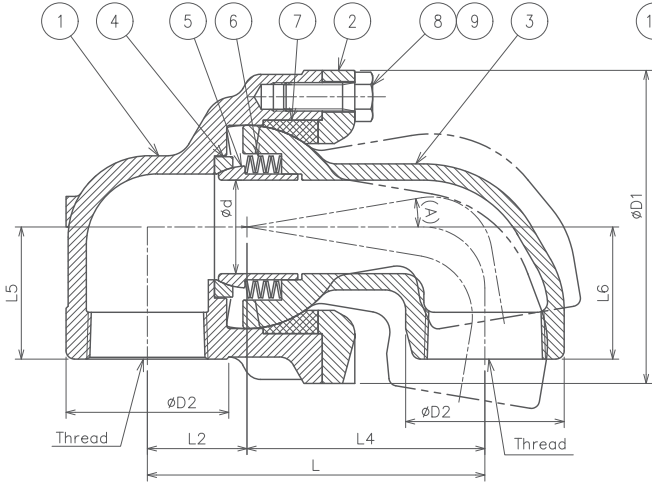
10	Spacer Ring
9	Spring Lock Washer (DN50)
8	Hexagon Head Screw
☆ 7	Seal Ring
6	Leaf Spring
5	Inner Ball
4	Ball Washer
3	Ball Joint-S
2	Cover
1	Body-S

LJ1221-□□ <Movable Type>

LJ1222-□□ <Non-movable Type>

<LJ1221-□□>

<LJ1222-□□>



☆: Recommended Spare Parts

Nominal Size		Dimensions (mm)										Weight (kg)
mm	inch	ϕd	$\phi D1$	$\phi D2$	L	L2	L4	L5	L6	A		
15	1/2	13	68	30	75	23	52	30	30	6°	0.9	
20	3/4	19	86	38	94	31	63	30	35	9°	1.6	
25	1	23	100	46	110	34	76	38	38	9°	2.7	
32	1-1/4	30	118	58	140	45	95	45	45	10°	4.5	
40	1-1/2	36	127	64	139	43	96	55	55	10°	5.6	
50	2	46	154	80	166	49	117	65	65	9°	10.9	

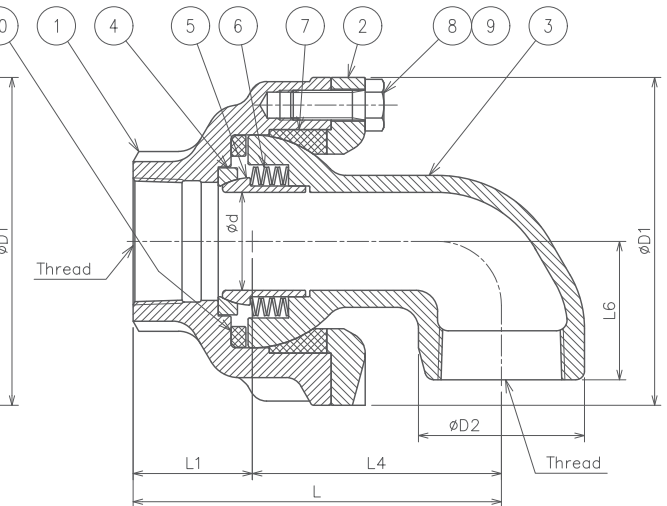
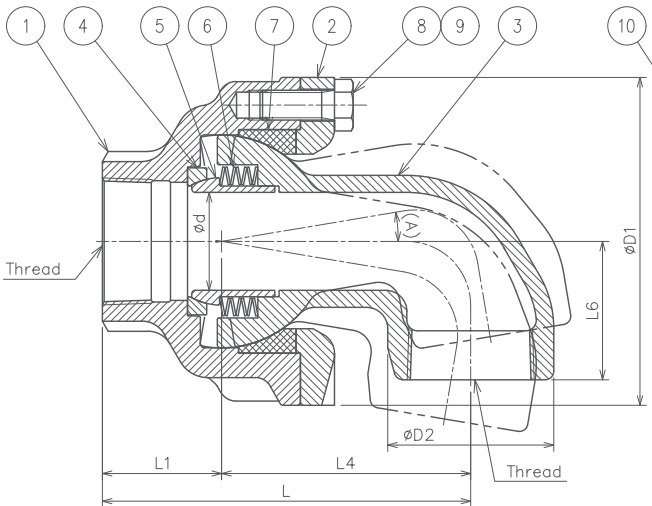
☆ 10	Spacer Ring
9	Spring Lock Washer (DN50)
8	Hexagon Head Screw
☆ 7	Seal Ring
6	Leaf Spring
5	Inner Ball
4	Ball Washer
3	Ball Joint-L
2	Cover
1	Body-L

LJ1121-□□ <Movable Type>

LJ1122-□□ <Non-movable Type>

<LJ1121-□□>

<LJ1122-□□>



☆: Recommended Spare Parts

Nominal Size		Dimensions (mm)									Weight (kg)
mm	inch	ϕd	$\phi D1$	$\phi D2$	L	L1	L4	L6	A		
15	1/2	13	68	30	82	30	52	30	6°	0.8	
20	3/4	19	86	38	96	33	63	35	9°	1.5	
25	1	23	100	46	120	44	76	38	9°	2.5	
32	1-1/4	30	118	58	145	50	95	45	10°	4.2	
40	1-1/2	36	127	64	149	53	96	55	10°	5.2	
50	2	46	154	80	173	56	117	65	9°	10.2	

☆ 10	Spacer Ring
9	Spring Lock Washer (DN50)
8	Hexagon Head Screw
☆ 7	Seal Ring
6	Leaf Spring
5	Inner Ball
4	Ball Washer
3	Ball Joint-L
2	Cover
1	Body-S

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