INSTALLATION INSTRUCTIONS TO QUALIFIED TECHNICIANS

H13741
ANSI/CSA NGV1-2017
ISO-14469-2017

For Type 1 CT Series Fueling Nozzles

TABLE OF CONTENTS - ENGLISH

SECTION A: INTRODUCTION

HOW TO USE THIS MANUAL

This manual has been prepared as a step by step installation guide for the listed OPW CT series of fueling nozzles:
This information is intended as general installation procedures and to familiarize the installer/end user with the techniques and procedures used.

GENERAL

These nozzles are intended for use in a Type 1; Class A CNG Vehicle fueling at the tabulated service pressures and receptacle combinations

NOZZLE	NGV 1 **Receptacle** & Standard	ISO **Receptacle** & Standard	**Service Pressure**	**Working Pressure**
CT1000P36	NGV 1 P36	ISO-14469 B250	3600 psi / 250 bar	4532 psi / 312.5 bar
CT1000LS	NGV 1 P30	ISO-14469 B200	3000 psi / 200 bar	4532 psi / 312.5 bar
CT5000S	NGV 1 P30HD	ISO-14469 B200	3600 psi / 250 bar	4532 psi / 312.5 bar

These nozzles have an operating temperature range of-40 C to 85 C (-40 F to 185 F)

All NGV-1 & ISO 14469 approved nozzles require special installation precautions to ensure safe and reliable operation. The installation shall conform to the requirements of the Authorities having jurisdiction or, in the absence of requirements, with the Standard for Compressed Natural Gas (CNG) Vehicular Fuel Systems, NFPA 52 or the Natural Gas for Vehicles Installation Code, CAN/CGA B149.4, as applicable.

SECTION B: INSTALLATION

The inlet connection and o-ring seal for these nozzles are as follows:

NOZZLE	**Inlet Fill Connection**	**Inlet Fill Connection O-Ring**	**Vent Connection**
CT1000P36	SAEJ1926-SAE 6 O-ring boss port with UNF 9/16" -18 threads	Size #906 O-ring	1/4” Double Ferrule Compression Fitting
CT1000LS	SAEJ1926-SAE 6 O-ring boss port with UNF 9/16" -18 threads	Size #906 O-ring	1/4” Double Ferrule Compression Fitting
CT5000S	SAEJ1926-SAE 10 O-ring boss port with UNF 7/8" -14 threads	Size #910 O-ring	3/8” Double Ferrule Compression Fitting

O-rings compound suitable for use in compressed natural gas environments at an operating temperature range of-40 C to 85 C (-40 F to 185 F)

IMPORTANT: Vent connection must NOT be connected to high pressure. Maximum vent pressure must be kept below 3.5 bar (50 psi) to allow proper nozzle operation. NPT (National Pipe Thread) fittings shall NOT be used on these nozzles.
Do NOT use thread sealing tapes or compounds. This may affect conductivity, clog internals and void warranty

1 . Ensure that the correct size SAE sealing o-ring (#906 or #910) is installed on the male UNF fitting (9/16"-18 or 7/18”-14) according to the fitting and O-ring manufacturer's instructions. We recommend using a Buna-N rubber compound specified for use with compressed natural gas and all compressor oils, including synthetic oils. An O-ring with durometer 90 is preferred and the MIL-P-25732 specification compounds perform very well under these conditions. OPW provides the proper O-ring with all new nozzles.
2. Be sure all sealing surfaces are clean, smooth and free of any oil, grease or other contaminants.

3. The nozzle should be tightened onto the approved hose fitting to torque value tabulated below:

NOZZLE	Inlet Fill Connection	Type of Wrench	Tighten To:
CT1000P36	SAEJ1926-SAE 6 O-ring boss port with UNF 9/16" -18 threads	27 mm (1 1/16") wrench	Minimum 15 ft-lbs to Maximum 24 ft-lbs Minimum 20 N.m to Maximum 33 N.m
CT1000LS	SAEJ1926-SAE 6 O-ring boss port with UNF 9/16" -18 threads	27 mm (1 1/16") wrench	Minimum 15 ft-lbs to Maximum 24 ft-lbs Minimum 20 N.m to Maximum 33 N.m
CT5000S	SAEJ1926-SAE 10 O-ring boss port with UNF 7/8" -14 threads	36 mm (1 7/16") wrench	Minimum 18 ft-lbs to Maximum 30 ft-lbs Minimum 24 N.m to Maximum 41 N.m

4. After installation, test the connections for leaks. The Nozzle handle should be cycled ten (10) times. Pressurize and test the connections using a suitable leak detector (e.g., SNOOP®). Test pressures should include low pressures (under 7 bar /100 psi) and up to the working pressure listed.

WARNING: ENSURE HOSE AND NOZZLE ARE SAFELY DEPRESSURIZED BEFORE REMOVAL OR MAINTENANCE.

SECTION C: OPERATION

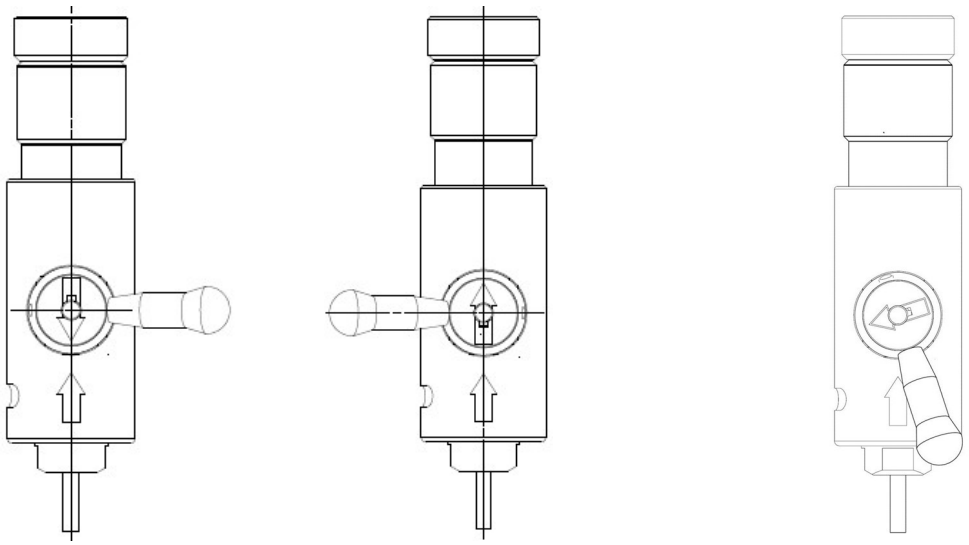
CONNECTING TO AN APPROVED VEHICLE RECEPTACLE:

1. Ensure the nozzle and receptacle are compatible using the previous table.
2. Remove the nozzle from the rest position and verify the indicating arrows are opposing (OFF position) with the handle in the 3 o'clock position (Figure 3). This opens the jaws and vents the nozzle.
3. Connect by pushing the nozzle forward onto the receptacle, then rotate the handle clockwise until the indicating arrows are in line (ON position) with the handle in the 9 o'clock position. Complete engagement of the nozzle and receptacle will ensure a correct connection and allow the handle to move freely.

WARNING: DO NOT APPLY EXTREME FORCE TO THE NOZZLE HANDLE. INTERNAL COMPONENTS MAY BE DAMAGED BY HIGH TORQUE ON THE OPERATING HANDLE.

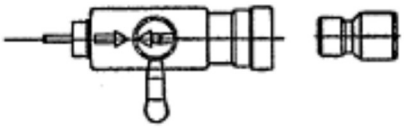
If the nozzle will not connect to the receptacle, ensure that the nozzle is fully vented and in the "OFF" position.

OFF Position **ON Position** **VENT Position**

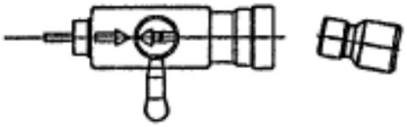


IMPORTANT: DO NOT ATTEMPT TO COUPLE THE NOZZLE AND RECEPTACLE WHEN THE RESPECTIVE AXIS OF THE NOZZLE AND RECEPTACLE ARE OFFSET OR AT AN ANGLE AS SHOWN BELOW.

Proper Coupling Alignment



Improper Coupling Alignment



DISCONNECTING FROM AN APPROVED VEHICLE RECEPTACLE:

1. When fueling is complete, turn the station dispenser OFF per manufacturer's procedure.
2. Turn the nozzle handle counter clockwise to the 6 o'clock position so that the arrows are perpendicular. This stops the flow of gas. Turn the handle slowly to the vent position (about 5 o'clock) to relieve the internal pressure of the nozzle. This only vents the nozzle, the hose remains pressurized.
   NOTE: THERE IS A BRIEF SOUND OF GAS VENTING WHEN GOING THROUGH THE DISCONNECT MOTION. THIS IS NORMAL. In the event that a popping sound is heard during venting
   - This is an indication that there is an obstruction in the vent or,
   - The nozzle handle was rotated rapidly, not allowing sufficient time for gas to vent properly

   If the nozzle is difficult to disconnect from the receptacle or venting does not stop after a few seconds, return the nozzle handle to the fill position, close the vehicle manual shut-off valve on the vehicle and repeat from Step 2 above. If problems persist, the entire supply to the nozzle and vent lines must be depressurized and thoroughly inspected. If station inspection reveals nothing, return the nozzle to OPW immediately with a full description of the problem.

3. Further rotate the nozzle handle counter-clockwise to the 3 o'clock position so that the arrows are lined up. This releases the receptacle.

SECTION D: SERVICE

Nozzles must be stored in a clean protected area. The nozzle must not be exposed to debris, dirt, water or chemicals. Service life is dependent on handling and care of the nozzle. Contamination increases the potential for nozzle malfunction. Unusual operation must be reported to OPW or the service representative immediately. NOTE: These nozzles have an internal filter to prevent damage caused from gas-borne debris. This filter is not serviceable or maintainable in the field and requires the nozzle be returned to OPW for repair.

ROUTINE MAINTENANCE

1. Inspect the jaws and clean any dirt, grease, or oil from the stainless steel exhaust valve with a clean, lint free cloth. Do not use any solvents as this may result in seal degradation and create the likelihood of personal injury with subsequent use.
2. The entire nozzle should be cleaned periodically by wiping with a cloth or rag. This should occur on average twice per month, more frequently if the nozzle is constantly in use or is used under extremely dirty conditions.
3. Repeatedly depress the exhaust valve to ensure smooth operation. In the event that the valve remains depressed, do not attempt to dislodge it. Call OPW or the local service representative immediately.

Every four months, the inside diameter at the front opening of the nozzles should be measured.
For CT1000 series nozzles, if the inside diameter is greater than 24.7mm, then the nozzle should be returned to OPW for repair.
For CT5000 series nozzles, if the inside diameter is greater than 34.7mm, then the nozzle should be returned to OPW for repair.

OPW offers a proprietary inspection tool that may be purchased. JAWGO-001 for CT1000 series and JAWGO-005 for CT5000 series nozzles.

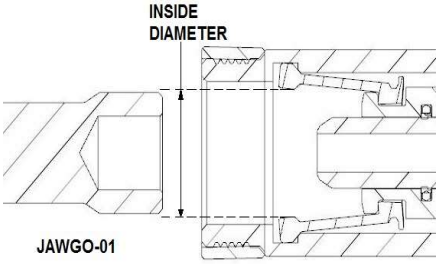


Figure 7: Front Opening

After One Year of Service, The nozzle should be routinely checked for leaks while under service pressure.
After Four Years of Service, The unit should be returned to OPW for inspection and refurbishment of all seals. This period should be reduced to twenty-four (24) months if the potential exists for misuse, abuse, or the nozzle is used in extreme environmental surroundings.