

# UNIT CONVERSIONS & FORMULAS

MEASUREMENT	CONVERSION	EXAMPLE
LENGTH	1 in. = 25.4 mm	12 in. x 25.4 = 304.8 mm
	1 in. = .0254 m	120 in. x .0254 = 3.05 m
	1 ft. = .3048 m	12 ft. x .3048 = 3.68 m
	1 mm = .0394 in.	100 mm x .0394 = 3.94 in.
	1 m = 39.37 in.	10 m x 39.37 = 393.7 in.
	1 m = 3.281 ft.	10 m x 3.281 = 32.81 ft.
VOLUME	1 gal = 3.785 l	10 gal x 3.785 = 37.85 l
	1 liter = .2642 gal	100 liters x 26.42 = 26.42 gal
WEIGHT	1 lb. = .454 kg	10 lbs. x .454 = 4.54 kg
	1 kg = 2.205 lbs.	10 kg x 2.205 = 22.05 lbs.
PRESSURE	1 psi = .06895 bar	40,000 psi x .06895 = 2,758 bar
	1 bar = 14.503 psi	2,758 bar x 14.503 = 40,000 psi
FLOW	1 gpm = 3.785 lpm	30 gpm x 3.785 = 113.55 lpm
	1 lpm = .2642 gpm	100 lpm x .264 = 26.42 gpm
FORCE	1 lb. = 4.448 N	100 lbs. x 4.448 = 444.8 N
	1 N = .2248 lbs.	900 N x .2248 = 202.32 lbs.
TORQUE	1 lb.-ft. = 1.3567 N-m	100 lb.-ft. x 1.3567 = 135.67 N-m
	1 N-m = .737 lb.-ft.	100 N-m x .737 = 73.7 lb.-ft.
POWER	1 hp = .7457 kW	50 hp x .7457 = 37.29 kW
	1 kW = 1.341 hp	50 kW x 1.341 = 67.05 hp

FORMULA	ENGLISH UNITS	METRIC UNITS
Power Requirements*	hp = gpm x psi / 1550	kW = lpm x bar / 540

\*Formulas assume 90% mechanical efficiency

# CONNECTION TYPES

Several connection types are available for use with Jetstream 20,000 PSI products. The purpose of this section is to allow users to identify the connections needed and provide information on the features and proper use of each.

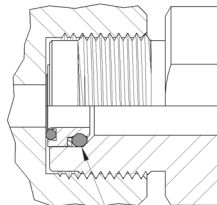


**NOTE:** Always apply thread lubricant (anti-seize) to male threads before assembling Jetstream 20K Port connections. See Fittings, page E-1, for thread lubricants available from Jetstream.

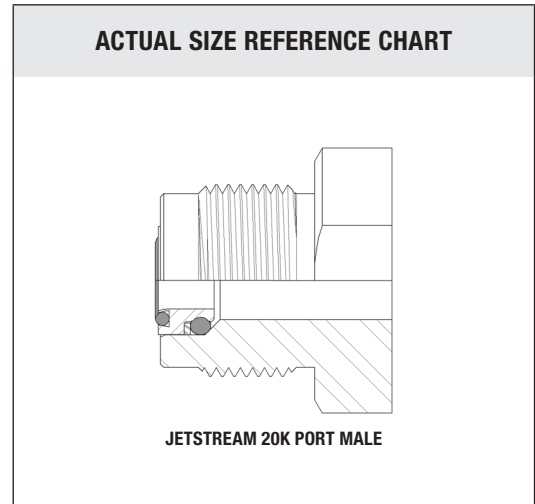
## JETSTREAM 20K PORT

- Specially designed to prevent leakage and wear frequently associated with standard connections by incorporating a replaceable seal assembly that is hydraulic biased to increase sealing force as pressure increases.
- Repairing leaks requires only replacement of the seal, compared with standard connections which often require re-coning, or component replacement
- Utilized in most Jetstream 20,000 psi products

CONNECTION THREAD	RECOMMENDED TORQUE	
	ft-lbs	N-m
1" - 16UN	50	68



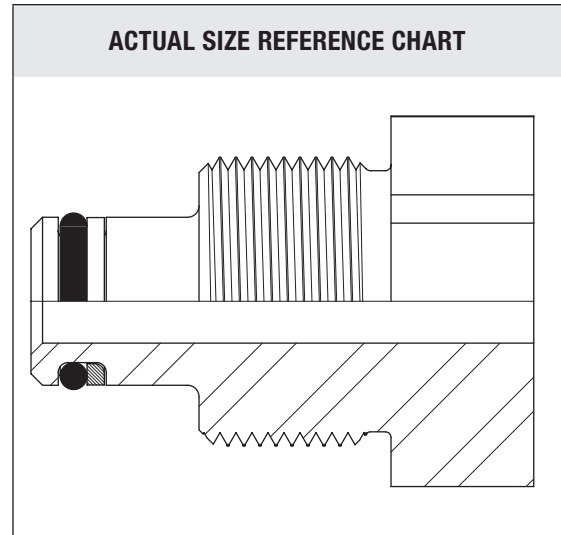
SEAL  
Part No. 52040



## JETSTREAM HHP MALE ADAPTERS

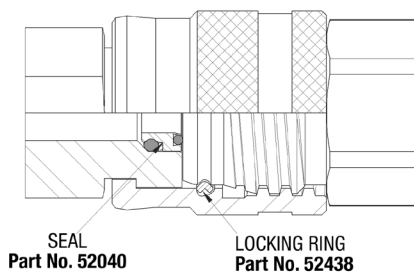
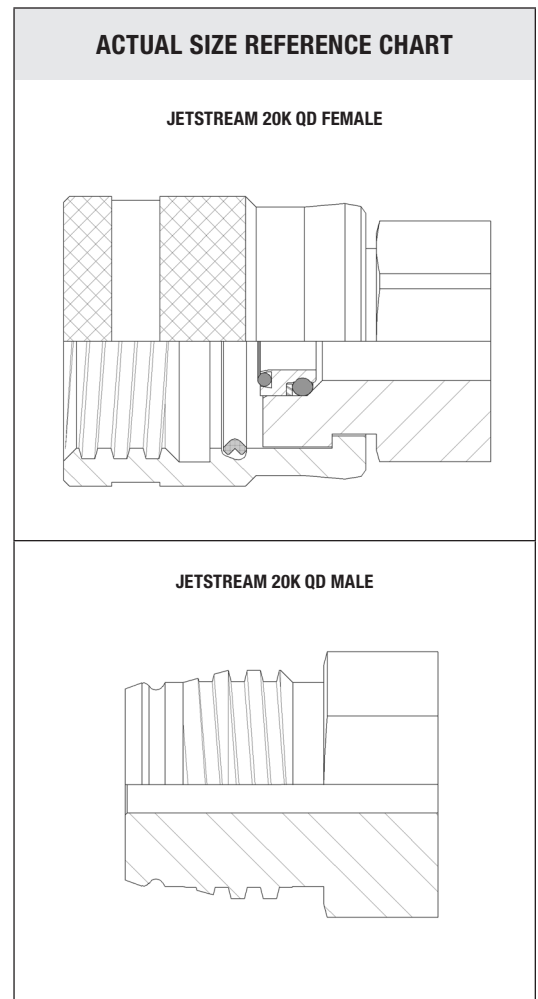
For use with 6020 and 5020Q pumps, the Jetstream HHP connection features an easily replaceable seal to prevent wear or damage to the manifold and a large bore to minimize pressure drop through fittings.

- Copper plated for galling resistance
- Stainless steel



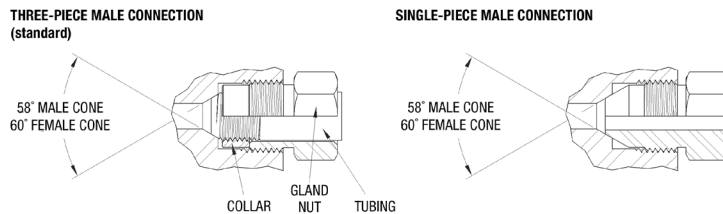
## JETSTREAM 20K QUICK DISCONNECT

- Enables fast connection and removal of 20,000 psi tools
- Utilizes the same hydraulically-biased replaceable seal as the Jetstream 20K Port Connection
- Hand-tightening is all that is required. A locking ring in the female swivel fitting holds the male fitting in place
- Repairing leaks requires only replacement of the seal, compared with standard connections which often require re-coning or component replacement
- Available on Jetstream 20,000 psi rubber hoses
- Connectors are available to use the Quick Disconnect fitting with any 20,000 psi product



## MEDIUM PRESSURE (MP)

- Industry standard connection for 20,000 psi applications.
- Connections exist in two different forms:
  1. Used to connect medium pressure tubing with a conical male seat and left-handed threads to a female port using a gland nut and left-hand threaded collar (Gland, Collar & Tubing).
  2. For many medium pressure male fittings, the geometry of the gland, collar, and tubing is combined into one component that connects directly to a medium pressure female port (Single-Piece Style).
- With proper care, this connection is suitable for repetitive connection/disconnection.
- Damage from repeated or improper use can often be repaired using reaming tools. For details on tubing preparation and repair equipment, contact Jetstream Sales.



SIZE	GLAND CONNECTION THREAD	TUBING THREAD* LEFT-HAND	RECOMMENDED TORQUE	
			ft-lbs	N-m
1/4" MP	7/16" - 20UNF	1/4" - 28UNF	20	27
3/8" MP	9/16" - 18UNF	3/8" - 24UNF	30	41
9/16" MP	13/16" - 16UNF	9/16" - 18UNF	85	15
3/4" MP	3/4" - 14NPSM	3/4" - 16UNF	90	122
1" MP	1-3/8" - 12UNF	1" - 14UNF	125	170

\*For three-piece connection styles only

## CONNECTION INSTRUCTIONS

1. **3 pc. Male Connection Style Only**—Liberaly apply anti-seize to male tubing threads to prevent thread galling.
2. **3 pc. Male Connection Style Only**—Slide gland nut over tubing and thread collar (left-hand threaded) onto tubing until it is past the first one or two full threads of the tubing.
3. **Both Styles**—Liberaly apply anti-seize to male connection threads and male cone.
4. **Both Styles**—Install male connection into female port and tighten according to torque specification in chart above.

### ACTUAL SIZE REFERENCE CHART

**SINGLE PIECE STYLE**

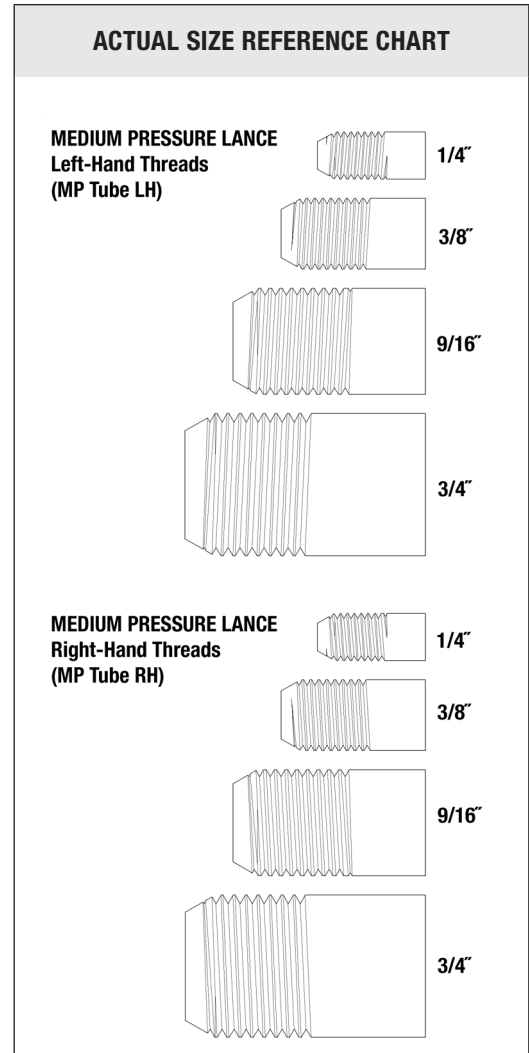
**GLAND, COLLAR & TUBING**

1" MP not shown

## MEDIUM PRESSURE TUBE (MP TUBE)

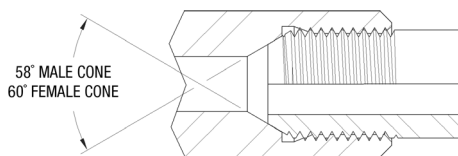
- Industry standard connection for 20,000 psi applications.
- Left-hand threaded connections are used in standard medium pressure three-piece connection style.
- Both left- and right-hand threaded connections are used in tube cleaning applications in which the male connection is inserted directly into a female connection without use of a gland and collar. For use where standard connections are too large in diameter.

SIZE	TUBE CONNECTION THREAD	RECOMMENDED TORQUE	
		ft-lbs	N-m
1/4" MP Tube LH	1/4"-28UNF-LH	15	20
1/4" MP Tube RH	1/4"-28UNF-RH		
3/8" MP Tube LH	3/8"-24UNF-LH	25	34
3/8" MP Tube RH	3/8"-24UNF-RH		
9/16" MP Tube LH	9/16"-18UNF-LH	30	41
9/16" MP Tube RH	9/16"-18UNF-RH		
3/4" MP Tube LH	3/4"-16UNF-LH	45	61
3/4" MP Tube RH	3/4"-16UNF-RH		
1" MP Tube LH	1"-14UNF-LH	70	95

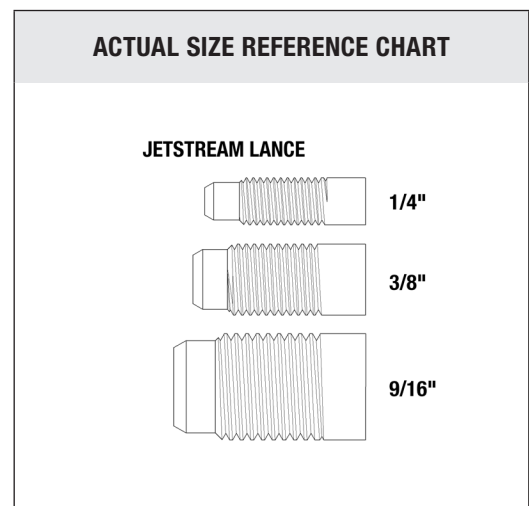


## JETSTREAM LANCE

- Formerly known as Jetstream's "Rigid Lance" connection.
- Commonly found in Jetstream flex and rigid lances and tube nozzles.
- Male Jetstream Lance connections will fit into female right hand medium pressure tube connections, but female Jetstream Lance connections cannot be used with male medium pressure tube connections.

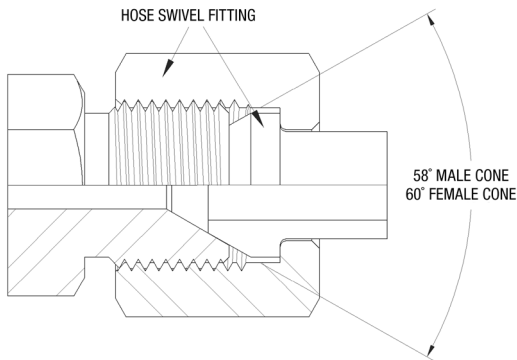


SIZE	LANCE CONNECTION THREAD	RECOMMENDED TORQUE	
		ft-lbs	N-m
1/4" JS Lance	1/4"-28UNF	15	20
3/8" JS Lance	3/8"-24UNF	25	34
9/16" JS Lance	9/16"-18UNF	30	41

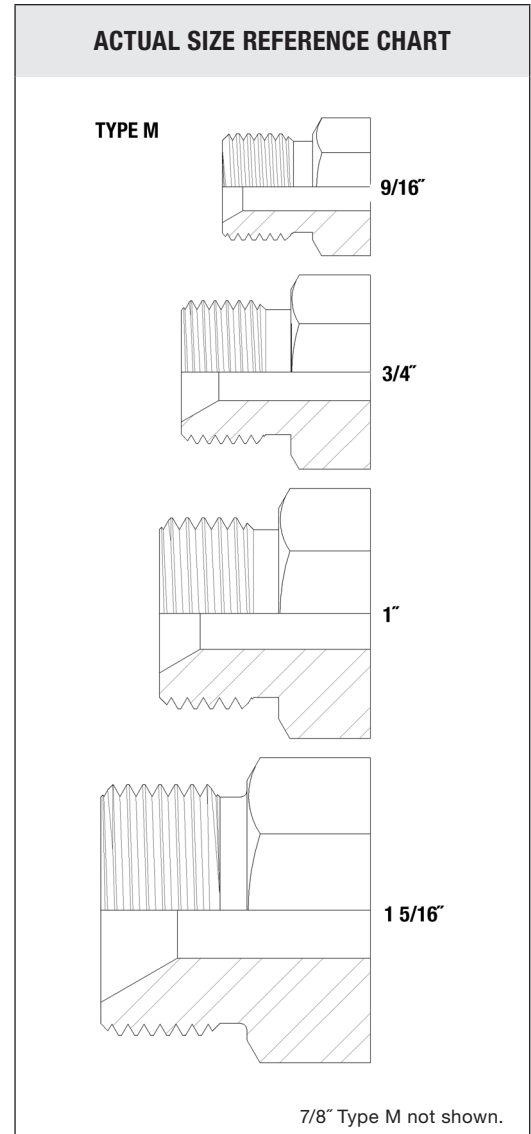


## TYPE M

- Industry standard connection.
- Designed for fast, simple connection of waterblast hoses and lances to waterblast equipment.
- Male conical seat protected from damage by the hose swivel nut.
- Unlike medium pressure connections, the seating surfaces do not rotate against each other when connections are made, resulting in a more reliable, longer lasting connection.
- Verify pressure rating of Type M hoses and fittings before use as the connection type is used for a wide range of pressures due to its ease of use and reliability.



SIZE		GLAND CONNECTION THREAD	RECOMMENDED TORQUE	
			ft-lbs	N-m
9/16" Type M	M9	9/16" - 18UNF	30	41
3/4" Type M	M12	3/4" - 16UNF 1"	45	61
7/8" Type M	M14	7/8" - 14UNF	50	67
1" Type M	M16	1" - 12UNF	75	95
1 5/16" Type M	M21	1-5/16" - 12UN	110	149



## HOSES & FLEX LANCES

### PRESSURE DROP DATA

The charts shown are used to approximate how much pressure will be lost through a particular hose or lance at a given flow rate. Because of frictional forces, the water exiting a hose or lance could be at a significantly lower pressure than at entry. In some cases, especially when using smaller hoses and lances such as Series 51952 & 51953, the flow rate that can be used is determined by pressure drop through a lance rather than the pump's maximum output.

### PRESSURE DROP & NOZZLE SIZING

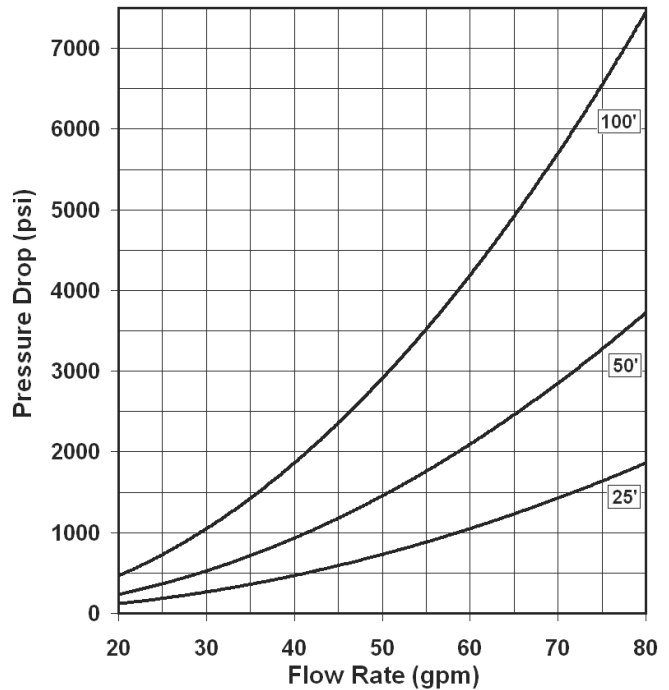
Pressure drop is especially important to understand when sizing nozzles. Use the following procedure for correct nozzle sizing:

1. Determine the pressure needed for a particular cleaning operation and subtract that amount from the desired pump operating pressure. The result is the desired pressure drop.
2. Consult pressure drop chart for the hose to be used to determine what flow rate will result in the intended pressure drop.
- 3a. If this flow rate exceeds the maximum flow of the pump, use the chart to find the pressure drop at the maximum pump flow and subtract that amount from the desired pump operating pressure to get the pressure at the nozzle. Then use the flow charts provided for the desired nozzle to select a nozzle, or nozzles, matching the desired flow and pressure.
- 3b. If this flow rate is within the capability of the pump, use the flow charts provided for the desired nozzle to select a nozzle, or nozzles, matching the desired flow and pressure.

**NOTE:** Doubling the length of a hose or lance will result in approximately twice the pressure drop at the same flow rate.

#### SERIES 52534 RUBBER WATERBLAST HOSE

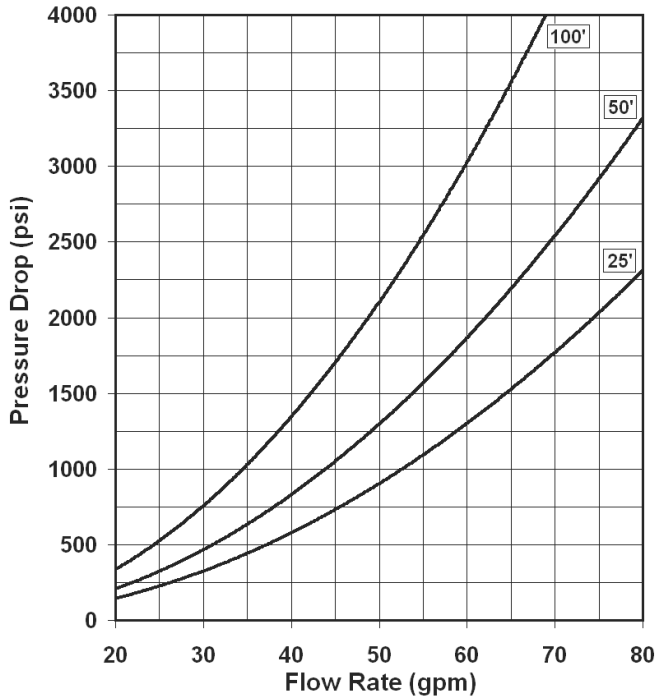
See page D-1 for ordering information.



## HOSES & FLEX LANCES PRESSURE DROP DATA

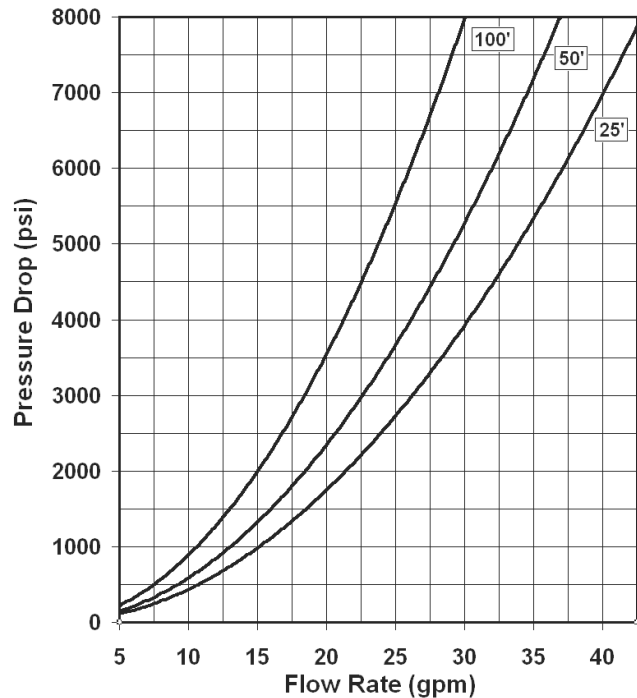
### SERIES 28347 THERMOPLASTIC HOSE

See pages D2, D4, D5 for ordering information.



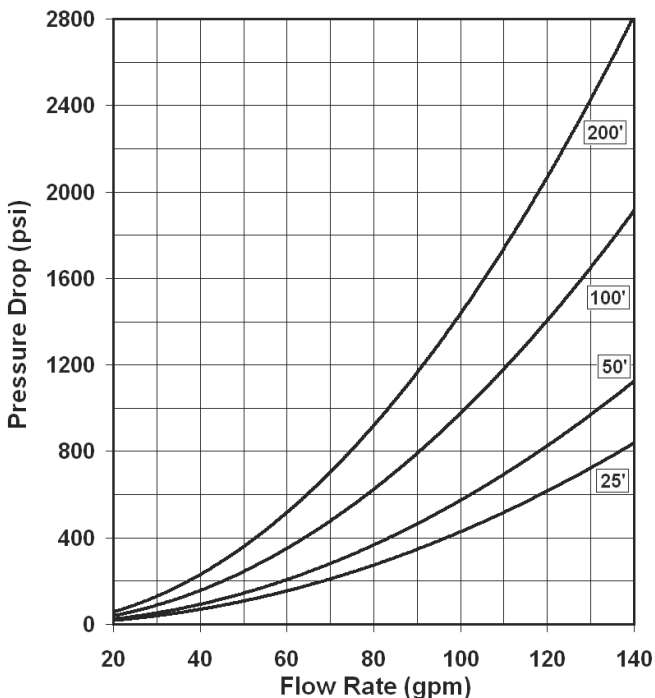
### SERIES 53816 THERMOPLASTIC HOSE & LANCE

See pages D2-D5 for ordering information.



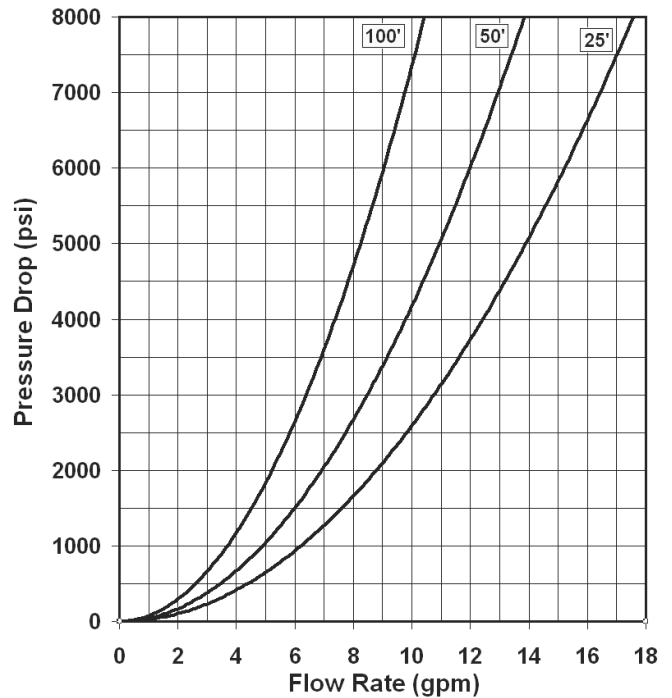
### SERIES 29120 THERMOPLASTIC HOSE

See pages D2, D4, D5 for ordering information.



### SERIES 51953 THERMOPLASTIC HOSE & LANCE

See pages D3-D5 for ordering information.

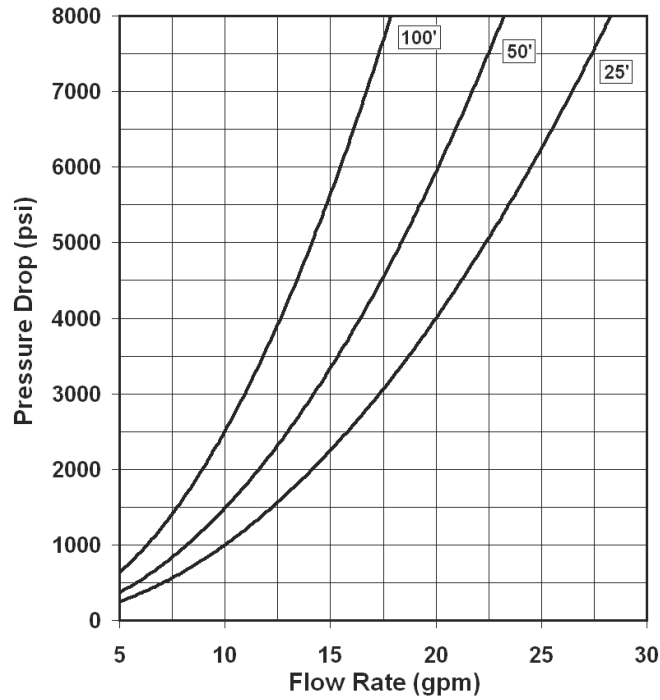




# RIGID LANCE PRESSURE DROP DATA

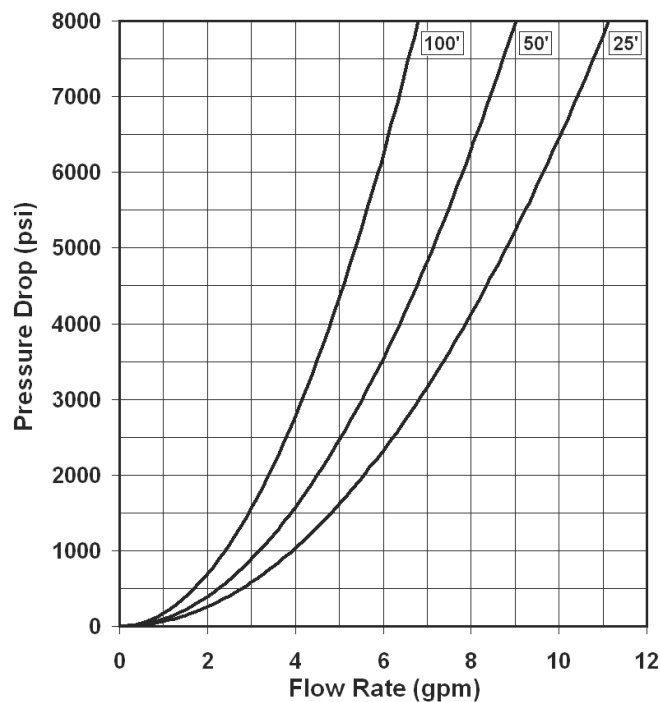
## SERIES 51954 THERMOPLASTIC HOSE & LANCE

See pages D2-D5 for ordering information.



## SERIES 51952 THERMOPLASTIC HOSE & LANCE

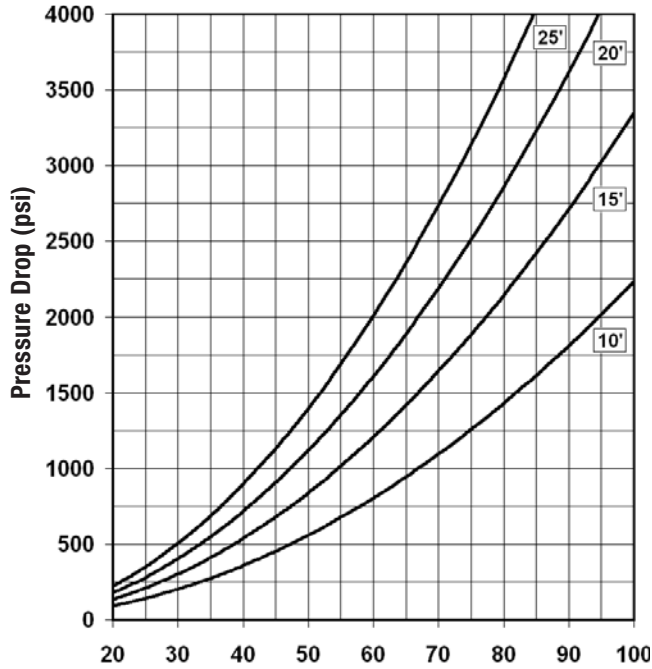
See pages D3-D5 for ordering information.



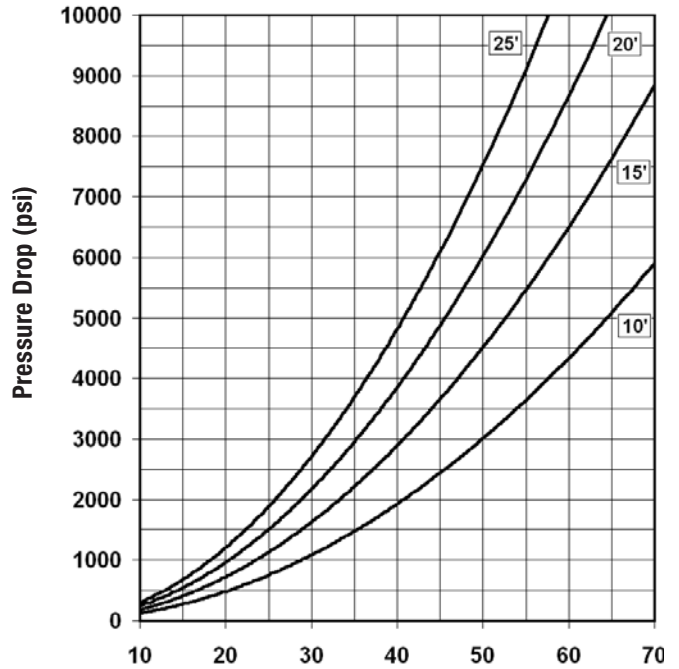
# HOSES & FLEX LANCES

## PRESSURE DROP DATA

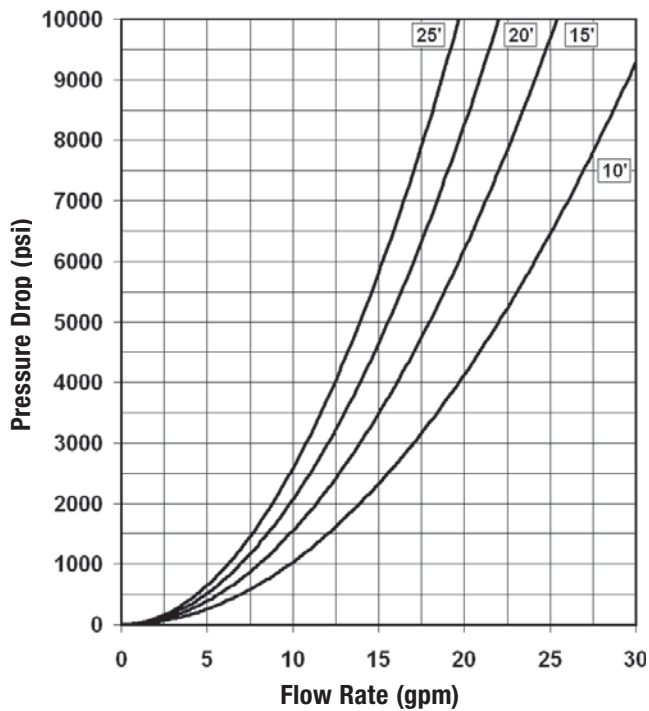
**3/4" RIGID LANCES**  
.740" O.D. X .437" I.D.



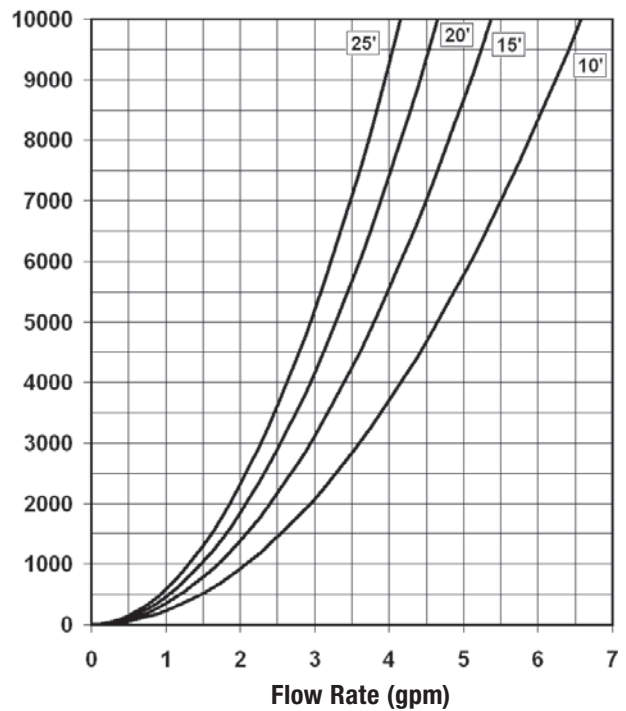
**9/16" RIGID LANCES**  
.553" O.D. X .312" I.D.



**3/8" RIGID LANCES**  
.368" O.D. X .203" I.D.



**1/4" RIGID LANCES**  
.245" O.D. X .109" I.D.





## THREADING AND CONING TOOLS HP CONNECTIONS

- Coning tool assemblies include tool as well as cutter and collet specific to the connection size and type needed.
- Threading tool assemblies include tool (consisting of housing and handle) as well as die and guide bushing specific to connection size needed.

### NOTE:

- 1/4" & 3/8" coning tools use the same tool with differing cutters & collets.
- 9/16" coning tools use the same tool with differing cutters.
- All threading tool assemblies include LH die and all use the same handle and housing.

### CONING

CONNECTION TYPE	CONING TOOL AY	CONING CUTTER	CONING COLLET
1/4" HP	71079	71085	71088
3/8" HP	71080	71086	71089
9/16" HP	71081	71087	71090

### THREAD

CONNECTION TYPE	THREATH TOOL AY	LH DIE	RH DIE	BUSHING
1/4" HP	71091	70192	71095	71097
3/8" HP	28783	71093	71096	71098
9/16" HP	28872	71094	28873	71099