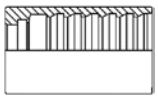
Thermoplastic hoses UHP (≥700 bar)

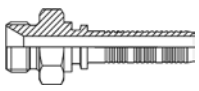
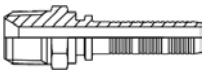
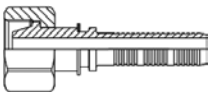
Thermoplastic hoses are designed for pressure not exceeding 800 bar. The external layer is made of abrasion resistant polyurethane, internal layer of polyester or polyamide reinforced by max 3 layers of steel or aramid fibre. Widely used in hydraulic systems, rescue equipment, lifts and pumps for hydraulic oil, paints, solvents, isocyanines and polyols. Working temperature ranges from -40 °C up to 100°C (for water and water-based liquids max. +70°C). Use P type ferrules (IT-142).

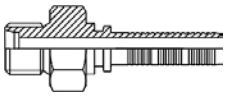
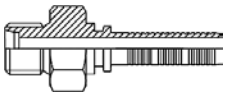
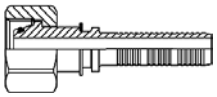
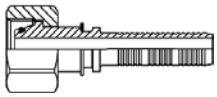
code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]	ferrule
1 type (STANDARD)	Hose intended for high pressure hydraulic systems. Internal layer: polyester. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane. * - hose reinforced with two aramid fibre layers.						
UH-OL8M-06*	6.4	14.8	700	2800	50	15.90	**
UH-MTKH-06	6.4	14.5			40	26.00	
UH-0412-06	6.6	12.7			35	18.00	PSAF
UH-0414-10	9.8	18.7			90	33.00	
2 type (TWIN)	Twin hose comprises two STANDARD type hoses. Internal layer: polyester. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane.						
UH-MTKHB-06	6.4	14.5	700	2800	40	52.00	**
UH-1412-06	6.6	12.7			35	36.00	PSAF
UH-1414-10	9.8	18.7			90	66.00	
3 type (NON CONDUCTIVE)	Non-conductive hose according to SAE 100 R8 standard less than 50 μA leakage when subjected to 246 kV/m for 5 min. used near electrical installations. Internal layer: polyester. Reinforcement: two aramid fibre layers. External layer: orange polyurethane.						
UH-0460-04	4	9.1	700	2800	25	6.00	PSAF
UH-OL8MNC-06	6.4	14.8			50	15.90	**
UH-0462-06	6.6	14			35	14.50	PSAF
4 type (MARINE)	Hose resistant to sea water. used in marine industry. Internal layer: polyester. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane. * - hose reinforced with two aramid fibre layers.						
UH-OL8MMARINE-06*	6.4	14.8	700	2800	50	15.90	**
UH-MTKHMARINE-06	6.4	14.5			40	26.00	
UH-0402-06	6.6	12.7			35	18.00	PSAF
UH-0404-10	9.8	18.7			90	33.00	
5 type (CHEMICAL)	Hose used to transfer aggressive chemicals. such as paint. solvents. Internal layer: polyamide. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane.						
UH-MTK-06	6.4	14.5	700	2800	40	25.40	**
UH-0482-06	6.6	12.7			35	18.00	PSAF
UH-MTKMMARINE-10	9.5	18.8			90	37.50	**
UH-0484-10	9.8	18.7			90	32.00	PSAF
6 type (ANTISTATIC)	Antistatic hose (R < $3x10^4$ Ω/m) designed for non-conductive media transfer. Internal layer: polyamide. Reinforcement: two aramid fibre layers. External layer: blue polyurethane.						
UH-AS8M-06	6.4	14.8	700	2800	50	15.00	**
7 type (EXTRA)	Hose for hydraulic systems working under 800 bar pressure. Internal layer: polyester. Reinforcement: two aramid fibre layers + steel layer. External layer: black polyurethane.						
UH-0802-06	6.6	14.5	800	3200	35	24.50	PSAF

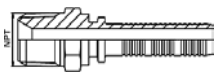
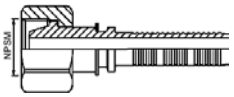
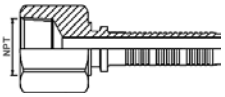
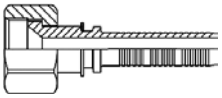
** - contact Technical Department of TUBES INTERNATIONAL®

UHP (≥700 bar) fittings for thermoplastic hoses

TI-P (700, 800 bar)	Crimping ferrules			
hose I.D. [inch]			-	
	code	ferrule I.D.	-	-
5/32	TI-PSAF-025-TO	9.8 mm	-	-
1/4	TI-PSAF-04-TO	15 mm	-	-
3/8	TI-PSAF-06-TO	20 mm	-	-

TI-P (700, 800 bar)		BSP (BSPT)thread, 60° cone			
		AGR	AGR-K	DKR	-
thread size [inch]	hose I.D. [inch]				-
		code	code	code	-
1/4	5/32	TI-PBZ110-04-025-TO	-	TI-PBW110-04-025-TO	-
1/4	1/4	TI-PBZ110-04-04-TO	-	TI-PBW110-04-04-TO	-
3/8		TI-PBZ110-06-04-TO	TI-PBZ130-06-04-TO	-	-
3/8	3/8	TI-PBZ110-06-06-TO	-	TI-PBW110-06-06-TO	-

TI-P (700. 800 bar)		Metric thread - 24° cone			
		CEL	CES	DKOL	DKOS
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
M14x1.5	1/4	TI-PMZ111-14-04-TO	-	TI-PMW121-14-04-TO	TI-PMW122-14-04-TO
M16x1.5		-	-	-	TI-PMW122-16-04-TO
M18x1.5		-	TI-PMZ112-18-04-TO	-	TI-PMW122-18-04-TO
M22x1.5		-	-	-	TI-PMW122-22-04-TO
M24x1.5		-	-	-	TI-PMW122-24-04-TO
M20x1.5	3/8	-	-	-	TI-PMW122-20-06-TO
M18x1.5		TI-PMZ111-18-06-TO	-	TI-PMW121-18-06-TO	-
M22x1.5		-	TI-PMZ112-22-06-TO	-	TI-PMW122-22-06-TO

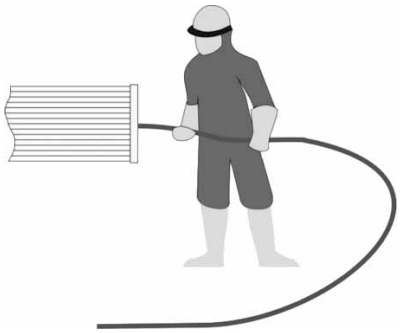
TI-P (700, 800 bar)		NPTF (NPSM) thread, 60° cone		NPT thread	JIC, UNF thread, 74° cone
		AGN	DKN		DKJ
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1/4-18	1/4	TI-PNZ110-04-04-TO	TI-PNW110-04-04-TO	TI-PNWS110-04-04-TO	-
3/8-18		TI-PNZ110-06-04-TO	-	TI-PNWS110-06-04-TO	-
7/16-20		-	-	-	TI-PJW110-07-04-TO
1/2-20		-	-	-	TI-PJW110-08-04-TO
9/16-18		-	-	-	TI-PJW110-09-04-TO
3/8-18	3/8	TI-PNZ110-06-06-TO	-	-	-
9/16-18		-	-	-	TI-PJW110-09-06-TO
3/4-16		-	-	-	TI-PJW110-12-06-TO

SPIR STAR® hoses

The internal layer of SPIR STAR® hoses is made of the highest quality thermoplastic materials such as polyoxymethylene (POM), polyamide (PA), polyvinylidene fluoride (PVDF), polytetrafluoroethylene - teflon (PTFE). There are up to 8 layers of high-tensile spring wire made of carbon or stainless steel (also acid resistant steel) spirally wrapped around the internal core.
The external layer is made of polyurethane, different kinds of polyamide or of PVDF depending on application.

Unique combination of the properties of materials that SPIR STAR® hoses are made of, allowed to obtain superior hose characteristics which outperform standard hoses:

- Ultrahigh pressure - up to 4000 bar for UHP type.
- Low volumetric expansion rate when under pressure - quick response of an executive part to a feed impulse.
- Smooth internal layer minimizes pressure drop.
- Reinforced with steel wire layers, which prevent kinking when the hose is bent and ensure long operation life in the most demanding applications.
- External layer resistant to wear and damage.
- Long lengths available - up to 4500 m.
- Small outside diameter - good proportion of size to high pressure operation capability - important when cleaning hard-to-reach places.
- Tailor-made assemblies are also available: twin hoses, bundles and other special-purpose systems.
- Excellent flow rate.
- Very good chemical resistance to detergents, chemicals and solvents.
- Low weight.
- Resistance to external pressure.
- Resistance to ultraviolet radiation, ozone and ageing.
- High stability in high temperatures (for HT series).
- Resistance to seawater.
- High resistance to impulse operation.
- Low medium permeability factor.



The main areas of SPIR STAR® application:

Waterblast technology

The main fields of application: hydro demolition and treatment of concrete, sewage system cleaning, water jet cutting, pipeline and heat exchanger cleaning, surface preparation - surface cleaning and degreasing with a pure medium (water) or medium with solids and abrasives added. A wide range of hose types combined with fittings of special structure e.g. Blast Pro type, allows to satisfy any application need.

High pressure hydraulics

SPIR STAR® hoses are widely applied wherever maximum flexibility and resistance to external damage are required. SPIR STAR® hoses are about 50% lighter than similar rubber hoses. Examples of application: hardening of metal surface with high pressure (autofrettage), hydroforming, lifesaving equipment and bolt tensioning.

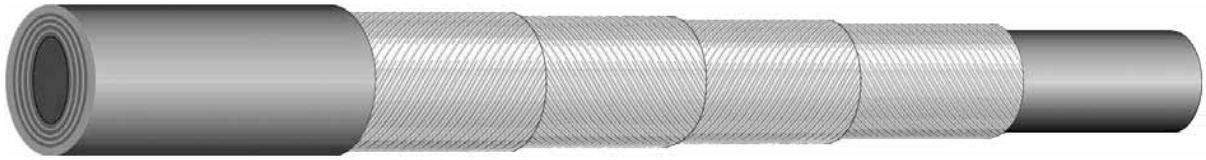
Oil and gas mining industry - oil rigs

Confirmed applications in offshore projects on rigs of the North Sea and Gulf of Mexico. The main areas of application: hose bundles, methanol service, chemical injection, hydraulics and oilfield well hydraulic control. Other advantages of SPIR STAR hoses vital for this branch of industry: availability of long lengths up to 4500 m in one piece, resistance to external pressure and high temperature up to 150°C for some types of hoses.

Other branches of industry

Aircraft, military, chemical, automotive and shipbuilding industry, railway, local government, road infrastructure.

SPIR STAR® hoses

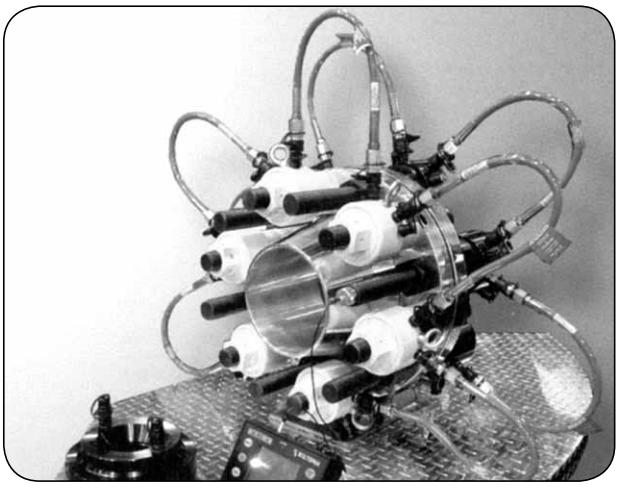


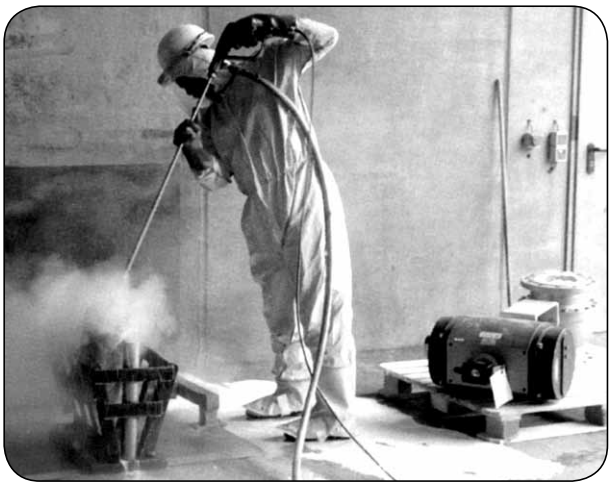
inside diameter [mm] — **5/4HT**

number of steel wire spirals

DC1	-	double cover (PA/PUR)
H	-	reinforced version
HT	-	for application in extreme temperatures
K	-	additional reinforcement layer in external layer
L	-	extremely flexible
M	-	PA11 internal core for methanol service
OK	-	additional reinforcement layer on external layer
PPA	-	PVDF internal layer, PA external layer
R	-	thicker/reinforced external layer
W	-	open (wide) layers of spiraled wire, as an alternative for additional external reinforcement

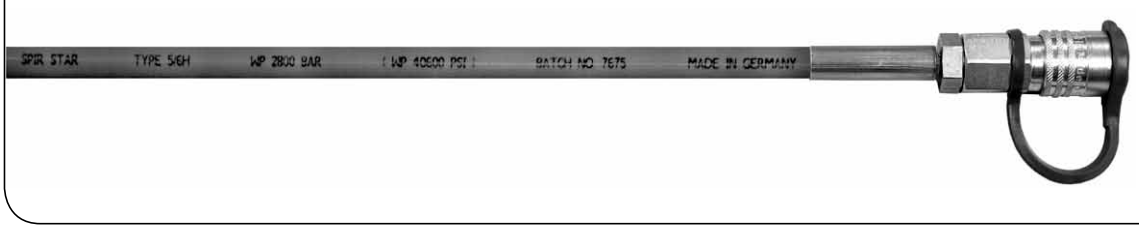
SPIR STAR®





SPIR STAR® hoses

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	fitting I.D. [mm]	ferrule O.D. [mm]
2 type	Lightweight. flexible. 2 layer hose used mainly to clean heat exchangers. hose assemblies and piping systems. Internal layer: POM (polyoxymethylene). from 10 mm PA (polyamide). external layer: PA (polyamide).							
SS-NW-03-2	3.4	6.9	1000	2500	60	0.07	2	8.9
SS-NW-04-2	4	8	1200	3000	75	0.11	2.5	10
SS-NW-05-2	5	9.4	1040	2600	95	0.13	3	12.9
SS-NW-06-2	6.3	11.5	1000	2500	110	0.18	4	13.9
SS-NW-08-2	8.1	13.3	900	2250	130	0.20	5.5	17.8
SS-NW-10-2	10.1	15.5	690	1725	160	0.28	6.5	20.8
SS-NW-13-2	12.9	19.3	690	1725	200	0.44	8.5	26
SS-NW-20-2	19	26.2	520	1300	240	0.75	13	34.2
SS-NW-25-2	24.8	33.5	440	1100	300	0.95	16.5	40
2K type	Robust. flexible. 2 layer hose used mainly to clean heat exchangers. hose assemblies and piping systems. Internal layer: PA (polyamide). external layer: PUR (polyurethane).							
SS-NW-04-2K	4	9.8	1200	3000	65	0.19	2.5	13.1
SS-NW-06-2K	6.2	12.9	1120	2800	95	0.30	4	14.1
2OK type	Robust. flexible. 2 layer hose used mainly to clean heat exchangers. hose assemblies and piping systems. Internal layer: POM (polyoxymethylene). external layer: PA (polyamide) + additional stainless steel layer.							
SS-NW-05-2OK	5	10.8	1040	2600	95	0.22	3.5	13.3
SS-NW-06-2OK	6.2	13.1	1000	2500	110	0.31	4	15
2W type	Robust. flexible. kink-resistant hose mainly used for tightening screws. iron roughnecks. jacks. cutters and other devices. Internal layer: PA (polyamide). external layer: PUR (polyurethane). * - twin version (Twin Hose) available.							
SS-NW-04-2W	4	9.8	1400	3500	65	0.16	2.5	13.1
SS-NW-06-2W	6	12	1280	3200	95	0.23	4	15.4
SS-NW-06-2WL *	5.9	12	1200	3000	80	0.24	4	15.4
SS-NW-08-2W *	8	14.3	1040	2600	110	0.31	5.5	18.3
SS-NW-08-2WL	8	14	1000	2500	100	0.32	5.5	18.3
SS-NW-08-2WR	8	16	1040	2600	110	0.36	4.5	21.3
SS-NW-10-2W	10	17.2	1100	2760	125	0.43	6.5	21.5
SS-NW-13-2W	12.8	20.8	1040	2600	150	0.59	8.5	27.2
SS-NW-13-2WR	12.8	22.2	1040	2600	150	0.59	7.5	27.5
SS-NW-20-2W	18.8	29.5	760	1900	220	1.16	13	36.3
SS-NW-25-2W	25	35.6	640	1600	280	1.49	16.5	44
3 type	Lightweight. flexible. 3 layer hose used mainly to clean heat exchanger. hose assemblies and piping systems. Internal layer: POM (polyoxymethylene). external layer: PA (polyamide).							
SS-NW-05-3	5	10.3	1120	2800	95	0.22	3 (3.5)	12.9
SS-NW-06-3	6.1	12.3	1040	2600	110	0.28	4	14.1



SPIR STAR® hoses

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	fitting I.D. [mm]	ferrule O.D. [mm]
4 type	Robust. flexible, 4 layer hose used mainly for tightening screws. jacks, iron roughnecks, cutters. jacks, water jet cutting machines, pressure testing machines, and other devices. Internal layer: POM (polyoxymethylene), from 13 mm PA (polyamide), external layer: PA (polyamide).							
SS-NW-03-4	3.4	8	2000	5000	110	0.14	2	12.1
SS-NW-04-4	4	10.3	2200	5500	130	0.23	1.8	14.7
SS-NW-05-4	5	11.2	1800	4500	150	0.26	2.5	15
SS-NW-06-4	6.3	12.6	1500	3800	180	0.30	3.5	16.4
SS-NW-08-4	8	14.6	1500	3800	200	0.39	4.5	20.2
SS-NW-10-4	9.9	18.4	1500	3800	200	0.69	5.5	23
SS-NW-13-4	12.8	21.4	1300	3250	200	0.80	7.5	27.4
SS-NW-13-4H	12.8	22	1400	3500	200	0.88	7.5	29.5
SS-NW-16-4	16	25.5	1040	2600	250	1.00	10.5	32.7
SS-NW-20-4	18.8	28.8	1040	2600	250	1.35	13	36.9
SS-NW-25-4	24.8	36.3	900	2250	300	1.72	19	45.9
6 type	Robust. flexible, 6 layer hose used mainly for high pressure cleaning, water jet cutting, hydroforming, chemicals injection and lubrication under high pressure. Internal layer: POM (polyoxymethylene), from 13 mm PA (polyamide), external layer: PA (polyamide).							
SS-NW-03-6	3	9.1	2800	7000	150	0.23	1.8	15.3
SS-NW-04-6	4	11.5	2800	7000	175	0.37	1.8	17.1
SS-NW-05-6	4.8	13.2	2500	6250	200	0.45	2	17.8
SS-NW-05-6H	4.6	14.4	2800	7000	220	0.56	2.5	19.7
SS-NW-06-6H	5.9	16.4	2800	7000	250	0.75	3	21.4
SS-NW-08-6	8	16.4	2100	5250	250	0.64	4.5	21.6
SS-NW-08-6H	7.7	18.8	2500	6250	260	0.93	4.5	22.8
SS-NW-08-6UHP	7.6	19.3	2800	7000	300	1.06	4.5	23.7
SS-NW-08-6UHP-X	7.6	19.3	3035	7000	300	1.06	4.5	23.7
SS-NW-10-6	9.8	20.4	1920	4800	250	1.00	5.5	26.6
SS-NW-13-6	12.8	23.4	1800	4500	300	1.16	7.5	30.1
SS-NW-13-6H	12.7	24.8	2000	5000	300	1.20	7.5	30.2
SS-NW-16-6	15.9	27.7	1520	3800	320	1.48	10.5	35
SS-NW-20-6	18.8	32.8	1400	3500	350	2.17	13	37.2
SS-NW-25-6	24.8	39.8	1400	3000	600	2.80	17.5	49
8 type	Robust. flexible, 8 layer hose used mainly for high pressure water jet cutting, hydroforming and laboratory applications. Internal layer: POM (polyoxymethylene), from 13 mm PA (polyamide), external layer: PA (polyamide).							
SS-NW-04-8	4	12.8	3200	8000	175	0.54	1.8	19.5
SS-NW-05mmUHP	4.5	15.3	3200	8000	250	0.69	2.5	19.7
SS-NW-06mmUHP	5.8	18.6	3200	8000	280	1.06	3	23.7
SS-NW-08mmUHP	7.6	22	3200	7400	300	1.50	4.5	29.7
SS-NW-13mmUHP	12.8	27.7	2800	6000	350	2.09	7.5	31.6
SS-NW-16mmUHP	15.9	31.8	2000	5000	400	2.52	10.5	35
HDC1 type	Hose designed for cleaning of heat exchangers. surface preparation. ship hull cleaning and hydro demolition of concrete. Internal layer: POM (polyoxymethylene), external layer: PA (polyamide) + PUR (polyurethane).							
SS-NW-05-6HDC1	4.6	18.4	2800	7000	220	0.69	2.5	17.9
SS-NW-08-6HDC1	7.7	22.8	2500	6250	260	1.09	4.5	22.8

SPIR STAR® hoses

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	fitting I.D. [mm]	ferrule O.D. [mm]
HT type	Hose designed for hot chemicals injection. Working temp. up to +150°C. Internal and external layer: PVDF (polyvinylidene fluoride).							
SS-HT-05-4HT	5	11.2	1035	4140	250	0.28	2.5	15.4
SS-HT-06-2WHT	6.3	12.2	690	2760	150	0.27	3.5	17.5
SS-HT-06-4HT	6.3	12.6	1035	4140	280	0.32	3.5	17.5
SS-HT-08-2WHT	8	14.5	690	2760	250	0.40	4	20.7
SS-HT-08-4HT	8	14.6	1035	4140	300	0.41	4.5	20.2
SS-HT-10-4HT	9.9	18.4	1035	4140	300	0.70	5	24.9
SS-HT-13-4HHT	12.8	22	860	3450	300	1.00	7.5	29.5
M type	Hose designed for methanol injection. Internal layer: PA11 BOSNO P40 TLO polyamide, external layer: polyamide (PA).							
SS-M-06-2WM	6	12.2	1100	2760	95	0.24	4	16.8
SS-M-06-4WM	6	13	1035	4140	180	0.34	3	19.9
SS-M-08-2WM	8	14.3	1100	2760	110	0.31	5.5	19.7
SS-M-10-2WM	10	17.2	1100	2760	125	0.47	5	21.5
SS-M-13-2WM	12.7	20.8	1100	2760	150	0.63	8.5	27.8
SS-M-25-2KM	23.6	32.6	500	1250	280	1.20	16.5	42
PPA type	Hose designed especially for oil rig applications. Internal layer: PVDF (polyvinylidene fluoride), external layer: polyamide (PA).							
SS-PPA-05-4PPA	5	11.2	1285	4140	250	0.26	2.5	15
SS-PPA-06-2WPPA	6.3	12.2	915	2760	150	0.27	3.5	17.1
SS-PPA-06-4PPA	6.3	12.6	1180	4140	280	0.31	3.5	16.4
SS-PPA-08-2WPPA	8	14.5	790	2760	250	0.36	5.5	18.3
SS-PPA-08-4PPA	8	14.7	1085	4140	300	0.42	4.5	20.3
SS-PPA-10-4PPA	10	18.4	1180	4140	300	0.68	5.5	23.1
SS-PPA-13-2WPPA	12.8	20.8	790	2760	300	0.67	8.5	26.5
SS-PPA-13-4HPPA	12.8	22	1040	3450	300	1.00	7.5	29.5
SS-PPA-16-4PPA	16	25.5	790	2760	400	1.08	10.5	32.7
SS-PPA-20-4PPA	18.8	28.8	775	2760	500	1.35	13	36.9
SS-PPA-20-6PPA	18.8	32.8	1040	3450	600	2.17	13	43.1
SS-PPA-25-4PPA	24.8	36.3	690	2070	500	1.82	18	42.3

Working temperature range for SPIR STAR® hose types (working pressure depends on working temperature).

- HT type from -20°C up to +150°C
- PPA type from -20°C up to +80°C (PA from -30°C up to +60°C)
- KF type from -70°C up to +200°C
- other from -30°C up to +60°C

SPIR STAR® hoses - VIPER, MAMBA, COBRA type

VIPER, MAMBA and COBRA, a new type of hoses in SPIR-STAR line whose construction ensures high flexibility and tensile strength. Used in UHP hydraulics e.g. in bolt tensioners, jacks, control panels, etc.
Working temperature from -30°C up to +60°C.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]	fitting I.D. [mm]	ferrule O.D. [mm]
VIPER type	Internal layer: PA (polyamide). Reinforcement layer: multi layers of high- tensile steel wire. External layer: yellow fluorescent PUR (polyurethane).							
SS-HL-VIPER-06	6.1	12.5	700	1800	80	20.60	4	14.4
VIPER Twin type (double)	Internal layer: PA (polyamide). reinforcement layer: multi layers of high- tensile steel wire. External layer: yellow and purple fluorescent PUR (polyurethane).							
SS-HL-VIPER-06T	6.1	12.5	700	1800	80	41.2	4	14.4
MAMBA type	Internal layer: PA (polyamide). Reinforcement layer: multi layers of high- tensile steel wire. External layer: red PUR (polyurethane).							
SS-HL-MAMBA-06	5.9	12	1200	3000	80	23.70	4	15.4
MAMBA Twin type (double)	Internal layer: PA (polyamide). Reinforcement layer: multi layers of high- tensile steel wire. External layer: red and dark grey PUR (polyurethane).							
SS-HL-MAMBA-06T	5.9	12	1200	3000	80	47.40	4	15.4
COBRA type	Internal layer: POM (polyoxymethylene). Reinforcement layer: multi layers of high- tensile steel wire. External layer: dark blue PA (polyamide).							
SS-HL-COBRA-05	5	11.2	1800	4500	150	26.00	2.5	15

Basic fittings for VIPER, MAMBA, COBRA hoses

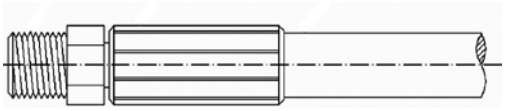
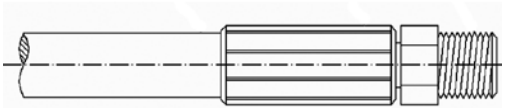
fitting					
hose type	NPTF female	NPTF male	BSP male (seal. ring)	BSP male (seal. 100°cone)	BSP female
VIPER VIPER Twin	1/4”-18	1/4”-18 3/8”-18	-	-	-
MAMBA MAMBA Twin	1/4”-18	1/4”-18 3/8”-18	1/4”	1/4”	1/4”
COBRA	-	-	1/4”	1/4”	1/4”

SPIR STAR® hose assemblies in 24 h - GREEN LINE

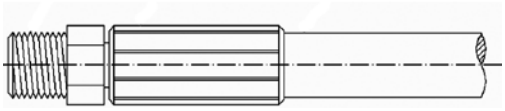
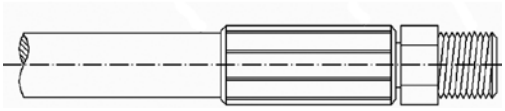
GREEN LINE is a system of fast production of SPIR STAR® hose assemblies, from the selected, most frequently used types of hoses and selected, most popular fittings. The hose assemblies are ready in 24 hours, considering the following conditions:

- a written order must be placed in the sales branch of TUBES INTERNATIONAL® and all technical and sales issues must be agreed upon before 11 a.m. on the day prior to the day when the particular hose assembly is to be ready for collection or dispatch,
- after all necessary agreements are made, the Customer should receive an order confirmation,
- any of the listed fittings can be freely matched with any hose length (allowing for the minimum technically possible length and the maximum available length of the hose),
- the quantity of ordered hose assemblies may be limited,
- the ordered hose assemblies are produced and tested according to the standard SPIR STAR® hose assembly production procedures.

To order your hose assemblies, please fill in the order form below (you can download this form from our website www.tubes-international.com.)

TUBES International	SPIR STAR 24H – GREEN LINE – ORDER FORM			
Customer: (company name, NIP, contact person and phone, e-mail):				
				
Left fitting	*Hose*	*Right fitting*	*Complete length Lc [mm]*	*Quantity*
Medium (substance)	*Working pressure [bar]*	*Working temperature [°C]*	*Other conditions (external conditions, bending during work etc.)*	
Name	*Date*	*Signature*	*Notes*	

Example:

TUBES International	SPIR STAR 24H – GREEN LINE – ORDER FORM			
Customer: (company name, NIP, contact person and phone, e-mail): Kowalski S.A., NIP 781-00-46-084, Jan Kowalski, tel. 669 111 570, kowalski@kowalski-sa.com				
				
Left fitting	*Hose*	*Right fitting*	*Complete length Lc [mm]*	*Quantity*
4/2-N2	SS-NW-04-2	4/2-N3	6250	2
Medium (substance)	*Working pressure [bar]*	*Working temperature [°C]*	*Other conditions (external conditions, bending during work etc.)*	
water	1000	40	none	
Name	*Date*	*Signature*	*Notes*	
Jan Kowalski	10.05.2016	Kowalski	none	

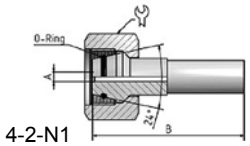
SPIR STAR® hose assemblies in 24 h - GREEN LINE

SPIR STAR DN4 (4/2)

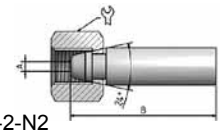
Internal layer: Polyoxymethylene (POM)
Reinforcement: Two layers of steel wire
External layer: Green polyamide (PA)
Working temp.: From -30°C up to +60°C

Lightweight, flexible hose used mainly to clean heat exchangers, hose assemblies and piping systems.

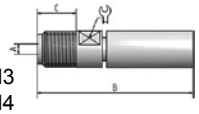
hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-04-2	4	8	1200	3000	75	0.11	SS-10420102	10	34



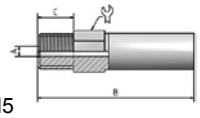
4-2-N1



4-2-N2



4-2-N3
4-2-N4



4-2-N5

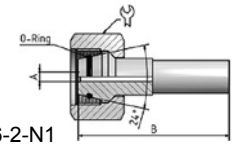
fitting type	description	elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]
4-2-N1	M24x1.5 female, 24° cone, o ring	insert	SS-20420042A	2.5	68	-	32
		nut	SS-51321206				
4-2-N2	1/4” BSP female, 24°/60° cone	insert	SS-20430302A	2.5	48	-	19
		nut	SS-50540301				
4-2-N3	1/8” BSP male, flat seal	-	SS-30420382A	2.5	55	13	9
4-2-N4	M7x1 male, flat seal	-	SS-30420082A	2.5	52	11	7
4-2-N5	1/4” BSP male, flat seal	-	SS-30420322A	2.5	55	12	11

SPIR STAR DN6 (6/2)

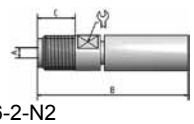
Internal layer: Polyoxymethylene (POM)
Reinforcement: Two layers of steel wire
External layer: Green polyamide (PA)
Working temp.: From -30°C up to +60°C

Lightweight, flexible hose used mainly for high pressure hydraulics (testing, hydraulic tools) and heat exchanger cleaning.

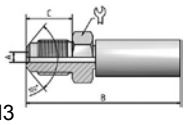
hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-06-2	6.3	11.5	1000	2500	110	0.18	SS-10620101	13.9	42



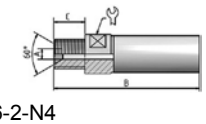
6-2-N1



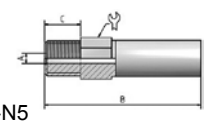
6-2-N2



6-2-N3



6-2-N4



6-2-N5

fitting type	description	elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]
6-2-N1	M24x1.5 female, 24° cone, o ring	insert	SS-20620042A	4	75	-	30
		nut	SS-51060201				
6-2-N2	1/4” BSP male, flat seal	-	SS-30620381A	4	66	15	12
6-2-N3	1/4” BSP male, 100° outer cone	-	SS-30620361A	4	67	18	17
6-2-N4	3/8” BSP male, 60° outer cone	-	SS-30620321A	4	61	12	17
6-2-N5	3/8” NPTF male	-	SS-30620451A	4	64	14	17

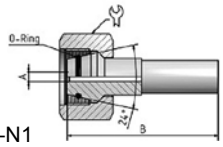
SPIR STAR® hose assemblies in 24 h - GREEN LINE

SPIR STAR DN8 (8/2W)

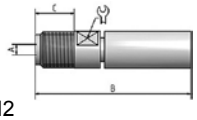
Internal layer: Polyamide (PA)
Reinforcement: Two dense and two open layers of steel wire
External layer: Black polyurethane (PUR)
Working temp.: From -30°C up to +60°C

Lightweight, flexible hose used mainly for high pressure hydraulics (testing, hydraulic tools) and heat exchanger cleaning.

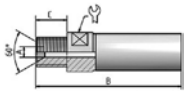
hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-08-2W	8	14.3	1040	2600	110	0.32	SS-10830191W	18.3	43



8-2W-N1



8-2W-N2



8-2W-N3

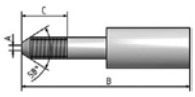
fitting type	description	elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]
8/2W-N1	M24x1.5 female, 24° cone, o ring	insert	SS-20820042A	5.5	75	-	32
		nut	SS-51321206				
8/2W-N2	1/4" BSP male, flat seal	-	SS-30820381A	5.5	70	15	12
8/2W-N3	3/8" BSP male, 60° outer cone	-	SS-30820301A	5.5	65	12	17

SPIR STAR DN8 UHP (8/6UHP)

Internal layer: Polyoxymethylene (POM)
Reinforcement: Six layers of steel wire
External layer: Yellow polyamide (PA)
Working temp.: From -30°C up to +60°C

Robust hose suitable for ultra-high pressure waterjet cleaning and cutting.

hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-08-6UHP	7.6	19.3	2800	7000	300	1.1	SS-10860116	23.7	88



8/6UHP-N1, 8/6UHP-N2

fitting type	description	elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]
8/6UHP-N1	HP 9/16"- 18 UNF LH male	-	SS-40860204E	4.5	126	31	-
8/6UHP-N2	HP M14x1.5 LH male	-	SS-40860104E	4.5	126	31	-

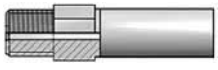
Complete UHP hose assemblies (SPIR STAR®, WATERBLAST) in 24 h

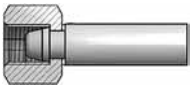
Complete, fully finished and tested UHP (ULTRA HIGH PRESURE) hose assemblies produced from selected SPIR STAR® and WATERBLAST hoses in the most common lengths (Lc) and with selected, most popular fittings. The information on the parameters of these hoses is provided on the previous pages of the catalogue. The hose assemblies are ready in 24 hours, considering the following conditions:

- warehouse availability of the hose assembly must be confirmed;
- a written order must be placed in the sales branch of TUBES INTERNATIONAL® and all technical and sales issues must be agreed upon before 12 a.m. on the day prior to the day when the particular hose assembly is to be ready for collection or dispatch,
- the Customer should receive an order confirmation issued on the basis of the agreements.

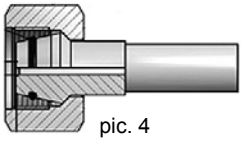
hose assembly code	hose type	I.D. [mm]	working pressure [bar]	length complete [m]	fittings			
					left	pic.	right	pic.
hydraulics 700 bar								
HASS-06-001-L1M	SS-HL-VIPER-06	6.1	700	1	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L2M	SS-HL-VIPER-06	6.1	700	2	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L3M	SS-HL-VIPER-06	6.1	700	3	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L5M	SS-HL-VIPER-06	6.1	700	5	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L10M	SS-HL-VIPER-06	6.1	700	10	3/8" NPT	1	3/8" NPT	1
hydraulics 1800 bar								
HASS-05-002-L2M	SS-NW-05-4	5	1800	2	1/4" BSP	2	1/4" BSP	2
HASS-05-002-L3M	SS-NW-05-4	5	1800	3	1/4" BSP	2	1/4" BSP	2
HASS-05-002-L5M	SS-NW-05-4	5	1800	5	1/4" BSP	2	1/4" BSP	2
cleaning 1000 bar								
HAWB-13-001-L20M	SL-WBL4P-13	12.7	1100	20	M24x1.5	4	M24x1.5	4
HASS-08-003-L20M	SS-NW-08-2W	8	1040	20	M24x1.5	4	M24x1.5	4
HASS-03-004-L12M	SS-NW-03-2	3.4	1000	12	1/4" BSP	2	M7x1 flat	5
HASS-04-005-L12M	SS-NW-04-2	4	1200	12	M24x1.5	4	1/8" BSP flat	6
HASS-05-006-L12M	SS-NW-05-2	5	1040	12	M24x1.5	4	1/8" BSP flat	6
HASS-06-007-L12M	SS-NW-06-2	6.3	1000	12	M24x1.5	4	1/4" BSP flat	6
cleaning 2500 bar								
HASS-08-008-L20M	SS-NW-08-6H	7.7	2500	20	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-08-009-L20M	SS-NW-08-6H	7.7	2500	20	HPM14x1.5 LH	3	HPM14x1.5 LH	3
HASS-05-010-L5M	SS-NW-05-6	4.8	2500	5	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-05-011-L5M	SS-NW-05-6	4.8	2500	5	HPM14x1.5 LH	3	HPM14x1.5 LH	3
cleaning 2800 bar								
HASS-08-012-L20M	SS-NW-08-6UHP	7.6	2800	20	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-08-013-L20M	SS-NW-08-6UHP	7.6	2800	20	HPM14x1.5 LH	3	HPM14x1.5 LH	3
HASS-05-014-L5M	SS-NW-05-6H	4.8	2800	5	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-05-015-L5M	SS-NW-05-6H	4.8	2800	5	HPM14x1.5 LH	3	HPM14x1.5 LH	3
cleaning 3000 bar								
HASS-08-016-L20M	SS-NW-08-6UHP-X	7.6	3035	20	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-08-017-L20M	SS-NW-08-6UHP-X	7.6	3035	20	HPM14x1.5 LH	3	HPM14x1.5 LH	3
HASS-05-018-L5M	SS-NW-05-6UHP	4.5	3200	5	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-05-019-L5M	SS-NW-05-6UHP	4.5	3200	5	HPM14x1.5 LH	3	HPM14x1.5 LH	3

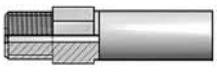
Fittings


pic. 1


pic. 2


pic. 3


pic. 4


pic. 5

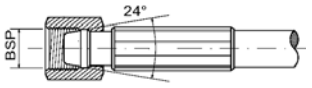
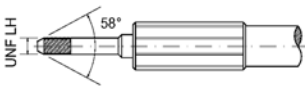
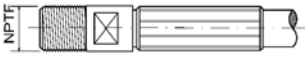

pic. 6

SPIR STAR® fittings

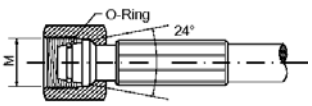
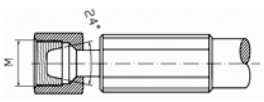
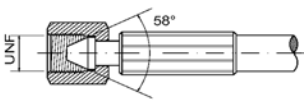
The most common combinations of fittings and basic types of SPIR STAR® hoses are marked with numerical codes e.g. for hose SS-NW-06/2. They are given in the tables below. The tables facilitate initial fitting selection for a particular hose type. The process of matching the fitting to the particular hose, the choice of sealing and thread size depends not only on the nominal diameter of the hose assembly but also on its maximum working pressure i.e. mainly on the number of reinforcement layers and fitting material. The standard combinations given in the tables below do not apply to special types of hoses - those marked with additional letters in the code of the hose type, e.g. NW-SS-06/2 WL.
The final confirmation of availability of hose-fitting connection must be based on the most recent catalogue cards from SPIR STAR® catalogue.

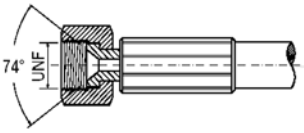
The procedure of initial standard hose assembly selection:

1. The selection of a hose according to such working parameters as medium, temperature, maximum working pressure and required nominal diameter are selected from the tables on SPIR STAR® hoses pages of this catalogue.
2. The selection of fittings from the tables below.
3. The verification of the selection by comparison to SPIR STAR® catalogue data.

fitting								
hose DN	hose type - number of reinf. layers					BSP female	HP male (UNF LH) LH metric thread	NPTF / NPT male
	2	3	4	6	8			
3	•					1/4"	-	1/16"
			•			-	1/4"-28	-
				•		-	1/4"-28, 3/8"-24	-
4	•					1/4"	1/4"-28	1/16", 1/8", 1/4", 5/16"
			•			1/4"	1/4"-28, 3/8"-24, 9/16"-18	1/8"
				•	•	-	1/4"-28, 3/8"-24, 9/16"-18	-
5	•	•				1/4"	-	1/8", 1/4"
			•			1/4”	1/4"-28, 3/8"-24, 9/16"-18	-
				•	•	1/4"	1/4"-28, 3/8"-24, 9/16"-18, M14x1.5	-
6	•	•				1/4"	9/16"-18	1/8", 1/4", 3/8"
			•			1/4"	3/8"-24	1/4"
				•	•	-	3/8"-24, 9/16"-18, M14x1.5	-
8	•					3/8"	-	1/4", 3/8"
			•			1/4”	9/16"-18	1/4', 3/8"
				•	•	-	3/8"-24, 9/16"-18, M14x1.5, 3/4"-16	-
10	•					1/2"	-	3/8", 1/2"
			•	•		1/2"	9/16"-18	-
13	•					1/2"	9/16"-18	1/2"
			•	•	•	1/2"	9/16"-18, 3/4"-16. M18x1.5	-
16			•			-	3/4"-16	3/4"
				•	•	-	M18x1.5	-
20	•					-	-	1"
			•	•		-	1"-14	-
25	•		•			-	-	1"
				•		-	1"-14	-

SPIR STAR® fittings

fitting								
hose DN	hose type - number of reinf. layers					metric female. O-ring (DKOS *)	metric female (DKL or DKS *)	M type (UNF female) HP female (UNF or LH female)
	2	3	4	6	8			
3			●			-	M12x1.5 (DKL)	9/16"-18
4	●					M24x1.5	-	9/16"-18
			●	●	●	-	-	9/16"-18
5	●	●				M24x1.5	M14x1.5 (DKL)	9/16"-18
			●			M20x1.5	M14x1.5 (DKL)	9/16"-18
				●	●	-	M14x1.5 (DKL)	9/16"-18
6	●	●				M18x1.5, M22x1.5, M24x1.5	M14x1.5 (DKL), M16x1.5 (DKS)	9/16"-18
			●			M18x1.5, M24x1.5	-	3/8"-24, 9/16"-18
				●	●	-	-	9/16"-18
8	●					M20x1.5, M24x1.5	-	3/4"-16
			●			M20x1.5, M22x1.5, M24x1.5	-	3/4"-16
				●	●	M24x1.5	-	3/4"-16, 7/8"-14
10	●					M24x1.5, M22x1.5	-	3/4"-16
			●			M22x1.5, M24x1.5	-	3/4"-16
				●		M22x1.5, M24x1.5	-	-
13	●					M22x1.5, M24x1.5	-	1"-12
			●	●	●	M24x1.5	-	1"-12
16			●	●	●	M30x2	-	1.5/16"-12
20	●		●	●		M36x2	-	1.5/16"-12
25	●			●		M42x2	-	-
			●			M42x2	-	1.5/16"-12

fitting								
hose DN	hose type - number of reinf. layers					JIC female UNF	BSP male	BSP male / metric (flat sealing)
	2	3	4	6	8			
3	●					-	-	M6x1, M7x1
4	●					-	1/8", 1/4"	1/8", M7, M8, M10
5	●	●				-	1/8", 1/4"	1/8", M7, M10
			●			-	1/4"	-
				●	●	9/16"-18	-	-
6	●	●				9/16"-18	1/8", 1/4", 3/8"	1/4"
			●			9/16"-18	1/4"	M8
8	●					9/16"-18	1/4", 3/8"	1/4"
			●			3/4"-16	1/4", 3/8"	1/4"
10	●		●			-	3/8"	-
16			●			1.1/16"-12	-	-
				●	●	1.5/16»-12	-	-
20	●					1.5/16"-12	-	-
25	●					1.5/16»-12	-	-

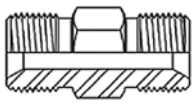
* Note: Fittings with metric thread basically correspond to such familiar types as DKOS, DKL and DKS. However, due to dimension differences occurring in certain sizes, it is recommended to confirm the choice with TUBES INTERNATIONAL® Technical Department.

Accessories for SPIR STAR® hoses

Connectors for HP fittings - working pressure 4000 bar

picture	code	thread size	description	intended for
	SS-UHP-CLR-04-HP	1/4"-28 UNF LH fem.	abutment ring	GN-1/4-HP
	SS-UHP-GN-04-HP	9/16"-18 UNF male	nut	CLR-1/4-HP
	SS-UHP-CLR-06-HP	3/8"-24 UNF LH fem.	abutment ring	GN-3/8-HP
	SS-UHP-GN-12-HP	3/4"-16 UNF male	nut	CLR-3/8-HP
	SS-UHP-CLR-09-HP	9/16"-18 UNF LH fem.	abutment ring	GN-9/16-HP
	SS-UHP-GN-18-HP	1.1/8"-12 UNF male	nut	CLR-9/16-HP
	SS-UHP-CLR-04-HP-ME	1/4"-28 UNF LH fem.	abutment ring	GN-M16
	SS-UHP-GN-M16	M16x1.5 male	nut	CLR-1/4-HP-ME
	SS-UHP-CLR-06-HP-ME	3/8"-24 UNF LH fem.	abutment ring	GN-M20
	SS-UHP-GN-M20	M20x1.5 male	nut	CLR-3/8-HP-ME
	SS-UHP-CLR-09-HP-ME	9/16"-18 UNF LH fem.	abutment ring	GN-M30
	SS-UHP-CLR-M14	M14-1.5 LH fem.	abutment ring	GN-M30
	SS-UHP-GN-M30	M30x2 male	nut	CLR-M14. CLR-9/16-HP-ME
	SS-UHP-CLR-M18-M30	M18x1.5 LH fem.	abutment ring	GN-M30-M18
	SS-UHP-GN-M30-M18	M30x2 male	nut	CLR-M18-M30
	SS-UHP-HC-M16	2 x M16x1.5 fem.	straight HP connector (body)	GN-M16 + CLR-1/4-HP-ME
	SS-UHP-HC-M20	2 x M20x1.5 fem.		GN-M20 CLR-3/8-HP-ME
	SS-UHP-HC-M30	2 x M30x2 fem.		GN-M30 + CLR-M14 GN-M30 + CLR-9/16-HP-ME GN-M30-M18 + CLR-M18-M30
	SS-UHP-HC-HF4	HP 1/4"	straight HP connector (complete)	GN-1/4-HP + CLR-1/4-HP
	SS-UHP-HC-HF6	HP 3/8"		GN-3/8-HP + CLR-3/8-HP
	SS-UHP-HC-HF9	HP 9/16"		GN-9/16-HP + CLR-9/16-HP
	SS-UHP-HC-HF9-HF6	HP 9/16" / HP 3/8"	reducing connector HP (complete)	GN-9/16-HP + CLR-9/16-HP + GN-3/8-HP + CLR-3/8-HP

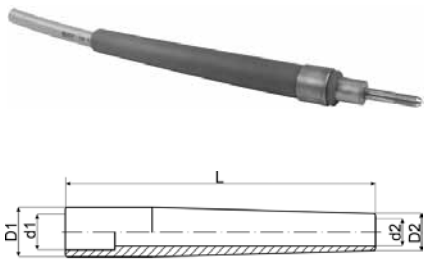
Other high pressure connectors

picture	code	pressure [bar]	threads	description
	TI-HP-0303-04-04	1380	2 x 1/4”	DKR high pressure nipple.
	SS-UHP-HMB4-MB4	2800		
	TI-HP-0303-06-06	1380	2 x 3/8”	
	SS-UHP-HMB6-MB6	2800		
	TI-HP-0303-08-08	1380	2 x 1/2”	
	SS-UHP-HMB8-MB8	2000		
	SS-UHP-HMB12-MB12	1000	2 x 3/4"	
	SS-UHP-HMEM18-MEM18	1500	2 x M18x1.5	DKOS high pressure nipple.
	SS-UHP-HMEM20-MEM20	2800	2 x M20x1.5	
	TI-HP-4545-22-22	1380	2 x M22x1.5	
	SS-UHP-HMEM22-MEM22	2800		
	TI-HP-4545-24-24	1380	2 x M24x1.5	
	SS-UHP-HMEM24-MEM24	2800		
	SS-UHP-HMEM30-MEM30	2000	2 x M30x2	
	SS-UHP-HMEM36-MEM36	1400	2 x M36x2	
	SS-UHP-HMEM42-MEM42	2070	2 x M42x2	
	SS-UHP-HMEM42-MEM42-20K	1380	2 x M42x2	
	SS-UHP-HMEM22-MEM24	2800	M22x1.5 x M24x1.5	DKOS high pressure reducing nipple.
	SS-UHP-HMEM24-MEM36	1400	M24x1.5 x M36x2	
	SS-UHP-HMEM30-MEM36	1400	M30x2 x M36x2	
	SS-UHP-HMEM36-MEM42	480	M36x2 x M42x2	

Accessories for SPIR STAR® hoses

Hose bend restrictors (assembled behind sleeve)

Polyurethane restrictors raise working safety level and extend hose service life. They are very lightweight and easy to assemble. Intended for hoses operating under highest pressure (see the table). For hoses with lower working pressure and other applications e.g. for hose 6/2 WL, standard rubber restrictors should be used (see CLEANING AND WASHING - code EM-KK… or EM-GK…). Please contact TUBES INTERNATIONAL® Technical Department to confirm your selection.

picture	code	dimensions [mm]					hose type
		L	D1	d1	D2	d2	
	SS-BR-PUR-01	250	30	18	23	16	5/6
	SS-BR-PUR-02	250	30	19.5	23	16	4/8, 5/6H
	SS-BR-PUR-03	250	30	20.5	23	16	5mmUHP
	SS-BR-PUR-04	250	40	22.5	30	22.5	6/6H, 8/6
	SS-BR-PUR-05	250	40	26.5	30	26.5	6mmUHP, 8/6H, 8/6HDC1, 8/6UHP, 8/6UHP-X
	SS-BR-PUR-06	250	40	30	30	22.5	8mmUHP
	SS-BR-PUR-07	350	50	35.3	40	32	13mmUHP
	SS-BR-PUR-08	350	52	38.3	44	35	16/6, 16mmUHP
	SS-BR-PUR-09	450	55	43.3	45	37	20/6

Hose securing grips

Steel securing grips used to protect a hose operator against the effects of connection failure e.g. pulling a fitting out from the hose. Very easy to install, even when the systems is on - requires disconnection of the hose from the system only at one side for assembly time. In emergency situation, when the hose-fitting connection breaks or the fitting is pulled out from the installation, the grip shrinks and tightens on the hose so the hose slows down and stops.

picture	code	hose O.D. [mm]	strength [kN]
	SS-CG-01	10 ÷ 15	10.2
	SS-CG-02	15 ÷ 20	20.4
	SS-CG-03	20 ÷ 30	24.3
	SS-CG-04	30 ÷ 40	35.1
	SS-CG-05	40 ÷ 50	48
	SS-CG-06	50 ÷ 60	48

Protective hose covers

In order to protect the external hose layer, another hose - LUISIANA and CRISTALLO (see “INDUSTRIAL HOSES - food”) can be used by sliding the protective hose over the one to be protected. LUISIANA hose cover (reinforced with spiral) secures SPIR STAR® hoses in WATERBLAST applications where high surface friction occurs. CRISTALLO hose cover (without reinforcement) secures high pressure hydraulic hoses in applications where friction is smaller but maximum flexibility is crucial.
Selection of a protective hose cover: the outside diameter of the ferrule of SPIR STAR® hose after crimping must be smaller than the inside diameter of the protective hose.