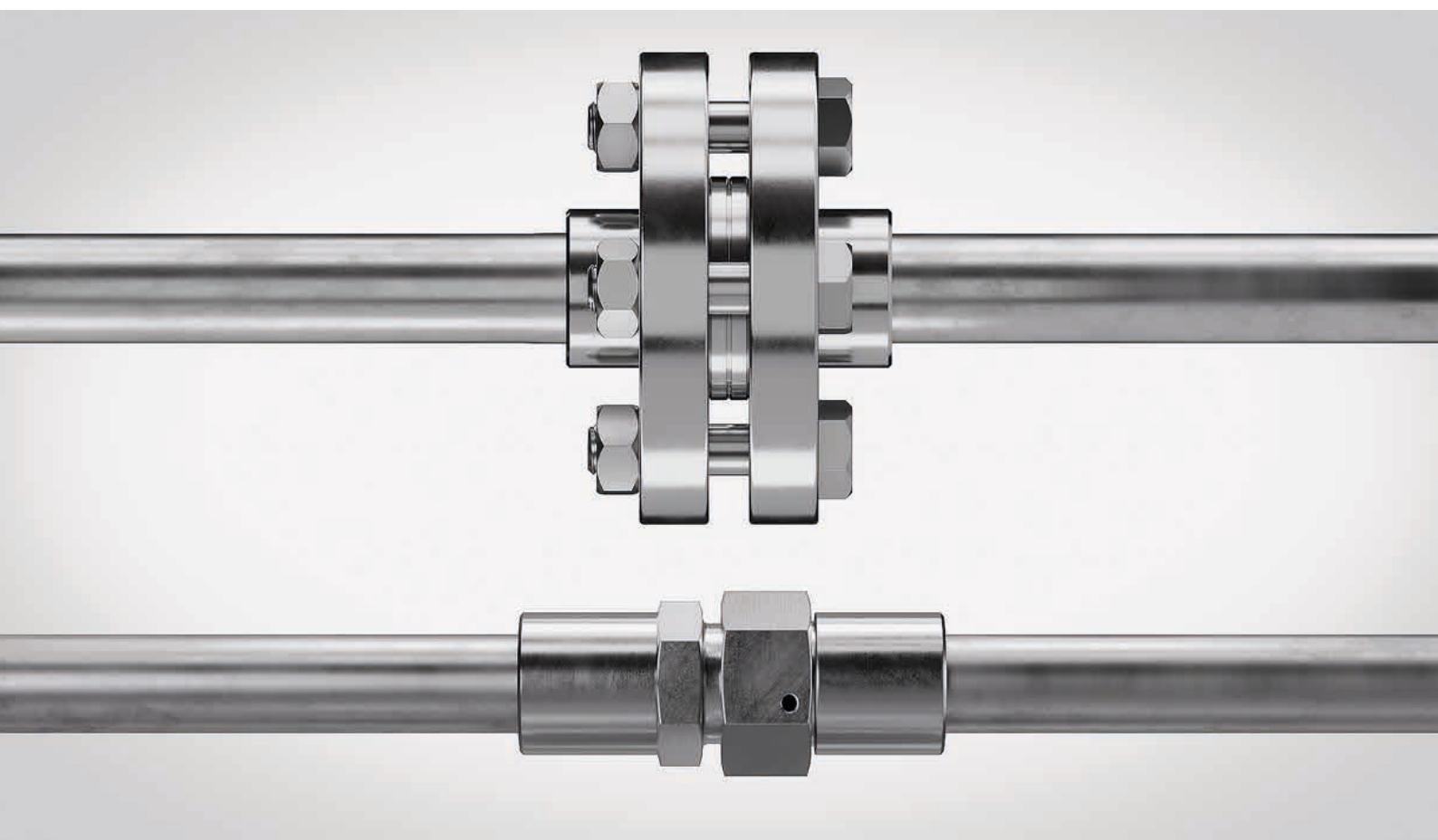


 **ALFAGOMMA**

THUNDER-LOCK



// THUNDER-LOCK

Thunder-lock is a revolutionary weldless connection for rigid pipes, providing the same reliability as welding without the associated risks and costs.

The tube is **permanently formed and sealed** to the end termination by means of a cold expansion process using a **compact portable tool**, not requiring a specialised technician. In addition to reduced costs and ease of use, some of the other benefits of the process offered are a **high degree of safety** through minimised injury risk without the need for fire-fighting supervision while providing a leak-free pipeline solution.

Thunder-lock makes possible the **easy and fast connection of pipelines**, even in confined spaces, such as those found on board ships, representing the **best alternative to welding** and in compliance with the stringent requirements in both the **naval and military fields**.

Thunder-lock is designed with **safety back-up o-ring** to prevent internal corrosion due to external contaminants.

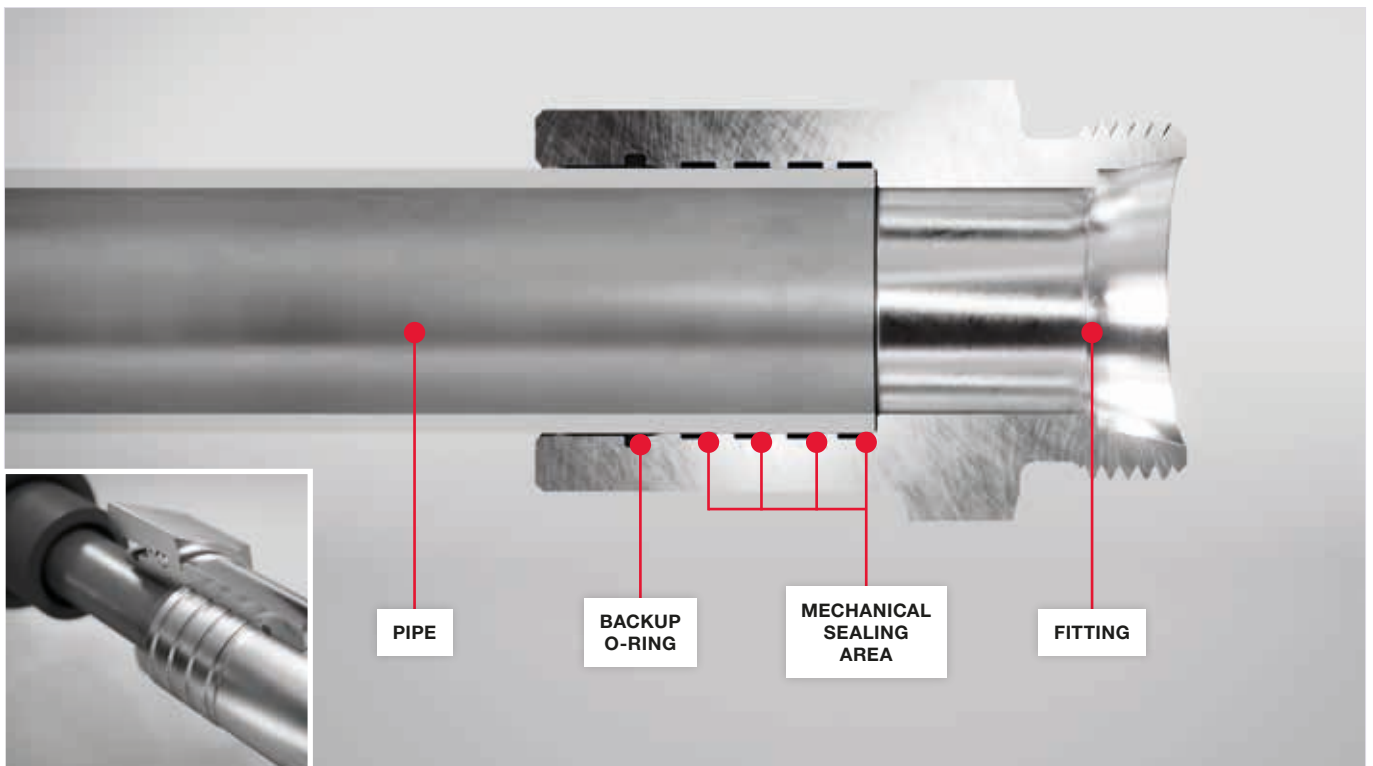
The technology is suitable for:

- metric tubes and NPS pipes
- high pressure applications

Available in:

- large range of configurations
- wide variety of materials

// WELD FREE DESIGN



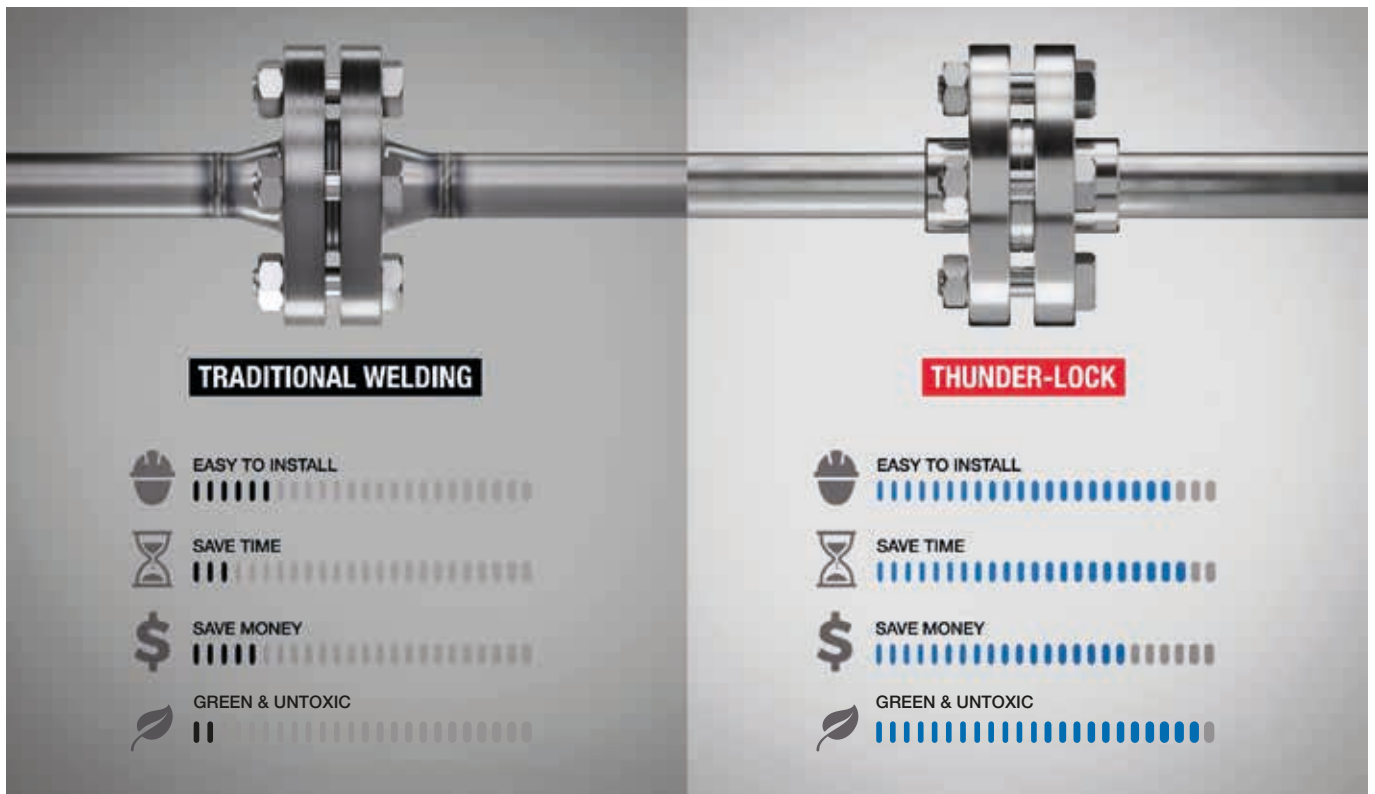
// TRADITIONAL WELDING VERSUS ALFAGOMMA THUNDER-LOCK

TRADITIONAL WELDING

- ⚠ HIGH DOWNTIME BETWEEN WELDING STAGES
- ⚠ HIGH RISKS OF INJURIES
- ⚠ FIRE-FIGHTING SUPERVISION
- ⚠ INTERNAL DIRT TO BE REMOVED
- ⚠ UNHEALTHY TOXIC GAS RELEASED

ALFAGOMMA THUNDER-LOCK

- ✓ COMPLETED IN 15 TO 20 SECONDS
- ✓ EASY ON-SITE INSTALLATION
- ✓ NO RISK OF FIRE
- ✓ NO NEED FOR FLUSHING
- ✓ NO TOXIC GAS RELEASED

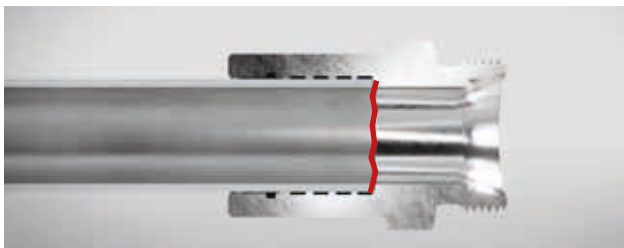


// THUNDER-LOCK, A GREEN INNOVATIVE TECHNOLOGY



Thunder-lock is a **green solution able to reduce assembly time, minimise injury risk and offer greater flexibility** compared to traditional welding joints. **Eco-friendly** and significantly better to use from a health standpoint by **eliminating the risks of inhalation of toxic gases and eye injury from welding radiation**.

100% mechanical sealing, the installation can be easily done expanding the pipe into the fitting grooves, resulting in **the absence of fumes and gases** and **eliminating the waste of post welding treatments such as specific flushing oils**.



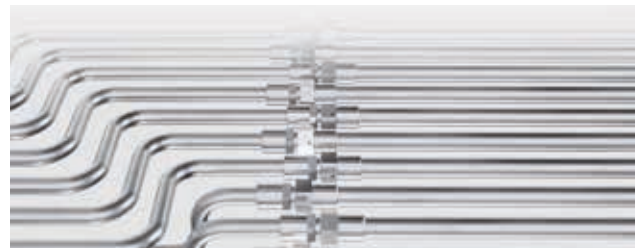
1 Cutting and deburring pipes with on-site tools allowed (high precision not required)



2 Setting the torque of the tool is the only requirement to ensure the expected results



3 Connecting in a matter of seconds without dross, toxic gases, risks



4 Creating extensive piping systems with multiple joints in a short time



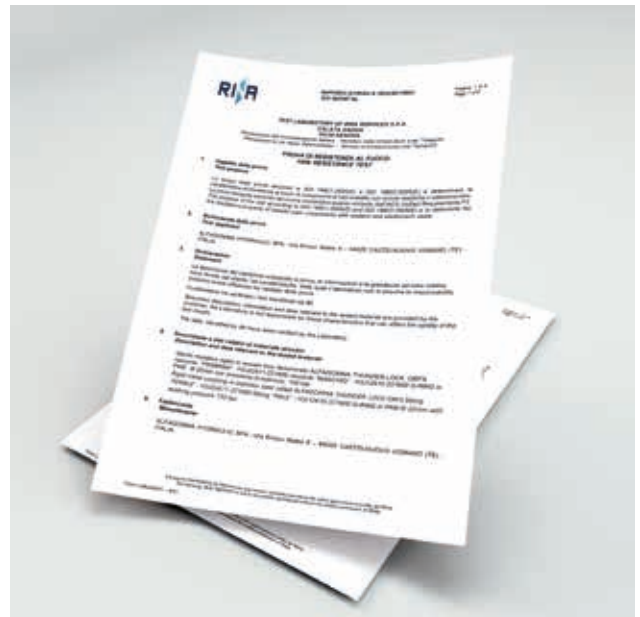
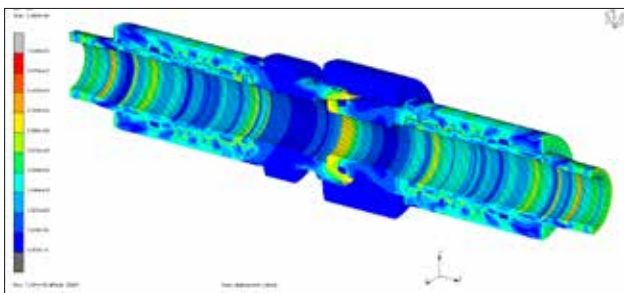
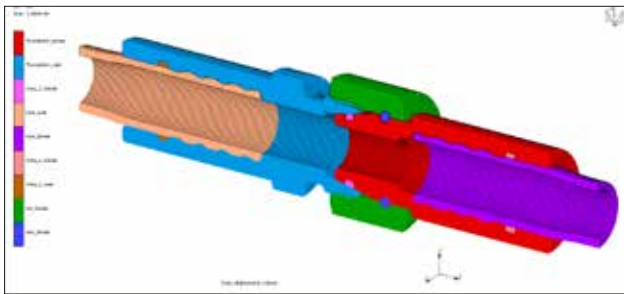
// QUALITY & APPROVALS

Thunder-lock has been extensively tested by the Alfagomma R&D department, and externally tested according to RINA rules and standards.

To obtain the marine type approval, it has passed tests such as:

- **tightness test**
- **combined pressure pulsation and vibration test**
- **burst pressure test**
- **pull-out test**
- **fire endurance test**
- **vacuum test**
- **repeated assembly test.**

Thunder-lock has also passed a MIL-S-901 shock test performed at the IT Navy Research and Experimentation Center (CSSN - Centro di Supporto e Sperimentazione Navale).



// ORFS



12mm to 38mm



to max WP 400 bar

// Soft seal flat face
// Retractable nut

General features: ORFS Thunder-lock male fitting has a soft seal flat face, while the female has a flat face. The seal works by compressing the o-ring onto the flat face of the female, similar to SAE flange type fitting. Each fitting is provided with a NBR safety back-up o-ring to prevent internal corrosion due to external contaminants such as water, oil, dust, etc.

Fitting materials:

Galvanized carbon steel
AISI316 stainless steel.

O-ring materials: NBR, FKM, EPDM, Graphite.

Norm: ISO 8434-3

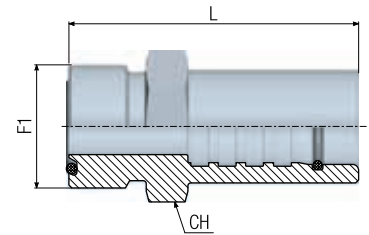
Temperature range:

-40 °C +100 °C (-40 °F +212 °F)

Temperature up to +200 °C when FKM, EPDM or Graphite seals are used.

Note: specific instructions for installation, use and maintenance are separately provided.

For specific needs please contact your local Alfagomma representative.



// ORFS - ISO 8434-3

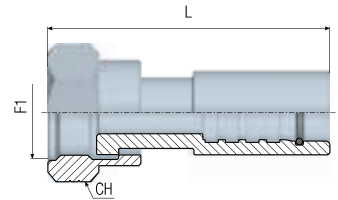
ORFS Male - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)			(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H1J12410-120800	12mm	1,5	2	08	13/16"-16 UN	48,7	22	400	5800	150	2175	0,077	0,170
H1J12410-151000	15mm	1,5	2,5	10	1"-14 UNS	52,2	27	400	5800	150	2175	0,109	0,240
H1J12410-161000	16mm	2	3	10	1"-14 UNS	52,2	27	400	5800	150	2175	0,111	0,245
H1J12410-181200	18mm	1	3	12	1"3/16-12 UN	55,7	32	400	5800	150	2175	0,186	0,410
H1J12410-201200	20mm	2	3	12	1"3/16-12 UN	55,7	32	350	5075	150	2175	0,181	0,399
H1J12410-221600	22mm	1	3	16	1" 7/16-12 UN	58,2	38	350	5075	150	2175	0,279	0,615
H1J12410-251600	25mm	2	3,5	16	1" 7/16-12 UN	58,2	38	350	5075	150	2175	0,265	0,584
H1J12410-282000	28mm	1	3	20	1"11/16-12 UN	60,2	46	350	5075	150	2175	0,338	0,745
H1J12410-302000	30mm	1	3,5	20	1"11/16-12 UN	60,2	46	250	3625	150	2175	0,369	0,813
H1J12410-352400	35mm	1	3	24	2"-12 UN	62,2	55	250	3625	150	2175	0,510	1,124
H1J12410-382400	38mm	2	4	24	2"-12 UN	62,2	55	200	2900	150	2175	0,543	1,197
H1J12410-040800	1/4" NPS	sch. 40	sch. 80	08	13/16"-16 UN	48,7	22	400	5800	150	2175	0,083	0,183
H1J12410-061000	3/8" NPS	sch. 40	sch. 80	10	1"-14 UNS	52,2	27	400	5800	150	2175	0,119	0,262
H1J12410-081200	1/2" NPS	sch. 10	sch. 80	12	1"3/16-12 UN	55,7	32	400	5800	150	2175	0,202	0,445
H1J12410-121600	3/4" NPS	sch. 10	sch. 80	16	1" 7/16-12 UN	58,2	38	350	5075	150	2175	0,273	0,602
H1J12410-162400	1" NPS	sch. 10	sch. 40	24	2"-12 UN	62,2	55	250	3625	150	2175	0,530	1,168

// ORFS - ISO 8434-3

ORFS Male - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)			(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H3J12410-120800	12mm	1,5	2	08	13/16"-16 UN	48,7	22	400	5800	150	2175	0,077	0,170
H3J12410-151000	15mm	1,5	2,5	10	1"-14 UNS	52,2	27	400	5800	150	2175	0,109	0,240
H3J12410-161000	16mm	2	3	10	1"-14 UNS	52,2	27	400	5800	150	2175	0,111	0,245
H3J12410-181200	18mm	1	3	12	1"3/16-12 UN	55,7	32	400	5800	150	2175	0,186	0,410
H3J12410-201200	20mm	2	3	12	1"3/16-12 UN	55,7	32	350	5075	150	2175	0,181	0,399
H3J12410-221600	22mm	1	3	16	1" 7/16-12 UN	58,2	38	350	5075	150	2175	0,279	0,615
H3J12410-251600	25mm	2	3,5	16	1" 7/16-12 UN	58,2	38	350	5075	150	2175	0,265	0,584
H3J12410-282000	28mm	1	3	20	1"11/16-12 UN	60,2	46	350	5075	150	2175	0,338	0,745
H3J12410-302000	30mm	1	3,5	20	1"11/16-12 UN	60,2	46	250	3625	150	2175	0,369	0,813
H3J12410-352400	35mm	1	3	24	2"-12 UN	62,2	55	250	3625	150	2175	0,510	1,124
H3J12410-382400	38mm	2	4	24	2"-12 UN	62,2	55	200	2900	150	2175	0,543	1,197
H3J12410-040800	1/4" NPS	sch. 40	sch. 80	08	13/16"-16 UN	48,7	22	400	5800	150	2175	0,083	0,183
H3J12410-061000	3/8" NPS	sch. 40	sch. 80	10	1"-14 UNS	52,2	27	400	5800	150	2175	0,119	0,262
H3J12410-081200	1/2" NPS	sch. 10	sch. 80	12	1"3/16-12 UN	55,7	32	400	5800	150	2175	0,202	0,445
H3J12410-121600	3/4" NPS	sch. 10	sch. 80	16	1" 7/16-12 UN	58,2	38	350	5075	150	2175	0,273	0,602
H3J12410-162400	1" NPS	sch. 10	sch. 40	24	2"-12 UN	62,2	55	250	3625	150	2175	0,530	1,168



// ORFS - ISO 8434-3

ORFS Female - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)			(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H1J22411-120800	12mm	1,5	2	08	13/16"-16 UN	63,7	27	400	5800	150	2175	0,101	0,223
H1J22411-151000	15mm	1,5	2,5	10	1"-14 UNS	66,2	30	400	5800	150	2175	0,124	0,273
H1J22411-161000	16mm	2	3	10	1"-14 UNS	68,2	30	400	5800	150	2175	0,130	0,287
H1J22411-181200	18mm	1	3	12	1"3/16-12 UN	70,2	36	400	5800	150	2175	0,216	0,476
H1J22411-201200	20mm	2	3	12	1"3/16-12 UN	72,2	36	350	5075	150	2175	0,218	0,480
H1J22411-221600	22mm	1	3	16	1" 7/16-12 UN	72,5	41	350	5075	150	2175	0,299	0,659
H1J22411-251600	25mm	2	3,5	16	1" 7/16-12 UN	72,5	41	350	5075	150	2175	0,267	0,589
H1J22413-282000	28mm	1	3	20	1"11/16-12 UN	51,2	50	350	5075	150	2175	0,319	0,702
H1J22411-302000	30mm	1	3,5	20	1"11/16-12 UN	75,5	50	250	3625	150	2175	0,414	0,913
H1J22411-352400	35mm	1	3	24	2"-12 UN	76,2	60	250	3625	150	2175	0,553	1,219
H1J22411-382400	38mm	2	4	24	2"-12 UN	78,2	60	200	2900	150	2175	0,604	1,330
H1J22411-040800	1/4" NPS	sch. 40	sch. 80	08	13/16"-16 UN	63,7	27	400	5800	150	2175	0,107	0,236
H1J22411-061000	3/8" NPS	sch. 40	sch. 80	10	1"-14 UNS	68,2	30	400	5800	150	2175	0,140	0,309
H1J22411-081200	1/2" NPS	sch. 10	sch. 80	12	1"3/16-12 UN	72,2	36	400	5800	150	2175	0,241	0,531
H1J22411-121600	3/4" NPS	sch. 10	sch. 80	16	1" 7/16-12 UN	74,5	41	350	5075	150	2175	0,303	0,668
H1J22411-162400	1" NPS	sch. 10	sch. 40	24	2"-12 UN	76,2	60	250	3625	150	2175	0,573	1,263

// ORFS - ISO 8434-3

ORFS Female - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)			(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H3J22411-120800	12mm	1,5	2	08	13/16"-16 UN	63,7	27	400	5800	150	2175	0,101	0,223
H3J22411-151000	15mm	1,5	2,5	10	1"-14 UNS	66,2	30	400	5800	150	2175	0,124	0,273
H3J22411-161000	16mm	2	3	10	1"-14 UNS	68,2	30	400	5800	150	2175	0,130	0,287
H3J22411-181200	18mm	1	3	12	1"3/16-12 UN	70,2	36	400	5800	150	2175	0,216	0,476
H3J22411-201200	20mm	2	3	12	1"3/16-12 UN	72,2	36	350	5075	150	2175	0,218	0,480
H3J22411-221600	22mm	1	3	16	1" 7/16-12 UN	72,5	41	350	5075	150	2175	0,299	0,659
H3J22411-251600	25mm	2	3,5	16	1" 7/16-12 UN	72,5	41	350	5075	150	2175	0,267	0,589
H3J22413-282000	28mm	1	3	20	1"11/16-12 UN	51,2	50	350	5075	150	2175	0,319	0,702
H3J22411-302000	30mm	1	3,5	20	1"11/16-12 UN	75,5	50	250	3625	150	2175	0,414	0,913
H3J22411-352400	35mm	1	3	24	2"-12 UN	76,2	60	250	3625	150	2175	0,553	1,219
H3J22411-382400	38mm	2	4	24	2"-12 UN	78,2	60	200	2900	150	2175	0,604	1,330
H3J22411-040800	1/4" NPS	sch. 40	sch. 80	08	13/16"-16 UN	63,7	27	400	5800	150	2175	0,107	0,236
H3J22411-061000	3/8" NPS	sch. 40	sch. 80	10	1"-14 UNS	68,2	30	400	5800	150	2175	0,140	0,309
H3J22411-081200	1/2" NPS	sch. 10	sch. 80	12	1"3/16-12 UN	72,2	36	400	5800	150	2175	0,241	0,531
H3J22411-121600	3/4" NPS	sch. 10	sch. 80	16	1" 7/16-12 UN	74,5	41	350	5075	150	2175	0,303	0,668
H3J22411-162400	1" NPS	sch. 10	sch. 40	24	2"-12 UN	76,2	60	250	3625	150	2175	0,573	1,263

// DIN 24°



12mm to 42mm



to max WP 630 bar

// Soft seal 24° cone
// Thrust wire nut

General features: DIN METRIC Thunder-lock are available in L/S series for a complete interface with all hydraulic systems. The female has a 24° cone with o-ring (DKO type). Each fitting is provided with a NBR safety back-up o-ring to prevent internal corrosion due to external contaminants such as water, oil, dust, etc.

Fitting materials:

Galvanized carbon steel
AISI316 stainless steel.

O-ring materials: NBR, FKM, EPDM.

Norm: ISO 8434-1

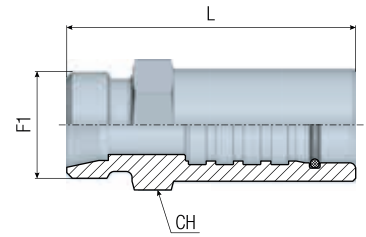
Temperature range:

-40 °C +100 °C (-40 °F +212 °F)

Temperature up to +200°C when FKM or EPDM seals are used.

Note: specific instructions for installation, use and maintenance are separately provided.

For specific needs please contact your local Alfagomma representative.



// DIN - ISO 8434-1

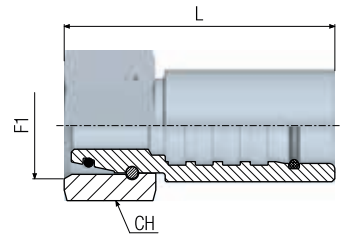
DIN Male 24° CEL - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H1J11110-121800	12mm	1,2	2	M18x1,5	48,7	19	330	4785	150	2175	0,060	0,132
H1J11110-152200	15mm	1,5	2,5	M22x1,5	49,7	22	275	3987	150	2175	0,071	0,157
H1J11110-182600	18mm	2	3	M26X1,5	50,7	27	250	3625	150	2175	0,104	0,229
H1J11110-223000	22mm	2	3	M30x2	54,7	32	215	3117	150	2175	0,176	0,388
H1J11110-283600	28mm	2	3	M36x2	56,7	36	165	2392	150	2175	0,194	0,428
H1J11110-354500	35mm	2	3	M45x2	60,7	46	150	2175	150	2175	0,311	0,686
H1J11110-425200	42mm	2	3	M52x2	62,7	55	150	2175	150	2175	0,437	0,963
H1J11110-042200	1/4" NPS	sch. 10	sch. 40	M22x1,5	49,7	22	275	3987	150	2175	0,078	0,172
H1J11110-062600	3/8" NPS	sch. 10	sch. 80	M26X1,5	50,7	27	250	3625	150	2175	0,110	0,243
H1J11110-083000	1/2" NPS	sch. 10	sch. 80	M30x2	54,7	32	215	3117	150	2175	0,181	0,399
H1J11110-123600	3/4" NPS	sch. 5	sch. 80	M36x2	56,7	36	165	2392	150	2175	0,207	0,456
H1J11110-164500	1" NPS	sch. 5	sch. 40	M45x2	60,7	46	150	2175	150	2175	0,331	0,730
H1J11110-205200	1"1/4 NPS	sch. 10	sch. 40	M52x2	62,7	55	150	2175	150	2175	0,434	0,957

// DIN - ISO 8434-1

DIN Male 24° CEL - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H3J11110-121800	12mm	1,2	2	M18x1,5	48,7	19	330	4785	150	2175	0,060	0,132
H3J11110-152200	15mm	1,5	2,5	M22x1,5	49,7	22	275	3987	150	2175	0,071	0,157
H3J11110-182600	18mm	2	3	M26X1,5	50,7	27	250	3625	150	2175	0,104	0,229
H3J11110-223000	22mm	2	3	M30x2	54,7	32	215	3117	150	2175	0,176	0,388
H3J11110-283600	28mm	2	3	M36x2	56,7	36	165	2392	150	2175	0,194	0,428
H3J11110-354500	35mm	2	3	M45x2	60,7	46	150	2175	150	2175	0,311	0,686
H3J11110-425200	42mm	2	3	M52x2	62,7	55	150	2175	150	2175	0,437	0,963
H3J11110-042200	1/4" NPS	sch. 10	sch. 40	M22x1,5	49,7	22	275	3987	150	2175	0,078	0,172
H3J11110-062600	3/8" NPS	sch. 10	sch. 80	M26X1,5	50,7	27	250	3625	150	2175	0,110	0,243
H3J11110-083000	1/2" NPS	sch. 10	sch. 80	M30x2	54,7	32	215	3117	150	2175	0,181	0,399
H3J11110-123600	3/4" NPS	sch. 5	sch. 80	M36x2	56,7	36	165	2392	150	2175	0,207	0,456
H3J11110-164500	1" NPS	sch. 5	sch. 40	M45x2	60,7	46	150	2175	150	2175	0,331	0,730
H3J11110-205200	1"1/4 NPS	sch. 10	sch. 40	M52x2	62,7	55	150	2175	150	2175	0,434	0,957



// DIN - ISO 8434-1

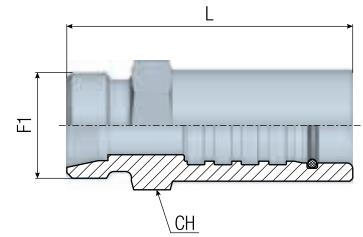
DIN Female 24° DKOL - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H1J21512-121800	12mm	1,2	2	M18x1,5	45,8	22	330	4785	150	2175	0,073	0,161
H1J21512-152200	15mm	1,5	2,5	M22x1,5	49,2	27	275	3987	150	2175	0,103	0,227
H1J21512-182600	18mm	2	3	M26X1,5	47,7	32	250	3625	150	2175	0,135	0,298
H1J21512-223000	22mm	2	3	M30x2	49,7	36	215	3117	150	2175	0,201	0,443
H1J21512-283600	28mm	2	3	M36x2	50,7	41	165	2392	150	2175	0,217	0,478
H1J21512-354500	35mm	2	3	M45x2	56,7	50	150	2175	150	2175	0,341	0,752
H1J21512-425200	42mm	2	3	M52x2	54,7	60	150	2175	150	2175	0,471	1,038
H1J21512-042200	1/4" NPS	sch. 10	sch. 40	M22x1,5	49,2	27	275	3987	150	2175	0,110	0,243
H1J21512-062600	3/8" NPS	sch. 10	sch. 40	M26X1,5	47,7	32	250	3625	150	2175	0,140	0,309
H1J21512-083000	1/2" NPS	sch. 10	sch. 80	M30x2	49,7	36	215	3117	150	2175	0,207	0,456
H1J21512-123600	3/4" NPS	sch. 5	sch. 80	M36x2	50,7	41	165	2392	150	2175	0,229	0,505
H1J21512-164500	1" NPS	sch. 5	sch. 40	M45x2	56,7	50	150	2175	150	2175	0,361	0,796
H1J21512-205200	1"1/4 NPS	sch. 10	sch. 40	M52x2	54,7	60	150	2175	150	2175	0,468	1,032

// DIN - ISO 8434-1

DIN Female 24° DKOL - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H3J21512-121800	12mm	1,2	2	M18x1,5	45,8	22	330	4785	150	2175	0,073	0,161
H3J21512-152200	15mm	1,5	2,5	M22x1,5	49,2	27	275	3987	150	2175	0,103	0,227
H3J21512-182600	18mm	2	3	M26X1,5	47,7	32	250	3625	150	2175	0,135	0,298
H3J21512-223000	22mm	2	3	M30x2	49,7	36	215	3117	150	2175	0,201	0,443
H3J21512-283600	28mm	2	3	M36x2	50,7	41	165	2392	150	2175	0,217	0,478
H3J21512-354500	35mm	2	3	M45x2	56,7	50	150	2175	150	2175	0,341	0,752
H3J21512-425200	42mm	2	3	M52x2	54,7	60	150	2175	150	2175	0,471	1,038
H3J21512-042200	1/4" NPS	sch. 10	sch. 40	M22x1,5	49,2	27	275	3987	150	2175	0,110	0,243
H3J21512-062600	3/8" NPS	sch. 10	sch. 80	M26X1,5	47,7	32	250	3625	150	2175	0,140	0,309
H3J21512-083000	1/2" NPS	sch. 10	sch. 80	M30x2	49,7	36	215	3117	150	2175	0,207	0,456
H3J21512-123600	3/4" NPS	sch. 5	sch. 80	M36x2	50,7	41	165	2392	150	2175	0,229	0,505
H3J21512-164500	1" NPS	sch. 5	sch. 40	M45x2	56,7	50	150	2175	150	2175	0,361	0,796
H3J21512-205200	1"1/4 NPS	sch. 10	sch. 40	M52x2	54,7	60	150	2175	150	2175	0,468	1,032



// DIN - ISO 8434-1

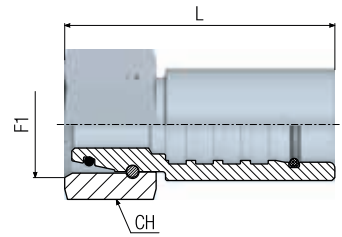
DIN Male 24° CES - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H1J11210-122000	12mm	1,5	2	M20x1,5	51,7	22	630	9135	150	2175	0,081	0,179
H1J11210-162400	16mm	2	2,5	M24x1,5	52,7	24	400	5800	150	2175	0,099	0,218
H1J11210-203000	20mm	2	3	M30x2	56,7	32	400	5800	150	2175	0,177	0,390
H1J11210-253600	25mm	2	4	M36x2	60,7	36	400	5800	150	2175	0,255	0,562
H1J11210-304200	30mm	2	4	M42x2	64,7	46	250	3625	150	2175	0,390	0,860
H1J11210-385200	38mm	3	4	M52x2	68,7	55	250	3625	150	2175	0,615	1,356
H1J11210-042400	1/4" NPS	sch. 10	sch. 40	M24x1,5	52,7	24	400	5800	150	2175	0,111	0,245
H1J11210-063000	3/8" NPS	sch. 10	sch. 80	M30x2	56,7	32	400	5800	150	2175	0,197	0,434
H1J11210-083600	1/2" NPS	sch. 10	sch. 80	M36x2	60,7	36	400	5800	150	2175	0,287	0,633
H1J11210-124200	3/4" NPS	sch. 5	sch. 80	M42x2	64,7	46	250	3625	150	2175	0,425	0,937
H1J11210-165200	1" NPS	sch. 5	sch. 40	M52x2	68,7	55	250	3625	150	2175	0,676	1,490

// DIN - ISO 8434-1

DIN Male 24° CES - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H3J11210-122000	12mm	1,5	2	M20x1,5	51,7	22	630	9135	150	2175	0,081	0,179
H3J11210-162400	16mm	2	2,5	M24x1,5	52,7	24	400	5800	150	2175	0,099	0,218
H3J11210-203000	20mm	2	3	M30x2	56,7	32	400	5800	150	2175	0,177	0,390
H3J11210-253600	25mm	2	4	M36x2	60,7	36	400	5800	150	2175	0,255	0,562
H3J11210-304200	30mm	2	4	M42x2	64,7	46	250	3625	150	2175	0,390	0,860
H3J11210-385200	38mm	3	4	M52x2	68,7	55	250	3625	150	2175	0,615	1,356
H3J11210-042400	1/4" NPS	sch. 10	sch. 40	M24x1,5	52,7	24	400	5800	150	2175	0,111	0,245
H3J11210-063000	3/8" NPS	sch. 10	sch. 80	M30x2	56,7	32	400	5800	150	2175	0,197	0,434
H3J11210-083600	1/2" NPS	sch. 10	sch. 80	M36x2	60,7	36	400	5800	150	2175	0,287	0,633
H3J11210-124200	3/4" NPS	sch. 5	sch. 80	M42x2	64,7	46	250	3625	150	2175	0,425	0,937
H3J11210-165200	1" NPS	sch. 5	sch. 40	M52x2	68,7	55	250	3625	150	2175	0,676	1,490



// DIN - ISO 8434-1

DIN Female 24° DKOS - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H1J21612-122000	12mm	1,5	2	M20x1,5	47	24	630	9135	150	2175	0,082	0,181
H1J21612-162400	16mm	2	2,5	M24x1,5	50,2	27	400	5800	150	2175	0,131	0,289
H1J21612-203000	20mm	2	3	M30x2	53,7	36	400	5800	150	2175	0,216	0,476
H1J21612-253600	25mm	2	4	M36x2	58,1	46	400	5800	150	2175	0,379	0,836
H1J21612-304200	30mm	2	4	M42x2	58,7	50	250	3625	150	2175	0,432	0,952
H1J21612-385200	38mm	3	4	M52x2	62,2	60	250	3625	150	2175	0,660	1,455
H1J21612-042400	1/4" NPS	sch. 10	sch. 40	M24x1,5	50,2	27	400	5800	150	2175	0,145	0,320
H1J21612-063000	3/8" NPS	sch. 10	sch. 80	M30x2	53,7	36	400	5800	150	2175	0,237	0,522
H1J21612-083600	1/2" NPS	sch. 10	sch. 80	M36x2	58,1	46	400	5800	150	2175	0,412	0,908
H1J21612-124200	3/4" NPS	sch. 5	sch. 80	M42x2	58,7	50	250	3625	150	2175	0,468	1,032
H1J21612-165200	1" NPS	sch. 5	sch. 40	M52x2	62,2	60	250	3625	150	2175	0,720	1,587

// DIN - ISO 8434-1

DIN Female 24° DKOS - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1	L	CH	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)				(bar)	(psi)	(bar)	(psi)	(kg)	(lb)
H3J21612-122000	12mm	1,5	2	M20x1,5	47	24	630	9135	150	2175	0,082	0,181
H3J21612-162400	16mm	2	2,5	M24x1,5	50,2	27	400	5800	150	2175	0,131	0,289
H3J21612-203000	20mm	2	3	M30x2	53,7	36	400	5800	150	2175	0,216	0,476
H3J21612-253600	25mm	2	4	M36x2	58,1	46	400	5800	150	2175	0,379	0,836
H3J21612-304200	30mm	2	4	M42x2	58,7	50	250	3625	150	2175	0,432	0,952
H3J21612-385200	38mm	3	4	M52x2	62,2	60	250	3625	150	2175	0,660	1,455
H3J21612-042400	1/4" NPS	sch. 10	sch. 40	M24x1,5	50,2	27	400	5800	150	2175	0,145	0,320
H3J21612-063000	3/8" NPS	sch. 10	sch. 80	M30x2	53,7	36	400	5800	150	2175	0,237	0,522
H3J21612-083600	1/2" NPS	sch. 10	sch. 80	M36x2	58,1	46	400	5800	150	2175	0,412	0,908
H3J21612-124200	3/4" NPS	sch. 5	sch. 80	M42x2	58,7	50	250	3625	150	2175	0,468	1,032
H3J21612-165200	1" NPS	sch. 5	sch. 40	M52x2	62,2	60	250	3625	150	2175	0,720	1,587

// SWIVEL FLANGE



20mm to 60mm



to max WP 40 bar

// Phonographic finish
// Practical loose flange

General features: SWIVEL FLANGE Thunder-lock are available in PN16/40 or PN6 rating for a complete interface with all hydraulic systems. The seal works by compressing a flat gasket among the flanges using bolts or rods.

Each fitting is provided with a NBR safety back-up o-ring to prevent internal corrosion due to external contaminants such as water, oil, dust, etc.

Fitting materials:

Galvanized carbon steel
AISI316 stainless steel.

Gasket materials: Asbestos Free, Graphite.

Norm: EN 1092-1

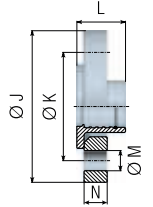
Temperature range:

-40 °C +100 °C (-40 °F +212 °F)

Temperature up to +200°C when Graphite seals are used.

Note: specific instructions for installation, use and maintenance are separately provided.

For specific needs please contact your local Alfagomma representative.



// SWIVEL FLANGE - EN 1092-1

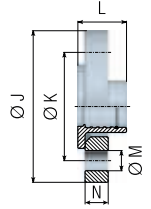
Swivel flange PN16/40 - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	ØJ	ØK	ØM	N° holes "M"	N	L	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)		(mm)	(mm)	(mm)		(mm)	(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)
H1J4BD74-201500	20mm	1	3	DN15	95	65	14	4	14	32,7	40	580	16	232	0,720	1,587
H1J4BD74-221500	22mm	1	3	DN15	95	65	14	4	14	32,7	40	580	16	232	0,726	1,601
H1J4BD74-252000	25mm	2	3,5	DN20	105	75	14	4	16	33,7	40	580	16	232	1,018	2,244
H1J4BD74-282000	28mm	1	3	DN20	105	75	14	4	16	33,7	40	580	16	232	0,987	2,176
H1J4BD74-302000	30mm	1,5	3,5	DN20	105	75	14	4	16	33,7	40	580	16	232	0,990	2,183
H1J4BD74-302500	30mm	1,5	3,5	DN25	115	85	14	4	16	33,7	40	580	16	232	1,258	2,773
H1J4BD74-352500	35mm	1	2,5	DN25	115	85	14	4	16	33,7	40	580	16	232	1,194	2,632
H1J4BD74-383200	38mm	2	3,5	DN32	140	100	18	4	18	34,7	40	580	16	232	1,987	4,381
H1J4BD74-423200	42mm	2	3,5	DN32	140	100	18	4	18	34,7	40	580	16	232	1,922	4,237
H1J4BD74-504000	50mm	2	3,5	DN40	150	110	18	4	18	34,7	40	580	16	232	2,265	4,993
H1J4BD74-605000	60mm	2	3,5	DN50	165	125	18	4	20	35,7	16	232	16	232	3,022	6,662
H1J4BD74-081500	1/2" NPS	sch. 10	sch. 80	DN15	95	65	14	4	14	32,7	40	580	16	232	0,732	1,614
H1J4BD74-122000	3/4" NPS	sch. 5	sch. 80	DN20	105	75	14	4	16	33,7	40	580	16	232	0,999	2,202
H1J4BD74-162500	1" NPS	sch. 5	sch. 40	DN25	115	85	14	4	16	33,7	40	580	16	232	1,214	2,676
H1J4BD74-203200	1"1/4 NPS	sch. 5	sch. 40	DN32	140	100	18	4	18	34,7	40	580	16	232	1,919	4,231
H1J4BD74-244000	1"1/2 NPS	sch. 5	sch. 40	DN40	150	110	18	4	18	34,7	40	580	16	232	2,297	5,064
H1J4BD74-325000	2" NPS	sch. 5	sch. 40	DN50	165	125	18	4	20	35,7	16	232	16	232	3,016	6,649

// SWIVEL FLANGE - EN 1092-1

Swivel flange PN16/40 - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	ØJ	ØK	ØM	N° holes "M"	N	L	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)		(mm)	(mm)	(mm)		(mm)	(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)
H3J4BD74-201500	20mm	1	3	DN15	95	65	14	4	14	32,7	40	580	16	232	0,720	1,587
H3J4BD74-221500	22mm	1	3	DN15	95	65	14	4	14	32,7	40	580	16	232	0,726	1,601
H3J4BD74-252000	25mm	2	3,5	DN20	105	75	14	4	16	33,7	40	580	16	232	1,018	2,244
H3J4BD74-282000	28mm	1	3	DN20	105	75	14	4	16	33,7	40	580	16	232	0,987	2,176
H3J4BD74-302000	30mm	1,5	3,5	DN20	105	75	14	4	16	33,7	40	580	16	232	0,990	2,183
H3J4BD74-302500	30mm	1,5	3,5	DN25	115	85	14	4	16	33,7	40	580	16	232	1,258	2,773
H3J4BD74-352500	35mm	1	2,5	DN25	115	85	14	4	16	33,7	40	580	16	232	1,194	2,632
H3J4BD74-383200	38mm	2	3,5	DN32	140	100	18	4	18	34,7	40	580	16	232	1,987	4,381
H3J4BD74-423200	42mm	2	3,5	DN32	140	100	18	4	18	34,7	40	580	16	232	1,922	4,237
H3J4BD74-504000	50mm	2	3,5	DN40	150	110	18	4	18	34,7	40	580	16	232	2,265	4,993
H3J4BD74-605000	60mm	2	3,5	DN50	165	125	18	4	20	35,7	16	232	16	232	3,022	6,662
H3J4BD74-081500	1/2" NPS	sch. 10	sch. 80	DN15	95	65	14	4	14	32,7	40	580	16	232	0,732	1,614
H3J4BD74-122000	3/4" NPS	sch. 5	sch. 80	DN20	105	75	14	4	16	33,7	40	580	16	232	0,999	2,202
H3J4BD74-162500	1" NPS	sch. 5	sch. 40	DN25	115	85	14	4	16	33,7	40	580	16	232	1,214	2,676
H3J4BD74-203200	1"1/4 NPS	sch. 5	sch. 40	DN32	140	100	18	4	18	34,7	40	580	16	232	1,919	4,231
H3J4BD74-244000	1"1/2 NPS	sch. 5	sch. 40	DN40	150	110	18	4	18	34,7	40	580	16	232	2,297	5,064
H3J4BD74-325000	2" NPS	sch. 5	sch. 40	DN50	165	125	18	4	20	35,7	16	232	16	232	3,016	6,649



// SWIVEL FLANGE - EN 1092-1

Swivel flange PN6 - Carbon steel

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	ØJ	ØK	ØM	N° holes "M"	N	L	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)		(mm)	(mm)	(mm)		(mm)	(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)
H1J4BB74-201500	20mm	1	3	DN15	80	55	11	4	12	32,7	6	87	6	87	0,470	1,036
H1J4BB74-221500	22mm	1	3	DN15	80	55	11	4	12	32,7	6	87	6	87	0,454	1,001
H1J4BB74-252000	25mm	2	3,5	DN20	90	65	11	4	14	33,7	6	87	6	87	0,688	1,517
H1J4BB74-282000	28mm	1	3	DN20	90	65	11	4	14	33,7	6	87	6	87	0,657	1,448
H1J4BB74-302000	30mm	1,5	3,5	DN20	90	65	11	4	14	33,7	6	87	6	87	0,660	1,455
H1J4BB74-302500	30mm	1,5	3,5	DN25	100	75	11	4	14	33,7	6	87	6	87	0,882	1,944
H1J4BB74-352500	35mm	1	2,5	DN25	100	75	11	4	14	33,7	6	87	6	87	0,818	1,803
H1J4BB74-383200	38mm	2	3,5	DN32	120	90	14	4	16	34,7	6	87	6	87	1,359	2,996
H1J4BB74-423200	42mm	2	3,5	DN32	120	90	14	4	16	34,7	6	87	6	87	1,294	2,853
H1J4BB74-504000	50mm	2	3,5	DN40	130	100	14	4	16	34,7	6	87	6	87	1,539	3,393
H1J4BB74-605000	60mm	2	3,5	DN50	140	110	14	4	16	35,7	6	87	6	87	1,748	3,854
H1J4BB74-081500	1/2" NPS	sch. 10	sch. 80	DN15	80	55	11	4	12	32,7	6	87	6	87	0,460	1,014
H1J4BB74-122000	3/4" NPS	sch. 5	sch. 80	DN20	90	65	11	4	14	33,7	6	87	6	87	0,670	1,477
H1J4BB74-162500	1" NPS	sch. 5	sch. 40	DN25	100	75	11	4	14	33,7	6	87	6	87	0,839	1,850
H1J4BB74-203200	1"1/4 NPS	sch. 5	sch. 40	DN32	120	90	14	4	16	34,7	6	87	6	87	1,291	2,846
H1J4BB74-244000	1"1/2 NPS	sch. 5	sch. 40	DN40	130	100	14	4	16	34,7	6	87	6	87	1,571	3,463
H1J4BB74-325000	2" NPS	sch. 5	sch. 40	DN50	140	110	14	4	16	35,7	6	87	6	87	1,743	3,843

// SWIVEL FLANGE - EN 1092-1

Swivel flange PN6 - Stainless steel 316

Product Code	OD Pipe	Pipe min. thick.	Pipe max. thick.	F1 Dash	ØJ	ØK	ØM	N° holes "M"	N	L	WP		WP (RINA marine type approval)		Weight	
		(mm)	(mm)		(mm)	(mm)	(mm)		(mm)	(mm)	(mm)	(bar)	(psi)	(bar)	(psi)	(kg)
H3J4BB74-201500	20mm	1	3	DN15	80	55	11	4	12	32,7	6	87	6	87	0,470	1,036
H3J4BB74-221500	22mm	1	3	DN15	80	55	11	4	12	32,7	6	87	6	87	0,454	1,001
H3J4BB74-252000	25mm	2	3,5	DN20	90	65	11	4	14	33,7	6	87	6	87	0,688	1,517
H3J4BB74-282000	28mm	1	3	DN20	90	65	11	4	14	33,7	6	87	6	87	0,657	1,448
H3J4BB74-302000	30mm	1,5	3,5	DN20	90	65	11	4	14	33,7	6	87	6	87	0,660	1,455
H3J4BB74-302500	30mm	1,5	3,5	DN25	100	75	11	4	14	33,7	6	87	6	87	0,882	1,944
H3J4BB74-352500	35mm	1	2,5	DN25	100	75	11	4	14	33,7	6	87	6	87	0,818	1,803
H3J4BB74-383200	38mm	2	3,5	DN32	120	90	14	4	16	34,7	6	87	6	87	1,359	2,996
H3J4BB74-423200	42mm	2	3,5	DN32	120	90	14	4	16	34,7	6	87	6	87	1,294	2,853
H3J4BB74-504000	50mm	2	3,5	DN40	130	100	14	4	16	34,7	6	87	6	87	1,539	3,393
H3J4BB74-605000	60mm	2	3,5	DN50	140	110	14	4	16	35,7	6	87	6	87	1,748	3,854
H3J4BB74-081500	1/2" NPS	sch. 10	sch. 80	DN15	80	55	11	4	12	32,7	6	87	6	87	0,460	1,014
H3J4BB74-122000	3/4" NPS	sch. 5	sch. 80	DN20	90	65	11	4	14	33,7	6	87	6	87	0,670	1,477
H3J4BB74-162500	1" NPS	sch. 5	sch. 40	DN25	100	75	11	4	14	33,7	6	87	6	87	0,839	1,850
H3J4BB74-203200	1"1/4 NPS	sch. 5	sch. 40	DN32	120	90	14	4	16	34,7	6	87	6	87	1,291	2,846
H3J4BB74-244000	1"1/2 NPS	sch. 5	sch. 40	DN40	130	100	14	4	16	34,7	6	87	6	87	1,571	3,463
H3J4BB74-325000	2" NPS	sch. 5	sch. 40	DN50	140	110	14	4	16	35,7	6	87	6	87	1,743	3,843

// SWIVEL COUPLING



50mm to 70mm



to max WP 60 bar

// Soft seal flat face
// Practical loose nut

General features: SWIVEL COUPLING Thunder-lock is the best solution to join pipes with an outside diameter > 50 mm. The seal works by compressing the o-ring onto the flat face of the male, similar to SAE flange type fitting. Each fitting is provided with a NBR safety back-up o-ring to prevent internal corrosion due to external contaminants such as water, oil, dust, etc.

Fitting materials:

Galvanized carbon steel
AISI316 stainless steel.

O-ring materials: NBR, FKM, EPDM, Graphite.

Norm: Alfagomma design

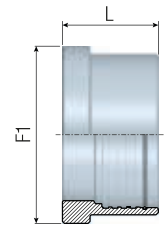
Temperature range:

-40 °C +100 °C (-40 °F +212 °F)

Temperature up to +200 °C when FKM and Graphite seals are used.

Note: specific instructions for installation, use and maintenance are separately provided.

For specific needs please contact your local Alfagomma representative.



// SWIVEL STRAIGHT COUPLING

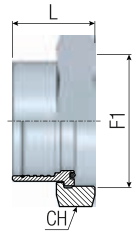
Swivel coupling Male PN60 - Carbon steel

SAP Code	OD Pipe	F1 Dash	L (mm)	Pipe Min. Thick (mm)	Pipe Max. Thick (mm)	WP		WP (RINA marine type approval)	WP (RINA marine type approval)
						(bar)	(psi)	(bar)	(psi)
1255064	50mm	M70x2	44,7	1	5	60	870	60	870
1255065	60mm	M80x2	46,7	1	5	60	870	60	870
1255066	70mm	M90x2	48,7	1	5	60	870	60	870
1255259	1"1/2 NPS	M70x2	44,7	sch. 5	sch. 80	60	870	60	870
1255260	2" NPS	M80x2	46,7	sch. 5	sch. 80	60	870	60	870
1255261	2"1/2 NPS	M90x2	48,7	sch. 5	sch. 40	60	870	60	870

// SWIVEL STRAIGHT COUPLING

Swivel coupling Male PN60 - Stainless steel 316

SAP Code	OD Pipe	F1 Dash	L (mm)	Pipe Min. Thick (mm)	Pipe Max. Thick (mm)	WP		WP (RINA marine type approval)	WP (RINA marine type approval)
						(bar)	(psi)	(bar)	(psi)
1255067	50mm	M70x2	44,7	1	5	60	870	60	870
1255068	60mm	M80x2	46,7	1	5	60	870	60	870
1255069	70mm	M90x2	48,7	1	5	60	870	60	870
1255262	1"1/2 NPS	M70x2	44,7	sch. 5	sch. 80	60	870	60	870
1255263	2" NPS	M80x2	46,7	sch. 5	sch. 80	60	870	60	870
1255264	2"1/2 NPS	M90x2	48,7	sch. 5	sch. 40	60	870	60	870



// SWIVEL STRAIGHT COUPLING

Swivel coupling Female PN60 - Carbon steel

SAP Code	OD Pipe	F1 Dash	L (mm)	CH (mm)	Pipe Min. Thick (mm)	Pipe Max. Thick (mm)	WP		WP (RINA marine type approval)	WP (RINA marine type approval)
							(bar)	(psi)	(bar)	(psi)
1255070	50mm	M70x2	44,7	80	1	5	60	870	60	870
1255071	60mm	M80x2	46,7	90	1	5	60	870	60	870
1255072	70mm	M90x2	48,7	100	1	5	60	870	60	870
1255265	1"1/2 NPS	M70x2	44,7	80	sch. 5	sch. 80	60	870	60	870
1255266	2" NPS	M80x2	46,7	90	sch. 5	sch. 80	60	870	60	870
1255267	2"1/2 NPS	M90x2	48,7	100	sch. 5	sch. 40	60	870	60	870

// SWIVEL STRAIGHT COUPLING

Swivel coupling Female PN60 - Stainless steel 316

SAP Code	OD Pipe	F1 Dash	L (mm)	CH (mm)	Pipe Min. Thick (mm)	Pipe Max. Thick (mm)	WP		WP (RINA marine type approval)	WP (RINA marine type approval)
							(bar)	(psi)	(bar)	(psi)
1255073	50mm	M70x2	44,7	80	1	5	60	870	60	870
1255074	60mm	M80x2	46,7	90	1	5	60	870	60	870
1255075	70mm	M90x2	48,7	100	1	5	60	870	60	870
1255268	1"1/2 NPS	M70x2	44,7	80	sch. 5	sch. 80	60	870	60	870
1255269	2" NPS	M80x2	46,7	90	sch. 5	sch. 80	60	870	60	870
1255270	2"1/2 NPS	M90x2	48,7	100	sch. 5	sch. 40	60	870	60	870

// **NOTES**

A series of horizontal dotted lines for taking notes.



Please read the manual carefully before operating with Thunder-lock.

Warning: pressure and temperature limits must not be exceeded.

Pipes and tubes pressurized by liquids can fail in a potentially dangerous manner.

The use of air and other gases as test media shall be avoided because of the risk to operators.

Improper use due to negligence of instructions may result in serious damage or injury.

Only trained technicians should install Thunder-lock.

Maintenance and repair of Thunder-lock tools must be performed by a certified Alfagomma technician.

Strictly follow the installation instructions in the manual.

Be sure to store the manual for future reference.

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