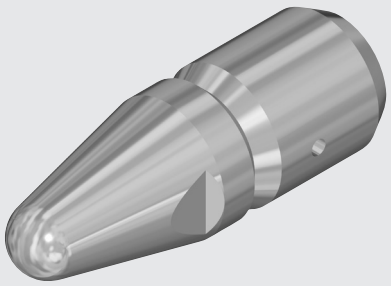
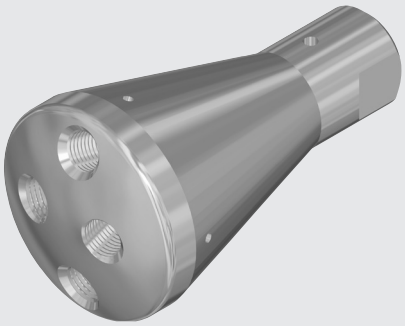
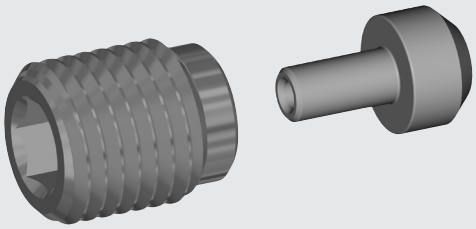
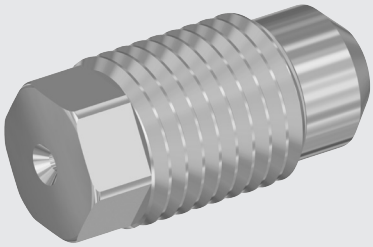








ROTARY, STRAIGHT, & TUBE CLEANING NOZZLES

Jetstream provides nozzles for different 40,000 psi applications in surface preparation and tube cleaning. All of our nozzles are made of stainless steel or hardened steel and treated to withstand ultra high pressures.

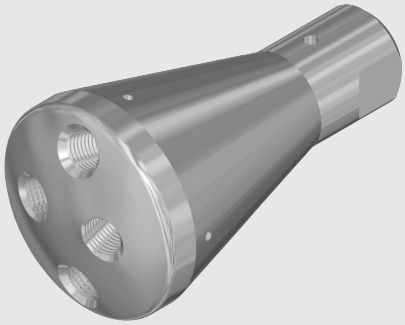
The Tornado nozzle is a rotary nozzle designed to use in conjunction with the Jetstream tornado gun or other air-powered rotary control guns. This nozzle utilizes the UHPX sapphire nozzles for the high output.

The UHP are replaceable sapphire nozzles that are installed in a special retainer for use. The UHPX nozzles are the premier high productivity sapphire nozzles and are used in a variety of 40,000 psi applications. The tapered orifice retainer reduces turbulence and provides a cohesive, aggressive waterjet.

Tube cleaning nozzles are drilled for each order and are designed for use at the end of a flex lance or rigid lance. The configurations and flow ratings are customized to each specific request per the job requirements. Jetstream has put together fourteen standard patterns; however, these can be drilled in any pattern requested and it has been determined that the nozzle will perform efficiently.

NOTE: Jetstream is an authorized distributor for many vendors and can offer additional specialized rotary, abrasive cutting and pipe cleaning nozzles are upon request.

US & Canada: 800-231-8192 or 832-590-1300



TORNADO SURFACE CLEANING NOZZLE

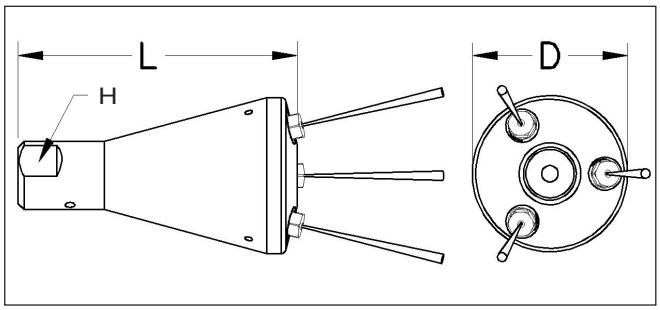
Designed for use with the Jetstream Tornado Gun and other air-powered rotary control guns.

- Button seal connection prevents wear and leakage of the nozzle
- Manufactured from heat-treated stainless steel
- Utilizes Jetstream UHPX or UHP replaceable nozzle tips
- Maximum Operating Pressure: 40,000 psi (2,750 bar)

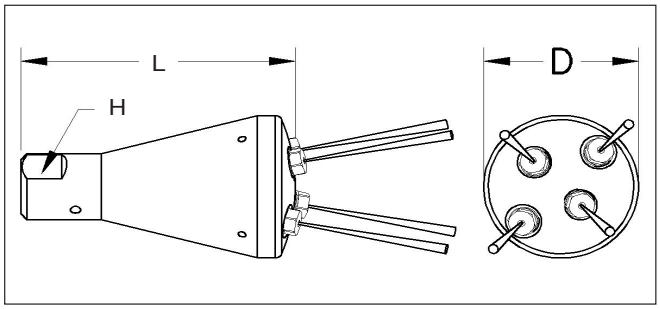
RELATED PARTS:

Part No. 53763 Nozzle Guard

Part No. 53502 Screw



PART NO. 53970: 3-JEWEL PATTERN



PART NO. 53971: STAGGERED 4-JEWEL PATTERN

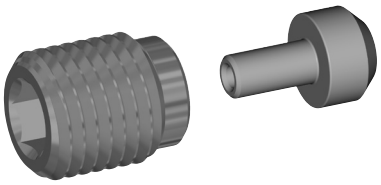
ASSEMBLY PART NO.	DIAMETER (D)		ASSEMBLY LENGTH (L)		FLATS (H)		INLET CONNECTION*	MAX. OPERATING PRESSURE		REPLACEMENT SEAL
	in	mm	in	mm	in	mm		psi	bar	
53970	1.99	50.5	3.60	91.4	1.29	0.59	9/16" Button Seal	40,000	2,750	
53971	1.90	48.3	3.37	85.6	1.16	0.53	9/16" Button Seal	40,000	2,750	**PART NO. J54059**

*See Page I-4 for connection specifications.

Jetstream® Subsidiary of Federal Signal Corporation

UHP NOZZLES

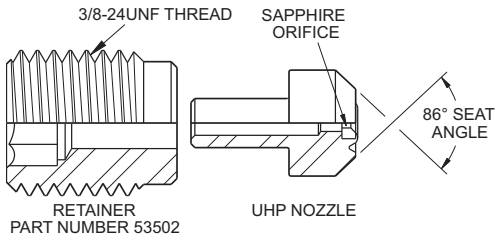
PART NO.	ORIFICE SIZE		NOZZLE FLOW, UHP NOZZLE @ SELECTED WORKING PRESSURES					
			30,000 psi (2,069 bar)		35,000 psi (2,414 bar)		40,000 psi (2,750 bar)	
	in	mm	gpm	lpm	gpm	lpm	gpm	lpm
54436	0.007	0.18	0.16	0.61	0.17	0.66	0.19	0.70
53506	0.008	0.20	0.21	0.80	0.23	0.86	0.24	0.92
54437	0.009	0.23	0.27	1.0	0.29	1.1	0.31	1.2
53507	0.010	0.25	0.33	1.2	0.36	1.3	0.38	1.4
54438	0.011	0.28	0.40	1.5	0.43	1.6	0.46	1.7
53508	0.012	0.30	0.47	1.8	0.51	1.9	0.55	2.1
53917	0.013	0.33	0.56	2.1	0.60	2.3	0.64	2.4
53509	0.014	0.36	0.65	2.4	0.70	2.6	0.74	2.8
54439	0.015	0.38	0.74	2.8	0.80	3.0	0.86	3.2
53511	0.016	0.41	0.84	3.2	0.91	3.4	0.97	3.7
53964	0.017	0.43	0.95	3.6	1.0	3.9	1.1	4.2
53512	0.018	0.46	1.1	4.0	1.2	4.4	1.2	4.7
53951	0.019	0.48	1.2	4.5	1.3	4.9	1.4	5.2
53513	0.020	0.51	1.3	5.0	1.4	5.4	1.5	5.8
54007	0.021	0.53	1.5	5.5	1.6	5.9	1.7	6.3
54008	0.022	0.56	1.6	6.0	1.7	6.5	1.8	7.0
53514	0.023	0.58	1.7	6.6	1.9	7.1	2.0	7.6
54009	0.024	0.61	1.9	7.2	2.0	7.7	2.2	8.3
53516	0.025	0.64	2.1	7.8	2.2	8.4	2.4	9.0



- Economically designed replaceable sapphire nozzle.
- Installed using a special retainer (see Related Items below).

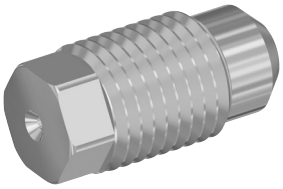
Related Items

53502 UHP Nozzle Retainer
53503 UHP Plug

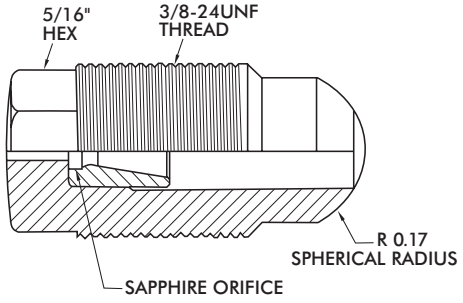


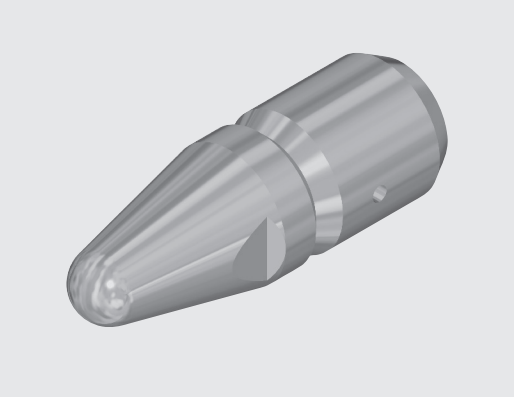
UHPX NOZZLES

54016	0.006	0.15	0.12	0.47	0.13	0.51	0.14	0.55
53873	0.007	0.18	0.17	0.64	0.18	0.69	0.20	0.74
53637	0.008	0.20	0.22	0.84	0.24	0.91	0.26	1.0
53874	0.009	0.23	0.28	1.1	0.30	1.1	0.32	1.2
53638	0.010	0.25	0.35	1.3	0.37	1.4	0.40	1.5
53875	0.011	0.28	0.42	1.6	0.45	1.7	0.48	1.8
53639	0.012	0.30	0.50	1.9	0.54	2.0	0.58	2.2
53876	0.013	0.33	0.59	2.2	0.63	2.4	0.68	2.6
53641	0.014	0.36	0.68	2.6	0.73	2.8	0.78	3.0
53902	0.015	0.38	0.78	3.0	0.80	3.2	0.90	3.4
53642	0.016	0.41	0.89	3.4	1.0	3.6	1.0	3.9
53903	0.017	0.43	1.0	3.8	1.1	4.1	1.2	4.4
53643	0.018	0.46	1.1	4.2	1.2	4.6	1.3	4.9
53877	0.019	0.48	1.3	4.7	1.4	5.1	1.4	5.5
53644	0.020	0.51	1.4	5.2	1.5	5.7	1.6	6.1
54017	0.021	0.53	1.5	5.8	1.7	6.2	1.8	6.7
54018	0.022	0.56	1.7	6.3	1.8	6.9	1.9	7.3
53646	0.023	0.58	1.8	6.9	2.0	7.5	2.1	8.0
54019	0.024	0.61	2.0	7.3	2.2	8.2	2.3	8.7
53647	0.025	0.64	2.2	8.2	2.3	8.9	2.5	9.5



- Premier high productivity sapphire nozzle.
- Tapered orifice retainer reduces turbulence and provides a cohesive, aggressive waterjet.





UHPE EVAPORATOR
TUBE CLEANING NOZZLES

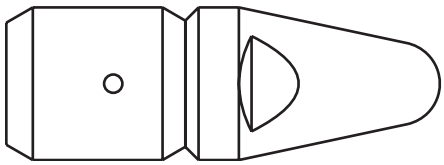
Designed for use with Flex or Rigid Lances

- High pressure female left-hand or right-hand threads
- Hardened stainless steel
- Custom drilled patterns available upon request

Nozzle Sizes (A)
Nozzles shown to actual size

1=1/4" THREADED NOZZLE BODY	
	
Connection Type*	1/4" HP Lance
Outside diameter	.375
Overall length	1.25

2=3/8" THREADED NOZZLE BODY	
	
Connection Type*	3/8" HP Lance
Outside diameter	.50
Overall length	1.59

9/16" THREADED NOZZLE BODY	
	
Connection Type*	9/16" HP Lance
Outside diameter	.75
Overall length	2.13

*Left hand or right hand threads must be specified when ordering.

UHPEX - ABBCC

UHPE — **Nozzle Type**

40,000 psi rated Jetstream
"Ultra-High Pressure Evaporator"

X — **Threads**

L = Left Hand Threads

R = Right Hand Threads

A — **Nozzle Size (A)**

1 = 1/4" threaded nozzle body

2 = 3/8" threaded nozzle body

3 = 9/16" threaded nozzle body

BB — **Nozzle Pattern (BB)**

Select the two digit number corresponding to the desired pattern. See Patterns chart on the next page.

When sizing a nozzle, it is important to note that each pattern has a corresponding minimum flow rating determined by the number of orifices in the pattern.

Example: 06 denotes a nozzle with 1 jet front, 3 jets drilled at the forward location, and 6 jets drilled at the back location. This particular pattern is available only for nozzles with a flow rating number of 4 or greater.

CC — **Nozzle Flow Rating (CC)**

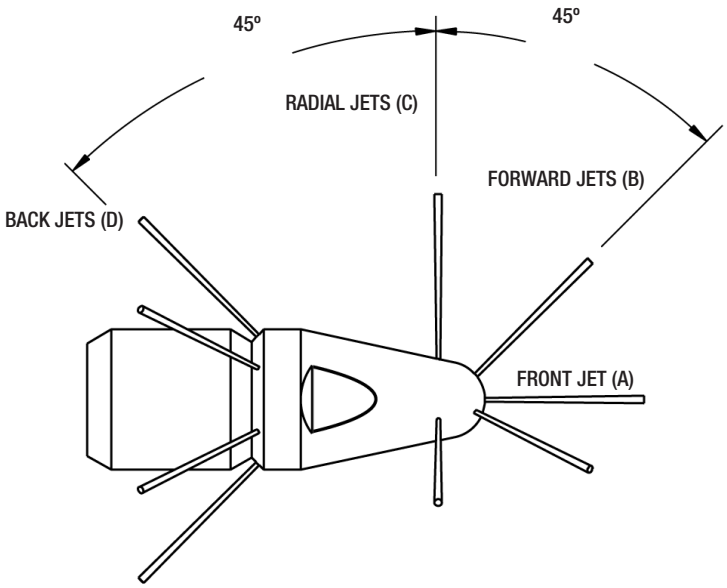
To select the correct flow number:

1) Determine the desired nozzle tip pressure.

2) Consult available flow charts for hoses, flexible lances, and rigid lances which will be used for the tube cleaning operation to determine the amount of flow through all components which will result in the desired tip pressure.

3) Find the column in the flow rating chart (next page) which corresponds to the desired tip pressure, and select the flow number corresponding to the row containing the desired flow rate within that column.

NOZZLE PATTERNS (BB)



JET LOCATOR	USE WITH	FLEXIBLE OR RIGID LANCE										RIGID LANCE ONLY				
	PATTERN	01	02	03	04	05	06	07	08	09		10	11	12	13	14
		NUMBER OF JETS AT EACH LOCATION														
	FRONT JETS (A)	1	1	1	1	1	1	1	1	1		1	1	1	1	1
	FORWARD JETS (B)					2	3					4				
	RADIAL JETS (C)							2	4	3		4	3	4	8	4
	BACK JETS (D)	3	4	6	8	4	6	4	4	6						
	TOTAL JETS	**4**	**5**	**7**	**9**	**7**	**10**	**7**	**9**	**10**		**9**	**4**	**5**	**9**	**4**
	MINIMUM FLOW RATING	0	1	2	3	2	4	2	3	4		3	0	1	3	0

NOZZLE FLOW RATING (CC)

FLOW RATING NUMBER	EQUIVALENT ORIFICE SIZE (IN)	FLOW (GPM/LPM) @ SPECIFIED PRESSURES (PSI/BAR)											
		30,000 psi	2,000 bar	32,000 psi	2,150 bar	34,000 psi	2,300 bar	36,000 psi	2,450 bar	38,000 psi	2,600 bar	40,000 psi	2,750 bar
0	0.029	2.8	10.4	2.9	10.8	3.0	11.2	3.1	11.5	3.1	11.9	3.2	12.2
1	0.033	3.6	13.3	3.7	13.8	3.8	14.2	3.9	14.7	4.0	15.2	4.1	15.6
2	0.038	4.7	17.6	4.9	18.3	5.0	18.9	5.2	19.5	5.3	20.1	5.5	20.7
3	0.042	5.8	21.5	6.0	22.3	6.2	23.1	6.3	23.8	6.5	24.5	6.7	25.3
4*	0.047	7.1	26.4	7.3	27.4	7.5	28.3	7.8	29.2	8.0	30.1	8.2	31.0
5	0.055	9.9	36.9	10.2	38.3	10.6	39.6	10.9	40.9	11.2	42.1	11.5	43.3
6	0.063	12.8	47.7	13.2	49.4	13.6	51.1	14.0	52.8	**	**	**	**
7	0.067	14.7	54.8	15.2	56.8	**	**	**	**	**	**	**	**
8	0.070	16.1	59.8	**	**	**	**	**	**	**	**	**	**

*Typical flow used. It is recommended not to exceed 8gpm for hand lancing.