

Procedure for Pop-A-Plug® Air Cooled Heat Exchanger (Fin Fan) Installation

WARNING

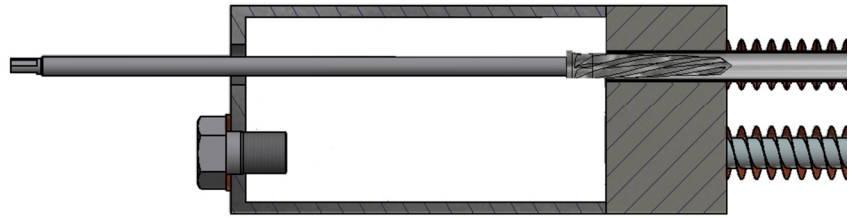
- ⚠ Pop-A-Plugs must be installed in the heat exchanger tube section where the tube has been expanded into the tubesheet. In cases where the heat exchanger tube has been removed, the Pop-A-Plug can be installed directly into the tubesheet.
- ⚠ If the tube is not expanded into the tubesheet and CPI/Perma plugs are used, maximum Tube ID limits are reduced by 0.02" (0.51 mm).
- ⚠ Installed Pop-A-Plugs should not project beyond the tubesheet face unless on the perimeter or in a thin tubesheet. In cases where the pin of an installed plug extends beyond the tubesheet, extra caution must be taken to ensure the pin is not struck by another object.
- ⚠ Remove tube sleeves or shields prior to tube preparation and plugging.
- ⚠ Never hit the Pop-A-Plug Pin with a hammer or heavy object.
- ⚠ Failure to remove weld droop prior to installing the Pop-A-Plug will result in a false reading with the Go/No Go Gage. This false Go/No Go Gage reading will direct the user to install an undersized Pop-A-Plug which will either leak initially or later.

Use the procedure outlined below to properly prep the tube ID and install Pop-A-Plug plugs through the header box of your Air Cooled Heat Exchanger.

Step/Action

Additional Action/Information/Result

1. If tube is welded to sheet, remove any weld droop protruding into the tube ID with a Tapered Reamer with Reamer Extension. Removing weld droop is a fairly quick step and should only take 15 – 30 seconds to remove. Only remove the weld droop (burr) projecting into the tube ID.

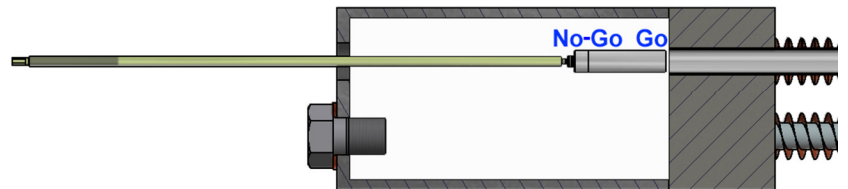


Note A straight reamer should never be used. Extended Tapered reamers are available. See Tables 2 and 3 for correct sizing information.

Install tapered reamer in a variable speed drill and lightly lubricate. The small end of tapered reamer should fit into tube ID and large end should not. The reamer should be operated in the following manner:

- Keep reamer axis parallel to tube axis and lightly squeeze the trigger on the drill to a low rpm in short intervals.
- Use slight forward pressure. If too much pressure is used the reamer may catch.
- Never force the reamer into the tube ID.

2. Install the Threaded Go/No-Go Gage onto the Gage Extension Rod and take initial tube ID measurement with Go/No-Go Gage.



Small end of gage should fit in tube to installation depth and large end should not.

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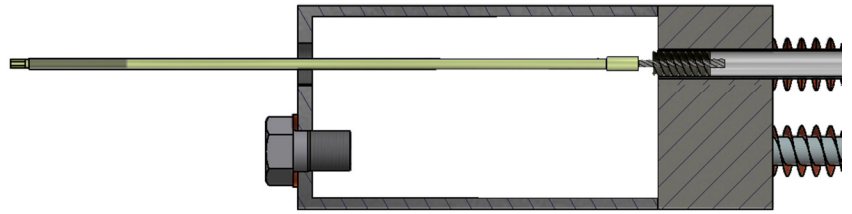
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Step/Action

Additional Action/Information/Result

3. Select the smallest of the Tube Preparation Brushes furnished in the Brush Kit that interferes with the tube ID and thread it onto the Brush Extension. Operate the brush with a power drill for at least 30 seconds (5 seconds for 90/10 Cu/Ni and Brass tubes). Brush using a smooth back and forth motion from the tube opening through the installation depth evenly to prevent a tapered condition. If as a result of uneven brushing the tube entrance is smaller, the installed plug may be undersized and leak.

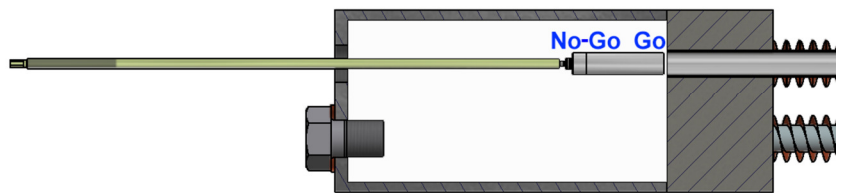


Do not use an oversized brush, force the brush into the tube, or bend the stem. These actions may break the stem and cause deep grooves in the tube. Do not reverse drill because bristles will fall out. A Brush lubricant/Spark inhibitor Lube-A-Tube is available from the factory if required. This should be used when brushing stainless steel tubes or brush may wear out quickly. Brush lubricant / Spark inhibitor should be cleaned from tube before plugging.

4. Carefully inspect tube for scale, pitting or other defects. These conditions must be corrected for plug to seal properly.

A properly brushed tube should have a shiny metallic finish. Deeply pitted tubes may require using larger preparation brushes and plugs.

5. Take a second measurement with Go/No-Go Gage to installation depth to confirm Pop-A-Plug sizing.

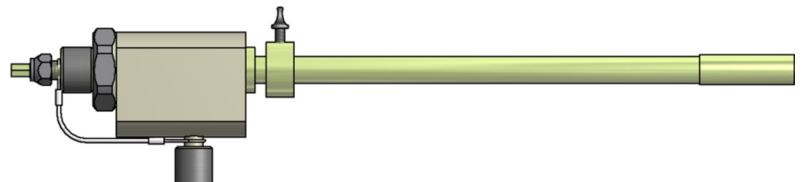


Brushing may remove enough tube material to require the next larger size gage and Pop-A-Plug.

Note: If No-Go (larger) end of gage fits into tube to installation depth, the next larger plug size is needed.

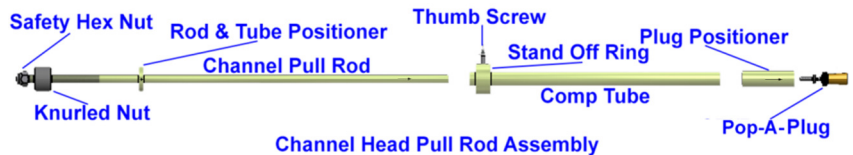
6. Assemble the Hydraulic Ram Package to be used.
7. Remove Safety Hex Nut and Knurled Nut and insert the assembled Channel Head Pull Rod Assembly into Hydraulic Ram. Thread Knurled Nut onto Pull Rod removing all slack in assembly. Secure Safety Cable on Pull Rod and thread Safety Hex Nut onto Pull Rod.

- See DC4000 for detailed Hydraulic Ram Package Assembly instructions.



Failure to correctly seat and tighten hydraulic fittings may cause ram piston to lock in extended position after activation.

8. Thread the Pop-A-Plug size that matches the correct Go/No-Go Gage size onto the appropriate Pull Rod Assembly (See Tables 2 and 3 for part numbers).



All arrows on Channel Head Pull Rod Assembly parts should point toward the Pop-A-Plug.



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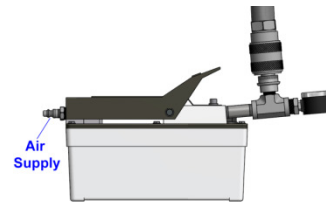
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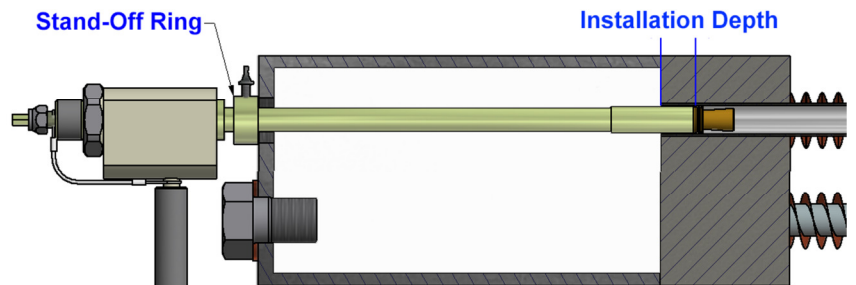
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Step/Action**Additional Action/Information/Result**

9. Attach air supply to pump.



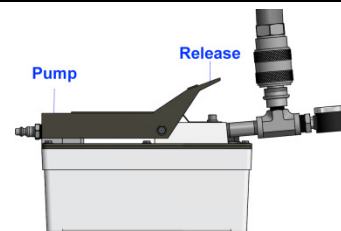
10. Insert Pop-A-Plug into prepared tube to the recommended installation depth. If the thickness of the tubesheet or the expanded length of the tube cannot accommodate the recommended tube installation depth, install the plug as deep as possible while keeping the Pop-A-Plug positioned within the tubesheet.



<i>If</i>	<i>then</i>
using Pop-A-Plug CPI/Perma plugs,	the recommended installation depth is 1" (25.4 mm) .
using Pop-A-Plug P2 plugs,	the recommended installation depth is 1 3/4" (44.5 mm) .

Never stand directly behind Ram. Guide Ram with hands to avoid cocking Pop-A-Plug.

11. Depress Hydraulic Pump pedal marked Pump, Hydraulic Ram will stroke.



If plug does not "POP" and PsiG exceeds 7000 PsiG (483 BarG) on gage, STOP. Depress front of Hydraulic Pump pedal and Hydraulic Ram will retract. If the ring has not contacted the tube ID and plug can be removed from the tube on this first stroke you may have an **UNDERSIZED PLUG**. Otherwise tighten knurled nut and depress pump pedal. If plug does not "POP", on second stroke an **UNDERSIZED PLUG** has been installed, stop and contact EST Group Customer Service, or your local representative for assistance.

12. After Pop-A-Plug installation, remove the Breakaway stub from the installed Pop-A-Plug by turning counter-clockwise.

Note: Weeping during hydro test indicates small surface imperfections in the tube that are difficult to see. A large leak indicates a surface imperfection in the tube such as scarring from a drill used to remove a sleeve or tapered pin that should have been seen in step 3. In either case, remove Pop-A-Plug using EST Group Plug Removal Tool and repeat procedure using next larger Tube Preparation Brush and Pop-A-Plug size.

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Questions?

Contact EST Group Customer Service at any of the following locations with questions.

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EST Group provides a complete range of repair products, services, and replacement parts covering the life cycle of heat exchangers and condensers; additionally EST Group provides products and services to facilitate pressure testing pipe, piping systems, pressure vessels, and their components. Visit EST Group on the Internet at www.estgroup.cwfc.com.

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Table 1: Operator Troubleshooting Guide

Problem	Cause	Solution
Imperfections such as pitting, gouges or scratches still exist within the tube ID after brushing.	Deep imperfections can exist from normal heat exchanger operation or maintenance work.	Continue brushing with Tube Preparation Brush until little or no resistance is encountered. If imperfections still exist, move up to the next Tube Preparation Brush size and repeat tube preparation steps.
Plug Positioner flares or becomes stuck on installed plug. Breakaway fractures on side opposite the undercut. (Normally the Breakaway fractures at the undercut) Pop-A-Plug does not "POP" after second stroke of hydraulic ram.	Undersized Pop-A-Plug The Pop-A-Plug was installed beyond the thickness of the tubesheet Heat Exchanger tube is not expanded (rolled or similar) into the tubesheet.	Gage or measure tube ID at location where Pop-A-Plug will be installed. Refer to heat exchanger datasheet to determine tubesheet thickness. Install Pop-A-Plug within the tubesheet length. Roller expand heat exchanger tube at Pop-A-Plug installation depth otherwise contact EST Group for assistance.
Go/No-Go Gage indicates proper Pop-A-Plug size, but problems related to an undersized Pop-A-Plug occur.	Weld droop has not been removed. Heat exchanger tube is only "soft rolled" for a short distance and is expanded to a larger tube ID beyond the "soft roll" length.	Remove weld droop using tapered reamer. Using Tube Preparation Brush, enlarge the heat exchanger tube so that the tube entrance and "soft roll" area has same ID as at the Pop-A-Plug installation depth.
Hydraulic Ram is stuck in extended position and will not retract.	Mating quick connects between Hydraulic Ram and hose or between Hydraulic Pump and hose are not fully engaged and tightened. Piston within Hydraulic Ram has been damaged	Using gripping pliers turn locking collar on female quick connect to further engage connection. Continue tightening until Hydraulic Ram retracts. Return Hydraulic Ram to EST Group for repair.
Stem of Tube Preparation Brush fractures	Brush size is too large The brush was forced or advanced too quickly	Gage the heat exchanger tube using Go/No-Go Gage and select corresponding brush size. Slowly feed the Tube Preparation Brush into the heat exchanger tube if significant resistance is encountered.
Bristles fall out of Tube Preparation Brush	The brush was run counter-clockwise in the drill.	Obtain a new brush and operate brush clockwise.
Inadequate space to get plug into tube when using the standard Hydraulic Ram with Pull Rod Assembly.		Use EST Group's Close Quarter Ram for Pop-A-Plug installation.

Plug Material

Pop-A-Plug CPI/Perma kits contain 10 plugs, and a threaded Go/No-Go Gage. Brushes are sold separately. Pop-a-Plug P2 kits contain 10 plugs, a Tube Preparation Brush and a threaded Go/No-Go Gage. EST Group recommends one Tube Preparation Brush Kit for every two Pop-A-Plug Kits. Brushes are marked with size on swage. Ensure correct size brush is chosen before brushing. The suffix "Q" in the Pop-A-Plug Kit part number is the Pop-A-Plug material designator. Please replace "Q" with one of the following:

A = 4142 Alloy	M = Monel	D=Duplex 2205 Stainless	NI=Nickel 200	H=70/30 Copper Nickel	
B = Brass	N = 90/10 Copper Nickel	F22=F22 Alloy	NI2=Nickel 201	I=Inconel 600	
C = Carbon Steel	S = 316 Stainless	F11=F11 Alloy Steel	P=430 Stainless	X=AL6Xn	Additional materials are readily available to meet your tube plugging needs.
E = 304 Stainless	T = Titanium	Y=Incoloy 825	K=410 Stainless	ZC=Zirconium	

To minimize effects of corrosion and thermal expansion, the Pop-A-Plug material should closely match the heat exchanger tube material. Contact EST Group if materials other than those listed above are needed.

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Table 2: Pop-A-Plug CPI/Perma Kits for Air Cooled Heat Exchangers (ACHE) and Fin-Fan Plugging

CPI/PERMA PLUG KIT	TUBE ID		INSTALLATION RAM KIT	CHANNEL HEAD PULL ROD ASSEMBLY	EXTENDABLE (THREADED) BRUSH KIT	EXTENDABLE (THREADED) GO / NO-GO GAGE	BRUSH & GO / NO-GO EXTENSION ROD**	EXTENDED TAPERED REAMER**
	(in)	(mm)						
V-471-(Q)-EXT	0.472 - 0.515	11.99 - 13.08	PAP-6600-SIL	CPA-471-YY	BSH-471-HT-EXT	GA-471-EXT	EXT-A-YY	REM-460-580-YY-EXT
V-491-(Q)-EXT	0.492 - 0.540	12.50 - 13.72	PAP-6600-SIL	CPA-491-YY	BSH-491-HT-EXT	GA-491-EXT	EXT-A-YY	REM-460-580-YY-EXT
V-512-(Q)-EXT	0.513 - 0.562	13.03 - 14.27	PAP-6600-SIL	CPA-512-YY	BSH-512-HT-EXT	GA-512-EXT	EXT-A-YY	REM-460-580-YY-EXT
V-524-(Q)-EXT	0.525 - 0.585	13.34 - 14.86	PAP-6600-SIL	CPA-524-YY	BSH-524-HT-EXT	GA-524-EXT	EXT-A-YY	REM-460-580-YY-EXT
V-555-(Q)-EXT	0.556 - 0.616	14.12 - 15.65	PAP-6600-SIL	CPA-555-YY	BSH-555-HT-EXT	GA-555-EXT	EXT-A-YY	REM-460-580-YY-EXT
V-584-(Q)-EXT	0.585 - 0.649	14.86 - 16.48	PAP-6600-SIL	CPA-584-YY	BSH-584-HT-EXT	GA-584-EXT	EXT-A-YY	REM-600-700-YY-EXT
V-621-(Q)-EXT	0.622 - 0.689	15.80 - 17.50	PAP-6600-SIL	CPA-621-YY	BSH-621-HT-EXT	GA-621-EXT	EXT-B-YY	REM-600-700-YY-EXT
V-649-(Q)-EXT	0.650 - 0.713	16.51 - 18.11	PAP-6600-SIL	CPA-649-YY	BSH-649-HT-EXT	GA-649-EXT	EXT-B-YY	REM-600-700-YY-EXT
V-670-(Q)-EXT	0.671 - 0.740	17.04 - 18.80	PAP-6600-SIL	CPA-670-YY	BSH-670-HT-EXT	GA-670-EXT	EXT-B-YY	REM-600-700-YY-EXT
V-712-(Q)-EXT	0.713 - 0.777	18.11 - 19.74	PAP-6600-SIL	CPA-712-YY	BSH-712-HT-EXT	GA-712-EXT	EXT-B-YY	REM-720-820-YY-EXT
V-735-(Q)-EXT	0.736 - 0.810	18.69 - 20.57	PAP-6600-SIL	CPA-735-YY	BSH-735-HT-EXT	GA-735-EXT	EXT-B-YY	REM-720-820-YY-EXT
V-774-(Q)-EXT	0.775 - 0.838	19.69 - 21.29	PAP-6600-SIL	CPA-774-YY	BSH-774-HT-EXT	GA-774-EXT	EXT-B-YY	REM-720-820-YY-EXT
V-804-(Q)-EXT	0.805 - 0.890	20.45 - 22.61	PAP-6600-SIL	CPA-804-YY	BSH-804-HT-EXT	GA-804-EXT	EXT-B-YY	REM-720-820-YY-EXT
V-837-(Q)-EXT	0.838 - 0.902	21.29 - 22.91	PAP-6600-SIL	CPA-837-YY	BSH-837-HT-EXT	GA-837-EXT	EXT-B-YY	REM-840-980-YY-EXT
V-853-(Q)-EXT	0.854 - 0.949	21.69 - 24.10	PAP-6600-SIL	CPA-853-YY	BSH-853-HT-EXT	GA-853-EXT	EXT-B-YY	REM-840-980-YY-EXT
V-899-(Q)-EXT	0.900 - 0.963	22.86 - 24.46	PAP-6600-SIL	CPA-899-YY	BSH-899-HT-EXT	GA-899-EXT	EXT-B-YY	REM-840-980-YY-EXT
V-919-(Q)-EXT	0.920 - 1.019	23.37 - 25.88	PAP-6600-SIL	CPA-919-YY	BSH-919-HT-EXT	GA-919-EXT	EXT-B-YY	REM-840-980-YY-EXT
V-962-(Q)-EXT	0.963 - 1.027	24.46 - 26.09	PAP-6600-SIL	CPA-962-YY	BSH-962-HT-EXT	GA-962-EXT	EXT-B-YY	REM-840-980-YY-EXT
V-979-(Q)-EXT	0.980 - 1.079	24.89 - 27.41	PAP-6600-SIL	CPA-979-YY	BSH-979-HT-EXT	GA-979-EXT	EXT-B-YY	REM-840-980-YY-EXT
V-1024-(Q)-EXT	1.025 - 1.088	26.04 - 27.64	PAP-6600-SIL	CPA-1024-YY	BSH-1024-NY-EXT	GA-1024-EXT	EXT-B-YY	N/A
V-1054-(Q)-EXT	1.055 - 1.154	26.80 - 29.31	PAP-6600-SIL	CPA-1054-YY	BSH-1054-NY-EXT	GA-1054-EXT	EXT-B-YY	N/A
V-1087-(Q)-EXT	1.088 - 1.152	27.64 - 29.26	PAP-6600-SIL	CPA-1087-YY	BSH-1087-NY-EXT	GA-1087-EXT	EXT-B-YY	N/A
V-1103-(Q)-EXT	1.104 - 1.203	28.04 - 30.56	PAP-6600-SIL	CPA-1103-YY	BSH-1103-NY-EXT	GA-1103-EXT	EXT-B-YY	N/A
V-1149-(Q)-EXT	1.150 - 1.213	29.21 - 30.81	PAP-6600-SIL	CPA-1149-YY	BSH-1149-NY-EXT	GA-1149-EXT	EXT-B-YY	N/A
V-1171-(Q)-EXT	1.172 - 1.270	29.77 - 32.26	PAP-6600-SIL	CPA-1171-YY	BSH-1171-NY-EXT	GA-1171-EXT	EXT-B-YY	N/A
V-1212-(Q)-EXT	1.213 - 1.336	30.81 - 33.93	PAP-6600-SIL	CPA-1212-YY	BSH-1212-NY-EXT	GA-1212-EXT	EXT-B-YY	N/A
V-1334-(Q)-EXT*	1.335 - 1.458	33.91 - 37.03	PAP-1750	CPA-1334-YY	BSH-1334-NY-EXT	GA-1334-EXT	EXT-B-YY	N/A
V-1456-(Q)-EXT*	1.457 - 1.579	37.01 - 40.11	PAP-1750	CPA-1456-YY	BSH-1456-NY-EXT	GA-1456-EXT	EXT-B-YY	N/A

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	(in)	(mm)						
V-1578-(Q)-EXT*	1.579 - 1.701	40.11 - 43.21	PAP-1750	CPA-1578-YY	BSH-1578-NY-EXT	GA-1578-EXT	EXT-B-YY	N/A
V-1700-(Q)-EXT*	1.701 - 1.823	43.21 - 46.30	PAP-1750	CPA-1700-YY	BSH-1700-NY-EXT	GAV-1700-EXT	EXT-B-YY	N/A
V-1822-(Q)-EXT*	1.823 - 1.945	46.30 - 49.40	PAP-1750	CPA-1822-YY	BSH-1822-NY-EXT	GA-1822-EXT	EXT-B-YY	N/A
V-1944-(Q)-EXT*	1.945 - 2.067	49.40 - 52.50	PAP-1750	CPA-1944-YY	BSH-1944-NY-EXT	GA-1944-EXT	EXT-B-YY	N/A

Notes:

*For Pop-A-Plug® CPI/Perma Plug sizes 1.334" and larger, the Large Ram Package is required.

** In the part number, YY is equal to the length of the extension in feet.

EST suggests that two Extension Rods be ordered for any extended near end applications. This allows the user to have a dedicated Extension Rod for gaging and a dedicated Extension Rod for brushing.

Table 3: Pop-A-Plug P2 for Air Cooled Heat Exchangers (ACHE) and Fin-Fan Plugging

Pop-A-Plug P2 PLUG KIT	Tube ID		INSTALLATION RAM KIT	CHANNEL HEAD PULL ROD ASSEMBLY	EXTENDABLE (THREADED) BRUSH KIT	EXTENDABLE (THREADED) GO / NO-GO GAGE	BRUSH & GO / NO-GO EXTENSION ROD**	EXTENDED TAPERED REAMER**
	(in)	(mm)						
P2-400-(Q)-EXT	0.400-0.420	10.19-10.68	PAP-6600-SIL	CHA-400-440-YY	BSH-400-HT-EXT	GA-400-EXT	EXT-A-YY	N/A
P2-420-(Q)-EXT	0.421-0.440	10.69-11.19	PAP-6600-SIL		BSH-420-HT-EXT	GA-420-EXT	EXT-A-YY	N/A
P2-440-(Q)-EXT	0.441-0.460	11.20-11.70	PAP-6600-SIL		BSH-440-HT-EXT	GA-440-EXT	EXT-A-YY	N/A
P2-460-(Q)-EXT	0.461-0.480	11.71-12.21	PAP-6600-SIL	CHA-460-500-YY	BSH-460-HT-EXT	GA-460-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-480-(Q)-EXT	0.481-0.500	12.22-12.72	PAP-6600-SIL		BSH-480-HT-EXT	GA-480-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-500-(Q)-EXT	0.501-0.520	12.73-13.22	PAP-6600-SIL		BSH-500-HT-EXT	GA-500-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-520-(Q)-EXT	0.521-0.540	13.23-13.73	PAP-6600-SIL	CHA-520-580-YY	BSH-520-HT-EXT	GA-520-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-540-(Q)-EXT	0.541-0.560	13.74-14.24	PAP-6600-SIL		BSH-540-HT-EXT	GA-540-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-560-(Q)-EXT	0.561-0.580	14.25-14.75	PAP-6600-SIL		BSH-560-HT-EXT	GA-560-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-580-(Q)-EXT	0.581-0.600	14.76-15.26	PAP-6600-SIL	CHA-600-680-YY	BSH-580-HT-EXT	GA-580-EXT	EXT-A-YY	REM-460-580-YY-EXT
P2-600-(Q)-EXT	0.601-0.620	15.27-15.76	PAP-6600-SIL		BSH-600-HT-EXT	GA-600-EXT	EXT-A-YY	REM-600-700-YY-EXT
P2-620-(Q)-EXT	0.621-0.640	15.77-16.27	PAP-6600-SIL		BSH-620-HT-EXT	GA-620-EXT	EXT-B-YY	REM-600-700-YY-EXT
P2-640-(Q)-EXT	0.641-0.660	16.28-16.78	PAP-6600-SIL		BSH-640-HT-EXT	GA-640-EXT	EXT-B-YY	REM-600-700-YY-EXT

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Pop-A-Plug P2 PLUG KIT	Tube ID		INSTALLATION RAM KIT	CHANNEL HEAD PULL ROD ASSEMBLY	EXTENDABLE (THREADED) BRUSH KIT	EXTENDABLE (THREADED) GO / NO-GO GAGE	BRUSH & GO / NO-GO EXTENSION ROD**	EXTENDED TAPERED REAMER**
	(in)	(mm)						
P2-660-(Q)-EXT	0.661-0.680	16.79-17.29	PAP-6600-SIL		BSH-660-HT-EXT	GA-660-EXT	EXT-B-YY	REM-600-700-YY-EXT
P2-680-(Q)-EXT	0.681-0.700	17.30-17.80	PAP-6600-SIL		BSH-680-HT-EXT	GA-680-EXT	EXT-B-YY	REM-600-700-YY-EXT
P2-700-(Q)-EXT	0.701-0.720	17.81-18.30	PAP-6600-SIL	CHA-700-780-YY	BSH-700-HT-EXT	GA-700-EXT	EXT-B-YY	REM-600-700-YY-EXT
P2-720-(Q)-EXT	0.721-0.740	18.31-18.81	PAP-6600-SIL		BSH-720-HT-EXT	GA-720-EXT	EXT-B-YY	REM-720-820-YY-EXT
P2-740-(Q)-EXT	0.741-0.760	18.82-19.32	PAP-6600-SIL		BSH-740-HT-EXT	GA-740-EXT	EXT-B-YY	REM-720-820-YY-EXT
P2-760-(Q)-EXT	0.761-0.780	19.33-19.83	PAP-6600-SIL		BSH-760-HT-EXT	GA-760-EXT	EXT-B-YY	REM-720-820-YY-EXT
P2-780-(Q)-EXT	0.781-0.800	19.84-20.34	PAP-6600-SIL		BSH-780-HT-EXT	GA-780-EXT	EXT-B-YY	REM-720-820-YY-EXT
P2-800-(Q)-EXT	0.801-0.820	20.35-20.84	PAP-6600-SIL		BSH-800-HT-EXT	GA-800-EXT	EXT-B-YY	REM-720-820-YY-EXT
P2-820-(Q)-EXT	0.821-0.840	20.85-21.35	PAP-6600-SIL	CHA-800-860-YY	BSH-820-HT-EXT	GA-820-EXT	EXT-B-YY	REM-720-820-YY-EXT
P2-840-(Q)-EXT	0.841-0.860	21.36-21.86	PAP-6600-SIL		BSH-840-HT-EXT	GA-840-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-860-(Q)-EXT	0.861-0.880	21.87-22.37	PAP-6600-SIL		BSH-860-HT-EXT	GA-860-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-880-(Q)-EXT	0.881-0.900	22.38-22.88	PAP-6600-SIL		BSH-880-HT-EXT	GA-880-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-900-(Q)-EXT	0.901-0.920	22.89-23.38	PAP-6600-SIL	CHA-880-960-YY	BSH-900-HT-EXT	GA-900-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-920-(Q)-EXT	0.921-0.940	23.39-23.89	PAP-6600-SIL		BSH-920-HT-EXT	GA-920-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-940-(Q)-EXT	0.941-0.960	23.90-24.40	PAP-6600-SIL		BSH-940-HT-EXT	GA-940-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-960-(Q)-EXT	0.961-0.980	24.41-24.91	PAP-6600-SIL		BSH-960-HT-EXT	GA-960-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-980-(Q)-EXT	0.981-1.000	24.92-25.42	PAP-6600-SIL		BSH-980-HT-EXT	GA-980-EXT	EXT-B-YY	REM-840-980-YY-EXT
P2-1000-(Q)-EXT	1.001-1.020	25.43-25.92	PAP-6600-SIL		BSH-1000-NY-EXT	GA-1000-EXT	EXT-B-YY	N/A
P2-1020-(Q)-EXT	1.021-1.040	25.93-26.43	PAP-6600-SIL	CHA-980-1060-YY	BSH-1020-NY-EXT	GA-1020-EXT	EXT-B-YY	N/A
P2-1040-(Q)-EXT	1.041-1.060	26.44-26.94	PAP-6600-SIL		BSH-1040-NY-EXT	GA-1040-EXT	EXT-B-YY	N/A
P2-1060-(Q)-EXT	1.061-1.080	26.95-27.45	PAP-6600-SIL		BSH-1060-NY-EXT	GA-1060-EXT	EXT-B-YY	N/A
P2-1080-(Q)-EXT	1.081-1.100	27.46-27.96	PAP-6600-SIL		BSH-1080-NY-EXT	GA-1080-EXT	EXT-B-YY	N/A
P2-1100-(Q)-EXT	1.101-1.120	27.97-28.46	PAP-6600-SIL	CHA-1080-1160-YY	BSH-1100-NY-EXT	GA-1100-EXT	EXT-B-YY	N/A

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Pop-A-Plug P2 PLUG KIT	Tube ID		INSTALLATION RAM KIT	CHANNEL HEAD PULL ROD ASSEMBLY	EXTENDABLE (THREADED) BRUSH KIT	EXTENDABLE (THREADED) GO / NO-GO GAGE	BRUSH & GO / NO-GO EXTENSION ROD**	EXTENDED TAPERED REAMER**
	(in)	(mm)						
P2-1120-(Q)-EXT	1.121–1.140	28.47–28.97	PAP-6600-SIL		BSH-1120-NY-EXT	GA-1120-EXT	EXT-B-YY	N/A
P2-1140-(Q)-EXT	1.141–1.160	28.98–29.48	PAP-6600-SIL		BSH-1140-NY-EXT	GA-1140-EXT	EXT-B-YY	N/A
P2-1160-(Q)-EXT	1.161–1.180	29.49–29.99	PAP-6600-SIL		BSH-1160-NY-EXT	GA-1160-EXT	EXT-B-YY	N/A
P2-1180-(Q)-EXT	1.181–1.200	30.00–30.50	PAP-1750	LCHA-1180-1240-YY	BSH-1180-NY-EXT	GA-1180-EXT	EXT-B-YY	N/A
P2-1200-(Q)-EXT	1.201–1.220	30.51–31.00	PAP-1750		BSH-1200-NY-EXT	GA-1200-EXT	EXT-B-YY	N/A
P2-1220-(Q)-EXT	1.221–1.240	31.01–31.51	PAP-1750		BSH-1220-NY-EXT	GA-1220-EXT	EXT-B-YY	N/A
P2-1240-(Q)-EXT	1.241–1.260	31.52–32.02	PAP-1750		BSH-1240-NY-EXT	GA-1240-EXT	EXT-B-YY	N/A
P2-1260-(Q)-EXT	1.261–1.280	32.03–32.53	PAP-1750	LCHA-1260-1340-YY	BSH-1260-NY-EXT	GA-1260-EXT	EXT-B-YY	N/A
P2-1280-(Q)-EXT	1.281–1.300	32.54–33.04	PAP-1750		BSH-1280-NY-EXT	GA-1280-EXT	EXT-B-YY	N/A
P2-1300-(Q)-EXT	1.301–1.320	33.05–33.54	PAP-1750		BSH-1300-NY-EXT	GA-1300-EXT	EXT-B-YY	N/A
P2-1320-(Q)-EXT	1.321–1.340	33.55–34.05	PAP-1750		BSH-1320-NY-EXT	GA-1320-EXT	EXT-B-YY	N/A
P2-1340-(Q)-EXT	1.341–1.360	34.06–34.56	PAP-1750		BSH-1340-NY-EXT	GA-1340-EXT	EXT-B-YY	N/A
P2-1360-(Q)-EXT	1.361–1.380	34.57–35.07	PAP-1750	LCHA-1360-1440-YY	BSH-1360-NY-EXT	GA-1360-EXT	EXT-B-YY	N/A
P2-1380-(Q)-EXT	1.381–1.400	35.08–35.58	PAP-1750		BSH-1380-NY-EXT	GA-1380-EXT	EXT-B-YY	N/A
P2-1400-(Q)-EXT	1.401–1.420	35.59–36.08	PAP-1750		BSH-1400-NY-EXT	GA-1400-EXT	EXT-B-YY	N/A
P2-1420-(Q)-EXT	1.421–1.440	36.09–36.59	PAP-1750		BSH-1420-NY-EXT	GA-1420-EXT	EXT-B-YY	N/A
P2-1440-(Q)-EXT	1.441–1.460	36.60–37.10	PAP-1750		BSH-1440-NY-EXT	GA-1440-EXT	EXT-B-YY	N/A

Notes:

A P2 -EXT kit comes standard with one (1) extendable (threaded) Brush and one (1) extendable (threaded) Go / No-Go Gage.

** In the part number, YY is equal to the length of the extension in feet.

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