

# RHH Series Hydraulic Communication Nipples

High-pressure, all-metal seal, shiftable, hydraulic communication nipples with working pressures to 17,500 psi [120,663 kPa]

## APPLICATIONS

- Ultrahigh-pressure applications to 17,500 psi [120,663 kPa]
- Sweet to severely corrosive environments from 40 degF to 400 degF [4 degC to 204 degC]

## BENEFITS

- Reduces solids and scale-deposition problems.
- Design is cost effective and easy to run.
- Meets a wide range of specific applications.

## FEATURES

- Short, secondary valve capability
- Metal-to-metal isolation of the hydraulics to the tubing-retrievable safety valve
- Optimal geometry and clearance between sliding components
- Compact design
- Autoclave high-pressure control line fittings (thread and cone) with 0.065-in [1.7-mm] wall thickness control line
- Choice of premium materials and design options
- Metal-seal body joints and a static operating piston seal

Camco\* RHH series hydraulic communication nipples are used with tubing-retrievable, surface-controlled subsurface safety valves. They allow the installation of a secondary slickline-retrievable safety valve in the event that the tubing-retrievable safety valve becomes inoperable. The RHH series nipples are designed for working pressures to 17,500 psi [120,663 kPa].

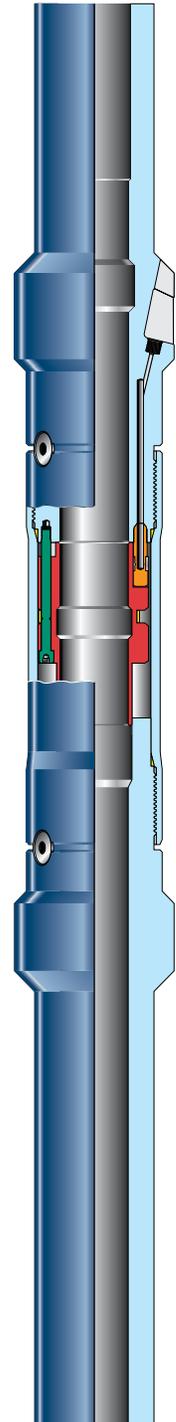
These nipples are compact and simple in design. They feature metal-to-metal seals, integral control line connections, and can be used with either API standard or non-API heavyweight production tubing. The RHH series communication nipples are compatible with any tubing-retrievable safety valve without an integral secondary feature or as an additional back-up system. The nipples also feature a plug isolation system to block communication to the tubing safety valve without using a long secondary safety valve. An integral shear sleeve in the nipple controls hydraulic communication to the secondary valve.

Communication nipples are available in several configurations. One design uses a single control line, and another uses dual control lines, with the first line connected to the nipple and the second connected to the safety valve. This system reduces the number of connections in the active operating control line and thus the number of potential leak paths.

The modular design allows for a maximum number of material and design options, including a wide range of sizes, pressure ratings, and unique operational features.

## OPERATION

To shift the hydraulic shear sleeve on an RHH series nipple, the appropriate shifting tool is installed in the shear sleeve using standard slickline methods on the appropriate DH series running tool. The shear sleeve is shifted using a blind box to establish hydraulic communication and close the isolation plunger. The shifting tool is retrieved with the appropriate JDC pulling tool. The control-line pressure is routed to the tubing, and the nipple is ready to accept a secondary, slickline-retrievable safety valve.



RHH-15P communication nipple.

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Engineering Data for RHH Hydraulic Communication Nipples					
Tube Size <sup>†</sup> (in [mm])	Valve Type	Max. OD (in [mm])	Nipple Bore (in [mm])	Working Pressure (psi [kPa])	Tensile Strength <sup>‡</sup> (lbf [kg])
2.875 [73.0]	RHH-15P	4.986 [126.2]	2.188 [55.6]	15,000 [103,425]	252,900 [114,690.2]
			2.125 [54.0]		275,000 [124,712.3]
3.500 [88.9]	RHH-17.5P	5.250 [133.4]	2.312 [58.7]	17,500 [120,663]	436,000 [197,726.0]
	RHH-15P	5.750 [146.1]	2.562 [65.1]	15,000 [103,425]	509,000 [230,831.5]
		5.812 [147.6]	2.812 [71.4]		466,000 [211,331.0]
	4.000 [101.6]	RHH-13P	5.750 [146.1]	2.562 [65.1]	13,000 [89,635]
4.500 [114.3]	RHH-2	6.813 [173.1]	3.812 [96.9]	5,000 [34,475]	390,660 [177,164.3]
	RHH-15P	7.875 [200.0]	3.562 [90.5]	15,000 [103,425]	508,000 [230,378.0]
5.500 [139.7]	RHH-2-RO	8.000 [203.2]	4.625 [117.5]	5,000 [34,475]	607,155 [275,344.8]
	RHH-4-RO	8.015 [203.6]	4.562 [115.9]		1,124,000 [509,734.0]

<sup>†</sup> The engineering data provided illustrate the scope of this product offering but are not all inclusive. Additional sizes and pressure ratings are available upon request.

<sup>‡</sup> Tensile ratings are given for specific example valves; higher-strength materials affect this value. Tensile ratings shown are exclusive of end connection (EOEC) and at ambient temperature.

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