



# SWIVEL JOINT

SWIVEL ELBOW / ROTARY JOINT



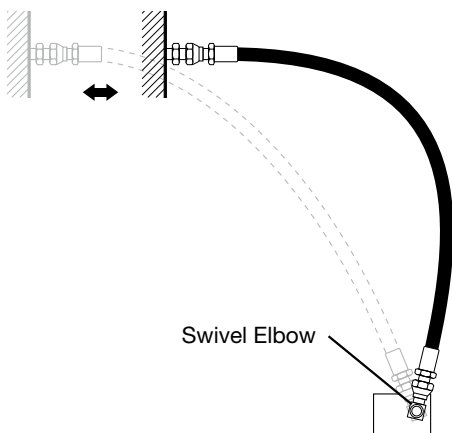
<http://www.abc-coupling.co.jp/>

# Swivel Joint Features

- |  |  |
|--|--|
| <p><b>1</b> Allows flexible piping</p>                       | <p>Easy jointing in any direction simplifies piping installation and shortens work time.</p>   |
| <p><b>2</b> Lengthens hose life by avoiding sharp bends.</p> | <p>Prevents hose from twisting and creates smooth bends, which saves material and reduces.</p>   |
| <p><b>3</b> Practical design</p>                             | <p>Compact and light design with low pressure loss and easy rotation even when pressurized.</p>  |
| <p><b>4</b> Easy to use in any environment</p>               | <p>Dust and corrosion-proof joints that are easy to use for a wide range of purposes and under a wide range of environments, including construction machinery, industrial vehicles, and machine tools.</p> |
| <p><b>5</b> Wide product lineup</p>                          | <p>Wide product lineup corresponding to piping and hose joint fitting specifications</p>   |

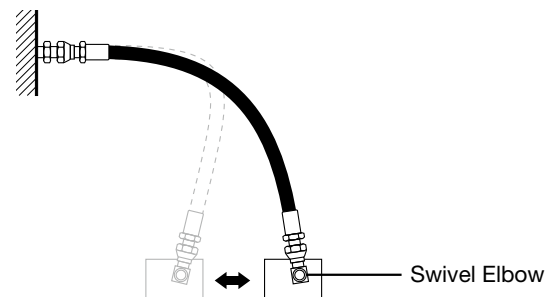
## What is the Swivel Joint?

The Swivel Joint creates rotating or swinging connections for hoses piping. Elbow-shaped joints are Swivel Elbow, and straight joints are Rotary Joint. Elbow-shaped Swivel Elbows are used widely.



Swivel Elbow

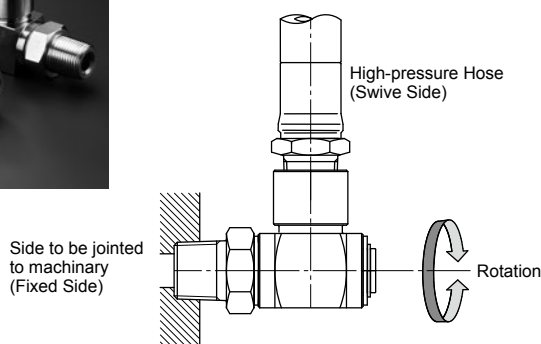
Swivel Elbow prevents excessive load on hose to lengthen life. Hose length can be adjusted for smooth and compact piping.



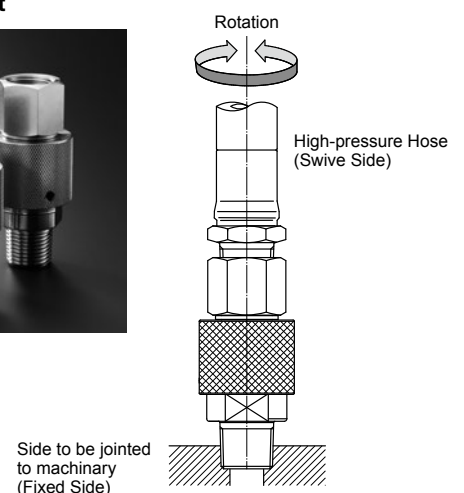
Swivel Elbow

Swivel Elbow prevents twisting and kinking, which protects hoses from abrasion damage.

## Swivel Elbow



## Rotary Joint



# For your safety, note the following instructions whenever Swivel Joint is used.

## Precautions for Swivel Joint use



Do not touch and look into a pressurized Swivel Joint.

**Prohibition**



Use Swivel Joint at or below the rated rotation or swivel speed listed in the catalog.

**Caution**



Use Swivel Joint within the rated temperature range.

**Caution**



Use compatible petroleum-based hydraulic oil.

**Caution**



During operation, check for leakage or abnormality around jointed sections on the body. Replace promptly with new unit if any abnormality is found.

**Caution**



Use Swivel Joint at or below the rated working pressure listed in the catalog.

**Warning**



Do not energize or ground Swivel Joint. And Avoid excessive vibration. Doing so may damage or adversely affect function.

**Caution**

## Correct installation of Swivel Joint



Do not strike, step on or place heavy items on the Swivel joint. Doing so may cause oil leak or breakage.



Do not place side load on the rotating section of the Swivel Joint. Doing so may cause oil leak or shaft breakage. in the catalog.



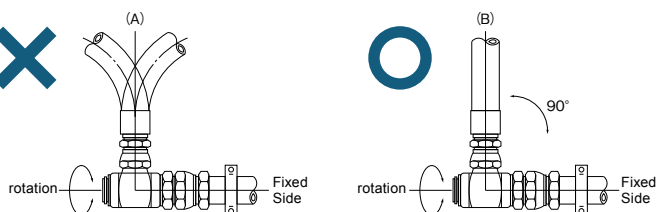
Fix shaft side firmly and fit hydraulic hose onto the housing side. Do not install other parts onto the housing side.



Follow the below tightening torques. Apply the tightening torques in the table below to the union nut type of Swivel Joint.

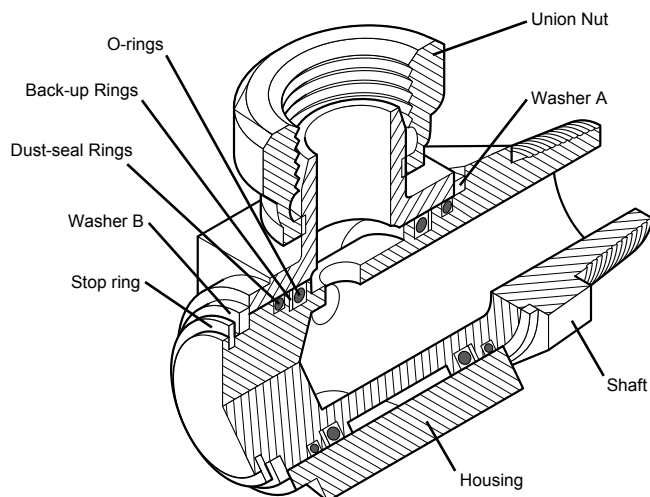
Tightening torques in the table to the union nut type of Swivel joint (Reference value)

Thread G	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Tightning torque (N·m)	25	34	64	132	196	225	255	412

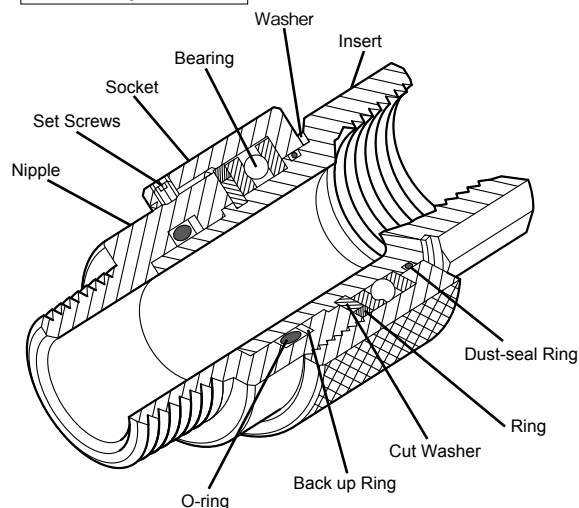


## Figure of structure

**Swivel Elbow**



**Rotary Joint**



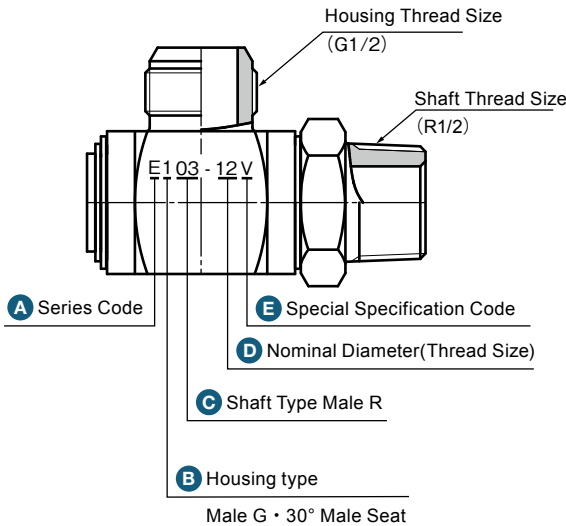
# Swivel Joint Orders

Use the catalog code number shown below when placing your order.

## How to read the Catalog Code Number

**E** **103** - **12V**

**A**   **B**   **C**   **D**   **E**



### A Series Code

Code	Series Name
E	Swivel Elbow
RA	Rotary Joint

### B Housing Type

This chart shows Thread & Sealing Seat on housing side.

Code	Thread & Sealing Seat Typ
1	Male G • 30° Male Seat
2	Male G • 30° Female Seat
3	Male R
4	Female Rc
5	Union Nut G • 30° Male Seat
11	O-ring Seal Type(ORFS)

### C Shaft Type

This chart shows Thread & sealing Seat on housing side

\*1. The Type 09 material is not available in stainless steel.

Code	Thread & Sealing Seat Type
01	Male G • 30° Male Seat
02	Male G • 30° Female Seat
03	Male R
04	Female Rc
05	Union Nut G • 30° Male Seat
07	Male G with O-ring Seal
09	Female Rc • 90° Cranked Shaft

### D Nominal Diameter (Thread Size)

Code	Thread
6	1/4
9	3/8
12	1/2
19	3/4
25	1
32	1 1/4
38	1 1/2
50	2

### E Special Specification Code

- Please add the following codes for materials out of our standard materials.
- Please contact us for special materials of the housing, shaft and seals.

Code	Material
None	Our standard materials(•O-ring: NBR, •Housing & shaft: steel on Zinc plating Ep-Fe/Zn[3-C2])
-V	O-ring: FKM
-S	Housing & shaft: Stainless Steel
-VS	O-ring: FKM Housing & shaft: Stainless Steel

Code	01	02	03	04	05	07	09	11
Swivel Elbow								
Counter- part	Male G 30° Male Seat  JIS B 8363 Union Nut G 30° Female Seat (Type F)	Male G 30° Female Seat  JIS B 8363 Union Nut G 30° Male Seat (Type C)	Male R  JIS B 0203 Female Rc (Type Rc)	Female Rc  JIS B 0203 Male R (Type R)	Union Nut G 30° Male Seat  JIS B 8363 Male G 30° Female Seat (Type G)	Male G with O-ring Seal * 2  JIS B 2351 Female G with ISO-ring groove Attachment 7-0 Type	Female Rc 90° Cranked Shaft  JIS B 0203 Male R (Type R)	Male UN with O-ring Seal  JIS B 0203 UN Union nut with Flat Face (Type ORFS)

\* 2. The Type 07 standard model will be shipped with O-rings on.

### Caution

- (1) Contact us to order materials that are not listed in this catalog or that are not our standard products.
- (2) Our standard products are made for use with petroleum-based hydraulic oil. Please contact us in advance if you are planning to use different fluid.

# Swivel Elbow Specifications

## Pressure

(at Housing & shaft : Steel (Zinc plating), O-ring : NBR , Fluid: petroleum-based oil) \*2

Nominal Size	Thread	Max. Working Pressure MPa	Min. Burst Pressure MPa*3
6	1/4	21	84
9	3/8	21	84
12	1/2	21	84
19	3/4	21	84
25	1	21	84
32	1 1/4	21	84
38	1 1/2	14	56
50	2	10.5	42

\*1 Max. working pressure means continuous max. working pressure.

\*2 Contact us if you are planning to use different fluid.

\*3 We follow JIS B 8360 and change pressure indication.

## Temperature Range

Material of O-rings	Working Temperature
NBR	-20°C ~ +100°C *4 (Ambient Temperature > -30°C)
FKM	-15°C ~ +140°C

\*4 It is described in TR10 according to the change of JIS B 2401. Contact us if you are planning to use different temperature.

The temperature range shown in this chart is for petroleum-based oil only.

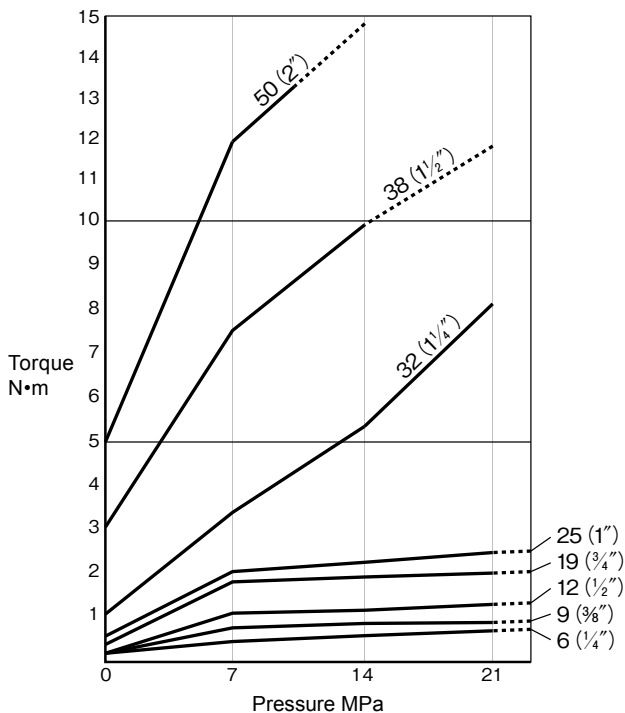
## Maximum Rotation Speed

10 RPM

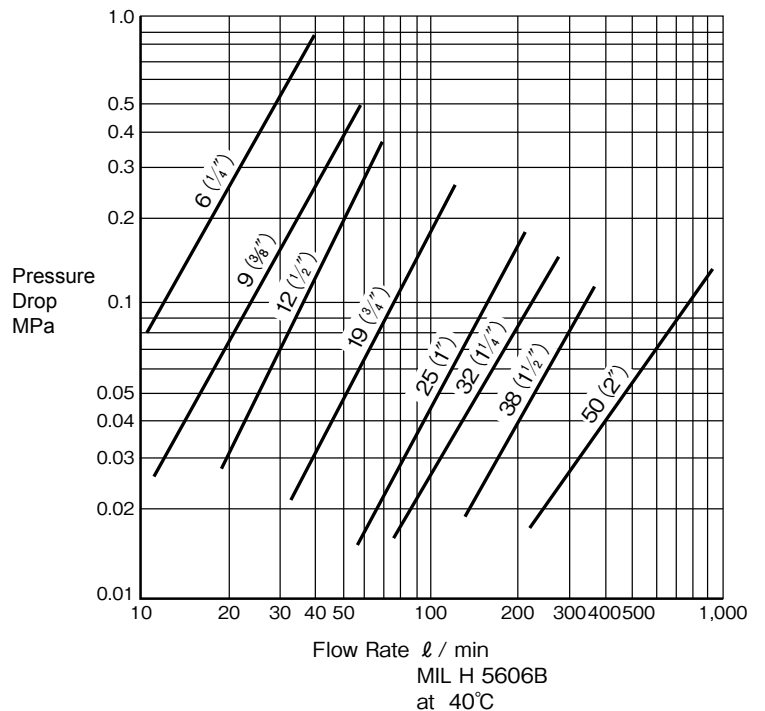
## Maximum Swivel Speed

60°/second

## Relationship between Torque and Pressure



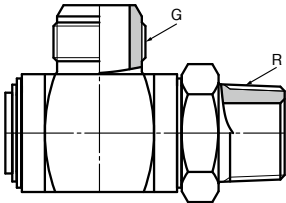
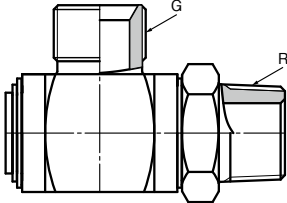
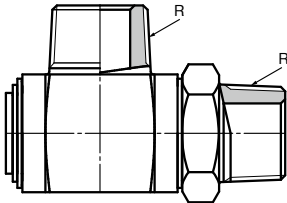
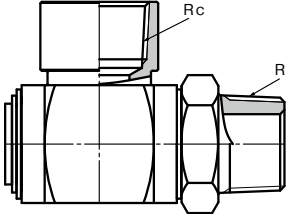
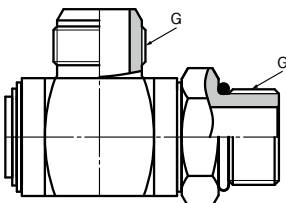
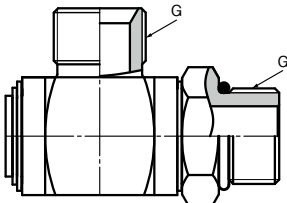
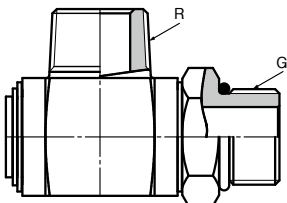
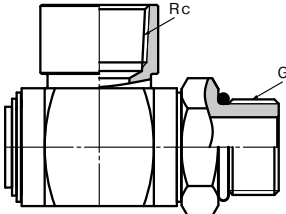
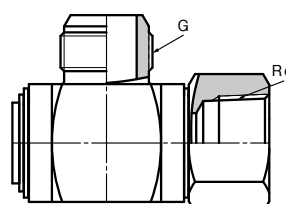
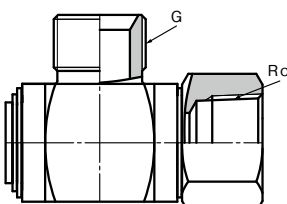
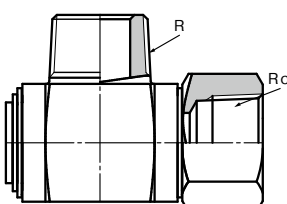
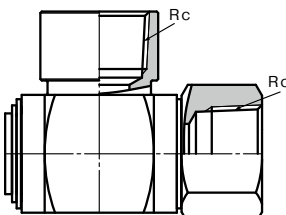
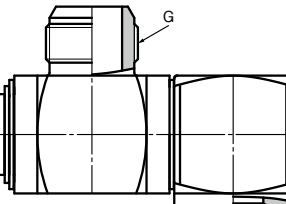
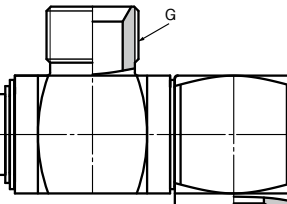
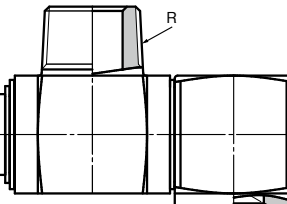
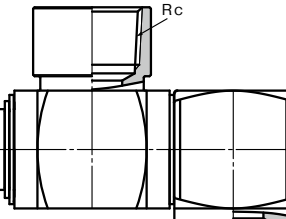
## Relationship between Pressure Drop and Flow Rate



# End Configurations of Swivel Elbow

Standard Type (Short delivery date products)

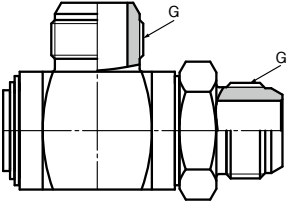
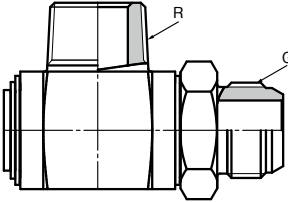
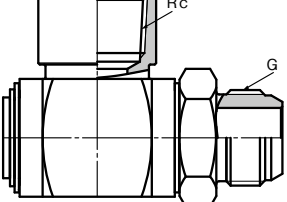
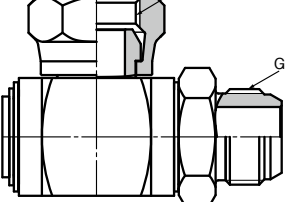
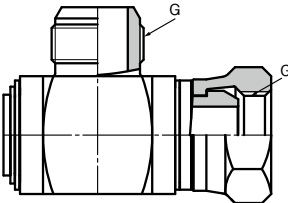
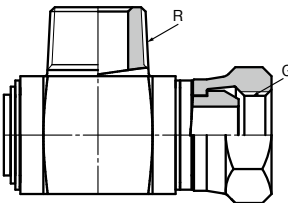
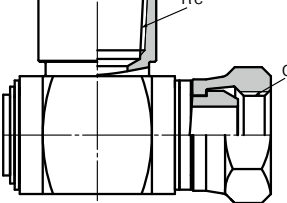
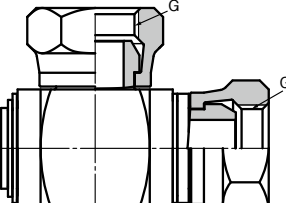
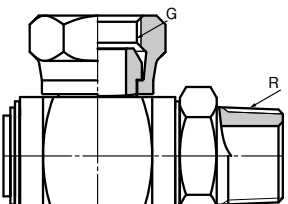
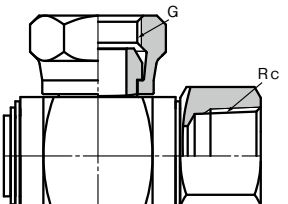
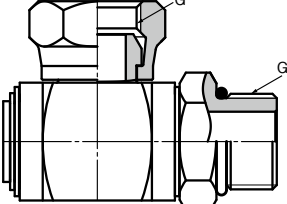
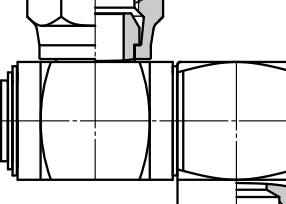
\* Fit hydraulic hose onto the swiveled side.

E103	E203	E303	E403
<p>Swiveled Side 30° male seat</p>  <p>Fixed Side</p>	<p>Swiveled Side 30° female seat</p>  <p>Fixed Side</p>	<p>Swiveled Side</p>  <p>Fixed Side</p>	<p>Swiveled Side</p>  <p>Fixed Side</p>
E107	E207	E307	E407
<p>Swiveled Side 30° male seat</p>  <p>O-ring seal Fixed Side</p>	<p>Swiveled Side 30° female seat</p>  <p>O-ring seal Fixed Side</p>	<p>Swiveled Side</p>  <p>O-ring seal Fixed Side</p>	<p>Swiveled Side</p>  <p>O-ring seal Fixed Side</p>
E104	E204	E304	E404
<p>Swiveled Side 30° male seat</p>  <p>Fixed Side</p>	<p>Swiveled Side 30° female seat</p>  <p>Fixed Side</p>	<p>Swiveled Side</p>  <p>Fixed Side</p>	<p>Swiveled Side</p>  <p>Fixed Side</p>
E109	E209	E309	E409
<p>Swiveled Side 30° male seat</p>  <p>90° cranked shaft Fixed Side</p>	<p>Swiveled Side 30° female seat</p>  <p>90° cranked shaft Fixed Side</p>	<p>Swiveled Side</p>  <p>90° cranked shaft Fixed Side</p>	<p>Swiveled Side</p>  <p>90° cranked shaft Fixed Side</p>

# End Configurations of Swivel Elbow

Semi-Standard Type (please contact us for delivery data)

\* Fit hydraulic hose onto the swiveled side.

E101	E301	E401	E501
<p>Swiveled Side 30° male seat</p>  <p>30° male seat Fixed Side</p>	<p>Swiveled Side</p>  <p>30° male seat Fixed Side</p>	<p>Swiveled Side</p>  <p>30° male seat Fixed Side</p>	<p>Swiveled Side Union nut with 30° male seat</p>  <p>30° male seat Fixed Side</p>
E105	E305	E405	E505
<p>Swiveled Side 30° male seat</p>  <p>Union nut with 30° male seat Fixed Side</p>	<p>Swiveled Side</p>  <p>Union nut with 30° male seat Fixed Side</p>	<p>Swiveled Side</p>  <p>Union nut with 30° male seat Fixed Side</p>	<p>Swiveled Side Union nut with 30° male seat</p>  <p>Union nut with 30° male seat Fixed Side</p>
E503	E504	E507	E509
<p>Swiveled Side Union nut with 30° male seat</p>  <p>Fixed Side</p>	<p>Swiveled Side Union nut with 30° male seat</p>  <p>Fixed Side</p>	<p>Swiveled Side Union nut with 30° male seat</p>  <p>O-ring seal Fixed Side</p>	<p>Swiveled Side Union nut with 30° male seat</p>  <p>90° cranked shaft Fixed Side</p>

## Stock

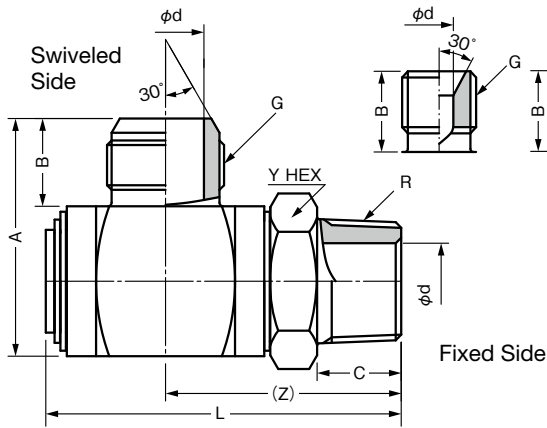
Products marked with ☉ are always in stock and available. contact us for sizes not shown in this chart.

Type Code Nominal size	E103	E203	E303	E403	E104	E304	E404	E107	RA403
6	☉	☉	☉	☉	☉	☉	☉	☉	☉
9	☉	☉	☉	☉	☉	☉	☉	—	☉
12	☉	☉	☉	☉	☉	☉	☉	—	☉
19	☉	☉	☉	☉	—	—	☉	—	☉
25	☉	☉	☉	☉	—	—	☉	—	☉

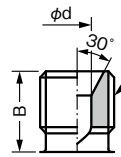
# Standard Type Swivel Elbow Dimensions

\* Fit hydraulic hose onto the swiveled side.

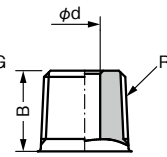
## E103



## E203

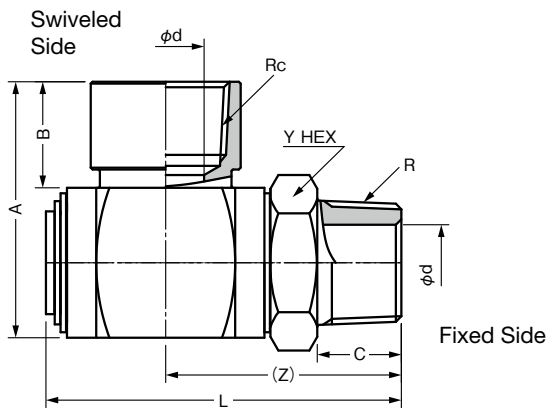


## E303



## E103, E203, E303

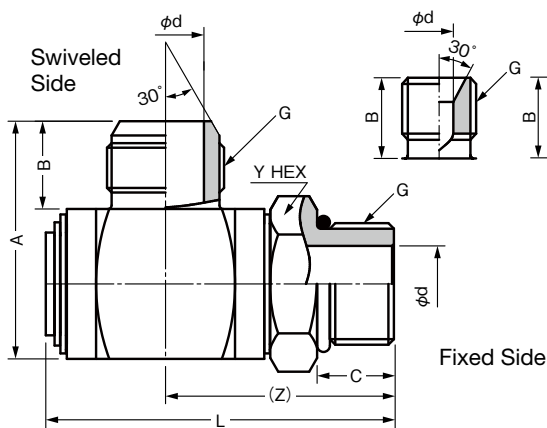
Nominal size	G R	L	A	B	d	C	Y	(Z)	Weight (g)
6	1/4	54	32	13	5	13	19	36	100
9	3/8	62	38	16	8	16	22	42	150
12	1/2	73	46	19	11	19	27	50	270
19	3/4	88	58	22	16	21	36	59	540
25	1	97	65	24	21	23	41	65	760
32	1 1/4	111	76	26	28	25	50	73	1,250
38	1 1/2	126	88	28	34	27	55	82	1,850
50	2	144	101	31	43.5	30	70	95	2,880



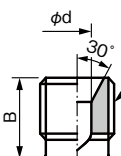
## E403

Nominal size	Rc R	L	A	B	d	C	Y	(Z)	Weight (g)
6	1/4	54	36	17	5	13	19	36	120
9	3/8	62	42	20	8	16	22	42	170
12	1/2	73	50	23	11	19	27	50	300
19	3/4	88	63	27	16	21	36	59	620
25	1	97	70	29	21	23	41	65	840
32	1 1/4	111	81	31	28	25	50	73	1,340
38	1 1/2	126	93	33	34	27	55	82	2,010
50	2	144	106	36	43.5	30	70	95	3,070

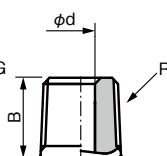
## E107



## E207

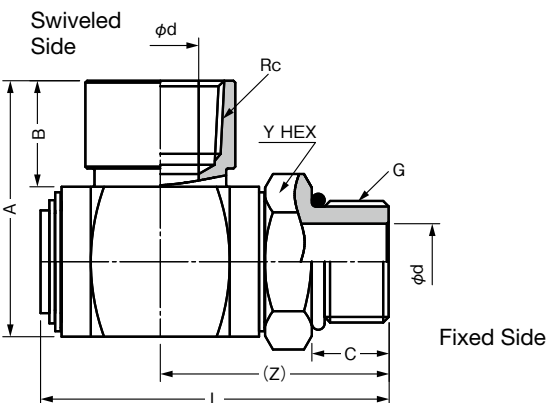


## E307



## E107, E207, E307

Nominal size	G R	L	A	B	d	C	Y	(Z)	O-ring	Weight (g)
6	1/4	53	32	13	5	12	19	36	P11	100
9	3/8	58	38	16	8	12	22	42	P14	150
12	1/2	70	46	19	11	16	27	50	P18	260
19	3/4	84	58	22	16	17	36	59	P22.4	540
25	1	95	65	24	21	21	41	65	P29	750
32	1 1/4	107	76	26	28	21	50	73	P38	1,230
38	1 1/2	120	88	28	34	21	55	82	P44	1,800



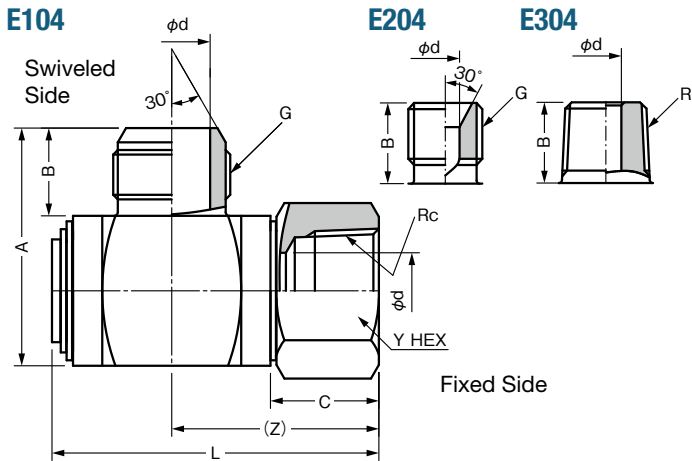
## E407

Nominal size	Rc G	L	A	B	d	C	Y	(Z)	O-ring	Weight (g)
6	1/4	53	36	17	5	12	19	36	P11	120
9	3/8	58	42	20	8	12	22	42	P14	170
12	1/2	70	50	23	11	16	27	50	P18	290
19	3/4	84	63	27	16	17	36	59	P22.4	620
25	1	95	70	29	21	21	41	65	P29	830
32	1 1/4	107	81	31	28	21	50	73	P38	1,320
38	1 1/2	120	93	33	34	21	55	82	P44	1,960



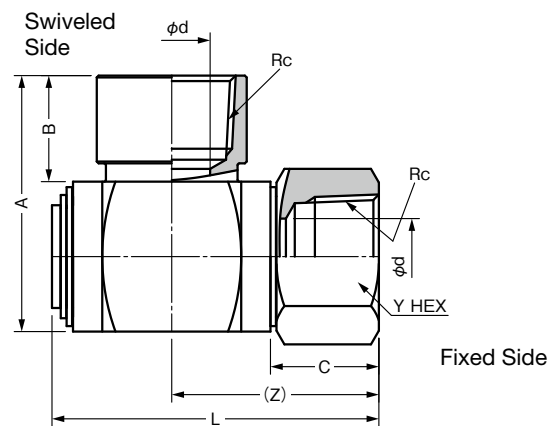
# Standard Type Swivel Elbow Dimensions

\* Fit hydraulic hose onto the swiveled side.



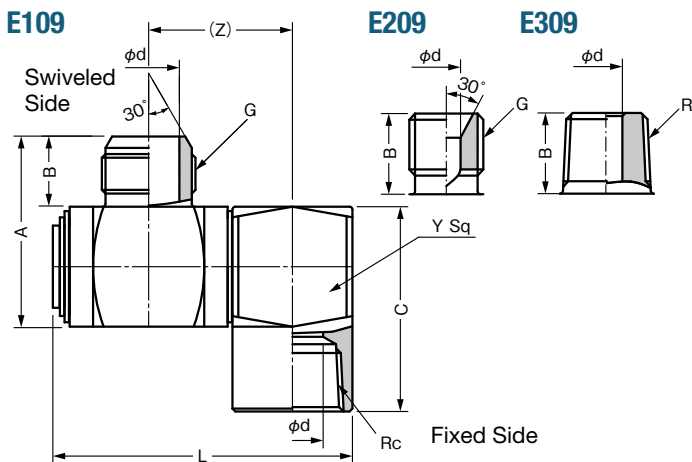
## E104, E204, E304

Nominal size	G R Rc	L	A	B	d	C	Y	(Z)	Weight (g)
6	1/4	49	32	13	5	16	19	31	100
9	3/8	56	38	16	8	19	22	36	150
12	1/2	66	46	19	11	22	27	43	250
19	3/4	80	58	22	16	25	36	51	530
25	1	89	65	24	21	28	41	57	730
32	1 1/4	102	76	26	28	30	50	64	1,200
38	1 1/2	116	88	28	34	32	55	72	1,750
50	2	129	101	31	43.5	35	70	80	2,660



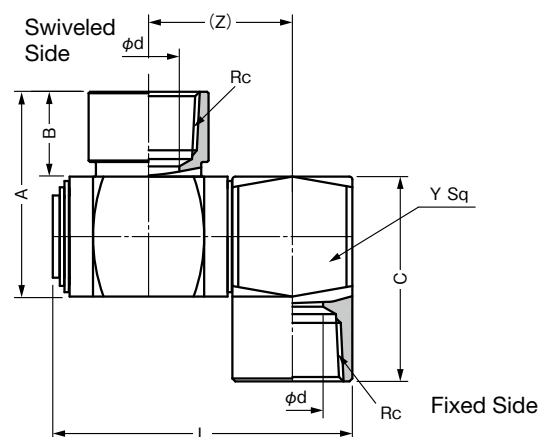
## E404

Nominal size	Rc	L	A	B	d	C	Y	(Z)	Weight (g)
6	1/4	49	36	17	5	16	19	31	120
9	3/8	56	42	20	8	19	22	36	170
12	1/2	66	50	23	11	22	27	43	280
19	3/4	80	63	27	16	25	36	51	610
25	1	89	70	29	21	28	41	57	810
32	1 1/4	102	81	31	28	30	50	64	1,300
38	1 1/2	116	93	33	34	32	55	72	1,910
50	2	129	106	36	43.5	35	70	80	2,840



## E109, E209, E309

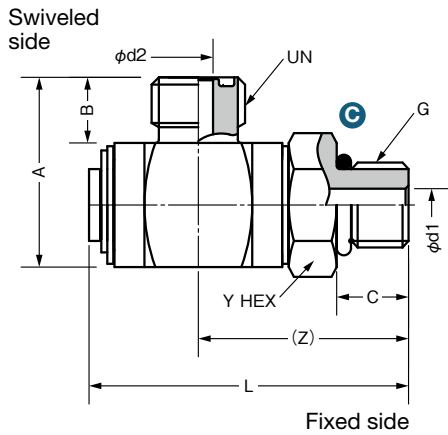
Nominal size	G R Rc	L	A	B	d	C	Y	(Z)	Weight (g)
6	1/4	52	32	13	5	36	19	24	150
9	3/8	59	38	16	8	42	22	28	230
12	1/2	71	46	19	11	50	27	34	370
19	3/4	91	58	22	16	63	36	44	820
25	1	102	65	24	21	70	41	49	1,110
32	1 1/4	122	76	26	28	81	50	59	1,860
38	1 1/2	144	88	28	34	93	60	70	2,970
50	2	164	101	31	43.5	106	70	80	4,360



## E409

Nominal size	Rc	L	A	B	d	C	Y	(Z)	Weight (g)
6	1/4	52	36	17	5	36	19	24	170
9	3/8	59	42	20	8	42	22	28	250
12	1/2	71	50	23	11	50	27	34	400
19	3/4	91	63	27	16	63	36	44	890
25	1	102	70	29	21	70	41	49	1,190
32	1 1/4	122	81	31	28	81	50	59	1,950
38	1 1/2	144	93	33	34	93	60	70	3,130
50	2	164	106	36	43.5	106	70	80	4,550

# O-ring Seal Type Swivel Elbow Dimensions

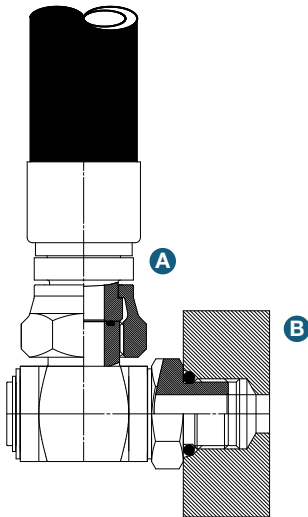


## E1107

\* Fit hydraulic hose onto the swiveled side.

Nominal size	UN	G	L	(Z)	C	d1	A	B	Y	d2	Thread(G) side O-Ring (series-p)	Weight (g)	References Thread(UN) side O-Ring (series-F)
6	9/16-18UNF	1/4	53	35	12	5	29	10	19	5	P11	110	011
9	11/16-16UN	3/8	58	38	12	8	33	11	22	7	P14	160	012
12	13/16-16UN	1/2	70	47	16	11	40	13	27	10	P18	270	014
19	1 3/16-12UN	3/4	84	55	17	16	53	17	36	16	P22.4	580	018
25	1 7/16-12UN	1	95	63	21	21	59	18	41	21	P29	810	021

- A** Counterpart of Housing : Union nut UN with O-ring face seal (ORFS)
- B** Counterpart of Shaft : JIS B 2351 (Attachment-7 Type:O)  
Female G with O-ring Groove
- C** O-ring on thread G side is installed when product is delivered.

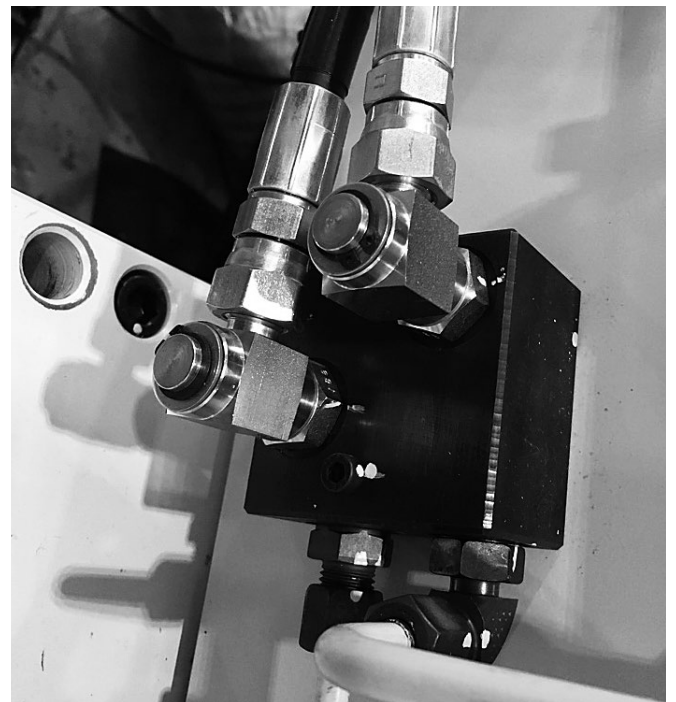


The fixed side (Shaft side thread & sealing sheet) of the Swivel Elbow is increasing in adoption of the G thread O-ring seal type instead of the R thread taper seal type for the following reasons.

- ① Certainty of assembly work
- ② Seal stability

ABC COUPLING KOGYO INC.  
E107, E207, E307, E407, E1107.  
We have a lineup.

## Example of attached to actual machine



[MEMO]

# Rotary Joint

## Features & Specifications

### Features

#### 1. Lower torque

The internal thrust bearings allow rotation and rocking with lower torque than Swivel Elbow (less than 1/2) is possible.

#### 2. Lower pressure drop

Lower pressure drop than Swivel Elbow having L-shape body.

### Specifications

#### Pressure

(at Nipple & Insert & Socket : steel(Zinc plating), Oring : NBR, Fluid : petroleum-based oil)\*2

Nominal size	Thread	Max. Working*1 Pressure MPa*3	Min. Burst Pressure MPa*3
6	1/4	21	84
9	3/8	21	84
12	1/2	21	84
19	3/4	21	84
25	1	21	84
32	1 1/4	21	84
38	1 1/2	14	56
50	2	10.5	42

\*1 Max. working pressure means continuous max. working pressure.

\*2 Contact us if you are planning to use different fluid.

\*3 We follow JIS B 8360 and change pressure indication.

#### Temperature Range

Material of O rings	Working temperature
NBR	-20°C ~ +100°C *4 (Ambient Temperature > -30°C)
FKM	-15°C ~ +140°C

The temperature range shown in this chart is for petroleum-based oil only.

\*4 It is described in TR10 according to the change of JIS B 2401.

Contact us if you are planning to use below -20°C

#### Max. Rotation Speed

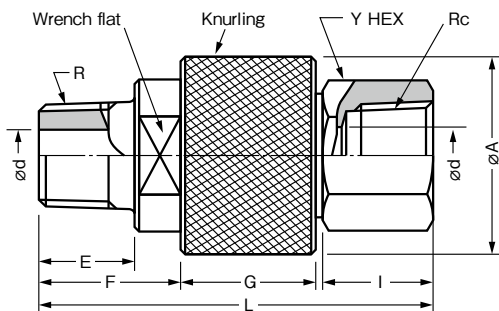
10RPM

#### Max. Swivel Speed

60°/second

### Rotary joint Dimensions

#### RA403



Nominal size	Rc R	L	A	d	E	F	G	I	Y	Weight (g)
6	1/4	67	32	5	13	22	27	17	19	200
9	3/8	75	35	8	16	26	28	20	22	280
12	1/2	84	38	10	19	30	30	23	27	370
19	3/4	96	52	16	21	33	34	27	36	770
25	1	103	58	20.5	23	36	36	29	41	980
32	1 1/4	111	64	26	25	39	39	31	50	1,340
38	1 1/2	125	77	34	27	44	45	33	55	1,990
50	2	137	92	42	30	50	49	36	70	3,080

Sizes 6, 9, 12, 19, 25 are standard products and always in Stock.  
contact us for size 32 or larger.



Bearings used in stainless steel rotary joints are not stainless steel. They are standard steel bearings. Please consult us beforehand if there is a possibility that product comes in contact with in the environment it is used.

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Total selle

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