Installation, Operation, & Maintenance Instructions
R500.E259A
10/1/2019

Reliance Product Torque Specifications

Reliance®
A PRODUCT OF CLARK-RELIANCE

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500 ● Fax: +1 (440) 238-8828
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

The following are torque specifications for Reliance® Boiler Level equipment.

Caution: Before proceeding, follow any and all plant lock-out/tag-out procedures required. Any trips/alarms should be bypassed to prevent any false trips/alarms when servicing the equipment. Verify that all power is turned off to any applicable equipment. If under pressure, the equipment should be isolated, or the boiler should be shut down before proceeding with the installation. Open drain valve to eliminate any trapped pressure. All inspection and installation steps should be performed by a qualified technician and should be executed in accordance with all applicable national and local codes and plant procedures.

Only use a properly calibrated torque wrench to guarantee that the specified torque values are achieved. Make sure all bolting is clean and lubricated per the applicable Reliance IOM.

CONDUCTIVITY PROBES

If probes are removed at any time for replacement or inspection, the sealing gasket must be replaced. Probe replacement kits are furnished with two spare gaskets.

Torque the probes as follows:

Model	Torque	Socket Size
T Probe	40 Ft-Lb. (54 Newton-Meters)	7/8” deep well socket
V Probe	40 Ft-Lb. (54 Newton-Meters)	7/8” deep well socket
ZG Probe	40 Ft-Lb. (54 Newton-Meters)	7/8” deep well socket
ZB Probe	40 Ft-Lb. (54 Newton-Meters)	7/8” deep well socket
FG Probe	90 Ft-Lb. (122 Newton-Meters)	1-1/4” deep well socket
FB Probe	90 Ft-Lb. (122 Newton-Meters)	1-1/4” deep well socket

Refer to IOM R500.E189-A-3 for complete instructions.

Note that FSB type probes are installed by placing the coupling nut on to the probe and turn on until hand tight. Then, using a 1 1/8” deep well socket, turn the nut an additional 1/4 turn. No specific torque value is required.

Refer to IOM E229-A for complete instructions.

Reliance®
A PRODUCT OF CLARK-RELIANCE

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500 ● Fax: +1 (440) 238-8828
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

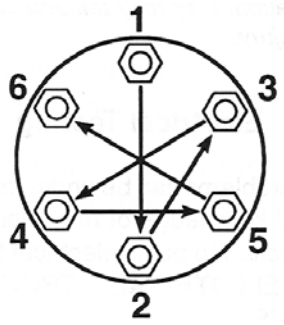
FLANGE CAP FOR WATER COLUMNS

When installing the Cap make sure to use a new cap gasket per the following:

- W0250 Cast Iron Water Column – P/N C1-3
- W0350 thru W0900 Steel Water Column – P/N WC53-12

Torque the bolting as follows:

Column Model	Torque	Socket Size
W0250	70 Ft-Lb. (95 Newton-Meters)	7/8” socket
W0350-W0900	120 Ft-Lb. (163 Newton-Meters)	1-1/4” socket

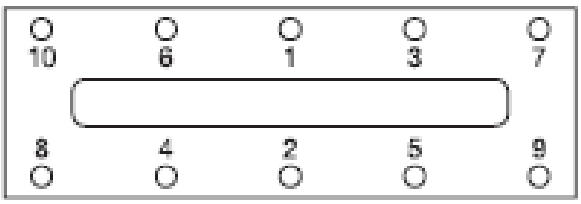


PRISMATIC AND FLAT GLASS GAGE GLASSES

Torque the bolting as follows:

Model	Torque	Socket Size
“C” Prismatic	40 Ft-Lb. (54 Newton-Meters)	¾” socket
“S” Prismatic	40 Ft-Lb. (54 Newton-Meters)	¾” socket
FG400 series	45 Ft-Lb. (61 Newton-Meters)	¾” socket
FG900 series	45 Ft-Lb. (61 Newton-Meters)	¾” socket
FG1500 series	70 Ft-Lb. (95 Newton-Meters)	7/8” socket
FG2000 series	70 Ft-Lb. (95 Newton-Meters)	7/8” socket

Tighten nuts ‘finger tight’ in the sequence shown in the sketch below. Using a calibrated torque wrench, tighten all nuts in the proper sequence in 1/3rd increments.



Refer to IOM R500.E153C for complete instructions.

Reliance®
A PRODUCT OF CLARK-RELIANCE

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500 ● Fax: +1 (440) 238-8828
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

SIMPLIPORT GAGE GLASSES

Torque the PW-68N Packing Nuts as follows:

Model	1st Torque	2nd Torque	Final Torque	Socket Size
P4000 Series	60 Ft-Lb. (81 Newton-Meters)	80 Ft-Lb. (108 Newton-Meters)	100 Ft-Lb. (136 Newton-Meters)	1-7/8" socket
P4100 Series	60 Ft-Lb. (81 Newton-Meters)	80 Ft-Lb. (108 Newton-Meters)	100 Ft-Lb. (136 Newton-Meters)	1-7/8" socket

Tighten the Packing Nuts to "finger tight". Do **NOT** tighten the Packing Nuts completely from "finger tight" to 100 Ft-Lb. Torque in stages as described above waiting approximately five minutes between each stage. NOTE: after the Final Torque, wait about a minute then re-torque nuts to 100 Ft-Lb. Hot torque is not required.

Refer to IOM R500.E241B for complete instructions. Also see the maintenance video at ***www.clark-reliance.com/4000video***

Torque the PW-68N Packing Nuts as follows:

Model	Torque	Socket Size
P3000 Series	140 Ft-Lb. (190 Newton-Meters)	1-7/8" socket
P3100 Series	140 Ft-Lb. (190 Newton-Meters)	1-7/8" socket

Tighten the Packing Nuts to "finger tight", then to 140 ft-lbs

Other model packing nuts:

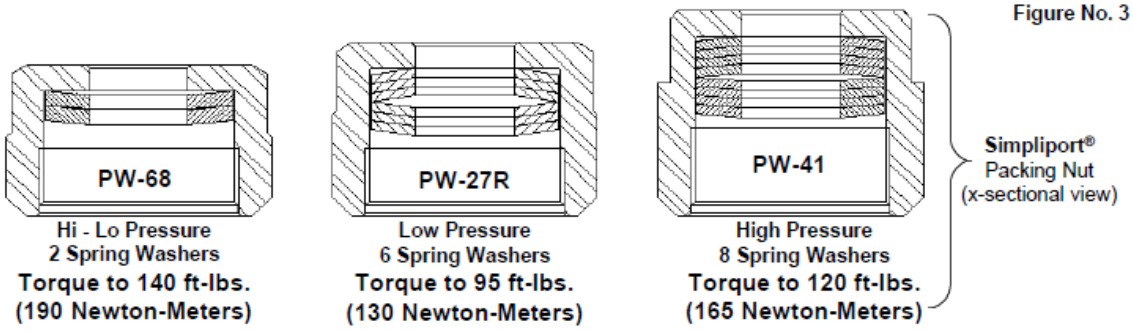


Figure No. 3

Refer to IOM 538I for complete instructions. Also see the maintenance video at ***www.clark-reliance.com/3000video***

Reliance®
A PRODUCT OF CLARK-RELIANCE

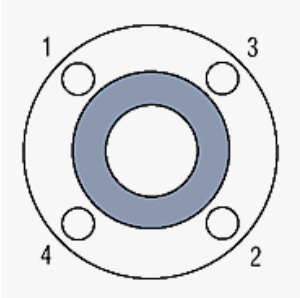
16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500 ● Fax: +1 (440) 238-8828
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

SG454-24 VALVE SEAT

Clean and lubricate threads of seat with Molykote "G" high temperature lubricant, or equal. Install the new seat gasket and new seat. Tighten seat using 3/4" socket with an extension to 40 Ft-Lb. (54 newton-meters) torque.

SG700 SERIES/SG800 SERIES WATER GAGE VALVE FLANGE

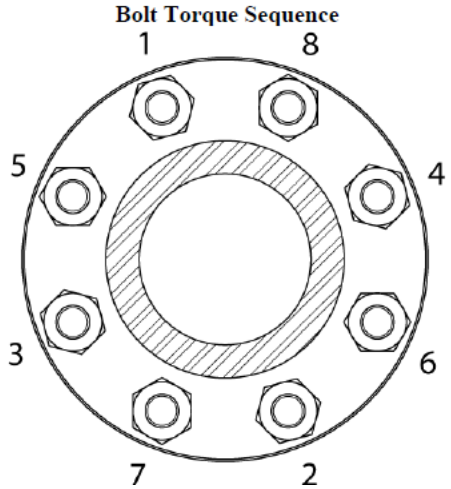
Clean and lubricate threads of the studs with Molykote "G" high temperature lubricant, or equal. Torque to 85 Ft-Lb. (115 newton-meters) with the following bolt sequence.



EA100G LEVALARM ASSEMBLIES

Always use a new gasket when assembling the flange cap. Torque the bolting as follows:

MODEL	1st Torque	2nd Torque	Final Torque
EA100G-150	33	66	100
EA100G-300/ EA100G-300SW	60	120	180
EA100G-600/ EA100G-600SW	116	233	350



Refer to IOM R500.E253A for complete instructions.

Reliance®
A PRODUCT OF CLARK-RELIANCE

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500 ● Fax: +1 (440) 238-8828
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

HOT TORQUE PROCEDURE

When a new piece of equipment, whether a Gage Glass or a Probe type device is installed, the hot torque procedure must be performed. This ensures that all bolting and components are properly seated for optimum performance. This procedure must also be performed after any maintenance is done to the equipment. Note that only the affected components, such as the installation of a new probe or glass kit, need to be hot torqued.

All work must be done by a qualified technician. All plant rules and procedures must be followed, including any lock out / tag out requirements. Verify that all alarms and trips have been by-passed on probe columns before any maintenance is performed, to prevent any false alarms or wiring hazards.
The hot torque procedure should be performed as follows:

1) Isolate the gage glass or probe device from any pressure.
2) Fully open the drain valve to evacuate any built up pressures and to allow the contained steam and water to escape during equipment warm up.
3) Slowly open the steam valve to allow a gentle rush of steam to flow through the equipment. Inspect the equipment to make sure there are no obvious leaks. Close the steam valve and the drain valve. Then open both the This should take approximately 5 – 10 minutes. The observer should see the High Temperature lubricant “sizzling” and smoke emanating from the gage of column. This is an indication that the equipment has reached operating temperatures.
4) When the equipment has been properly heated, close the steam valve. The drain valve should remain open to allow any residual steam or pressure to escape.
5) Immediately re-torque the equipment to the correct values stated in the applicable instruction manual. There should be movement of 1/8th of a turn or more.
6) If there is no movement of the bolting or probes, the equipment was not heated properly. Repeat the procedure.
7) Once the hot torque procedure is completed, close the drain valve, and the equipment can be put back into service. Carefully check for any leaks in the equipment and verify proper operation of all illumination, relay controls and wiring, or other accessories.

Note that Model FSB Compression Type Probes and Model P4000/P4100 Series Simpliport Gages do not require hot torqueing.

Reliance®
A PRODUCT OF CLARK-RELIANCE

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500 ● Fax: +1 (440) 238-8828
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com