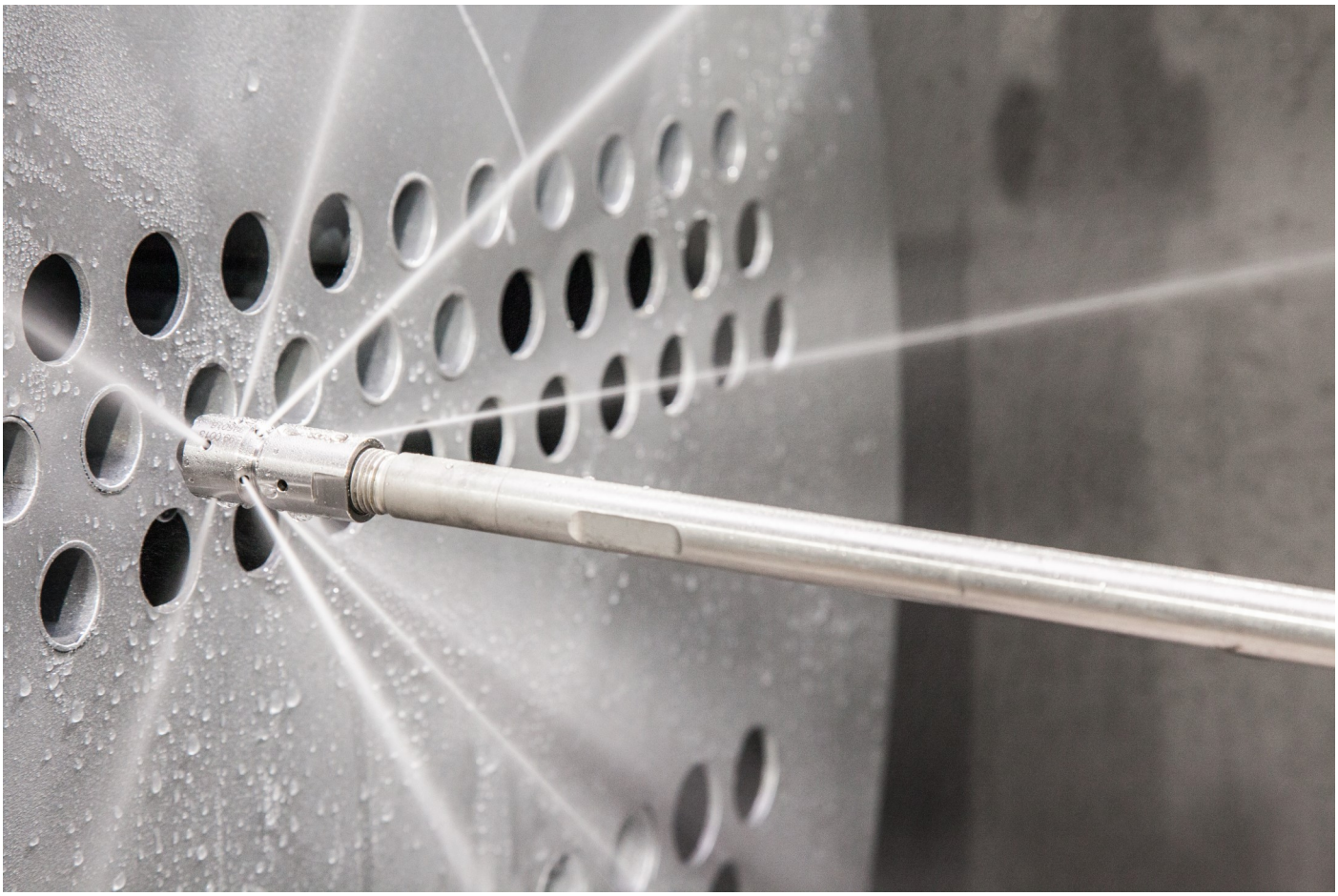
Tube Cleaning Solutions



HOEIT

CALDER

Runner Nozzles



HIGH EFFICIENCY TUBE CLEANING NOZZLE

PATENT PENDING DESIGN

WORKING PRESSURE UP TO 1500 BAR / 22K

BULLET SHAPE NOZZLE HEAD



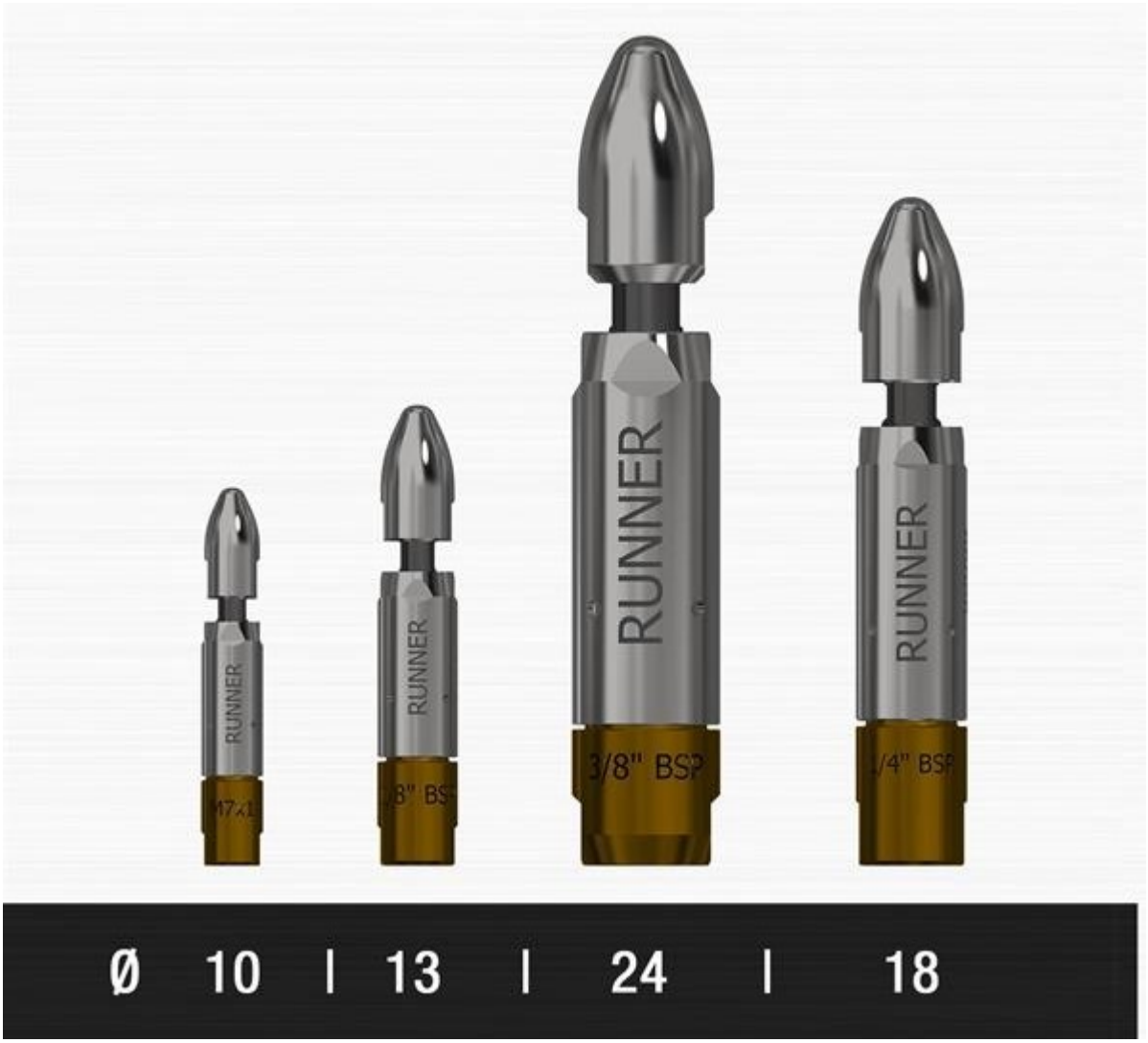
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Runner Nozzles—Parts



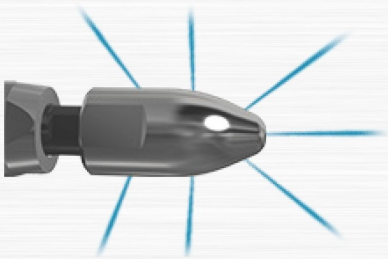
Runner Nozzles—Diameters



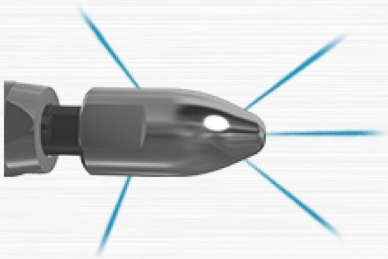
Runner Nozzles—Diameters

The Runner Nozzle is a rotating tube cleaning nozzle, designed for cleaning heat exchanger tubes.

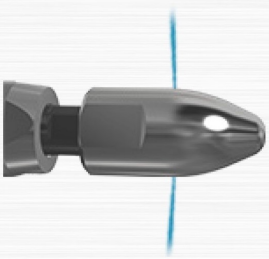
The Runner Nozzle has a maximum working pressure of 1500 bar / 22K and is available with various nozzle heads to remove hard plugs or scales.



STANDARD HEAD (S)



UNPLUGGER HEAD (U)



POLISHER HEAD (P)

* Custom design configurations available on request.



Runner Nozzles—Specifications

CONNECTION	MAX. PRESSURE	PART NO.
Runner 10 - Diameter Ø 10 mm - Length 60 mm		
M7x1 - Female	1500 bar 22K	RUN10-M7F-3
5/16” UNF - Male (65mm)	1500 bar / 22K	RUN10-516M-3
1/16” NPT - Female	1000 bar / 15K	RUN10-116NF-2
1/4” UNF LH - Female	1500 bar / 22K	RUN10-M4LF-3
1/4” UNF RH - Female	1500 bar / 22K	RUN10-M4RF-3
Runner 13 - Diameter Ø 13 mm - Length 75 mm		
1/8” BSP - Female	1500 bar / 22K	RUN13-18F-2
1/8” NPT - Female	1000 bar / 15K	RUN13-18NF-2
3/8” UNF LH - Female	1500 bar / 22K	RUN13-M6LF-2
3/8” UNF RH - Female	1500 bar / 22K	RUN13-M6RF-2
Runner 18 - Diameter Ø 18 mm - Length 101 mm		
1/4” BSP - Female	1500 bar / 22K	RUN18-14F-2
1/4” NPT - Female	1000 bar / 15K	RUN18-14NF-2
9/16” UNF LH - Female	1500 bar / 22K	RUN18-M9LF-2
9/16” UNF RH - Female	1500 bar / 22K	RUN18-M9RF-2
Runner 24 - Diameter Ø 24 mm - Length 134 mm		
3/8” BSP - Female	1500 bar / 22K	RUN24-38F-2
3/8” NPT - Female	1000 bar / 15K	RUN24-38NF-2
9/16” UNF LH - Female	1500 bar / 22K	RUN24-M9LF-2
9/16” UNF RH - Female	1500 bar / 22K	RUN24-M9RF-2



Runner Nozzle—selection table 1

CONNECTION	THREAD	LENGTH	DIAMETER	BAR	PART NUMBER
Runner 10					
M7x1	Female	60 mm	Ø 10 mm	1500 bar/ 22K	RUN10-M7F-3
5/16" UNF	Male	65 mm	Ø 10 mm	1500 bar/ 22K	RUN10-516M-3
1/16" NPT	Female	60 mm	Ø 10 mm	1000 bar/ 15K	RUN10-116NF-2
1/4" UNF LH	Female	60 mm	Ø 10 mm	1500 bar/ 22K	RUN10-M4LF-3
1/4" UNF RH	Female	60 mm	Ø 10 mm	1500 bar/ 22K	RUN10-M4RF-3
Runner 13					
1/8" BSP	Female	75 mm	Ø 13 mm	1500 bar/ 22K	RUN13-18F-2
1/8" NPT	Female	75 mm	Ø 13 mm	1000 bar/ 15K	RUN13-18NF-2
3/8" UNF LH	Female	75 mm	Ø 13 mm	1500 bar/ 22K	RUN13-M6LF-2
3/8" UNF RH	Female	75 mm	Ø 13 mm	1500 bar/ 22K	RUN13-M6RF-2
Runner 18					
1/4" BSP	Female	101 mm	Ø 18 mm	1500 bar/ 22K	RUN18-14F-2
1/4" NPT	Female	101 mm	Ø 18 mm	1000 bar/ 20K	RUN18-14NF-2
9/16" UNF LH	Female	101 mm	Ø 18 mm	1500 bar/ 22K	RUN18-M9LF-2
9/16" UNF RH	Female	101 mm	Ø 18 mm	1500 bar/ 22K	RUN18-M9RF-2
Runner 24					
3/8" BSP	Female	134 mm	Ø 24 mm	1500 bar/ 22K	RUN24-38F-2
3/8" NPT	Female	134 mm	Ø 24 mm	1000 bar/ 20K	RUN24-38NF-2
9/16" UNF LH	Female	134 mm	Ø 24 mm	1500 bar/ 22K	RUN24-M9LF-2
9/16" UNF RH	Female	134 mm	Ø 24 mm	1500 bar/ 22K	RUN24-M9RF-2



Runner Nozzle—selection table 2

PART NUMBER	TYPE	MAX. WORKING PRESSURE	FLOW
Runner 10			
RUN10-015-S1	Standard	1000-1500 bar/ 15-22K	24-30 lpm / 6,5-8 gpm
RUN10-015-U1	Unplugger	700-1000 bar/ 10-15K	19-23 lpm / 5-6 gpm
RUN10-015-U2	Unplugger	1000-1500 bar/ 15-22K	21-25 lpm / 5.5-6.5 gpm
RUN10-015-P1	Polisher	700-1000 bar/ 10-15K	17-21 lpm / 4.5-5.5 gpm
RUN10-015-P2	Polisher	1000-1500 bar/ 15-22K	19-23 lpm / 5-6 gpm
Runner 13			
RUN13-015-S1	Standard	700-1000 bar / 10-15K	30-38 lpm / 8-10 gpm
RUN13-015-S3	Standard	1000-1500 bar / 15-22K	30-38 lpm / 8-10 gpm
RUN13-015-U1	Unplugger	700-1000 bar / 10-15K	27-34 lpm / 7-9 gpm
RUN13-015-U3	Unplugger	1000-1500 bar / 15-22K	27-34 lpm / 7-9 gpm
RUN13-015-P1	Polisher	700-1000 bar / 10-15K	27-34 lpm / 7-9 gpm
RUN13-015-P3	Polisher	1000-1500 bar / 15-22K	27-34 lpm / 7-9 gpm

Runner 18 and Runner 24 on next page

Runner Nozzle—selection table 2 continued

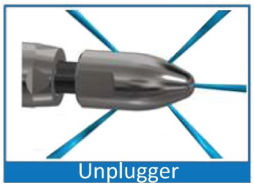
PART NUMBER	TYPE	MAX. WORKING PRESSURE	FLOW
Runner 18			
RUN18-015-S1	Standard	700-1000 bar / 10-15K	42-53 lpm / 11-14 gpm
RUN18-015-S2	Standard	700-1000 bar / 10-15K	30-38 lpm / 8-10 gpm
RUN18-015-S3	Standard	1000-1500 bar / 15-22K	42-53 lpm / 11-14 gpm
RUN18-015-U1	Unplugger	700-1000 bar / 10-15K	42-53 lpm / 11-14 gpm
RUN18-015-U2	Unplugger	700-1000 bar / 10-15K	30-38 lpm / 8-10 gpm
RUN18-015-U3	Unplugger	1000-1500 bar / 15-22K	42-53 lpm / 11-14 gpm
RUN18-015-U4	Unplugger	1000-1500 bar / 15-22K	30-38 lpm / 8-10 gpm
RUN18-015-P1	Polisher	700-1000 bar / 10-15K	42-53 lpm / 11-14 gpm
RUN18-015-P2	Polisher	700-1000 bar / 10-15K	30-38 lpm / 8-10 gpm
RUN18-015-P3	Polisher	1000-1500 bar / 15-22K	42-53 lpm / 11-14 gpm
RUN18-015-P4	Polisher	1000-1500 bar / 15-22K	30-38 lpm / 8-10 gpm
Runner 24			
RUN24-015-P1	Polisher	700-1000 bar / 10-15K	76-95 lpm / 20-25 gpm
RUN24-015-P2	Polisher	700-1000 bar / 10-15K	57-72 lpm / 15-19 gpm
RUN24-015-P3	Polisher	700-1000 bar / 10-15K	45-53 lpm / 12-14 gpm
RUN24-015-P4	Polisher	1000-1500 bar / 15-22K	68-80 lpm / 18-21 gpm
RUN24-015-P5	Polisher	1000-1500 bar / 15-22K	57-64 lpm / 15-17 gpm
RUN24-015-P6	Polisher	1000-1500 bar / 15-22K	45-53 lpm / 12-14 gpm
RUN24-015-S1	Standard	700-1000 bar / 10-15K	76-95 lpm / 20-25 gpm
RUN24-015-S2	Standard	700-1000 bar / 10-15K	57-72 lpm / 15-19 gpm
RUN24-015-S3	Standard	700-1000 bar / 10-15K	45-53 lpm / 12-14 gpm
RUN24-015-S4	Standard	1000-1500 bar / 15-22K	68-80 lpm / 18-21 gpm
RUN24-015-S5	Standard	1000-1500 bar / 15-22K	57-64 lpm / 15-17 gpm
RUN24-015-S6	Standard	1000-1500 bar / 15-22K	45-53 lpm / 12-14 gpm



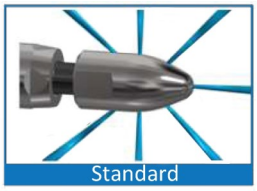
Tube Cleaning Flow Chart

Step 1: size tube

⌀12-16mm	⌀15-25mm	⌀22-33mm
Step 2: Pressure/ Thread (body)	**Step 2: Pressure/ Thread (body)**	**Step 2: Pressure/ Thread (body)**
1000 Bar/15k psi - 1/16”NPT F	1000 Bar/15k psi - 1/8”NPT F	1000 Bar/15k psi - 1/4”NPT F
1400 Bar/20k psi 5/16”UNF M 1/4”UNF LH F 1/4” UNF RH F M7 F	1400 Bar/20k psi 1/8”BSP F 3/8”UNF LH F 3/8” UNF RH F	1400 Bar/20k psi 1/4”BSP F 9/16”UNF LH F 9/16” UNF RH F
Step 3: Head	**Step 3: Head**	**Step 3: Head**
Flow 17-21 l/m P1: polisher Flow 19-23 l/m U1: unplugger	Flow 19-23 l/m P2: polisher Flow 21-25 l/m U2: unplugger Flow 27-30 l/m S1: standard	Flow 27-34 l/m P1: polisher U1: unplugger Flow 30-38 l/m S1: standard	Flow 27-34 l/m P3: polisher U3: unplugger Flow 30-38 l/m S3: standard	Flow 30-38 l/m P2: polisher U2: unplugger S2: standard Flow 42-53 l/m P1: polisher S1: standard U1: unplugger	Flow 30-38 l/m P4: polisher U4: unplugger S4: standard Flow 42-53 l/m P3: polisher U3: unplugger S3: standard


Unplugger

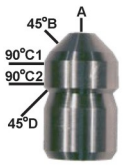

Polisher


Standard

Tube Nozzles—15K

15K AP Standard Nozzles

The economical APS stainless steel AP Standard style nozzles come in pressure ratings to match your flex or rigid lances. The 15K-AP features FNPT threads to go with lances with MNPT threads, a slimline design that makes it easy to move through almost any size of tubing, and a wide range of options for precision drilled orifices.



Part #	15K-AP FNPT	Diameter	Length
15-001-001	1/16" NPT	0.375" (9.53mm)	0.875" (22.23mm)
15-001-011	1/8" NPT	0.468" (11.91mm)	0.937" (23.81mm)
15-001-016	1/8" NPT	0.500" (13.88mm)	1.250" (31.75mm)
15-001-021	1/4" NPT	0.625" (15.88mm)	1.250" (31.75mm)
15-001-031	3/8" NPT	0.875" (22.23mm)	1.437" (36.50mm)
15-001-041	1/2" NPT	1.000" (25.40mm)	1.625" (41.28mm)
15-001-051	3/4" NPT	1.250" (31.75mm)	2.000" (50.80mm)
15-001-061	1" NPT	1.625" (41.28mm)	2.250" (57.15mm)

15K FNPT Nozzles

The **FNPT nozzles** are to be used in rotary applications for the removal of hardened plugs in heat exchanger tubes. This 15K nozzle NPT threads to go with lances with MNPT threads, a slimline design that makes it easy to move through almost any size of tubing, and a wide range of options for precision drilled orifices.

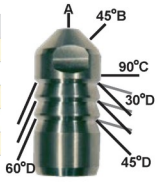


Part #	15K-FNPT	Diameter	Length
15-002-001	1/16" FNPT	0.375" (9.53mm)	0.875" (22.23mm)
15-002-011	1/8" FNPT	0.468" (11.91mm)	0.937" (23.81mm)
15-002-021	1/4" FNPT	0.625" (15.88mm)	1.250" (31.75mm)
15-002-031	3/8" FNPT	0.875" (22.23mm)	1.437" (36.50mm)
15-002-041	1/2" FNPT	1.000" (25.40mm)	1.625" (41.28mm)

15K Multi-Groove Nozzles

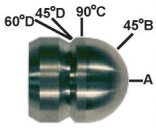
The **APS** high production stainless steel Multi-Groove nozzles come in pressure ratings to match your flex or rigid lances. The 15K-MG features FNPT threads to go with lances with MNPT threads. The Multi-Grooves have wrench flats for easy installation on the lance, and offer many options for up to 4 rows of precision drilled orifices. Please specify drilling pattern, pressure and flow when ordering.

Part #	15K-MG FNPT	Diameter	Length
15-003-001	1/16" NPT	0.375" (9.53mm)	1.281" (32.54mm)
15-003-011	1/8" NPT	0.468" (11.91mm)	1.625" (41.28mm)
15-003-021	1/4" NPT	0.625" (15.88mm)	1.625" (41.28mm)
15-003-031	3/8" NPT	0.875" (22.23mm)	1.875" (47.62mm)
15-003-041	1/2" NPT	1.000" (25.40mm)	2.043" (51.89mm)



15K Button Tip Flex Lance Nozzles

The **APS** Button-Tip compact stainless steel nozzles come in pressure ratings to match your flex lances. They are ideal for cleaning small diameter tubes with small radius bends. The 15K-BT features FNPT threads to go with lances with MNPT threads. All offer many options for precision drilled orifices.



Part #	15K-BT FNPT	Diameter	Length
15-004-001	1/16" NPT	0.375" (9.53mm)	0.500" (12.70mm)
15-004-011	1/8" NPT	0.468" (11.91mm)	0.590" (14.98mm)
15-004-021	1/4" NPT	0.625" (15.88mm)	0.825" (20.96mm)
15-004-031	3/8" NPT	0.875" (22.23mm)	1.000" (25.40mm)
15-004-041	1/2" NPT	1.000" (25.40mm)	1.125" (28.58mm)
15-004-051	3/4" NPT	1.250" (31.75mm)	1.625" (41.27mm)

15K Penetrator Nozzles

The **APS** Penetrator stainless steel nozzles are used with rigid or flex lances with MNPT threads. The rounded nose shape permits a range of forward and side drilling patterns while the backwards facing ridge allows a large number of pulling orifices to more efficiently clean fouled tubing. Wrench flats allow for easy installation.



Part #	15K-PT FNPT	Diameter	Length
15-005-001	1/16" NPT	0.375" (9.53mm)	1.312" (33.32mm)
15-005-011	1/8" NPT	0.468" (11.91mm)	1.500" (38.10mm)
15-005-021	1/4" NPT	0.625" (15.88mm)	1.750" (44.45mm)
15-005-031	3/8" NPT	0.875" (22.23mm)	1.812" (46.02mm)
15-005-041	1/2" NPT	1.000" (25.40mm)	2.062" (52.37mm)

15K Evaporator Nozzles

The **APS** Evaporator stainless steel nozzles are used with rigid or flex lances with MNPT threads. The design permits a range of forward and side drilling patterns while the backwards facing ridge allows a large number of pulling orifices to more efficiently clean fouled tubing. Wrench flats allow for easy installation.



Part #	15K-EVNPT	Diameter	Length
15-006-001	1/16" NPT	0.375" (9.53mm)	1.343" (34.11mm)
15-006-011	1/8" NPT	0.468" (11.91mm)	1.437" (36.50mm)
15-006-021	1/4" NPT	0.625" (15.88mm)	1.687" (42.85mm)
15-006-031	3/8" NPT	0.875" (22.23mm)	1.812" (46.02mm)
15-006-041	1/2" NPT	1.000" (25.40mm)	2.060" (52.32mm)

15K TLX Nozzles

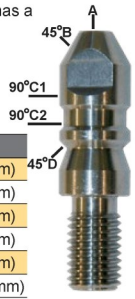
The **APS** stainless steel TLX nozzles come in pressure ratings to match your flex or rigid lances. The 15K-TLX features FNPT threads to go with lances with MNPT threads.
All have wrench flats for easy installation on the lance.
All offer many options for 3 or 4 rows of precision drilled orifices.



Part #	15K-TLX NPT	Diameter	Length
15-007-001	1/16" NPT	0.375" (9.53mm)	1.468" (37.29mm)
15-007-011	1/8" NPT	0.468" (11.91mm)	1.625" (41.27mm)
15-007-021	1/4" NPT	0.625" (15.88mm)	1.875" (47.63mm)
15-007-031	3/8" NPT	0.875" (22.23mm)	2.813" (71.45mm)
15-007-041	1/2" NPT	1.000" (25.40mm)	3.000" (76.20mm)
15-007-051	3/4" NPT	1.000" (25.40mm)	3.000" (76.20mm)

15K MMS Nozzles

The **APS** stainless steel Male Machine Screw nozzles come in pressure ratings to match your flex or rigid lances with female machine screw threads (UNF or UNC). The compact 15K-MMS has a special slimline design that assures that the outside diameter matches the OD of the lance, and have wrench flats for easy installation. All offer many options for 3 or 4 rows of precision drilled orifices.



Part #	15K-MMS NPT	Diameter	Length
15-008-000	10-24 UNF	0.250" (6.35mm)	1.062" (26.97mm)
15-008-001	12-28 UNF	0.250" (6.35mm)	1.062" (26.97mm)
15-008-002	1/4"-28 UNF	0.312" (7.92mm)	1.250" (31.75mm)
15-008-003	5/16"-24 UNF	0.406" (10.32mm)	1.437" (36.50mm)
15-008-005	3/8"-24 UNF	0.562" (14.27mm)	1.750" (44.45mm)
15-008-006	1/2"-20 UNF	0.687" (17.45mm)	1.875" (47.625mm)

15K Thruster Nozzles

The **APS** Thruster stainless steel nozzles are used with flex lances in conjunction with another tube cleaning nozzle. It allows one to "stack" the nozzles so that additional jets can be used for a more thorough cleaning.

Part #	15K-Thruster	Diameter	Length
15-101-001	1/16" NPT	0.375" (9.53mm)	1.250" (31.75mm)
15-101-011	1/8" NPT	0.468" (11.89mm)	1.437" (36.50mm)
15-101-021	1/4" NPT	0.625" (15.88mm)	1.500" (38.10mm)
15-101-031	3/8" NPT	0.875" (22.23mm)	1.843" (46.81mm)
15-101-041	1/2" NPT	1.0" (25.40mm)	2.0" (50.80mm)
15-101-051	3/4" NPT	1.25" (31.75mm)	2.250" (57.15mm)
15-101-061	1" NPT	1.625" (41.28mm)	2.437" (61.90mm)



15K Standard Nozzles with Carbide Blade

The **APS** tungsten carbide tipped tube nozzles are to be used in rotary applications for the removal of hardened plugs in heat exchanger tubes.



Part #	15K-SCBN	Diameter	Length
15-029-101	1/16" NPT	0.375" (9.53mm)	0.875" (22.23mm)
15-029-111	1/8" NPT	0.468" (11.89mm)	0.937" (23.80mm)
15-029-121	1/4" NPT	0.625" (15.88mm)	1.250" (31.75mm)
15-029-131	3/8" NPT	0.875" (22.23mm)	1.437" (36.50mm)
15-029-141	1/2" NPT	1.0" (25.40mm)	1.625" (41.28mm)

Tube Nozzles—20K

20K TLX Nozzles

The APS stainless steel TLX Nozzles come in pressure ratings to match your flex or rigid lances. The 20K-TLX have Autoclave-type MP threads. All have wrench flats for easy installation on the lance. All offer many options for 3 or 4 rows of precision drilled orifices. Please specify drilling pattern, pressure and flow when ordering.



LH Part #	RH Part #	20K-TLX MP	Dimensions
16-004-001	16-004-101	1/4" MP	.375" OD x 1.375" L
16-005-001	16-005-101	3/8" MP	.468" OD x 1.650" L
16-006-001	16-006-101	9/16" MP	.687" OD x 2.063" L

20K MP Male Standard Nozzles

The 20K-MP Male Standard Nozzle is designed to go with flex or rigid lances with either right or left hand Autoclave-type medium pressure threads, a special seating design with wrench flats for easy installation, and offer a wide range of options for precision drilled orifices. Please specify drilling pattern, pressure and flow when ordering.



LH Part #	RH Part #	20K-MP-M	Dimensions
16-020-004	16-020-001	1/4"-28 MP (M)	.375" OD x 1.250" L
16-020-005	16-020-002	3/8"-24 MP (M)	.500" OD x 1.500" L
16-020-006	16-020-003	9/16"-18 MP (M)	.625" OD x 1.625" L



Part ID	Description	Dimensions
16-020-009	BLANK, BALL TYPE, 13MM TYPE M	(20K MAWP) X 1-1/8" DIA. X 1-3/4" LONG NOZZLE

20K Standard Nozzles with Tungsten Carbide Blade

The APS tungsten carbide tipped tube nozzles are to be used in rotary applications for the removal of hardened plugs in heat exchanger tubes. Please specify drilling pattern, pressure and flow when ordering.



RH Part #	20K-MP-M	Dimensions
16-001-221	1/4" MP RH	.375" OD x 1.225" L
16-002-221	3/8" MP RH	.468" OD x 1.375" L
16-003-221	9/16" MP RH	.750" OD x 1.625" L

20K MP Standard Nozzles

The economical APS stainless steel MP Standard style nozzles come in pressure ratings to match your flex or rigid lances. The 20K-MP Standard Nozzle is designed to go with lances with either right or left hand Autoclave-type medium pressure threads, a special seating design that eliminates the requirement for gland nuts and collars, wrench flats for easy installation, and offer a wide range of options for precision drilled orifices. Please specify drilling pattern, pressure and flow when ordering.



LH Part #	RH Part #	20K-MP STD.	Dimensions
16-001-001	16-001-101	1/4" MP	.375" OD x 1.225" L
16-002-001	16-002-101	3/8" MP	.468" OD x 1.375" L
16-003-001	16-003-101	9/16" MP	.687" OD x 1.625" L
16-010-001	16-010-101	3/4" MP	1.00" OD x 1.875" L

20K Button Tip Nozzles

APS Button-Tip compact stainless steel nozzles are ideal for cleaning small diameter tubes with small radius bends. The 20K-BT have Autoclave-type MP threads, and offer many options for precision drilled orifices. Please specify drilling pattern, pressure and flow when ordering.



LH Part #	RH Part #	20K-BT MP	Dimensions
16-007-001	16-007-101	1/4" MP	.375" OD x 0.875" L
16-008-001	16-008-101	3/8" MP	.468" OD x 1.000" L
16-009-001	16-009-101	9/16" MP	.687" OD x 1.125" L
16-021-001	16-021-101	3/4" MP	1.00" OD x 1.375" L

Tube Nozzles—40K

40K HP Standard Nozzles

The economical **APS** stainless steel **HP Standard** style nozzles come in pressure ratings to match your flex or rigid lances. The **40K-HP Standard Nozzle** is designed to go with lances with either right or left hand Autoclave-type high pressure threads, a special seating design that eliminates the requirement for gland nuts and collars, wrench flats for easy installation, and offer a wide range of options for precision drilled orifices.

Please specify drilling pattern, pressure and flow when ordering.



LH Part #	RH Part #	40K-STD HP	Dimensions
16-011-001	**16-011-101**	1/4" HP	.375" OD x 1.225" L
16-012-001	**16-012-101**	3/8" HP	.468" OD x 1.375" L
16-013-001	**16-013-101**	9/16" HP	.687" OD x 1.625" L

40K Button Tip Flex Lance Nozzles

The **APS Button-Tip** compact stainless steel nozzles come in pressure ratings to match your flex lances. They are ideal for cleaning small diameter tubes with small radius bends. The 40K-BT nozzles have Autoclave-type HP threads. All offer many options for precision drilled orifices.

Please specify drilling pattern, pressure, flow and whether right or left hand threaded when ordering.



LH Part #	RH Part #	40K-BT HP	Dimensions
16-014-001	**16-014-101**	1/4" HP	.375" OD x 1.016" L
16-015-001	**16-015-101**	3/8" HP	.468" OD x 1.375" L
16-016-001	**16-016-101**	9/16" HP	.687" OD x 1.562" L

Part ID	Description	Dimensions
16-020-007	10-32 RH MALE MP/HP	.250" OD x 1.125" L BLANK (40K)
16-020-008	NOZZLE, BALL TYPE, 9/16"-18 LHM	.680 X 1.00" OD



Part ID	Description
16-022-003	Blank, 5.16" 24UH RH (F) ADMAC 40K Nozzle (.375 O.D.) ADMAC STYLE



40K TLX Nozzles

The **APS** stainless steel **TLX Nozzles** come in pressure ratings to match your flex or rigid lances. The 40K-TLX have Autoclave-type HP threads. All have wrench flats for easy installation on the lance. All offer many options for 3 or 4 rows of precision drilled orifices.



LH Part #	RH Part #	40K-TLX HP	Dimensions
16-017-001	**16-017-101**	1/4" HP	.375" OD x 1.337" L
16-018-001	**16-018-101**	3/8" HP	.468" OD x 1.650" L
16-019-001	**16-019-101**	9/16" HP	.687" OD x 2.000" L

20K-40K Male Machine Thread Lance Nozzles

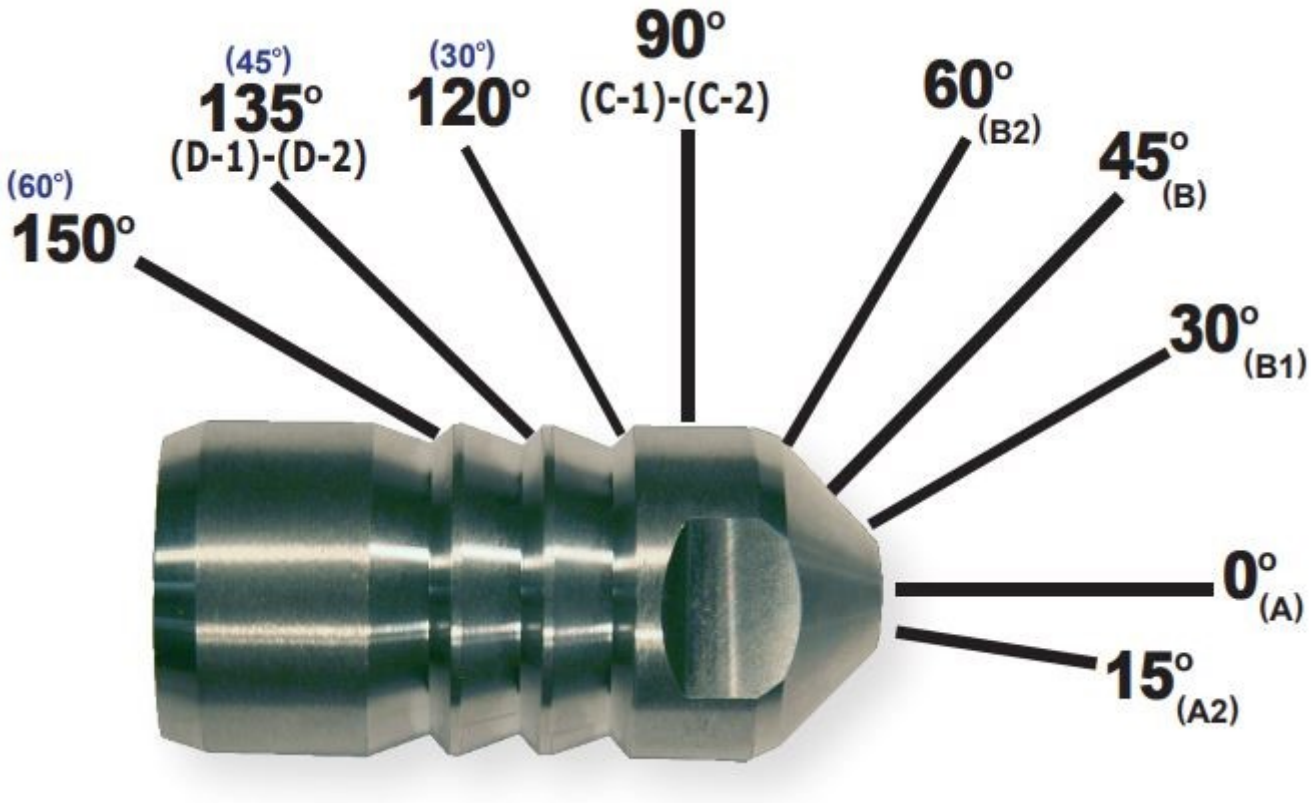
The **APS Button-Tip** compact stainless steel nozzles come in pressure ratings to match your flex lances. They are ideal for cleaning small diameter tubes with small radius bends. The **40K-MMT** have Autoclave-type HP threads, and offer many options for precision drilled orifices.

Please specify drilling pattern, pressure and flow when ordering.

LH Part #	RH Part #	40K-MMT HP	Dimensions
16-020-004	**16-020-001**	1/4"-28 HP	.375" OD x 0.875" L
16-020-005	**16-020-002**	3/8"-24 HP	.468" OD x 1.000" L
16-020-006	**16-020-003**	9/16"-18 HP	.687" OD x 1.125" L
	16-020-007	10-32 HP	.687" OD x 1.125" L
16-020-010	BLANK, 1/4"-28 HP RHM 40K SHORT		BUTTON NOZZLE SS



Typical Tube Nozzle Drill Patterns





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Tube Cleaning Solutions

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