

# CPI / PERMA PLUG™

Heat Exchanger and Condenser Tube Plugs



The fast and safe way to seal leaking heat exchanger and condenser tubes in refineries and chemical plants



- Rated up to 1,000 psi (68.9 Bar)
- US patent number 5,437,310
- Suitability and type tested by TUV
- Safer alternative to tapered pins and elastomer plugs
- Helium leak-tight to  $1 \times 10^{-10}$  cc/sec

Tapered pins can turn into lethal projectiles that can pose a real safety hazard for your workers. You can eliminate this danger with CPI / Perma Plug™ heat exchanger and condenser tube plugs. Resistant to thermal cycling and able to provide a seal that's helium-leak tight, CPI / Perma Plug™ tube plugs are installed using a controlled force. This protects against damage to tubesheet ligaments and the adjacent tubesheet joints, extending the life of your heat exchanger and reducing costs when you need to retube. What's more, CPI / Perma Plug™ heat exchanger tube plugs take only seconds to install. Its broad expansion range fits multiple tube sizes, so you need to keep fewer plugs on hand; reducing inventory and cutting costs. Stocked in carbon steel, stainless steel, brass, titanium, 4142 alloy, monel and copper nickel. Consult EST Group for other materials.

The only plugs manufactured under a QA program certified to ISO-9001



Can be supplied under ANSI N45.2, 10CFR50 Appendix B.

**CURTISS  
WRIGHT**  
Flow Control Company  
**EST Group**

Part Number	Plug Size / O.D. (inches (mm))	Tube I.D. Range (inches (mm))	Pin Length (inches (mm))	Brush Kits (hard alloys)	Brush Kits (soft alloys)	Positioner	Pull Rod Assembly	Channel Head Pull Rod Assembly
V-471-Q	0.471 (11.96)	0.472 - 0.515 (11.99 - 13.08)	1.630 (41.40)	BSH-471-HT	BSH-471	P-471	PA-471	CPA-471-LL
V-491-Q	0.491 (12.47)	0.492 - 0.540 (12.50 - 13.72)	1.670 (42.42)	BSH-491-HT	BSH-491	P-491	PA-491	CPA-491-LL
V-512-Q	0.512 (13.00)	0.513 - 0.562 (13.03 - 14.27)	1.590 (40.39)	BSH-512-HT	BSH-512	P-512	PA-512	CPA-512-LL
V-524-Q	0.524 (13.31)	0.525 - 0.585 (13.34 - 14.86)	1.280 (32.51)	BSH-524-HT	BSH-524	P-524	PA-524	CPA-524-LL
V-555-Q	0.555 (14.10)	0.556 - 0.616 (14.12 - 15.65)	1.400 (35.56)	BSH-555-HT	BSH-555	P-555	PA-555	CPA-555-LL
V-584-Q	0.584 (14.83)	0.585 - 0.649 (14.86 - 16.48)	1.320 (33.53)	BSH-584-HT	BSH-584	P-584	PA-584	CPA-584-LL
V-621-Q	0.621 (15.77)	0.622 - 0.689 (15.80 - 17.50)	1.570 (39.88)	BSH-621-HT	BSH-621	P-621	PA-621	CPA-621-LL
V-649-Q	0.649 (16.48)	0.650 - 0.713 (16.51 - 18.11)	1.320 (33.53)	BSH-649-HT	BSH-649	P-649	PA-649	CPA-649-LL
V-670-Q	0.670 (17.02)	0.671 - 0.740 (17.04 - 18.80)	1.660 (42.16)	BSH-670-HT	BSH-670	P-670	PA-670	CPA-670-LL
V-712-Q	0.712 (18.08)	0.713 - 0.777 (18.11 - 19.74)	1.320 (33.53)	BSH-712-HT	BSH-712	P-712	PA-712	CPA-712-LL
V-735-Q	0.735 (18.67)	0.736 - 0.810 (18.69 - 20.57)	1.680 (42.67)	BSH-735-HT	BSH-735	P-735	PA-735	CPA-735-LL
V-774-Q	0.774 (19.66)	0.775 - 0.838 (19.69 - 21.29)	1.320 (33.53)	BSH-774-HT	BSH-774	P-774	PA-774	CPA-774-LL
V-804-Q	0.804 (20.42)	0.805 - 0.890 (20.45 - 22.61)	1.700 (43.18)	BSH-804-HT	BSH-804	P-804	PA-804	CPA-804-LL
V-837-Q	0.837 (21.26)	0.838 - 0.902 (21.29 - 22.91)	1.320 (33.53)	BSH-837-HT	BSH-837	P-837	PA-837	CPA-837-LL
V-853-Q	0.853 (21.67)	0.854 - 0.949 (21.69 - 24.10)	1.720 (43.69)	BSH-853-HT	BSH-853	P-853	PA-853	CPA-853-LL
V-899-Q	0.899 (22.83)	0.900 - 0.963 (22.86 - 24.46)	1.320 (33.53)	BSH-899-HT	BSH-899	P-899	PA-899	CPA-899-LL
V-919-Q	0.919 (23.34)	0.920 - 1.019 (23.37 - 25.88)	1.760 (44.70)	BSH-919-HT	BSH-919	P-919	PA-919	CPA-919-LL
V-962-Q	0.962 (24.43)	0.963 - 1.027 (24.46 - 26.09)	1.320 (33.53)	BSH-962-HT	BSH-962	P-962	PA-962	CPA-962-LL
V-979-Q	0.979 (24.87)	0.980 - 1.079 (24.89 - 27.41)	1.820 (46.23)	BSH-979-HT	BSH-979	P-979	PA-979	CPA-979-LL
V-1024-Q	1.024 (26.01)	1.025 - 1.088 (26.04 - 27.64)	1.320 (33.53)	BSH-1024-NY	BSH-1024-NY	P-1024	PA-1024	CPA-1024-LL
V-1054-Q	1.054 (26.77)	1.055 - 1.154 (26.80 - 29.31)	1.900 (48.26)	BSH-1054-NY	BSH-1054-NY	P-1054	PA-1054	CPA-1054-LL
V-1087-Q	1.087 (27.61)	1.088 - 1.152 (27.64 - 29.26)	1.320 (33.53)	BSH-1087-NY	BSH-1087-NY	P-1087	PA-1087	CPA-1087-LL
V-1103-Q	1.103 (28.03)	1.104 - 1.203 (28.04 - 30.56)	1.900 (48.26)	BSH-1103-NY	BSH-1103-NY	P-1103	PA-1103	CPA-1103-LL
V-1149-Q	1.149 (29.18)	1.150 - 1.213 (29.21 - 30.81)	1.320 (33.53)	BSH-1149-NY	BSH-1149-NY	P-1149	PA-1149	CPA-1149-LL
V-1171-Q	1.171 (29.74)	1.172 - 1.270 (29.77 - 32.26)	2.000 (50.80)	BSH-1171-NY	BSH-1171-NY	P-1171	PA-1171	CPA-1171-LL
V-1212-Q	1.212 (30.78)	1.213 - 1.336 (30.81 - 33.93)	2.000 (50.80)	BSH-1212-NY	BSH-1212-NY	P-1212	PA-1212	CPA-1212-LL

Specifications subject to change without notice.  
See DC1224 for more technical information.

#### Notes:

- The suffix Q in the Part Number column is a plug material designator.
- Replace Q with one of the following: C for Carbon, S for 316 Stainless Steel, E for 304 Stainless Steel, B for Brass, T for Titanium, H for 70/30 Copper Nickel, N for 90/10 Copper Nickel, A for 4142 Alloy, M for Monel.
- Titanium plugs do not have the same tube I.D. range. Please consult factory for ranges.
- The suffix LL in the Pull Rod Assembly column signifies the length, in feet, of the channel head extension. These parts are available in 1, 2, 3, 4, and 6 feet lengths. Add -01, -02, -03, etc. for the respective channel head extension length required.

Delivery: Substantial quantities of V-524-Q through V-1149-Q in the five materials listed above are normally in stock for immediate shipment. For details on delivery, larger sizes, higher pressure ratings, or alternate materials, contact EST Group directly.

Please supply the following information when ordering:

- Tube O.D. and wall thickness or measured tube I.D.
- Tube material and/or tubesheet material
- Maximum pressure and temperature
- The type of tube-to-tubesheet joint (rolled, welded, etc.)
- Each kit includes a Go/ No-Go Gauge for ensuring proper plug size (Brush kits and installation equipment sold separately.)

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