



Smart-Hose® TECHNOLOGIES

WE MAKE TRANSFER OPERATIONS SAFER



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LL1

ENGINEERING DATA HOSE ASSEMBLIES

Smart-Hose® Safety System

LL1 incorporates an internal cable connected to normally unseated "Plunger Valves" located on each end of the cable. The integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

COUPLING DATA

- **CHEMICAL VERSION:** Wetted parts are 316 stainless steel.
- **HIGH PRESSURE-COMPRESSED GAS VERSION:** Wetted parts are 316 stainless steel.
- **FLAMMABLE GAS VERSION:** All parts are 316 stainless steel with brass plug valve.
- **BRASS VERSION:** All parts are brass with 316 stainless steel snap ring or beryllium copper.
- **O-RING:** All couplings use virgin PTFE unless another material is required.

LL1

Diameters: ¼" ½" ¾"
1" available in Monel - Chlorine use only

Open

Flow

Closed

No Flow

Recommended for gaseous flow and liquid applications.

Features and Benefits

- ✓ Full flow technology.
- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All hoses are serial numbered and shipped with a test certificate and operating booklet.



Optional Apparatus

- ✓ Flanges
- ✓ CGA connections
- ✓ Scuff Guard
- ✓ Armor
- ✓ Acmes
- ... **and more!**

Coupling Options	Suitable Applications
316-SS fittings, valves, valve retainers, snap rings, internal cable	severe chemical, high-pressure (HP) compressed gas, LPG
316-SS fittings, brass valves and valve retainers, 316-SS snap rings, 316-SS internal cable	acetylene gas
316-SS fittings, brass valves and valve retainers, beryllium copper snap rings, 316-SS internal cable	hydrogen gas, inert gases, general HP compressed gas
brass fittings, brass valves and valve retainers, 316-SS snap rings, 316-SS internal cable	acetylene gas, LPG
brass fittings, brass valves and valve retainers, beryllium copper snap rings, 316-SS internal cable	oxygen, hydrogen, general service
brass fittings, brass valves and valve retainers, beryllium copper snap rings, Monel internal cable	oxygen, hydrogen, general service

Hose ID	Alloys Offered	End Configurations	End Fitting Weight / lbs. each	End Fitting Length / Inches
¼"	316-SS; Brass; Bronze	Male & Female NPT, BSPP, BSPT	.4	2.26"
½"	316-SS; Brass	Male & Female NPT, Flanges	.8	4.08"
¾"	316-SS; Brass	Male & Female NPT, Flanges	1.6	5.72"
1"	Monel	Male & Female NPT, Flanges	2.8	4.88"

NOTE: Additional options available upon request.



LL3

ENGINEERING DATA HOSE ASSEMBLIES

Smart-Hose® Safety System

LL3 incorporates an internally coated cable connected to normally unseated "Flapper Valves" located on each end of the cable. The integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

COUPLING DATA

- **CHEMICAL VERSION:** Wetted parts are 316 stainless steel.
- **HCL VERSION:** Wetted parts are Hastelloy.
- **FLAMMABLE GAS VERSION:** Wetted parts are 316 stainless steel.
- **O-RING:** Virgin PTFE unless another material is required.



Features and Benefits

- ✓ Full flow technology.
- ✓ Tested under water with CDA or nitrogen to working and test pressure.

Optional Apparatus

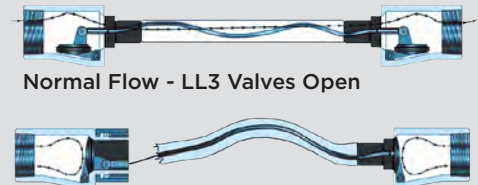
- ✓ Flanges
- ✓ CGA connections
- ✓ Acmes
- ✓ Cam lock
- ✓ Scuff Guard ... **and more!**

LL3

Diameters: ✓ 1" ✓ 1 ¼" ✓ 1 ½" ✓ 2"
 ✓ 3" ✓ 4" ✓ 6" ✓ 8"



• Recommended for gaseous flow and liquid applications.



Coupling Ejection - LL3 Valves Closed

Hose ID	Alloys Offered	End Configurations	End Fitting Weight / lbs. each	End Fitting Length / Inches
1"	316-SS	Male & Female NPT, Flanges	1.5	3.25"
1 ¼"	316-SS	Male & Female NPT, Flanges	2.6	3.97"
1 ½"	316-SS	Male & Female NPT, Flanges	3.4	4.74"
2"	316-SS; Hastelloy	Male & Female NPT, Flanges	4.7	5.36"
3"	316-SS	Male & Female NPT, Flanges	12.1	8.21"
4"	316-SS	Male & Female NPT, Flanges	20.7	9.10"
6"	316-SS	Male & Female NPT, Flanges	45.43	13.30"
8"	316-SS	Male & Female NPT, Flanges	75.0	15.00"

NOTE A: Additional options available upon request.

NOTE B: All hoses are serial numbered and shipped with a test certificate and operating booklet.

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TECHNOLOGIES



LL3-B

ENGINEERING DATA BREAK-AWAY HOSE ASSEMBLIES



COUPLING DATA

- WETTED PARTS: 316 stainless steel.
- BREAK-AWAY SEAL: Nitrile / Viton / EPDM
- SEALING O-RING: All couplings use virgin PTFE unless another material is required.

Smart-Hose® Safety System

The LL3-B BREAK-AWAY hose assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to fail-safe is directly related to the angle of the pull-away. No human intervention needed to activate.

Features and Benefits

- ✓ Full flow technology.
- ✓ 360° engineered break-away point.
- ✓ Rugged shock proof design with annular seals.
- ✓ 316 SS Schedule 80 construction.
- ✓ Factory rebuildable.
- ✓ Meets 5 to 1 burst specifications.
- ✓ Custom engineered break-points for specific applications.
- ✓ Priced significantly less than conventional break-away apparatus.

Optional Apparatus

- ✓ Flanges ✓ CGA connections ✓ Cam lock
- ✓ Acmes ✓ Scuff Guard ... **and more!**

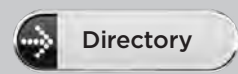
LL3-B

Diameters:
✓ 1 ¼" ✓ 2" ✓ 3"

Open Closed

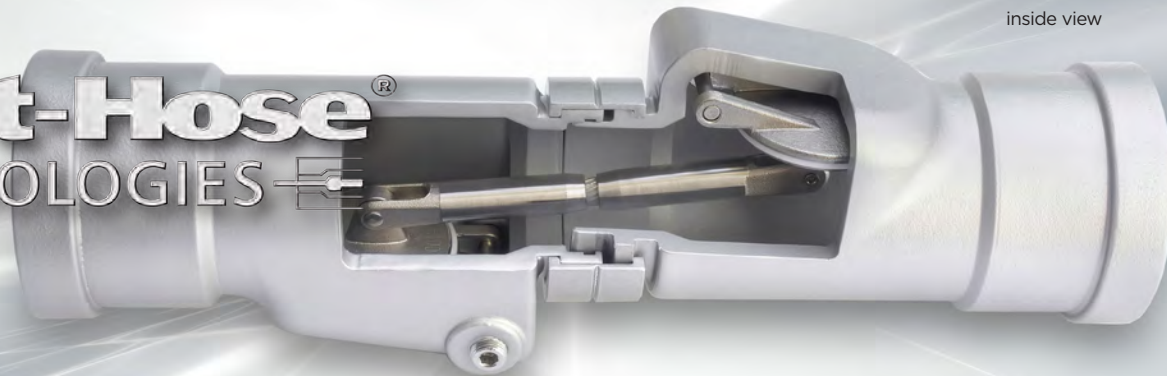
Hose ID	Alloy	End Configurations	End Fitting Weight / lbs. each	End Fitting Length / Inches
1 ¼"	316-SS	Male & Female NPT, Flanges	2.6	3.97"
2"	316-SS	Male & Female NPT, Flanges	4.7	5.36"
3"	316-SS	Male & Female NPT, Flanges	12.1	8.21"

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



Smart-Hose[®]

TECHNOLOGIES



LL3-BA

Break-Away Adapter

No special installation required!

Smart-Hose[®] Safety System

Designed to protect plant, tank truck, rail car, loading arms and workforce from the potentially hazardous consequences of a pull away incident. Adapter/Coupler products provide break-away protection and offer the flexibility to be used with Smart-Hose[®] Assemblies, conventional hose assemblies, or, where no hose attachments are required.

Features and Benefits

- ✓ Full flow technology. Factory rebuildable.
- ✓ Instantly stops product flow in the event of a pull-away. No human intervention needed.
- ✓ No annual maintenance required.

Optional Apparatus

- ✓ Flanges ✓ Acmes ... *and more!*

LL3-BA

Diameters

2"

3"

See the difference...

Smart-Hose[®] Break-Away

Conventional Break-Away Apparatus

- Creates flow restriction.
- Annual maintenance required.
- Higher cost.

***Chart shows sample configurations. Fully customizable solutions are available!**

Application	Part Number	Description
LPG	A80-016-94-0012-0-00-00	LL3-BA, Nitrile Seals, 316-SS, FNPT X FNPT, 2" X 12 Inches, 350 psi.
LPG	A80-016-97-0012-0-00-00	LL3-BA, Nitrile Seals, 316-SS, MNPT X MNPT, 2" X 12 Inches, 350 psi.
LPG	A80-016-95-0012-0-00-00	LL3-BA, Nitrile Seals, 316-SS, FNPT X MNPT, 2" X 12 Inches, 350 psi.
NH3	A81-016-94-0012-0-00-00	LL3-BA, EPDM Seals, 316-SS, FNPT X FNPT, 2" X 12 Inches, 350 psi.
NH3	A81-016-97-0012-0-00-00	LL3-BA, EPDM Seals, 316-SS, MNPT X MNPT, 2" X 12 Inches, 350 psi.
NH3	A81-016-95-0012-0-00-00	LL3-BA, EPDM Seals, 316-SS, FNPT X MNPT, 2" X 12 Inches, 350 psi.

NOTE A: Serial numbered and shipped with a test certificate and operating booklet.
 NOTE B: Available for other chemical usage upon request.



BREAK-AWAY

Pull-Away Forces vs. Angle of Pull

In the event of a pull-away incident, the Smart-Hose[®] Break-Away Safety System is designed to fail-safe at a pre-determined pull force. As with all break-away technology, the amount of pull force that it takes to separate the Smart-Hose[®] Break-Away Safety System is directly related to the angle of the pull away.

The Smart-Hose[®] Break-Away Safety System is configured in LL3-B and LL3-BA systems. Smart-Hose[®] Break-Away hose assemblies, LL3-B, are Smart-Hose[®] hose assemblies that contain valves in each end to

protect against catastrophic hose failure, with the added feature of a break-away fitting on one end, designed to separate at a pre-determined pull force. Smart-Hose[®] Break-Away Couplers LL3-BA (Adapters) are fully assembled

break-away couplers designed to separate at pre-determined pull forces. The LL3-BA can be used in conjunction with Smart-Hose[®] hose assemblies, conventional hose assemblies, or where no hose attachments are required.

In the case of a pull-away event, the pull force can be greatly reduced if the hose port is configured at a 45° or 90° angle to the direction of pull (Note A).



Horizontal or straight line
hose port pull-away:
8,900 lbs. of pull force



45 degree
hose port pull-away:
1,300 lbs. of pull force



90 degree
hose port pull-away:
900 lbs. of pull force

Reasons why we **DO NOT** recommend horizontal hose ports:

- High pull-away forces.
- Safety concerns regarding accidental releases.
- Concentrated stress on the hose assembly.

Note: If the hose will be used in a potential pull away application, the piping system should be buttressed to resist the following loads:

½" ID - 4,500 lbs	1-1/4" ID - 16,000 lbs	3" ID - 34,000 lbs
¾" ID - 5,500 lbs	1-1/2" ID - 20,000 lbs	4" ID - 44,000 lbs
1" ID - 7,000 lbs	2" ID - 24,000 lbs	6" ID - 56,000 lbs

Note A: Independent testing conducted at the Smart-Hose[®] Technologies Engineering Facility typically yielded repeatable results. However, actual results may vary from facility to facility.



Chlorine Transfer HOSE ASSEMBLIES

HOSE DATA



Double Braid

- COVER: 316 Stainless Steel Armor
- REINFORCEMENT: Monel 400 braid - Double braid
- TUBE: Monel 400 corrugated metal tube



Smart-Hose® Safety System

Chlorine Transfer Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

The Smart-Hose® Safety System is designed to work with a Monel 400 metal hose for chlorine applications. Manufactured with a Monel 400 convoluted tube, braid, and 316 SS armor, it is constructed to meet the demanding requirements of the chlorine industry.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.

Optional Apparatus

- ✓ Nipples
- ✓ Flanges

... **and more!**

LL1

Diameters: ✓ 1"

Open

Flow

Closed

No Flow

*Recommended for gaseous flow and liquid applications.

Normal Flow - LL1 Valves Open

Coupling Ejection

Normal Flow

Back Flow

Valve Closed - Flow Shut Off

***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Braid Layers	Working Pressure PSI	Bend Radius (in.)	Hose Weight Per Ft (lb.)	Smart-Hose Part Number
1"	2	375	9.0"	1.20	M46-008-13-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet.



CRYOGENIC METAL HOSE ASSEMBLIES

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ Mass-spectrometer testing available.

Optional Apparatus

- ✓ Flanges ✓ CGA connections
- ✓ Acmes ✓ Scuff Guard
- ✓ Armor ... **and more!**



*NOTE: For 6" and 8" ID Hoses, please call for quote.

HOSE DATA



Single Braid



Double Braid

- **BRAIDS:** 304 Stainless Steel - Single or Double, 316-SS on request
- **CONSTRUCTION:**
P4 Series: Annular/Standard Pitch
Series 700: Annular/Standard Pitch
Series 800: Annular/Close Pitch
Series 900: Annular/Close Pitch
- **TUBE:** 316L Stainless Steel
- **TEMP:** Cryogenic to -450°F

LL1	✓ 1/4"		LL3	✓ 1"	✓ 2"	
	✓ 1/2"			✓ 1 1/4"	✓ 3"	
	✓ 3/4"			✓ 1 1/2"		

***Chart shows sample configurations. Fully customizable solutions are available!**

P4 SERIES									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
1"	1	630	2520	9.00	2.75	0.79	FNPT / FNPT	1.5	M20-008-33-XXXX-0-00-00
	2	1000	4000				FNPT / FNPT		M21-008-33-XXXX-0-00-00
1 1/4"	1	575	2300	10.50	3.50	1.12	FNPT / FNPT	2.6	M20-010-33-XXXX-0-00-00
	2	920	3680				FNPT / FNPT		M21-010-33-XXXX-0-00-00
1 1/2"	1	500	2000	12.00	4.00	1.29	MNPT / MNPT	3.4	M20-012-32-XXXX-0-00-00
	2	800	3200				MNPT / MNPT		M21-012-32-XXXX-0-00-00
2"	1	532	2128	15.00	5.00	1.61	MNPT / FNPT	4.7	M20-016-3X-XXXX-0-00-00
	2	850	3400				MNPT / FNPT		M21-016-3X-XXXX-0-00-00
3"	1	400	1600	22.00	9.00	2.00	MNPT / MNPT	12.1	M20-024-32-XXXX-0-00-00
	2	600	2400				MNPT / MNPT		M21-024-32-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

Continued...

***Chart shows sample configurations. Fully customizable solutions are available!**

SERIES 700									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
¼"	1	2116	8464	5.00	1.00	0.17	FNPT / FNPT	0.4	M03-002-11-XXXX-0-00-00
	2	3125	12500						M04-002-11-XXXX-0-00-00
½"	1	1075	4301	6.00	1.50	0.34	FNPT / FNPT	0.6	M03-004-11-XXXX-0-00-00
	2	1720	6880						M04-004-11-XXXX-0-00-00
¾"	1	792	3168	8.00	2.25	0.59	FNPT / FNPT	0.8	M03-006-11-XXXX-0-00-00
	2	1267	5069						M04-006-11-XXXX-0-00-00

SERIES 800									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
¼"	1	2562	10250	5.00	2.50	0.17	FNPT / FNPT	0.4	M11-002-11-XXXX-0-00-00
	2	4099	16400						M12-002-11-XXXX-0-00-00
½"	1	2194	8777	8.00	4.00	0.63	FNPT / FNPT	0.6	M11-004-11-XXXX-0-00-00
	2	3510	14040						M12-004-11-XXXX-0-00-00
¾"	1	1311	5244	8.00	4.00	0.79	FNPT / FNPT	0.8	M11-006-11-XXXX-0-00-00
	2	2098	8392						M12-006-11-XXXX-0-00-00
1"	1	1069	4276	9.00	4.50	1.20	FNPT / FNPT	1.5	M11-008-33-XXXX-0-00-00
	2	1710	6840						M12-008-33-XXXX-0-00-00
1¼"	1	1110	4443	10.00	5.00	1.66	FNPT / FNPT	2.6	M11-010-33-XXXX-0-00-00
	2	1776	7040						M12-010-33-XXXX-0-00-00
1½"	1	868	3472	10.00	5.00	2.11	MNPT / MNPT	3.4	M11-032-32-XXXX-0-00-00
	2	1388	5552						M12-032-32-XXXX-0-00-00
2"	1	810	3240	11.50	5.75	2.56	MNPT / FNPT	4.7	M11-016-3X-XXXX-0-00-00
	2	1296	5184						M12-016-3X-XXXX-0-00-00

SERIES 900									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
¼"	2	4406	17627	12.00	6.00	0.36	FNPT / FNPT	0.4	M14-002-11-XXXX-0-00-00
½"	2	3510	14040	14.00	7.00	0.76	FNPT / FNPT	0.6	M14-004-11-XXXX-0-00-00
¾"	2	3192	12769	15.00	7.50	1.19	FNPT / FNPT	0.8	M14-006-11-XXXX-0-00-00
1"	2	2558	10234	16.00	8.00	1.94	FNPT / FNPT	1.5	M14-008-33-XXXX-0-00-00
1¼"	2	2107	8431	18.00	9.00	2.48	FNPT / FNPT	2.6	M14-010-33-XXXX-0-00-00
1½"	2	1698	6795	19.00	9.50	3.30	MNPT / MNPT	3.4	M14-032-32-XXXX-0-00-00
2"	2	1346	5388	24.00	12.00	3.91	MNPT / FNPT	4.7	M14-016-3X-XXXX-0-00-00



Cryogenic Break-Away METAL ASSEMBLIES

Smart-Hose® Safety System

Metal Break-Away Hose Assemblies:

The Smart-Hose® Cryogenic Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to fail-safe is directly related to the angle of the pull-away. No human intervention needed to activate.

No special installation required!

Features and Benefits

- ✓ No human intervention needed to activate.
- ✓ 360° engineered break-away point.
- ✓ Rugged welded metallic seal.
- ✓ 316 SS Schedule 80 construction.
- ✓ Oxygen and food-grade service cleaning offered.
- ✓ Custom engineered break-points for specific applications.
- ✓ Full flow technology.

Optional Apparatus

- ✓ Flanges
- ✓ CGA connections
- ✓ Armor
- ✓ Scuff Guard
- ... and more!

HOSE DATA



- **BRAIDS:** 304 Stainless Steel - Single or Double, 316-SS upon request
- **CONSTRUCTION:** P4 Series, annular hose; standard pitch
- **TUBE:** 316L Stainless Steel
- **TEMP:** Cryogenic to -450°F



LL3-B

Diameters:

- ✓ 2"
- ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
2"	1	532	2128	15.00	5.00	1.61	MNPT / FNPT	4.7	M20-016-8X-XXXX-0-00-00
3"	1	400	1600	22.00	9.00	2.00	MNPT / MNPT	12.1	M20-024-87-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet.

Smart-Hose[®]

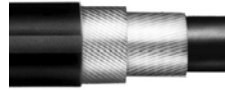
TECHNOLOGIES



LPG

Propane Transfer HOSE ASSEMBLIES

HOSE DATA



- **COVER:** Black chloroprene Perforated wrapped finish
- **REINFORCEMENT:** Multiple textile braids
- **TUBE:** Black Nitrile
- **TEMPERATURE:** -40°F to 180°F
- **ELECTRICALLY CONDUCTIVE:** Available upon request

Smart-Hose[®] Safety System

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

The Smart-Hose[®] Safety System integrated into LPG/Propane transfer hose assemblies is designed to meet the demands of the most rugged applications.

Optional Apparatus

- ✓ Flanges ✓ Acmes ✓ Armor ✓ Scuff Guard ... **and more!**

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.
- ✓ Meets NFPA 58 & 59, US Passive Shutoff Mandate for MC330/331 Transports, CSA Cert. #2143659, and CRN OD16092.5C.

No special installation required!

LL1

Diameters:

- ✓ 1/2"
- ✓ 3/4"

Open

Closed

Full flow technology.

LL3

Diameters:

- ✓ 1"
- ✓ 1 1/4"
- ✓ 1 1/2"
- ✓ 2"
- ✓ 3"

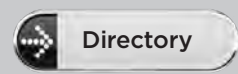
Open

Closed

***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose Hose Assembly Part Number
1/2"	350	1750	R09-004-1X-XXXX-0-00-00
3/4"	350	1750	R09-006-1X-XXXX-0-00-00
1"	350	1750	R09-008-33-XXXX-0-00-00
1 1/4"	350	1750	R09-010-33-XXXX-0-00-00
1 1/2"	350	1750	R09-012-32-XXXX-0-00-00
2"	350	1750	R09-016-3X-XXXX-0-00-00
3"	350	1750	R18-024-32-XXXX-0-00-00

NOTE A: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.
 NOTE B: All hose assemblies through 3" ID are designed to meet UL21 Standards.



Smart-Hose® TECHNOLOGIES



LPG Propane Transfer Break-Away HOSE ASSEMBLIES

Smart-Hose® Safety System

LPG/Propane Break-Away Hose Assemblies:

The Smart-Hose® LPG/Propane Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to fail-safe is directly related to the angle of the pull-away. No human intervention needed to activate.

No special installation required!

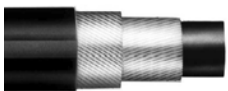
Features and Benefits

- ✓ Meets NFPA 58 & 59, US Passive Shutoff Mandate for MC330/331 Transports, CSA Cert. #2143659, and CRN OD16092.5C.
- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.

Optional Apparatus

- ✓ Flanges ✓ Scuff Guard ✓ Acmes ... **and more!**

HOSE DATA



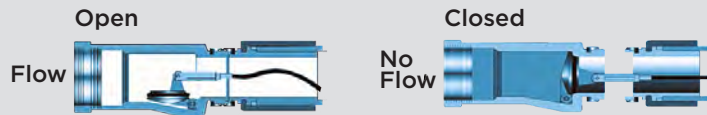
- ... COVER: Black chloroprene perforated wrapped finish
- ... REINFORCEMENT: Multiple textile braids
- ... TUBE: Black Nitrile
- ... TEMPERATURE: -40°F to 180°F
- ... ELECTRICALLY CONDUCTIVE: Available upon request



LL3-B

Diameters:

- ✓ 1 ¼" ✓ 2" ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose LL3-B Break-Away Assembly Part Number
1 ¼"	350	1750	RXX-010-80-XXXX-0-00-00
2"	350	1750	RXX-016-8X-XXXX-0-00-00
3"	350	1750	RXX-024-83-XXXX-0-00-00

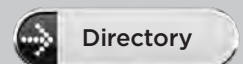
NOTE A: Serial numbered and shipped with a test certificate and operating booklet.

NOTE B: All hose assemblies through 3" ID are designed to meet UL21 Standards.

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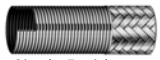
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METAL HOSE ASSEMBLIES

HOSE DATA



Single Braid



Double Braid

- **BRAIDS:** 304 Stainless Steel - Single or Double, 316-SS on request
- **CONSTRUCTION:**
P4 Series: Annular/Standard Pitch
Series 700: Annular/Standard Pitch
Series 800: Annular/Close Pitch
Series 900: Annular/Close Pitch
- **TUBE:** 316L Stainless Steel
- **COVER:** SS Armor Available

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ Mass-spectrometer testing available.

Optional Apparatus

- ✓ Flanges ✓ CGA connections
- ✓ Acmes ✓ Scuff Guard
- ✓ Armor ... **and more!**



*NOTE: For 6" and 8" ID Hoses, please call for quote.

LL1	✓ 1/4"		LL3	✓ 1"	✓ 2"	✓ 6"	
	✓ 1/2"			✓ 1 1/4"	✓ 3"	✓ 8"	
	✓ 3/4"			✓ 1 1/2"	✓ 4"		

*Chart shows sample configurations. Fully customizable solutions are available!

P4 SERIES									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.) Dyn. Static	Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number	
1"	1	630	2520	9.00 2.75	0.79	FNPT / FNPT	2.5	M20-008-14-XXXX-0-00-00	
	2	1000	4000					M21-008-14-XXXX-0-00-00	
1 1/4"	1	575	2300	10.50 3.50	1.12	FNPT / FNPT	2.6	M20-010-33-XXXX-0-00-00	
	2	920	3680					M21-010-33-XXXX-0-00-00	
1 1/2"	1	500	2000	12.00 4.00	1.29	MNPT / MNPT	3.4	M20-012-32-XXXX-0-00-00	
	2	800	3200					M21-012-32-XXXX-0-00-00	
2"	1	532	2128	15.00 5.00	1.61	MNPT / FNPT	4.7	M20-016-3X-XXXX-0-00-00	
	2	850	3400					M21-016-3X-XXXX-0-00-00	
3"	1	400	1600	22.00 9.00	2.00	MNPT / MNPT	12.1	M20-024-32-XXXX-0-00-00	
	2	600	2400					M21-024-32-XXXX-0-00-00	
4"	1	300	1200	27.00 13.00	2.68	MNPT / MNPT	20.7	M20-032-32-XXXX-0-00-00	
	2	444	1776					M21-032-32-XXXX-0-00-00	

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

Continued...

***Chart shows sample configurations. Fully customizable solutions are available!**

SERIES 700									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
¼"	1	2116	8464	5.00	1.00	0.17	FNPT / FNPT	0.4	M03-002-11-XXXX-0-00-00
	2	3125	12500						M04-002-11-XXXX-0-00-00
½"	1	1075	4301	6.00	1.50	0.34	FNPT / FNPT	0.6	M03-004-11-XXXX-0-00-00
	2	1720	6880						M04-004-11-XXXX-0-00-00
¾"	1	792	3168	8.00	2.25	0.59	FNPT / FNPT	0.8	M03-006-11-XXXX-0-00-00
	2	1267	5069						M04-006-11-XXXX-0-00-00

SERIES 800									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
¼"	1	2562	10250	5.00	2.50	0.17	FNPT / FNPT	0.4	M11-002-11-XXXX-0-00-00
	2	4099	16400						M12-002-11-XXXX-0-00-00
½"	1	2194	8777	8.00	4.00	0.63	FNPT / FNPT	0.6	M11-004-11-XXXX-0-00-00
	2	3510	14040						M12-004-11-XXXX-0-00-00
¾"	1	1311	5244	8.00	4.00	0.79	FNPT / FNPT	0.8	M11-006-11-XXXX-0-00-00
	2	2098	8392						M12-006-11-XXXX-0-00-00
1"	1	1069	4276	9.00	4.50	1.20	FNPT / FNPT	2.5	M11-008-14-XXXX-0-00-00
	2	1710	6840						M12-008-14-XXXX-0-00-00
1¼"	1	1110	4443	10.00	5.00	1.66	FNPT / FNPT	2.6	M11-010-33-XXXX-0-00-00
	2	1776	7040						M12-010-33-XXXX-0-00-00
1½"	1	868	3472	10.00	5.00	2.11	MNPT / MNPT	3.4	M11-032-32-XXXX-0-00-00
	2	1388	5552						M12-032-32-XXXX-0-00-00
2"	1	810	3240	11.50	5.75	2.56	MNPT / FNPT	4.7	M11-016-3X-XXXX-0-00-00
	2	1296	5184						M12-016-3X-XXXX-0-00-00

SERIES 900									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
				Dyn.	Static				
¼"	2	4406	17627	12.00	6.00	0.36	FNPT / FNPT	0.4	M14-002-11-XXXX-0-00-00
½"	2	3510	14040	14.00	7.00	0.76	FNPT / FNPT	0.6	M14-004-11-XXXX-0-00-00
¾"	2	3192	12769	15.00	7.50	1.19	FNPT / FNPT	0.8	M14-006-11-XXXX-0-00-00
1"	2	2558	10234	16.00	8.00	1.94	FNPT / FNPT	2.5	M14-008-14-XXXX-0-00-00
1¼"	2	2107	8431	18.00	9.00	2.48	FNPT / FNPT	2.6	M14-010-33-XXXX-0-00-00
1½"	2	1698	6795	19.00	9.50	3.30	MNPT / MNPT	3.4	M14-032-32-XXXX-0-00-00
2"	2	1346	5388	24.00	12.00	3.91	MNPT / FNPT	4.7	M14-016-3X-XXXX-0-00-00



METAL BREAK-AWAY HOSE ASSEMBLIES

Features and Benefits

- ✓ Full flow. No human intervention needed.
- ✓ 360° engineered break-away point.
- ✓ 316 SS Schedule 80 construction.
- ✓ Custom engineered break-points for specific applications.
- ✓ Priced significantly less than conventional break-away apparatus.

Optional Apparatus

- ✓ Flanges ✓ CGA connections ✓ Acmes
- ✓ Armor ✓ Scuff Guard ... **and more!**

HOSE DATA



- **COVER:** 304 Stainless Steel - Single or Double, 316-SS upon request
- **CONSTRUCTION:** P4 Series, annular hose; standard pitch
- **TUBE:** 316L Stainless Steel
- **COVER:** SS Armor Available

Smart-Hose® Safety System

Metal Break-Away Hose Assemblies:

The Smart-Hose® Metal Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to fail-safe is directly related to the angle of the pull-away. No human intervention needed to activate.



LL3-B

Diameters:
✓ 1 ¼" ✓ 2" ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.) Dyn. Static	Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
1 ¼"	1	575	2300	8.30 2.80	1.53	FNPT / FNPT	1.6	M20-010-80-XXXX-X-00-00
2"	1	532	2128	15.00 5.00	1.61	MNPT / FNPT	4.7	M20-016-8X-XXXX-X-00-00
3"	1	400	1600	22.00 9.00	2.00	MNPT / MNPT	12.1	M20-024-87-XXXX-X-00-00

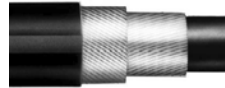
NOTE: Serial numbered and shipped with a test certificate and operating booklet.

Smart-Hose® TECHNOLOGIES



NH₃ Anhydrous Ammonia HOSE ASSEMBLIES

HOSE DATA



- **COVER:** Black EPDM
Perforated wrapped finish
- **REINFORCEMENT:**
Multiple textile braids
- **TUBE:** Black EPDM
- **TEMPERATURE:** -40°F to 180°F
- **ELECTRICALLY CONDUCTIVE:**
Available upon request

Smart-Hose® Safety System

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

The Smart-Hose® Safety System integrated into NH₃ transfer hose assemblies is designed to meet the demands of the most rugged applications.

Optional Apparatus

- ✓ Flanges ✓ Acmes ✓ Scuff Guard ... **and more!**

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.
- ✓ Meets DOT HM 225 Standards and US Passive Shutoff Mandate for MC330/331 Transports and CRN OD16092.5C.



LL1

Diameters:

- ✓ 1/2"
- ✓ 3/4"

Open

Flow

Closed

No Flow

Full flow technology.

LL3

Diameters:

- ✓ 1"
- ✓ 1 1/4"
- ✓ 1 1/2"
- ✓ 2"
- ✓ 3"

Open

Flow

Closed

No Flow

***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose Hose Assembly Part Number
1/2"	350	1750	RXX-004-1X-XXXX-0-00-00
3/4"	350	1750	RXX-006-14-XXXX-0-00-00
1"	350	1750	RXX-008-33-XXXX-0-00-00
1 1/4"	350	1750	RXX-010-33-XXXX-0-00-00
1 1/2"	350	1750	RXX-012-32-XXXX-0-00-00
2"	350	1750	RXX-016-3X-XXXX-0-00-00
3"	350	1750	RXX-024-32-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

Smart-Hose[®]

TECHNOLOGIES



NH₃ Anhydrous Ammonia Break-Away HOSE ASSEMBLIES

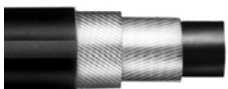
Features and Benefits

- ✓ Meets DOT HM 225 Standards and US Passive Shutoff Mandate for MC330/331 Transports and CRN OD16092.5C.
- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.

Optional Apparatus

- ✓ Flanges
- ✓ Scuff Guard
- ✓ Acmes
- ... **and more!**

HOSE DATA



- ... **COVER:** Black EPDM perforated wrapped finish
- ... **REINFORCEMENT:** Multiple textile briads
- ... **TUBE:** Black EPDM
- ... **TEMPERATURE:** -40°F to 180°F
- ... **ELECTRICALLY CONDUCTIVE:** Available upon request

Smart-Hose[®] Safety System

NH₃ Break-Away Hose Assemblies:

The Smart-Hose[®] NH₃ Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to fail-safe is directly related to the angle of the pull-away. No human intervention needed to activate.

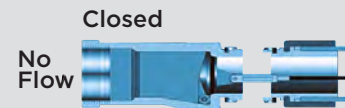
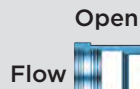
No special installation required!



LL3-B

Diameters:

- ✓ 1 ¼"
- ✓ 2"
- ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

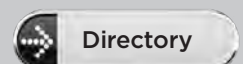
Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose LL3-B Break-Away Assembly Part Number
1 ¼"	350	1750	RXX-010-80-XXXX-0-00-00
2"	350	1750	RXX-016-8X-XXXX-0-00-00
3"	350	1750	RXX-024-83-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet.

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TECHNOLOGIES

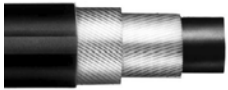


Petroleum^{TRANSFER}

HOSE ASSEMBLIES



HOSE DATA



- **COVER:** Black (red spiral stripe) Synthetic rubber (oil resistant); Smooth cover, wrapped finish
- **REINFORCEMENT:** Spiral-plyed synthetic fabric with wire dual helix
- **TUBE:** Nitrile synthetic rubber - ARPM Class A (high oil resistant)
- **ELECTRICALLY CONDUCTIVE:** Available upon request
- **TEMPERATURE:** -35°F to 200°F

Smart-Hose[®] Safety System

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

The Smart-Hose[®] Safety System integrated into petroleum transfer hose assemblies is designed to meet the demands of the most rugged applications in the petroleum industry.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure. • Full flow technology •
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.

Optional Apparatus

- ✓ Flanges ✓ Scuff Guard ✓ Acmes ... *and more!*

LL3

Diameters: ✓ 1 ✓ 1 ¼" ✓ 1 ½" ✓ 2" ✓ 3" ✓ 4"



• Recommended for gaseous flow and liquid applications.



Normal Flow - LL3 Valves Open



Coupling Ejection - LL3 Valves Closed

***Chart shows sample configurations. Fully customizable solutions are available!**

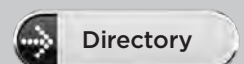
Hose ID	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in)	Hose Weight per ft. (lb)	Smart-Hose End Fitting	End Fitting Weight (lb) each	Smart-Hose Hose Assembly Part Number
1"	150	600	2.0	0.63	FNPT / FNPT	2.2	RXX-008-14-XXXX-0-00-00
1 ¼"	150	600	3.0	0.79	FNPT / FNPT	2.6	RXX-010-33-XXXX-0-00-00
1 ½"	150	600	4.0	0.86	MNPT / MNPT	3.4	RXX-012-32-XXXX-0-00-00
2"	150	600	5.0	1.11	FNPT / MNPT	5.1	RXX-016-3X-XXXX-0-00-00
3"	150	600	8.0	2.00	MNPT / MNPT	12.1	RXX-024-32-XXXX-0-00-00
4"	150	600	12.0	2.71	MNPT / MNPT	20.7	RXX-032-32-XXXX-0-00-00

NOTE A: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

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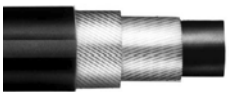
TECHNOLOGIES



Petroleum TRANSFER BREAK-AWAY HOSE ASSEMBLIES

No special installation required!

HOSE DATA



- **COVER:** Black (red spiral stripe) Synthetic rubber (oil resistant); Smooth cover, wrapped finish
- **REINFORCEMENT:** Spiral-plyed synthetic fabric with wire dual helix
- **TUBE:** Nitrile synthetic rubber - ARPM Class A (high oil resistant)
- **ELECTRICALLY CONDUCTIVE:** Available upon request
- **TEMPERATURE:** -35°F to 200°F

LL3-B Break-Away Hose Assembly



Smart-Hose[®] Safety System

Petroleum Break-Away Hose Assemblies:

The Smart-Hose[®] Petroleum Transfer Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to failsafe is directly related to the angle of the pull-away. No human intervention needed to activate.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ Full flow technology.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.

Optional Apparatus

- ✓ Flanges ✓ Scuff Guard ✓ Acmes ... **and more!**

LL3-B

Diameters:

- ✓ 1 ¼"
- ✓ 2"
- ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

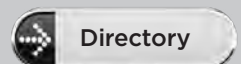
Hose ID	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in)	Hose Weight per ft. (lb)	Smart-Hose End Fitting	End Fitting Weight (lb) each	Smart-Hose Hose Assembly Part Number
1 ¼"	150	600	3.0	0.79	FNPT / FNPT	2.6	RXX-010-80-XXXX-X-00-00
2"	150	600	5.0	1.11	FNPT / MNPT	5.1	RXX-016-8X-XXXX-X-00-00
3"	150	600	8.0	2.00	MNPT / MNPT	12.1	RXX-024-83-XXXX-X-00-00

NOTE A: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

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Ship Transfer HOSE ASSEMBLIES

Smart-Hose[®] Safety System

Ship Transfer Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

Large bore ship loading/unloading hose assemblies are exposed to a tremendous amount of stress. The weight of the material being transferred, coupled with the high end force can lead to a catastrophic hose failure, possibly resulting in an uncontrolled release of a hazardous material spilling into the waterway. The Smart-Hose[®] Safety System can protect your facility, workforce, and the environment from the devastating consequences associated with a catastrophic ship hose failure.

Features and Benefits

- ✓ Tested to working and test pressure.
- ✓ No human intervention required to activate the system.
- ✓ All hoses are serial numbered.
- ✓ All hoses are shipped with a test certificate and operating booklet.
- ✓ Full flow technology.



Optional Apparatus

- ✓ Flanges
- ✓ Armor
- ✓ Scuff Guard
- ... **and more!**

LL3

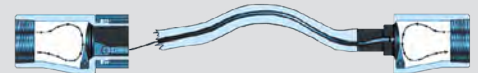
Diameters: ✓ 6" ✓ 8"



*Recommended for gaseous flow and liquid applications.



Normal Flow - LL3 Valves Open



Coupling Ejection - LL3 Valves Closed

***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Reinforcement	Tube	Smart-Hose Part Number
6"	Metal / Rubber	Metal / Rubber	Call for Details/Quote
8"	Metal / Rubber	Metal / Rubber	Call for Details/Quote

NOTE: Additional options available upon request.

Smart-Hose[®] TECHNOLOGIES



FEP Chemical Transfer HOSE ASSEMBLIES

Smart-Hose[®] Safety System

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

The Smart-Hose[®] Safety System is designed to work with rubber covered FEP chemical hose. Manufactured with an EPDM rubber cover and a helical wire, the hose can meet the demands of extreme abrasion applications and full vacuum applications.

Optional Apparatus

✓ Flanges ✓ Acmes ✓ Scuff Guard ... **and more!**

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.
- ✓ Full flow technology.
- ✓ All hoses are serial numbered and shipped with a test certificate and operating booklet.
- ✓ No human intervention required to activate the system.

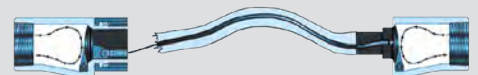


LL3

Diameters: ✓ 1" ✓ 1 1/4" ✓ 1 1/2" ✓ 2" ✓ 3" ✓ 4"



Normal Flow - LL3 Valves Open



Coupling Ejection - LL3 Valves Closed

***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working/Burst Pressure PSI	Bend Radius (in)	Hose Weight per ft. (lb)	Smart-Hose End Fitting	End Fitting Weight (lb) each	Smart-Hose Hose Assembly Part Number
1"	450/1800	7	0.57	FNPT / FNPT	1.5	RXX-008-33-XXXX-0-00-00
1 1/4"	375/1500	11	0.75	FNPT / FNPT	2.6	RXX-010-33-XXXX-0-00-00
1 1/2"	350/1400	12	1.11	MNPT / MNPT	3.4	RXX-012-32-XXXX-0-00-00
2"	300/1200	16	1.57	FNPT / MNPT	4.7	RXX-016-3X-XXXX-0-00-00
3"	200/800	30	2.86	MNPT / MNPT	12.1	RXX-024-32-XXXX-0-00-00
4"	150/600	42	4.28	MNPT / MNPT	20.75	RXX-032-32-XXXX-0-00-00

NOTE: Additional options available upon request.



FEP Chemical Transfer BREAK-AWAY HOSE ASSEMBLIES

No special
installation
required!

Smart-Hose[®] Safety System

FEP Break-Away Hose Assemblies:

The Smart-Hose[®] FEP Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to failsafe is directly related to the angle of the pull-away. No human intervention needed to activate.

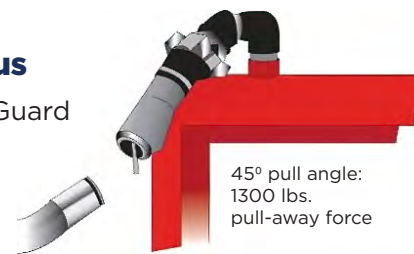
The Smart-Hose[®] Safety System is designed to work with an EPDM covered FEP chemical hose. The hose can meet the demands of extreme abrasion applications, and full vacuum applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.
- ✓ All hoses are serial numbered and shipped with a test certificate and operating booklet.
- ✓ Full flow technology.

Optional Apparatus

- ✓ Flanges
- ✓ Scuff Guard
- ... **and more!**



45° pull angle:
1300 lbs.
pull-away force

*** Electrically conductive available upon request.**

LL3-B

Diameters:

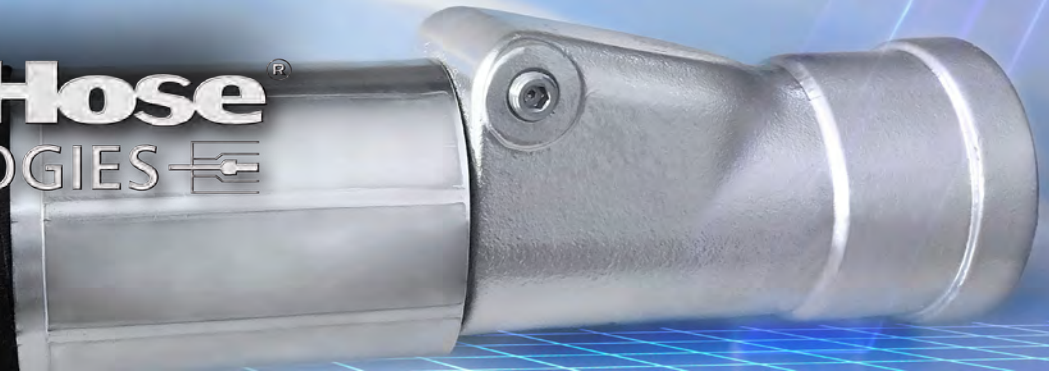
- ✓ 1 ¼"
- ✓ 2"
- ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Smart-Hose End Fitting	End Fitting Weight (lb) each	Smart-Hose LL3-B Break-Away Hose Assembly Part Number
1 ¼"	FNPT	2.6	RXX-010-80-XXXX-X-00-00
2"	FNPT / MNPT	4.7	RXX-016-8X-XXXX-X-00-00
3"	MNPT	12.1	RXX-024-83-XXXX-X-00-00

NOTE A: Additional options available upon request.



UHMWPE Chemical Transfer HOSE ASSEMBLIES

Smart-Hose[®] Safety System

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

The Smart-Hose[®] Safety System integrated into UHMWPE chemical transfer hose assemblies is designed to meet the demands of the most rugged applications in the chemical industry.

Optional Apparatus

✓ Flanges ✓ Acmes ✓ Scuff Guard ... **and more!**

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.
- ✓ Full flow technology.
- ✓ All hoses are serial numbered and shipped with a test certificate and operating booklet.
- ✓ No human intervention required to activate the system.

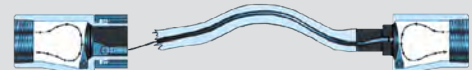


LL3

Diameters: ✓ 1" ✓ 1 ¼" ✓ 1 ½" ✓ 2" ✓ 3" ✓ 4"



Normal Flow - LL3 Valves Open



Coupling Ejection - LL3 Valves Closed

***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in)	Hose Weight per ft. (lb)	Smart-Hose End Fitting	End Fitting Weight (lb) each	Smart-Hose Hose Assembly Part Number
1"	200	1000	4.0	0.58	FNPT / FNPT	1.5	RXX-008-14-XXXX-0-00-00
1 ¼"	250	1000	4.5	0.72	FNPT / FNPT	2.6	RXX-010-33-XXXX-0-00-00
1 ½"	250	1000	5.0	0.82	MNPT / MNPT	3.4	RXX-012-32-XXXX-0-00-00
2"	250	1000	6.0	1.03	FNPT / MNPT	4.7	RXX-016-3X-XXXX-0-00-00
3"	200	800	9.0	1.87	MNPT / MNPT	12.1	RXX-024-32-XXXX-0-00-00
4"	200	800	10.0	4.09	MNPT / MNPT	20.75	RXX-032-32-XXXX-0-00-00

NOTE: Additional options available upon request.

Smart-Hose[®] TECHNOLOGIES

UHMWPE Chemical Transfer BREAK-AWAY HOSE ASSEMBLIES

No special installation required!



Smart-Hose[®] Safety System

FEP Break-Away Hose Assemblies:

The Smart-Hose[®] UHMWPE Break-Away Hose Assembly is specially designed to protect plant, tank truck, rail car, loading arms, workforce and the environment from the potentially hazardous consequences of a pull-away incident.

The hose assembly contains valves in each end to stop product flow in the event of a catastrophic hose failure, plus, the added feature of a break-away fitting on one end that is designed to separate at a pre-determined pull-force in the event of a pull-away. The amount of pull force it takes for the system to failsafe is directly related to the angle of the pull-away. No human intervention needed to activate.

The Smart-Hose[®] Safety System integrated into UHMWPE chemical transfer hose assemblies is designed to meet the demands of the most rugged applications in the chemical industry.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ 316 Stainless Steel fittings are designed for reuse on a new hose.
- ✓ All hoses are serial numbered and shipped with a test certificate and operating booklet.
- ✓ Full flow technology.

Optional Apparatus

- ✓ Flanges
- ✓ Scuff Guard
- ... **and more!**



45° pull angle:
1300 lbs.
pull-away force

*** Electrically conductive available upon request.**

LL3-B

Diameters:

- ✓ 1 ¼"
- ✓ 2"
- ✓ 3"



***Chart shows sample configurations. Fully customizable solutions are available!**

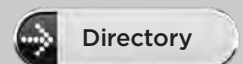
Hose ID	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in)	Hose Weight per ft. (lb)	Smart-Hose End Fitting	End Fitting Weight (lb) each	Smart-Hose LL3-B Break-Away Hose Assembly Part Number
1 ¼"	250	1000	4.5	1.07	FNPT / FNPT	2.6	RXX-010-80-XXXX-X-00-00
2"	250	1000	6.0	1.53	FNPT / MNPT	4.7	RXX-016-8X-XXXX-X-00-00
3"	200	800	9.0	2.78	MNPT / MNPT	12.1	RXX-024-83-XXXX-X-00-00

NOTE A: Additional options available upon request.

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HOSE SAFETY INSTITUTE
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2026





HIGH PRESSURE Acetylene HOSE ASSEMBLIES

Smart-Hose[®] Safety System

High Pressure Acetylene Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs.

When a high pressure acetylene hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with hose failures.

The Smart-Hose[®] Safety System is designed to work within high pressure industrial hose assemblies with a PTFE tube typically used for acetylene applications.

No human intervention is needed to activate.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.



Optional Apparatus

- ✓ Armor
- ✓ CGA connections
- ✓ Scuff Guard ... **and more!**

HOSE DATA

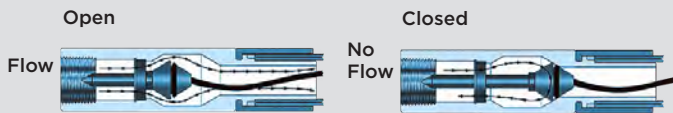


Double Braid

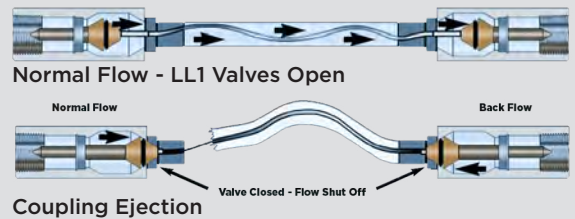
- **COVER:** 304 Stainless Steel - Double Braid
- **DESIGN:** High pressure anti-static smooth bore PTFE tube with high tensile 304 stainless steel braid
- **TUBE:** Medium wall anti-static smooth bore PTFE tube.
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters: ✓ 1/4" ✓ 1/2"



• Recommended for gaseous flow and liquid applications.



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT / Acetylene Service	0.40	P02-002-16-XXXX-0-00-00
1/4"	4500	18000	Bronze FNPT / Acetylene Service	0.40	P04-002-29-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT / Acetylene Service	0.80	P03-004-16-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



HIGH PRESSURE **Argon** HOSE ASSEMBLIES

Smart-Hose[®] Safety System

High Pressure Argon Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs.

When a high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose[®] High Pressure Argon hose assembly is designed to work with a high pressure PTFE hose and utilizes an internal cable that is designed specifically for high pressure argon gas applications.

No human intervention is needed to activate.



Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.

Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard
- ... **and more!**

HOSE DATA



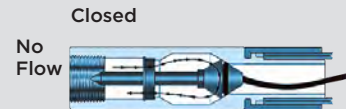
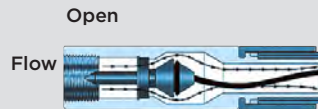
Double Braid

- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** PTFE Tube; True ID; Post Sintered PTFE Tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters:

- ✓ 1/4"
- ✓ 1/2"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT 316-SS FNPT	0.40	P02-002-16-XXXX-0-00-00 P02-002-20-XXXX-0-00-00
3/4"	4500	18000	Bronze FNPT 316-SS FNPT	0.40	P04-002-12-XXXX-0-00-00 P04-002-20-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT 316-SS FNPT	0.80	P03-004-17-XXXX-0-00-00 P03-004-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



HIGH PRESSURE Helium HOSE ASSEMBLIES

Smart-Hose[®] Safety System

High Pressure Helium Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When a high pressure helium hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The system is designed to work within high pressure helium hose assemblies with an ETFE post sintered tube for applications requiring lower effusion, typically used for high pressure hydrogen and helium applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard ... **and more!**

HOSE DATA

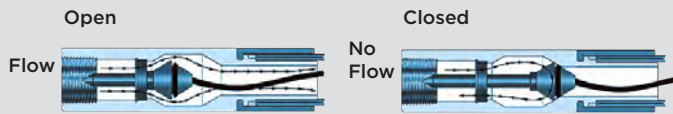


Double Braid

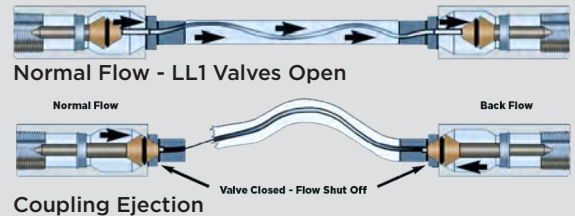
- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** ETFE Post Sintered Tube - for applications requiring low effusion
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters: ✓ 1/4" ✓ 1/2"



*Recommended for gaseous flow and liquid applications.



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT 316-SS FNPT	0.40	P51-002-17-XXXX-0-00-00 P51-002-11-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT 316-SS FNPT	0.80	P52-004-17-XXXX-0-00-00 P52-004-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

Smart-Hose[®]

TECHNOLOGIES



HIGH PRESSURE Hydrogen HOSE ASSEMBLIES

Smart-Hose[®] Safety System

High Pressure Hydrogen Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When a high pressure hydrogen hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The system is designed to work within high pressure hydrogen hose assemblies with an ETFE post sintered tube for applications requiring lower effusion, typically used for high pressure hydrogen and helium applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard ... **and more!**

HOSE DATA



Double Braid

- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** ETFE Post Sintered Tube - for applications requiring low effusion
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters: ✓ ¼" ✓ ½"

Open

Flow

Closed

No Flow

• Recommended for gaseous flow and liquid applications.

Normal Flow - LL1 Valves Open

Normal Flow Back Flow

Coupling Ejection Valve Closed - Flow Shut Off

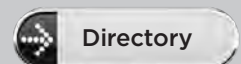
***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
¼"	3500	14000	Brass FNPT 316-SS FNPT	0.40	P51-002-17-XXXX-0-00-00 P51-002-11-XXXX-0-00-00
½"	4000	16000	Brass FNPT 316-SS FNPT	0.80	P52-004-17-XXXX-0-00-00 P52-004-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



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HIGH PRESSURE Nitrogen HOSE ASSEMBLIES

Smart-Hose[®] Safety System

High Pressure Nitrogen Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs.

When a high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose[®] High Pressure Nitrogen hose assembly is designed to work with a high pressure PTFE hose and utilizes an internal cable that is designed specifically for high pressure nitrogen gas applications.

No human intervention is needed to activate.



Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.

Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard
- ... **and more!**

HOSE DATA



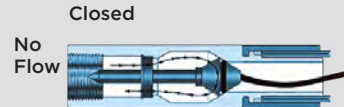
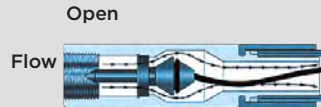
Double Braid

- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** PTFE Tube; True ID; Post Sintered PTFE Tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters:

- ✓ 1/4"
- ✓ 1/2"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT 316-SS FNPT	0.40	P02-002-17-XXXX-0-00-00 P02-002-11-XXXX-0-00-00
1/4"	4500	18000	Bronze FNPT 316-SS FNPT	0.40	P04-002-12-XXXX-0-00-00 P04-002-11-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT 316-SS FNPT	0.80	P03-004-17-XXXX-0-00-00 P03-004-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



HIGH PRESSURE Oxygen HOSE ASSEMBLIES

Smart-Hose[®] Safety System

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When a high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose[®] High Pressure Oxygen hose assembly is designed to work with a high pressure PTFE hose and utilizes an internal cable that is designed specifically for high pressure oxygen gas applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard ... **and more!**

HOSE DATA



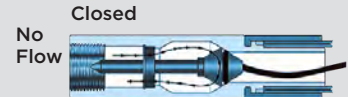
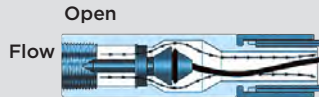
Double Braid

- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** PTFE Tube; True ID; Post Sintered PTFE Tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available



Diameters:

- ✓ 1/4"
- ✓ 1/2"
- ✓ 3/4"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT 316-SS FNPT Brass Heat Dissipater FNPT	0.40	P02-002-17-XXXX-0-00-00 P02-002-11-XXXX-0-00-00 P02-002-19-XXXX-0-00-00
1/4"	4500	18000	Bronze FNPT 316-SS FNPT Bronze Heat Dissipater FNPT	0.40	P04-002-12-XXXX-0-00-00 P04-002-11-XXXX-0-00-00 P04-002-21-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT 316-SS FNPT Brass Heat Dissipater FNPT	0.80	P03-004-17-XXXX-0-00-00 P03-004-11-XXXX-0-00-00 P03-004-19-XXXX-0-00-00
3/4"	4000	16000	316-SS FNPT	0.60	P03-006-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



HIGH PRESSURE ETFE HOSE ASSEMBLIES

Smart-Hose® Safety System

High Pressure ETFE Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When a high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose® Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose® High Pressure ETFE hose assembly is designed to work with a high pressure ETFE hose and utilizes an internal cable that is designed specifically for high pressure ETFE gas applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard
- ... **and more!**

HOSE DATA



Double Braid

- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** ETFE Tube; True ID; Post Sintered ETFE Tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters:

- ✓ 1/4"
- ✓ 1/2"
- ✓ 3/4"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT 316-SS FNPT Brass Heat Dissipater FNPT	0.40	P51-002-17-XXXX-0-00-00 P51-002-11-XXXX-0-00-00 P51-002-19-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT 316-SS FNPT Brass Heat Dissipater FNPT	0.80	P52-004-17-XXXX-0-00-00 P52-004-11-XXXX-0-00-00 P52-004-19-XXXX-0-00-00
3/4"	4000	16000	316-SS FNPT	0.60	P52-006-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.



HIGH PRESSURE PTFE HOSE ASSEMBLIES

Smart-Hose® Safety System

High Pressure PTFE Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When a high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose® Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose® High Pressure PTFE hose assembly is designed to work with a high pressure PTFE hose and utilizes an internal cable that is designed specifically for high pressure ETFE gas applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard
- ... **and more!**

HOSE DATA

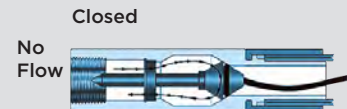
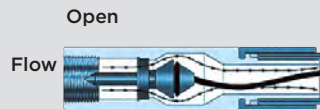


- **COVER:** SS Armor available on request
- **REINFORCEMENT:** Double Braid 304 SS
- **TUBE:** PTFE Tube; True ID; Post Sintered PTFE Tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters:

- ✓ 1/4"
- ✓ 1/2"
- ✓ 3/4"



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	3500	14000	Brass FNPT 316-SS FNPT Brass Heat Dissipater FNPT	0.40	P02-002-17-XXXX-0-00-00 P02-002-11-XXXX-0-00-00 P02-002-19-XXXX-0-00-00
1/4"	4500	18000	Bronze FNPT 316-SS FNPT Bronze Heat Dissipater FNPT	0.40	P04-002-12-XXXX-0-00-00 P04-002-11-XXXX-0-00-00 P04-002-21-XXXX-0-00-00
1/2"	4000	16000	Brass FNPT 316-SS FNPT Brass Heat Dissipater FNPT	0.80	P03-004-17-XXXX-0-00-00 P03-004-11-XXXX-0-00-00 P03-004-19-XXXX-0-00-00
3/4"	4000	16000	316-SS FNPT	0.60	P03-006-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet. Additional options available upon request.

Smart-Hose[®] TECHNOLOGIES



HIGH PRESSURE STAINLESS STEEL HOSE ASSEMBLIES

HOSE DATA



Double Braid

- BRAID: T304 Stainless Steel - Double
- HOSE: T316L Stainless Steel
- ARMOR: T304 Stainless Steel
- TEMPERATURE: Cryogenic to 1500°F

Smart-Hose[®] Safety System

Ultra High Pressure Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When high pressure hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose[®] Safety System is designed to work within high pressure stainless steel industrial hose assemblies.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.
- ✓ All hoses are serial numbered and shipped with a test certificate and operating booklet.



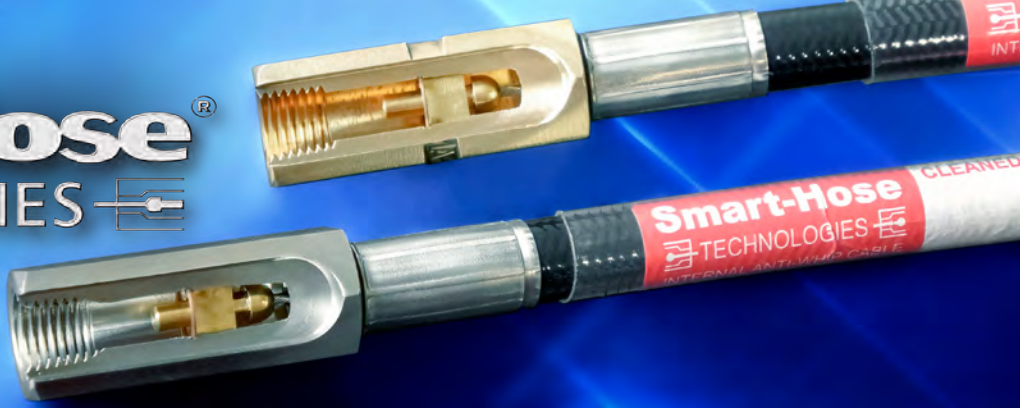
Optional Apparatus

- ✓ Flanges ✓ CGA connections ✓ Acmes ✓ Armor
- ✓ Scuff Guard ... **and more!**

LL1	✓ 1/4"		LL3	✓ 1"	✓ 2"	
	✓ 1/2"			✓ 3"		
✓ 3/4"						

***Chart shows sample configurations. Fully customizable solutions are available!**

PRESSUREMAX HP									
Hose ID	Braid Layers	Working Pressure PSI	Burst Pressure PSI	Bend Radius (in.)		Hose Weight Per Ft (lb.)	End Fittings LL3-B / LL3	End Fitting Weight (lb.)	Smart-Hose Part Number
1/4"	2	6000	24000	4.5	4.5	0.49	FNPT / FNPT	0.4	M37-002-11-XXXX-0-00-00
1/2"	2	4500	18000	8.0	3.0	0.85	FNPT / FNPT	0.6	M37-004-11-XXXX-0-00-00
3/4"	2	3600	14521	10.0	4.0	1.58	FNPT / FNPT	0.8	M37-006-11-XXXX-0-00-00
1"	2	3000	12083	11.0	5.0	2.25	FNPT / FNPT	1.5	M37-008-33-XXXX-0-00-00
2"	2	1675	6710	14.0	9.0	4.45	MNPT / MNPT	4.7	M37-016-32-XXXX-0-00-00
							FNPT / FNPT		M37-016-33-XXXX-0-00-00
3"	2	900	3600	20.0	10.5	5.67	MNPT / MNPT	12.1	M37-024-32-XXXX-0-00-00



ULTRA HIGH PRESSURE ETFE HOSE ASSEMBLIES

Smart-Hose® Safety System

Ultra High Pressure ETFE Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When an ultra high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose® Safety System can protect your facility and workforce from the potentially devastating consequences associated with ultra high pressure hose failures.

The Smart-Hose® Safety System is designed to work within ultra high pressure industrial hose assemblies with an ETFE tube typically used for ultra high pressure hydrogen and helium applications.

Features and Benefits

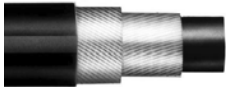
- ✓ All ultra high pressure hose assemblies are oxygen cleaned to industry standards.
- ✓ Tested under water with CDA or nitrogen to working and test pressure.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard
- ... **and more!**

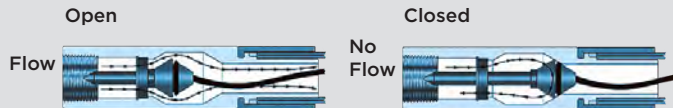
HOSE DATA



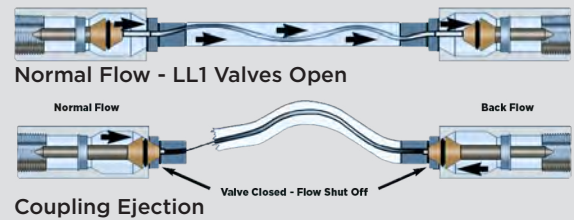
- **COVER:** Smooth, tough abrasion resistant polyester cover (black)
- **DESIGN:** Smooth bore gas quality ETFE tube with aramid braid and one high tensile Stainless Steel 304 braid
- **TUBE:** Gas quality smooth bore ETFE tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters: ✓ 1/4"



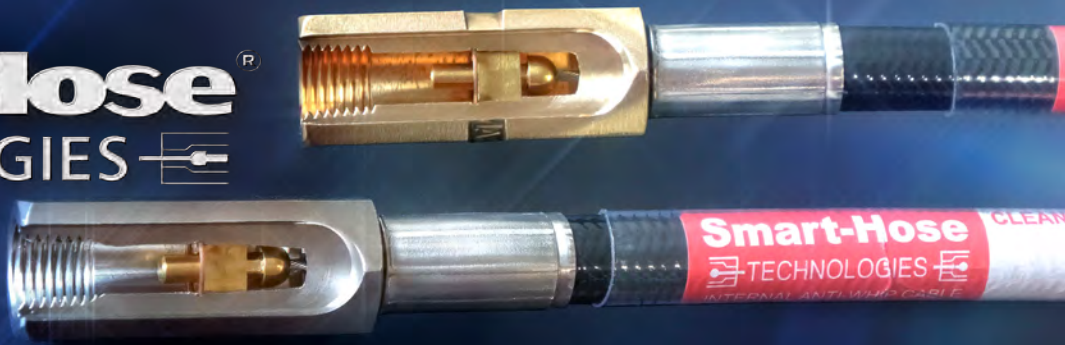
*Recommended for gaseous flow and liquid applications.



***Chart shows sample configurations. Fully customizable solutions are available!**

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	Smart-Hose Part Number
1/4"	6000	24000	Bronze FNPT	P18-002-12-XXXX-0-00-00
3/4"	6000	24000	316-SS FNPT	P18-002-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet.



ULTRA HIGH PRESSURE PTFE HOSE ASSEMBLIES

Smart-Hose® Safety System

Ultra High Pressure PTFE Hose Assemblies:

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When an ultra high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose® Safety System can protect your facility and workforce from the potentially devastating consequences associated with ultra high pressure hose failures.

The Smart-Hose® Safety System is designed to work within ultra high pressure industrial hose assemblies with a PTFE tube typically used for ultra high pressure hydrogen and helium applications.

Features and Benefits

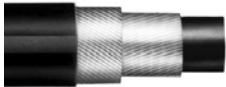
- ✓ All ultra high pressure hose assemblies are oxygen cleaned to industry standards.
- ✓ Tested under water with CDA or nitrogen to working and test pressure.



Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard
- ... **and more!**

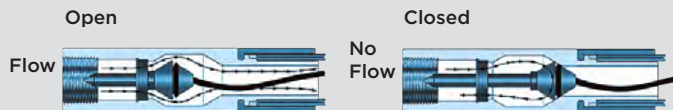
HOSE DATA



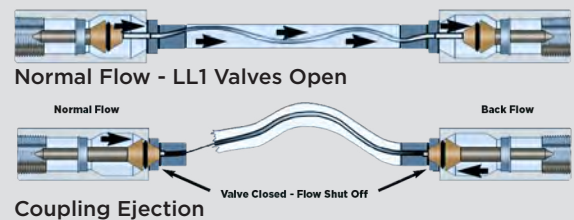
- **COVER:** Smooth, tough abrasion resistant polyester cover (black)
- **DESIGN:** Smooth bore gas quality PTFE tube with aramid braid and one high tensile Stainless Steel 304 braid
- **TUBE:** Gas quality smooth bore PTFE tube
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA; various ends available

LL1

Diameters: ✓ 1/4"



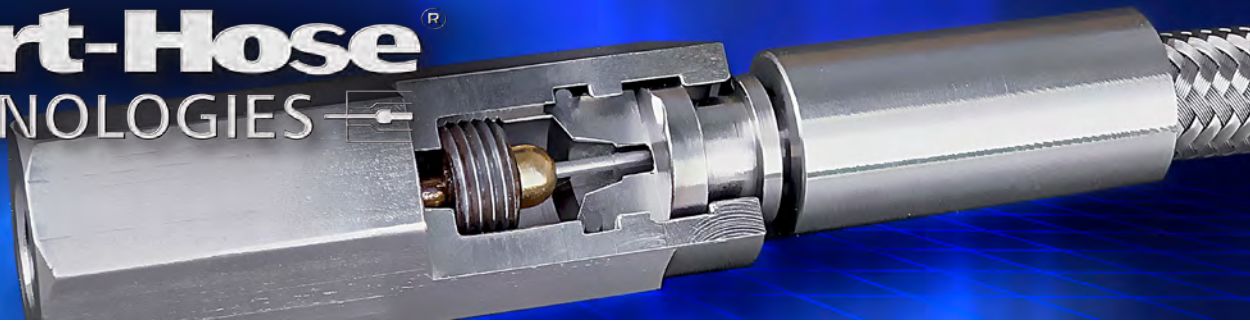
*Recommended for gaseous flow and liquid applications.



***Chart shows sample configurations. Fully customizable solutions are available!**

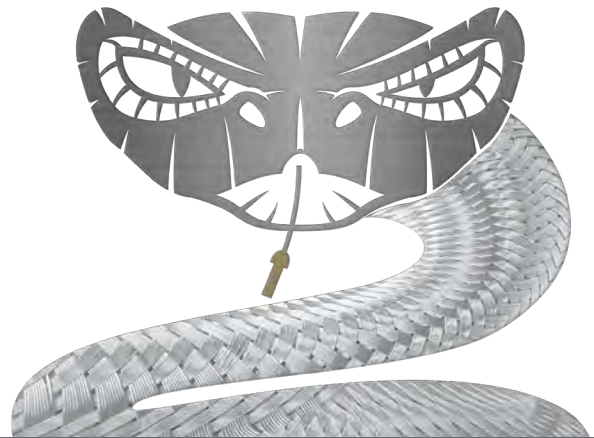
Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	Smart-Hose Part Number
1/4"	6000	24000	Bronze FNPT	P17-002-12-XXXX-0-00-00
3/4"	6000	24000	316-SS FNPT	P17-002-11-XXXX-0-00-00

NOTE: Serial numbered and shipped with a test certificate and operating booklet.



COBRA

Extreme Pressure 9000 PSI Hose Assemblies



Smart-Hose[®] Safety System

How the System Works

Integrated valves will instantly stop product flow if a **catastrophic** failure occurs. No human intervention is needed to activate.

When a high pressure cylinder filling hose assembly fails, the hose can whip violently resulting in property damage, personnel injury, and even death. The Smart-Hose[®] Safety System can protect your facility and workforce from the potentially devastating consequences associated with high pressure hose failures.

The Smart-Hose[®] Extreme Pressure PTFE Hose Assembly is designed to work with extreme pressure PTFE hoses. It utilizes an internal cable that is designed specifically for extreme pressure PTFE gas applications.

Features and Benefits

- ✓ Tested under water with CDA or nitrogen to working and test pressure.
- ✓ Standard 2 piece live swivel end fittings.
- ✓ All high pressure hose assemblies are oxygen cleaned to industry standards.
- ✓ Serial numbered and shipped with a test certificate and operating booklet.

No special installation required!

Optional Apparatus

- ✓ CGA connections
- ✓ Scuff Guard ... **and more!**

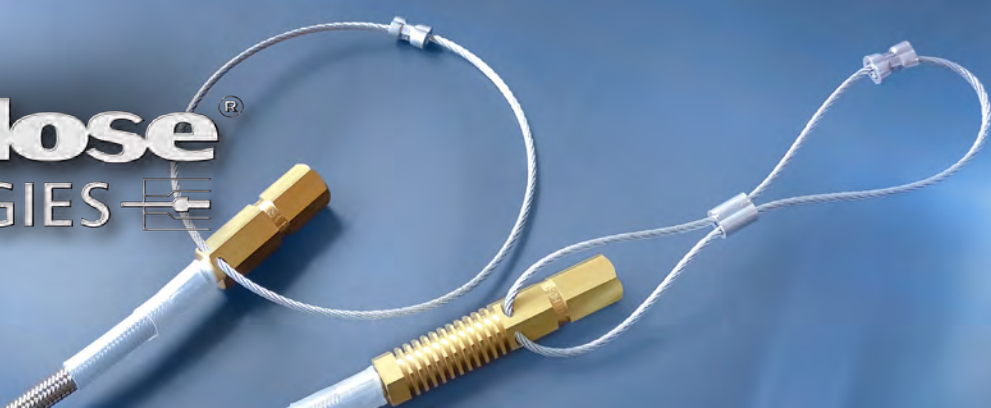
HOSE DATA



- **TUBE:** Gas quality or heavy wall smooth-bore virgin PTFE tube
- **COVER:** SS Armor available on request
- **REINFORCEMENT:** 2 Aramid Braids and 1 High Tensile 304 Maypole Wound SS Braid
- **TUBE:** Gas quality or heavy wall smooth-bore virgin PTFE tube
- **TEMPERATURE:** -54°C to +150°C (-65°F to +302°F)
- **ACCESSORIES:** Safety loops; External Cable; Bend Restrictors; CGA

Hose ID	Working Pressure PSI	Burst Pressure PSI	Smart-Hose End Fittings	End Fitting Weight (lb.)	Smart-Hose Part Number
¼"	9000	36000	316-SS FNPT	0.40	P23-002-55-XXXX-0-00-00

***Chart shows sample configurations. Fully customizable solutions are available!**



HIGH PRESSURE pigtail ACCESSORIES

Smart-Hose® Safety System



High Pressure Live Swivel

The high pressure live swivel is integrated into the end fitting and designed to work in conjunction with the Smart-Hose® Safety System. If a **catastrophic** failure occurs, the integrated valves will instantly stop product flow. No human intervention is needed to activate.

High Pressure Hose assemblies often experience premature hose failure due to excessive hose torque or twisting. The Smart-Hose® Live Swivel fitting is designed to allow the high pressure hose assembly the ability to maintain neutral torque during pressurization while extending the functional life of the hose assembly.

Features and Benefits

- ✓ The Live Swivel is integrated into, and works in conjunction with, the Smart-Hose® Safety Hose Assembly.
- ✓ Incorporates a robust dual o-ring seal design.
- ✓ Eliminates premature hose failure due to excessive hose torque or twisting.
- ✓ Allows the high pressure hose assemblies to maintain neutral torque during pressurization.
- ✓ Helps to extend the life of high pressure Smart-Hose® hose assemblies.

AND MORE Pigtail Accessories...

- ✓ Spring Guard
- ✓ Scuff Guard
- ✓ Safety Loops
- ✓ Bend Restrictors
- ✓ CGA Fittings
- ✓ Male NPT
- ✓ SS BSPP/BSPT Adapters
- ✓ Brass BSPP/BSPT Adapters
- ✓ Heat Dissipater Fittings
- ✓ External Anti-Whip Cable (with safety loops)
- ✓ Live Swivel Fitting (built into the end fitting)
- ✓ Live Swivel Adapter (threaded into standard fitting)