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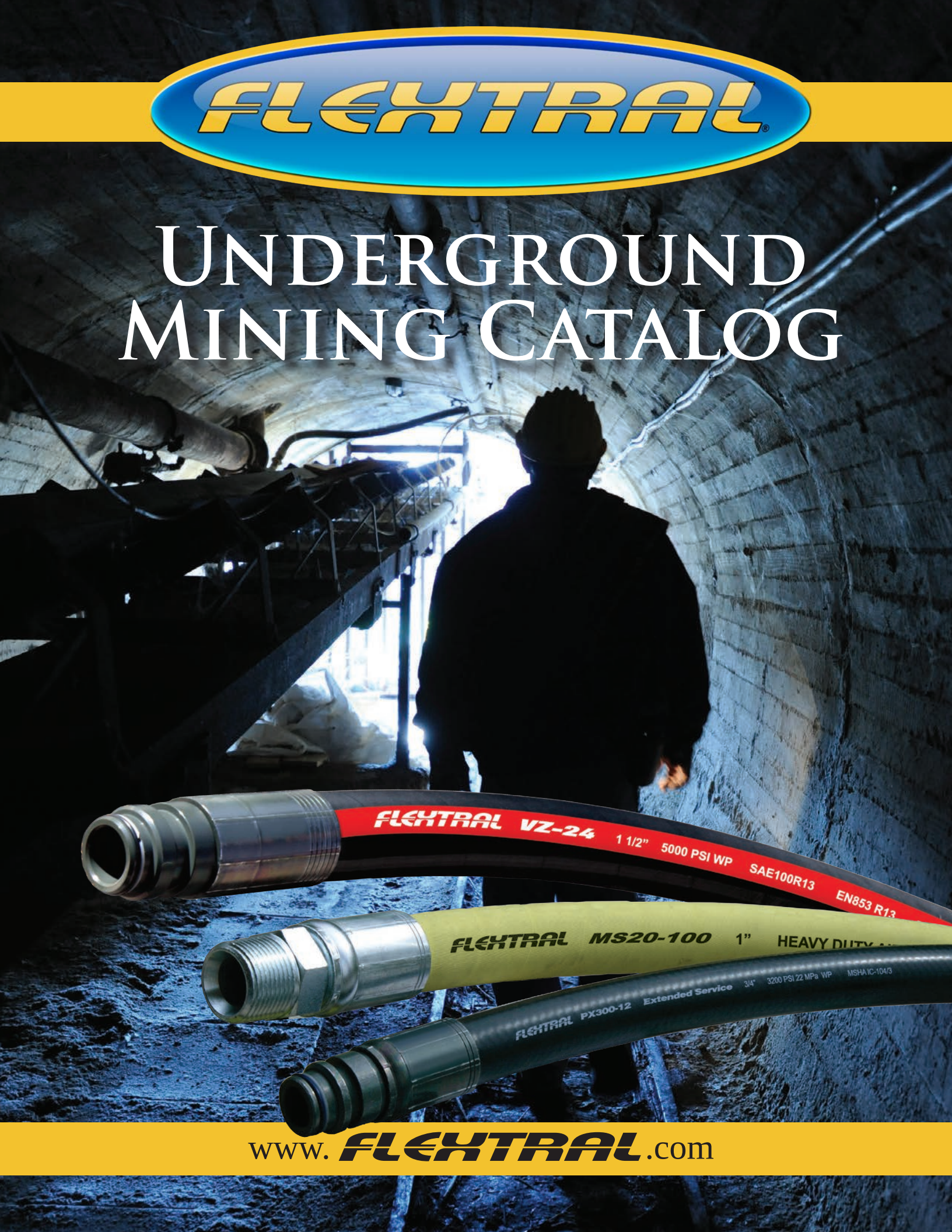
Underground Mining Catalog



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Technical Data

Hose

Couplings

Standard Adapters

Standard Adapters (cont.)

Super Adapters

Recommended Practices for Hydraulic Hose Assemblies - SAE J1273 1996

Foreword

The SAE Recommended Practices is intended as a guide to consider when selecting, routing, fabricating, installing, replacing, maintaining, and storing hose for fluid-power systems. It is subject to change to keep pace with experience and technical advances. For those new to hose use in fluid power systems, this guide outlines practices to note during each phase of system design and use. Experienced designers and users skilled in achieving proper results, as well as the less experienced, can use this outline as a list of considerations to keep in mind.

Fluid-power systems are complex and require extensive knowledge of both the system requirements and the various types of hose. Therefore, all inclusive, detailed, step by step instructions are not practical and are beyond the scope of this document. Less experienced designers and users who need more information can consult specialists such as hose suppliers and manufacturers. This guide can improve the communication process.

Safety Considerations

These recommended practices involve safety considerations; note these carefully during all phases of design and use of hose systems. Improper selection, fabrication, installation, or maintenance of hose and hose assemblies for fluid power systems may result in serious personal injury or property damage. These recommended practices can reduce the likelihood of component or system failure, thereby reducing the risk of injury or damage.

1. Scope - SAEJ1273 provides guidelines for selection, routing, fabrication, installation, replacement, maintenance, and storage of hose and hose assemblies for fluid-power systems. Many of these SAI Recommended Practices also may be suitable for other hoses and systems.

2. Reference

2.1 Applicable publications - The following publications form a part of this specification to the extent specified herein, Unless otherwise specified, the latest issue of SAF publications shall apply.

2.1.1 SAE publications - Available for SAE, 400 Commonwealth Drive, Warrendale, PA 15096-000

SAEJ343 -Test and Procedures for SAE 100 R Series Hydraulic Hose and Hose Assemblies SAEJ514 - Hydraulic Tube Fittings

SAEJ517 - Hydraulic Hose SAEJ 1927 - Cumulative Damage Analysis for Hydraulic Hose Assemblies

2.1.2 ISO publications - Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002

ISO 3457 - Earth moving machinery - Guards and shields definitions and specifications.

3. Definitions

These explanations serve only to clarify this document and are not intended to stand alone. They are presented sequentially, with the former helping to explain the latter. 3.1 Fluid-power Energy transmitted and controlled using pressurized hydraulic fluids or compressed air. 3.2 Hose - flexible conductor. In this document, the term hose also may refer to a hose assembly with related accessories used in fluid power applications. 3.3 Hose fitting or fitting - connector which can be attached to the end of a hose. 3.4 Hose assembly - hose with hose fittings attached.

3.5 Hose failure - occurrence in which a hose stops meeting system requirements. 3.6 Hose service life - length of time a hose meets system requirements without needing replacement.

4. Safety considerations - listed in 4.1 to 4.7 are some potential conditions and situations that may lead to personal injury and/or property damage. This list is not necessarily all inclusive. Consider reasonable and feasible means, including those described in this section, to reduce the risk of injuries or property damage.

Training, including the information in this document, for operators, maintenance personnel, and other individuals working with hoses under pressure is encouraged.

4.1 Fluid injections - fine streams of escaping pressurised fluid can penetrate skin and enter a human body. These fluid injections may cause severe tissue damage and loss of limb. Consider various means to reduce the risk of fluid injections, particularly in areas normally occupied by operators. Consider careful routing, adjacent components, warnings, guards, shields, and training programs.

Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Avoid contact with escaping fluids. Treat all leaks as though pressurised and hot enough to burn skin. Never use any part of your body to check a hose for leaks. If a fluid-injection accident occurs, see a doctor immediately. DO NOT DELAY OR TREAT AS A SIMPLE CUT! Any fluid injected into skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should consult a knowledgeable medical source.

4~2 Whipping hose - if a pressurised hose assembly blows apart, the fittings can be thrown off at high speed, and the loose hose can flail or whip with great force. This is particularly true in compressible-fluid systems. When the risk exists, consider guards and restraints to protect against injury.

4~3 Burns from conveyed fluids - fluid-power media may reach temperatures that can burn human skin. If there is risk of burns from escaping fluid, consider guards and shields to prevent injury, particularly in areas normally occupied by operators.

4~4 Fire and explosions from conveyed fluids - most fluid-power media, including fire-resistant hydraulic fluids, will burn under certain conditions. Fluids which escape from pressurised systems may form a mist or fine spray which can flash or explode upon contact with an ignition source. Consider selecting, guarding, and routing hose to minimize the risk of combustion (see Section 5 and ISO 3457).

4.5 Fire and explosions from static-electric discharge - fluid passing through hose can generate static electricity, resulting in static electric discharge. This may create sparks that can ignite system fluids or gases in the surrounding atmosphere.

When this potential exists, select hose specifically designed to carry the static-electric charge to ground.

Selection of Hose

System type
The selection and installation of hoses must be in relation to pump pressure, operating cycle, inner diameters of pipes, and type of fluid.

Operating pressure
Hose lines are rated for continuous operation at the maximum operating pressures specified for the hose.

Generally, the operating pressure is one fourth the hose minimum burst pressure, thus meeting the SAE recommended safety factor of 4 to 1.

Pressure surges
Almost all hydraulic systems develop pressure surges which may exceed relief valve settings and affect the service life of hose and system components. In systems where surges are severe, select a hose that will increase the safety factor.

Conversely, in systems where surges are slight or non-existent, a smaller safety factor may be used.

Operating temperatures
Operating temperatures specified refer to maximum temperature of the fluid or gases being conveyed (with peaks up to 300˚F or 149˚C). Continuous operation at or near maximum rated temperatures will materially reduce the service life of the hose.

Ambient temperatures
Very high or low ambient (outside of hose) temperatures will affect cover and reinforcement materials, thus influencing the life of the hose.

Bend radius
Recommended minimum bend radii are based on maximum operating pressures with no flexing of the hose.

Vibration and flexing
Hose lines are designed to withstand maximum vibration and flexing.

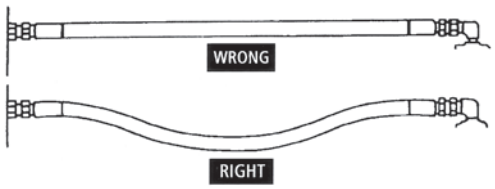
Volumetric expansion
Hose is normally manufactured with a neutral braid angle to reduce volumetric expansion.

Gaseous fluid systems
High pressure gaseous systems are very hazardous. Hose lines should be adequately protected from external shock and mechanical or chemical damage.

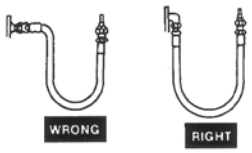
They should also be suitably protected to prevent whiplash action in the event of failure for any reasons.

It is recommended to increase safety factor.

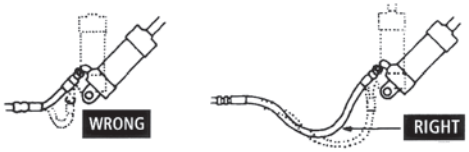
Hose Installation Guide



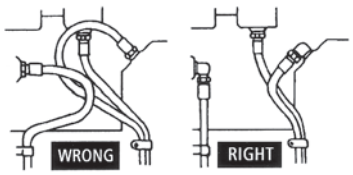
Be sure to leave some slack to allow for changes in length under surge pressures (estimated at +2% to -4%)



Use angle adaptors to avoid sharp twists or bends



Allow for movement on flexing or vibrating installations to minimise flex failure and abrasion



Use 45˚ and 90˚ adaptors and fittings to improve routing

Hose and Fitting Compatibility
SAE J517 hose from one manufacturer is usually not compatible with SAE J516 fittings supplied by another manufacturer. It is the responsibility of the fabricator to consult the manufacturer's written assembly instructions or the manufacturer directly before intermixing hose and fittings from two manufacturers. Similarly, assembly equipment from one manufacturer is usually not interchangeable with that of another manufacturer. It is the responsibility of the fabricator to consult the manufacturer's written instructions or the manufacturer directly for proper assembly equipment. Always follow the manufacturer's instructions for proper preparation and fabrication of hose assemblies.

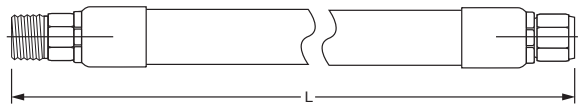
How to Measure Flextral Assemblies

Use to identify length of customer sample and for checking proper length of new hose assembly.

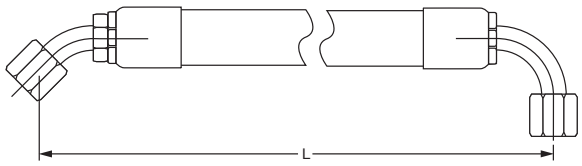
Unless otherwise specified, assembly length shall be the overall length measured from the extreme end of one connector to the extreme end of the other. O-ring face seal type connectors shall be measured from the sealing face. Where elbow connectors are used, measurement shall be to the centerline of the sealing surface of the elbow end (The sealing surface of female flared elbow connectors shall be the centerline of the outer end of the cone seat). See figures below.

Hold the assembly so that you can look along the length of the hose and with the fitting furthest away from you in the vertical position. Measure the angle between the vertical fitting and the one nearest to you in a clockwise direction. Relationship can then be expressed from 0˚ to 360˚.

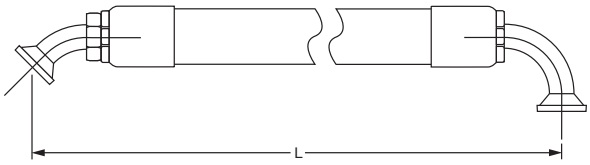
Method of measurement should be specified. Tolerances on assembly length shall be as in table below.



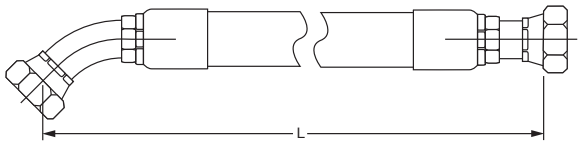
Straight connectors (except O-ring face seal)



Female swivel elbow connectors



Flange connectors



O-ring face seal connectors

Assembly Length	Tolerances (decimal inch)	Tolerances (fraction inch)	Tolerances (mm)
Up through 12” (304.8 mm)	0.13	1/8	3.2
Over 12” through 18” (304.8 through 457.2 mm)	0.19	3/16	4.8
Over 18” through 36” (457.2 through 914.4 mm)	0.25	1/4	6.4
Over 36” (914.4 mm)	1%	1%	1%

Angular Relationships

Hold the assembly so that you can look along the length of the hose and with the fitting furthest away from you in the vertical position. Measure the angle between the vertical fitting and the one nearest to you in a clockwise direction. Relationship can then be expressed from 0˚ to 360˚.

PX300 Extended Service Hydraulic Hose

Meets or exceeds the requirements of SAE 100R16 and EN857 2SC DIN 20022
2SN-ISO 1436 Type 2

Tube: Nitrile
Reinforcement: Two braids of ultra high tensile steel wire
Cover: Smooth, Black, oil, high abrasion and weather resistant synthetic rubber, MSHA approved
Temperature: -54°C to +121°C (-65°F to 250°F)
Packaging: Reels/coils
Application: Petroleum based hydraulic fluids, water, diesel fuels and lubricating oils, biodegradeable hydraulic oil fire resistant synthetic polyol esters

PART NUMBER	HOSE I.D.	HOSE O.D.		MAX W.P.	MAX STATIC WORKING PRESSURE	MINIMUM BURST PRESSURE	MINIMUM BEND RADIUS		WEIGHT	Non-Skive
	(in)	(in)	(mm)	(psi)	(psi)	(psi)	(in)	(mm)	(lbs/ft)	COUPLINGS
PX300-04	¼	0.56	14.2	5,800	7,714	23,200	1.9	48	0.2	E
PX300-06	⅜	0.72	18.3	6,650	6,650	20,000	2.5	63	0.3	E, N
PX300-08	½	0.85	21.5	4,395	5,845	17,580	3.3	85	0.36	E, N
PX300-10	⅝	0.97	24.7	3,700	4,921	14,800	3.9	98	0.48	E, N
PX300-12	¾	1.13	28.6	3,190	4,242	12,760	4.5	115	0.61	E, N
PX300-16	1	1.44	36.6	3,045	4,049	12,180	5.7	145	0.84	E, N

Notes: *PX300 has been tested and approved for 1,000,000 impulse cycles at 133% of working pressure at 250°F.
*PX300 is 33 times more abrasion resistant than standard rubber hydraulic hose.
* Static working pressures are calculated as 133% of dynamic working pressure.

EX 2SN Two Wire Braid Hose

Meets or exceeds the requirements of SAE 100R2AT-EN853
DIN 20022 2SN-ISO 1436 Type 2

Tube: Nitrile
Reinforcement: Two braids of high tensile steel wire
Cover: Black, oil, abrasion and weather resistant synthetic rubber, MSHA approved
Temperature: -40°C to +100°C (-40°F to +212°F), intermittent use up to +125°C (+257°F)
Packaging: ¼" - 1" Reels, 1¼" - 2" Coils
Application: Petroleum based hydraulic fluids, water, diesel fuels and lubricating oils, biodegradeable hydraulic oil, fire resistant synthetic polyol esters, USCG 1942-1 accepted.

PART NUMBER	HOSE I.D.	HOSE O.D.		MAX W.P.	MAX STATIC WORKING PRESSURE	MINIMUM BURST PRESSURE	MINIMUM BEND RADIUS		WEIGHT	ONE PIECE
	(in)	(in)	(mm)	(psi)	(psi)	(psi)	(in)	(mm)	(lbs/ft)	COUPLINGS
EX-03	3⁄16	0.53	13.4	6,020	8,006	24,080	3.5	90	0.26	E
EX-04	¼	0.59	15.1	5,805	7,720	23,220	3.9	100	0.26	E
EX-05	5⁄16	0.65	16.6	5,080	6,756	20,320	4.5	115	0.26	E
EX-06	⅜	0.75	19.1	5,000	6,650	20,000	5.0	130	0.37	E, N
EX-08	½	0.87	22.2	4,000	5,320	16,000	7.1	180	0.45	E, N
EX-10	⅝	1.00	25.4	3,625	4,821	14,500	7.9	200	0.54	E, N
EX-12	¾	1.15	29.3	3,120	4,149	12,480	9.5	240	0.67	E, N
EX-16	1	1.50	38.1	2,395	3,185	9,580	11.8	300	0.98	E, N
EX-20	1¼	1.90	48.3	1,815	2,413	7,260	16.5	420	1.43	E, N
EX-24	1½	2.14	54.3	1,305	1,735	5,220	19.7	500	1.61	E, N
EX-32	2	2.65	67.3	1,160	1,542	4,640	24.8	630	2.24	E, N

Notes: Static working pressures are calculated as 133% of dynamic working pressure.

NZ Four Spiral Hose

Exceeds the requirements of SAE 100R12 - EN856

Tube: Nitrile
Reinforcement: Four spirals of high tensile wire
Cover: Black, oil, abrasion and weather resistant synthetic rubber, MSHA approved
Temperature: 40°C to +121°C (-40°F to +250°F)
Packaging: Coils
Application: Petroleum based hydraulic fluids, water, diesel fuels and lubricating oils, biodegradeable hydraulic oil fire resistant synthetic polyol esters

PART NO.	HOSE I.D.	HOSE O.D.		MAX W.P.	MAX STATIC PRESSURE	MIN B.P.	MINIMUM BEND RADIUS		WEIGHT	ONE PIECE Non-Skive	ONE PIECE Skive
	(in)	(in)	(mm)	(psi)	(psi)	(psi)	(in)	(mm)	(lbs/ft)	COUPLINGS	COUPLINGS
NZ-12	¾	1.26	32.0	6,100	7,320	24,400	11.0	280	1.04	N, V	
NZ-16	1	1.51	38.4	5,500	6,600	22,000	13.4	340	1.44	N, V	
NZ-20	1¼	1.78	45.2	5,000	6,000	20,000	18.1	460	1.68	N	VS
NZ-24	1½	2.09	53.0	4,300	5,160	17,200	22.0	560	2.23	N	VS
NZ-32	2	2.66	67.6	3,600	4,320	14,400	27.6	700	3.08	N	VS

Note - Static working pressures are calculated as 120% of dynamic working pressure

VZ 100R13 Six Spiral Wire Hose

Meets or exceeds the requirements of SAE 100R13

Tube: Nitrile
Reinforcement: 1¼" thru 2" 6 spirals of high tensile steel
Cover: Black, oil, abrasion and weather resistant synthetic rubber, MSHA approved
Temperature: -40°C to +121°C (-40°F to +250°F)
Packaging: Coils
Application: Petroleum based hydraulic fluids, water, diesel fuels and lubricating oils, biodegradeable hydraulic oil fire resistant synthetic polyol esters

PART NUMBER	HOSE I.D.	HOSE O.D.		MAX W.P.	MAX STATIC PRESSURE	MINIMUM BURST PRESSURE	MINIMUM BEND RADIUS		WEIGHT	ONE PIECE Skive
	(in)	(in)	(mm)	(psi)	(psi)	(psi)	(in)	(mm)	(lbs/ft)	COUPLINGS
VZ-20	1¼	1.94	49.3	5,000	6,000	20,000	16.5	420	2.67	VS
VZ-24	1½	2.26	57.3	5,000	6,000	20,000	19.7	500	3.35	VS
VZ-32	2	2.82	71.6	5,000	6,000	20,000	24.8	630	4.37	VS

Note - Static working pressures are calculated as 120% of dynamic working pressure

EM Mine Emulsion Hose

Meets or exceeds the requirements of SAE 100R2AT-EN853
DIN 20022 2SN-ISO 1436 Type 2

Tube: Synthetic Rubber
Reinforcement: Two braids of high tensile steel wire
Cover: Black, oil, abrasion and weather resistant synthetic rubber, MSHA approved
Temperature: -40°C to +100°C (-40°F to +212°F), intermittent use up to +125°C (+257°F)
Packaging: Coils
Application: Petroleum based hydraulic fluids, lubricating oils, water and emulsion

PART NUMBER	HOSE I.D.	HOSE O.D.		MAXIMUM WORKING PRESSURE	MINIMUM BURST PRESSURE	MINIMUM BEND RADIUS		TWO PIECE
	(in)	(in)	(mm)	(psi)	(psi)	(in)	(mm)	
EM-40	2½	3	76.2	1,000	4,000	30	762	EMV/EMF
EM-48	3	3.52	89.4	1,000	4,000	36	915	EMV/EMF

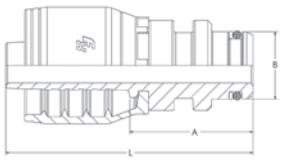
MS20 Yellow Mine Spray Hose

Tube: Synthetic Rubber
Reinforcement: High tensile steel wire
Cover: Yellow, perforated synthetic rubber, MSHA
Temperature: -35°C to +100°C (-31°F to +212°F)
Packaging: Coils
Application: Mine Spray, general purpose air/water application

PART NUMBER	HOSE I.D.	HOSE O.D.		MAXIMUM WORKING PRESSURE	MINIMUM BURST PRESSURE	MINIMUM BEND RADIUS		WEIGHT	ONE PIECE
	(in)	(in)	(mm)	(psi)	(psi)	(in)	(mm)	(lbs/ft)	COUPLINGS
MS20-075	¾	1.10	28	1,000	4,000	8.98	228	0.41	E
MS20-100	1	1.34	34	1,000	4,000	11.81	300	0.55	E
MS20-125	1¼	1.63	41.4	1,000	4,000	15.12	384	0.74	E
MS20-150	1½	1.89	48	1,000	4,000	17.95	456	0.95	E
MS20-200	2	2.44	62	1,000	4,000	24.00	610	1.47	E

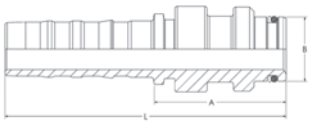
Couplings

E Standard Stecko Male Connector – No Skive



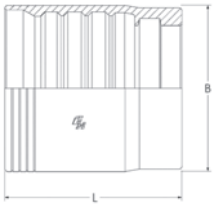
PART NUMBER	L (mm)	A (mm)	B (mm)
E04-04ST	60.2	32.2	9.9
E06-06ST	62.7	32.2	13.9
E08-08ST	65.7	32.7	17.9
E12-12ST	74.2	33.7	23.9
E16-16ST	90.9	39.9	30.9
E20-20ST	97.9	40.2	37.9
E24-24ST	108.3	43.8	46.9
E32-32ST	114.3	44.3	55.9

S Super Stecko Male Connector – External Skive



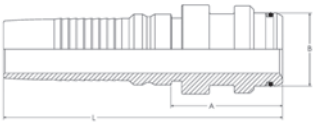
PART NUMBER	L (mm)	A (mm)	B (mm)
S12-12SST	96.0	45.0	21.9
S16-16SST	118.2	61.7	30.9

SF Super Stecko Ferrule – External Skive



PART NUMBER	L (mm)	B (mm)
SF12	54	38
SF16	60	46

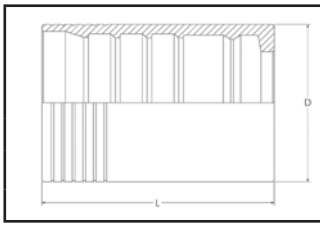
K Super Stecko Male Connector – Internal/External Skive



PART NUMBER	L (mm)	A (mm)	B (mm)
K20-20SST	145.7	58.3	37.9
K24-24SST	156.9	63.2	43.9
K32-32SST	163.6	66.0	49.9

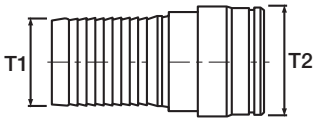
Couplings

KF Super Stecko Ferrule – Internal/External Skive



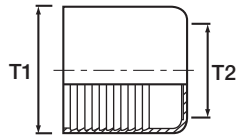
PART NUMBER	L (mm)	A (mm)	B (mm)
KF20	88.0	59.8	37.9
KF24	94.0	67.0	43.9
KF32	99.0	84.5	49.9

EMV Internal Expanded Grooved Ends



PART NUMBER	T1	T2
EMVS-40	2 ½	2 ½
EMVS-48	3	3

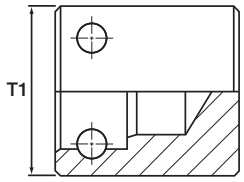
EMF Internal Expanded Ferrule



PART NUMBER	T1	T2
EMF-40	2 ½	2 ½
EMF-48	3	3

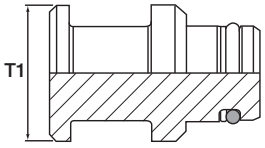
Standard Stecko Adaptors

ST0304C Standard Stecko Female Cap



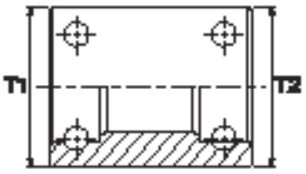
PART NUMBER	T1
ST0304C-04	¼
ST0304C-06	⅜
ST0304C-08	⅛
ST0304C-12	¾
ST0304C-16	1
ST0304C-20	1 ¼
ST0304C-24	1 ½
ST0304C-32	2

ST2408 Standard Stecko Male Plug



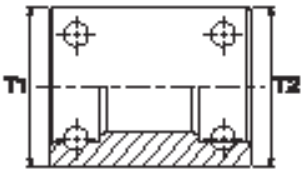
PART NUMBER	T1
ST2408-04	¼
ST2408-06	⅜
ST2408-08	⅛
ST2408-12	¾
ST2408-16	1
ST2408-20	1 ¼
ST2408-24	1 ½
ST2408-32	2
ST2408-40	2 ½
ST2408-48	3

ST5000 Standard Stecko F-ST / F-ST Straight



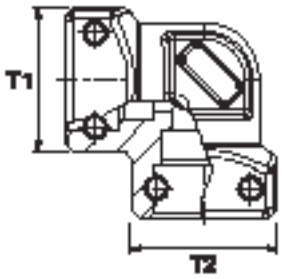
PART NUMBER	T1	T2
ST5000-0404	¼	¼
ST5000-0604	⅜	¼
ST5000-0606	⅜	⅜
ST5000-0806	½	⅜
ST5000-0808	½	½
ST5000-1206	¾	⅜
ST5000-1208	¾	½

ST5000 Standard Stecko F-ST / F-ST Straight (Cont)



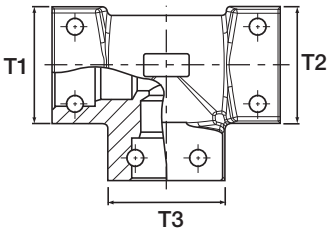
PART NUMBER	T1	T2
ST5000-1212	¾	¾
ST5000-1606	1	⅜
ST5000-1608	1	½
ST5000-1612	1	¾
ST5000-1616	1	1
ST5000-2012	1¼	¾
ST5000-2016	1¼	1
ST5000-2020	1¼	1¼
ST5000-2412	1½	¾
ST5000-2416	1½	1
ST5000-2420	1½	1¼
ST5000-2424	1½	1½
ST5000-3212	2	¾
ST5000-3216	2	1
ST5000-3220	2	1¼
ST5000-3224	2	1½
ST5000-3232	2	2
ST5000-4032	2½	2
ST5000-4040	2½	2½
ST5000-4832	3	2½
ST5000-4848	3	3

ST5504 Standard Stecko 90° F-ST / F-ST



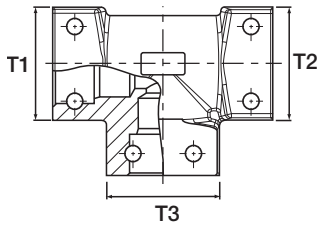
PART NUMBER	T1	T2
ST5504-0404	¼	¼
ST5504-0606	⅜	⅜
ST5504-0604	⅜	¼
ST5504-0808	½	½
ST5504-1212	¾	¾
ST5504-1616	1	1
ST5504-2020	1¼	1¼
ST5504-2424	1½	1½
ST5504-3232	2	2
ST5504-4040	2½	2½
ST5504-4848	3	3

ST5605 Standard Stecko F-ST / F-ST / F-ST TEE



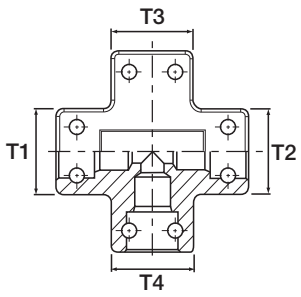
PART NUMBER	T1	T2	T3
ST5605-040404	¼	¼	¼
ST5605-060606	⅜	⅜	⅜
ST5605-060604	⅜	⅜	¼
ST5605-080808	½	½	½
ST5605-080806	½	½	⅜
ST5605-121212	¾	¾	¾
ST5605-121206	¾	¾	⅜
ST5605-121208	¾	¾	½
ST5605-161616	1	1	1
ST5605-161606	1	1	⅜
ST5605-161608	1	1	½
ST5605-161612	1	1	¾
ST5605-202020	1¼	1¼	1¼
ST5605-202006	1¼	1¼	⅜

ST5605 Standard Stecko F-ST / F-ST / F-ST TEE (cont)



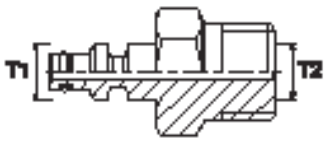
PART NUMBER	T1	T2	T3
ST5605-202008	1¼	1¼	½
ST5605-202012	1¼	1¼	¾
ST5605-202016	1¼	1¼	1
ST5605-242424	1½	1½	1½
ST5605-242406	1½	1½	⅜
ST5605-242408	1½	1½	½
ST5605-242412	1½	1½	¾
ST5605-242416	1½	1½	1
ST5605-242420	1½	1½	1¼
ST5605-323232	2	2	2
ST5605-323206	2	2	⅜
ST5605-323208	2	2	½
ST5605-323212	2	2	¾
ST5605-323216	2	2	1
ST5605-323220	2	2	1¼
ST5605-323224	2	2	1½
ST5605-404040	2½	2½	2½
ST5605-404006	2½	2½	⅜
ST5605-404012	2½	2½	¾
ST5605-404016	2½	2½	1
ST5605-404020	2½	2½	1¼
ST5605-404024	2½	2½	1½
ST5605-404032	2½	2½	2
ST5605-484820	3	3	1¼
ST5605-484824	3	3	1½
ST5605-484832	3	3	2

ST5652 Standard Stecko F-ST / F-ST / F-ST/F-ST CROSS



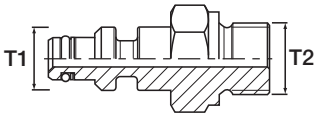
PART NUMBER	T1	T2	T3	T4
ST5652-04040404	¼	¼	¼	¼
ST5652-06060606	⅜	⅜	⅜	⅜
ST5652-08080808	½	½	½	½
ST5652-12121212	¾	¾	¾	¾
ST5652-16161616	1	1	1	1
ST5652-20202020	1¼	1¼	1¼	1¼
ST5652-24242424	1½	1½	1½	1½
ST5652-32323232	2	2	2	2

ST2404 Standard Stecko M-ST / NPT Straight



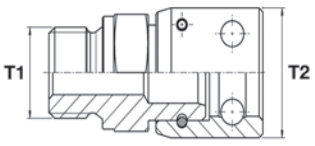
PART NUMBER	T1	T2
ST2404-0402	¼	⅛
ST2404-0404	¼	¼
ST2404-0406	¼	⅜
ST2404-0604	⅜	¼
ST2404-0606	⅜	⅜
ST2404-0608	⅜	½
ST2404-0806	½	⅜
ST2404-0808	½	½
ST2404-0812	½	¾
ST2404-1212	¾	¾
ST2404-1216	¾	1
ST2404-1612	1	¾
ST2404-1616	1	1
ST2404-2020	1¼	1¼

ST7002 Standard Stecko M-ST / M-BSPP Straight



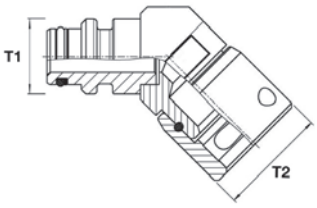
PART NUMBER	T1	T2
ST7002-0404	¼	¼ -19
ST7002-0406	¼	⅜ -19
ST7002-0604	⅜	¼ -19
ST7002-0606	⅜	⅜ -19
ST7002-0608	⅜	½ -14
ST7002-0612	⅜	¾ -14
ST7002-0804	½	¼ -19
ST7002-0806	½	⅜ -19
ST7002-0808	½	½ -14
ST7002-0812	½	¾ -14
ST7002-0816	½	1 -11
ST7002-1208	¾	½ -14
ST7002-1212	¾	¾ -14
ST7002-1216	¾	1 -11
ST7002-1616	1	1 -11
ST7002-1620	1	1¼ -11
ST7002-2020	1¼	1¼ -11
ST7002-2024	1¼	1½ -11
ST7002-2424	1½	1½ -11
ST7002-3232	2	2 -11

ST6402 Standard Stecko M-BSPP / F-ST Swivel Straight



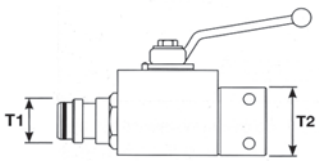
PART NUMBER	T1	T2
ST6402-0404	¼ -19	¼
ST6402-0604	⅜ -19	¼
ST6402-0406	¼ -19	⅜
ST6402-0606	⅜ -19	⅜
ST6402-0806	½ -14	⅜
ST6402-1206	¾ -14	⅜
ST6402-0608	⅜ -19	½
ST6402-0808	½ -14	½
ST6402-1208	¾ -14	½
ST6402-1608	1 -11	½
ST6402-0812	½ -14	¾
ST6402-1212	¾ -14	¾
ST6402-1612	1 -11	¾
ST6402-2012	1¼ -11	¾
ST6402-2412	1½ -11	¾
ST6402-1216	¾ -11	1
ST6402-1616	1 -11	1
ST6402-2016	1¼ -11	1
ST6402-2416	1½ -11	1
ST6402-1620	1 -11	1¼
ST6402-2020	1¼ -11	1¼
ST6402-2420	1½ -11	1¼
ST6402-3220	2 -11	1¼
ST6402-2424	1½ -11	1½
ST6402-2432	1½ -11	2
ST6402-3232	2 -11	2

ST6502 Standard Stecko 45° M-ST / F-ST Swivel



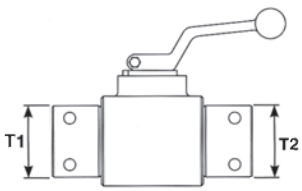
PART NUMBER	T1	T2
ST6502-0404	¼	¼
ST6502-0606	⅜	⅜
ST6502-0608	⅜	½
ST6502-0808	½	½
ST6502-1212	¾	¾
ST6502-1616	1	1
ST6502-2020	1¼	1¼

STBV6504 Standard Stecko M-ST / F-ST Swivel Ball Valve



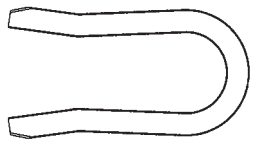
PART NUMBER	T1	T2
STBV6504-0606	⅜	⅜
STBV6504-0808	½	½
STBV6504-1212	¾	¾
STBV6504-1616	1	1
STBV6504-2020	1¼	1¼
STBV6504-2424	1½	1½
STBV6504-3232	2	2

STBV6565 Standard Stecko F-ST / F-ST Swivel Ball Valve



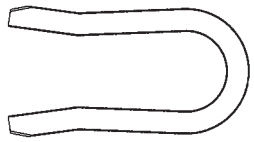
PART NUMBER	T1	T2
STBV6565-0404	¼	¼
STBV6565-0606	⅜	⅜
STBV6565-0808	½	½
STBV6565-1212	¾	¾
STBV6565-1616	1	1
STBV6565-2020	1¼	1¼
STBV6565-2424	1½	1½
STBV6565-3232	2	2

ST Standard Stecko Staple (Carbon Steel)



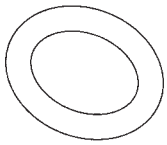
PART NUMBER	SIZE
ST-04-LS	¼
ST-06-LS	⅜
ST-08-LS	½
ST-12-LS	¾
ST-16-LS	1
ST-20-LS	1¼
ST-24-LS	1½
ST-32-LS	2

ST Standard Stecko Staple (Stainless)



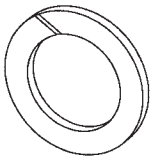
PART NUMBER	SIZE
ST-04-SS	¼
ST-06-SS	⅜
ST-08-SS	½
ST-12-SS	¾
ST-16-SS	1
ST-20-SS	1¼
ST-24-SS	1½
ST-32-SS	2
ST-40-SS	2½

OST Standard Stecko O-Ring



PART NUMBER	SIZE
OST-04	¼
OST-06	⅜
OST-08	½
OST-12	¾
OST-16	1
OST-20	1¼
OST-24	1½
OST-32	2
OST-40	2½
OST-48	3

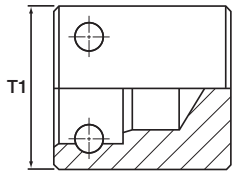
BST Standard Stecko Backup Ring



PART NUMBER	SIZE
BST-04	¼
BST-06	⅜
BST-08	½
BST-12	¾
BST-16	1
BST-20	1¼
BST-24	1½
BST-32	2

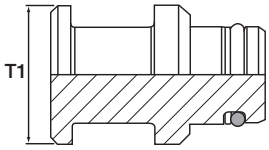
Super Stecko Adaptors

SST0304C Female Cap



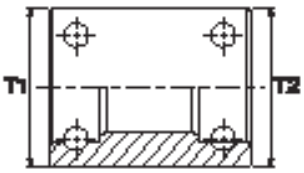
PART NUMBER	T1
SST0304C-08	½
SST0304C-12	¾
SST0304C-16	1
SST0304C-20	1¼
SST0304C-24	1½
SST0304C-32	2

SST2408 Male Plug



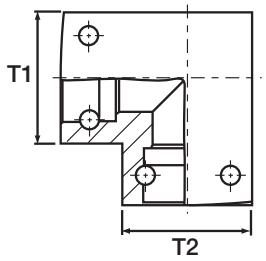
PART NUMBER	T1
SST2408-12	¾
SST2408-16	1
SST2408-20	1¼
SST2408-24	1½

SST5000 F-SST/F-SST Straight



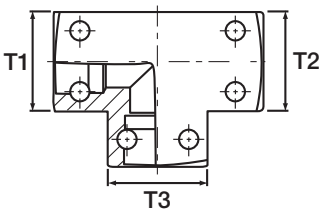
PART NUMBER	T1	T2
SST5000-0808	½	½
SST5000-1212	¾	¾
SST5000-1616	1	1
SST5000-2020	1¼	1¼
SST5000-2016	1¼	1
SST5000-2424	1½	1½
SST5000-2412	1½	¾
SST5000-2416	1½	1
SST5000-2420	1½	1¼
SST5000-2432	1½	2
SST5000-3232	2	2
SST5000-3216	2	1
SST5000-3220	2	1¼
SST5000-3224	2	1½

SST5504 90° F-SST/F-SST



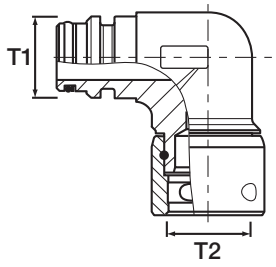
PART NUMBER	T1	T2
SST5504-2020	1¼	1¼
SST5504-2424	1½	1½
SST5504-3232	2	2
SST5504-3224	2	1½

SST5605 F-SST / F-SST / F-SST TEE



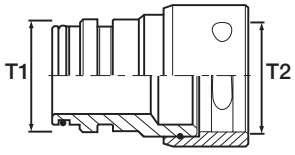
PART NUMBER	T1	T2	T3
SST5605-202020	1¼	1¼	1¼
SST5605-242424	1½	1½	1½
SST5605-242420	1½	1½	1¼
SST5605-323232	2	2	2
SST5605-323216	2	2	1
SST5605-323220	2	2	1¼
SST5605-323224	2	2	1½

SST6500 90° M-SST / F-SST Swivel



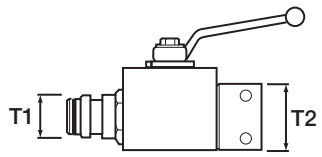
PART NUMBER	T1	T2
SST6500-1212	¾	¾
SST6500-2020	1¼	1¼
SST6500-2424	1½	1½
SST6500-3232	2	2

SST6504 M-SST / F-SST Swivel Straight



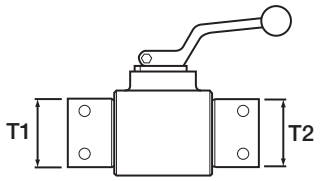
PART NUMBER	T1	T2
SST6504-2016	1¼	1
SST6504-2420	1½	1¼
SST6504-3220	2	1¼

SSTBV6504 M-SST / F-SST Swivel Ball Valve



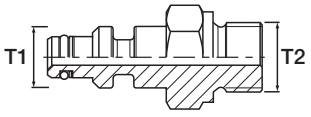
PART NUMBER	T1	T2
SSTBV6504-1212	¾	¾
SSTBV6504-1616	1	1
SSTBV6504-2020	1¼	1¼
SSTBV6504-2424	1½	1½
SSTBV6504-3232	2	2

SSTBV6565 F-SST / F-SST Swivel Ball Valve



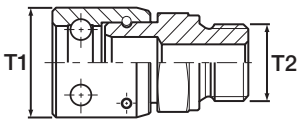
PART NUMBER	T1	T2
SSTBV6565-1212	¾	¾
SSTBV6565-1616	1	1
SSTBV6565-2020	1¼	1¼
SSTBV6565-2424	1½	1½
SSTBV6565-3232	2	2

SST2404 M-SST / M-BSPP Straight



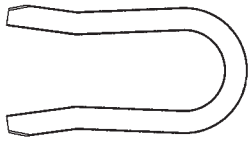
PART NUMBER	T1	T2
SST2404-1212	¾	¾ -14
SST2404-1616	1	1 -11
SST2404-2020	1¼	1¼ -11
SST2404-2424	1½	1½ -11
SST2404-3232	2	2 -11

SST6505 F-SST Swivel / M-BSPP Straight



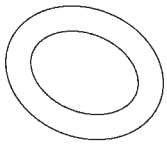
PART NUMBER	T1	T2
SST6505-1212	¾	¾ 14
SST6505-1216	¾	1 11
SST6505-1616	1	1 11
SST6505-2016	1¼	1 11
SST6505-2024	1¼	1½ 11
SST6505-2032	1¼	2 11
SST6505-2424	1½	1½

SST Staple (Stainless)



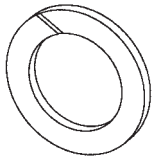
PART NUMBER	SIZE
SST-16-SS	1
SST-20-SS	1¼
SST-24-SS	1½
SST-32-SS	2

OSST O-Ring



PART NUMBER	SIZE
OSST-08	½
OSST-12	¾
OSST-16	1
OSST-20	1¼
OSST-24	1½
OSST-32	2

BSST Backup Ring



PART NUMBER	SIZE
BSST-12	¾
BSST-16	1
BSST-20	1¼
BSST-24	1½
BSST-32	2

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