



# Ported Hollow Steel Carrier Guns Technical Manual

MAN-HSC1-001 (R02)

## Owen Oil Tools

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## 1.0 Pre-Assembly



**Warning: Explosives are destructive by nature! Do not attempt to disassemble or alter explosive products in any manner! Do not crush, hammer, pinch, impact, pull wires or abuse any explosive product!**



**Warning: Be sure to follow safe operating practices as found in API RP-67 in accordance with governmental regulations, company policies and manufacturer's recommendations!**



**Note: Before loading and testing, visually inspect the carrier for any defects.**



**Note: This tool requires at least two people for assembly.**

## 2.0 Assembly

**2.1** Thread a lead wire through the gun and back around to the outside where it can be taped to the OD of the gun and held in place. The lead wire should be positioned inside the gun so that it is positioned along side one row of ports. With the wire positioned there, it should never be crushed when the charges are loaded. Some loaders prefer to use a lead wire threading tool to thread the lead wire through the gun after the charges are in place.

**2.2** Put a small amount of grease in the counter bore of each port.



**Caution: Do not put grease on the threads. This could fall into the cavity of the charge during the loading operation and cause a "Split Jet" or a misdirected jet which could cause the port plug to be jetted (a hole shot to one side of the port)!**

**2.3** Cut the detonating cord to a length of about 15 ft for an 11 ft gun or 40% more than the length of the gun. Thread the detonating cord through the hole in the charge. Grip the charge with the loading tool and slide it into the gun down the center port. You should feel the charge drop into the recess in the bottom of the port to be loaded.



*Note: A helper should look in the port and signal the loader when the charge is in place.*

**2.4** With the charge held in place, the helper should drop the alignment sleeve through the port and seat it in the alignment washer on the charge.



***Caution: When inserting the alignment sleeve it must be noted how far up in the threads the alignment sleeve comes! An alignment sleeve of the proper length will just enter the threaded part by one thread! If the alignment sleeve is too short, it will not extend up into the thread part of the port and thus will not properly secure the charge in place! Additionally, the charge could fall out of place and cause a hole to be shot to one side of the port or the jet could cut the threads!***



***Caution: The result of using an alignment sleeve that is too long, is that it puts a great amount of crush on the charge causing several possible issues! The alignment washer on top of the charge will crush in an uneven way, causing the jet to be misaligned that could cause a jetted port! Also, the det cord can be crushed so hard that it could cause skip firing of the charges!***

While still holding the charge tight to prevent the charge from twisting, screw the port plug into the port and tightened with a wrench. If the charge twists, it will kink the det cord and cause a misfire.

Each gun can be shot multiple times. Generally the gun will swell about 1/8 in per run. As the gun swells, a longer alignment sleeve will be needed. If the sleeve for a swelled gun is used in a new gun, it may be too long and come up too high inside the threads.

**2.5** After the port plug is tightened, move the loading tool back and forth to assure that the charge is securely held in position.

**2.6** Rotate the gun so that the next port is vertical and then insert the next charge in the gun until all of ports on that end of the gun are loaded. The det cord must always be kept tight, so that no excess cord is allowed between charges. Any excess cord will cause "interference" between charges and cause decreased performance or jetted ports.

**2.7** Repeat the loading process on the other end of the gun.

**2.8** Check the lead wire for continuity and shorts. End seals should be put on the det cord to prevent excess powder from escaping. Excess wire and det cord should be tucked into the gun to prevent damage prior to transport to the well site.

**2.9** It is good practice to put a bull plug in one end and a test sub in the other end of the gun then test with air pressure for leaks. After pressure is applied, soapy water should be brushed on each port plug to check for possible leaks.



***Caution: The air going into and out of the gun, should be applied and released slowly to prevent collapse of the charge assembly!***

## 3.0 Cleaning Guns

**3.1** Use a port plug extractor to remove the port plugs. The guns need to be steam cleaned using a wire brush on the end of a pipe, with the steam exiting at the brush.

**3.2** The guns should be inspected before use and stamped to record the number of runs.

