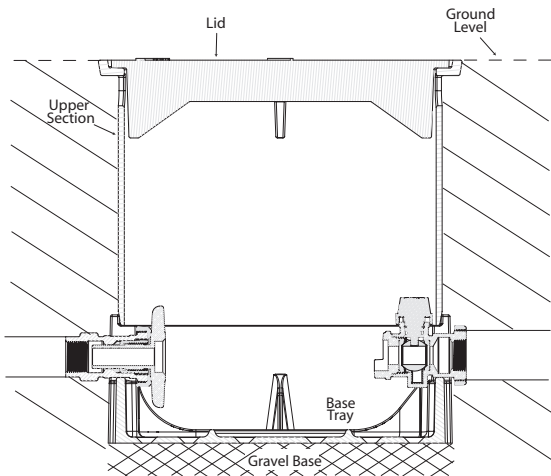


CR Box Installation Instructions

IMPORTANT NOTICE - READ CAREFULLY



1. CR boxes should be installed with the top of the box at ground level.
2. Use proper box depth for freezing conditions.
3. Install on a gravel base for proper drainage.

Operating Ball Valves with Turning Restraints (Checks)

1. Ball valves generally require low operating torques.
2. If valve turns hard, check turning direction before using excess force. Excess force can damage or destroy the turning restraints (checks) in the ball valve cap and body assembly.
3. If the valve cap or stop box handle is perpendicular to the water line the valve is closed and should be turned counter-clockwise to open.
4. If the valve cap or stop box handle is in line with the water line the valve is open and should be turned clockwise to close.

CAUTIONS

A.Y. McDonald waterworks products are designed for reliable service. Like all brass products, however, they can be damaged by improper handling and use.

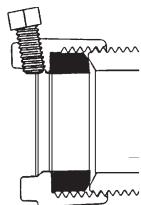
1. Protect threads. Avoid loose fitting wrenches. Do not drop or impact.
2. Use extra care with high water pressures (over 100 PSIG) and pipe or tubing over 1". Consult factory if desired.
3. Inspect and test all joints, valves and fittings before backfilling.
4. Backfill carefully so as to avoid damage to the service line and connections. Looping of the service lines is recommended to minimize strain.
5. DO NOT use Vaseline®, plumber's grease, or any other petroleum based product on seals or o-rings.

Damage caused by improper use and/or handling will void our warranty.

1. Use a tube or pipe cutter to assure a square end. Make sure pipe is round. On copper tubing, use a rounding tool, if necessary. Surface should be clean.
2. Service tubing should always be **snaked** in the ditch.
- * 3. **INSERT STIFFENERS MUST BE USED ON FLEXIBLE PLASTIC SERVICE TUBE OR PIPE.**
4. Stab tube or pipe through the nut and into the socket of the valve or fitting until it bottoms out (some fittings may or may not have a stop).
5. If the nut or socket appears too large or small, a check should be made to be sure you are using the correct fitting and pipe/tube.
6. **PRESSURE TEST FOR LEAKS BEFORE BACKFILLING.**
7. **USE ONLY ON COLD WATER SERVICES.**

Compression Connectors • General Information

Steel Pipe Size "55" Compression Connectors



Tighten the "55" Compression nut onto the valve or fitting to the following minimum torques.

3/4" size.....	30 ft-lbs.
1" size.....	35 ft-lbs.
1 1/2" size.....	40 ft-lbs.
2" size.....	45 ft-lbs.

This compresses the gasket for watertight connections. Overtorquing nut by 10-20 ft-lbs. will not affect connections.

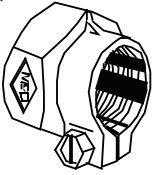
Lock the pipe onto the nut by tightening the cup-point set screw(s) as follows (NOTE UNIT CHANGE).

3/4" size.....	3/4 - 1 turns (approx. 50 in-lbs.)
1" size.....	1 1/2 - 2 turns (approx. 180 in-lbs.)
1 1/2" size.....	1 1/2 - 1 3/4 turns (approx. 210 in-lbs.)
2" size.....	1 1/2 - 1 3/4 turns (approx. 210 in-lbs.)

(OVER)

Compression Connectors • General Information

Mac-Pak Compression Connectors (22, 33, 44)



Tighten the Mac-Pak nut onto the valve or fitting to the following minimum torques. Overtorquing nut by 10-20 ft.-lbs. will not affect connections.

- 1/2" size 20 ft.-lbs.
- 3/4" size 25 ft.-lbs.
- 1" size 30 ft.-lbs.
- 1 1/4" size 35 ft.-lbs.
- 1 1/2" size 40 ft.-lbs.
- 2" size 45 ft.-lbs.

Lock the tube or pipe into the nut by securely tightening the split clamp side screw (use a box end or socket wrench, not a screwdriver). The torques to which the clamp side screw should be tightened are as follows (NOTE CHANGE IN UNITS).

- 1/2" size 70-80 in.-lbs.
- 3/4" size 80-90 in.-lbs.
- 1" size 90-100 in.-lbs.
- 1 1/4" size 120-140 in.-lbs.
- 1 1/2" size 160-180 in.-lbs.
- 2" size 200-220 in.-lbs.

A.Y. McDonald Mac-Pak Coding System

All A.Y. McDonald Mac-Pak fittings are coded to identify which type of service material they are designed to fit. Lettering is on the hex of the Mac-Pak nut.

***INSERT STIFFENERS MUST BE USED ON FLEXIBLE PLASTIC SERVICE TUBE OR PIPE.**

CTS

- Copper tube (Type K or L)
- PE tube per ASTM D2737 SDR 9 ONLY
- PB tube per ASTM D2666 SDR 9 Class 250 ONLY

PVC

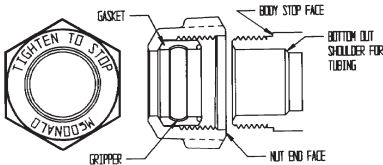
- PVC pipe per ASTM D1785
- Steel pipe
- Brass pipe

*PEP

- PE pipe per ASTM D2239 SDR 7 ONLY
- PB pipe per ASTM D2662 SDR 7 Class 250 ONLY

*Was marked IPS until 2/02

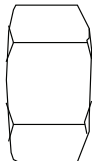
CTS McQuik ("Q") Series and PEP McQuik ("-3Q") Series Compression Connectors



Tighten the CTS McQuik "Q" Series nut or the PEP McQuik "3Q" nut to the stop. The end face of the nut is to contact the stop face of the body.

T-Series (CTS) and -3T Series (PEP) Compression Connectors

Tighten the compression nut onto the valve or fitting to the following minimum torques. Overtorquing nut by 5-10 ft.-lbs. will not affect connections.



T-Series

- 3/4" size 50 ft.-lbs.
- 1" size 55 ft.-lbs.
- 1 1/4" size 65 ft.-lbs.
- 1 1/2" size 85 ft.-lbs.
- 2" size 100 ft.-lbs.

-3T Series

- 3/4" size 55 ft.-lbs.
- 1" size 65 ft.-lbs.

Types of Pipe/Tubing for use with A.Y. McDonald Fittings (Outside Diameters listed)

NOMINAL SIZE	TYPE K or L COPPER TUBE	POLYETHYLENE ASTM D2737 SDR 9 TUBE SIZE *	POLYBUTYLENE ASTM D2666 SDR 9 TUBE SIZE CLASS 250 *	POLYETHYLENE ASTM D2239 SDR 7 PIPE SIZE *	POLYBUTYLENE ASTM D2662 SDR 7 CLASS 250 *
3/4"	.872 .878	.871 .879	.875 .883	1.045 1.110 (1.089)	1.045 1.110 (1.089)
1"	1.121 1.129	1.120 1.130	1.125 1.135	1.329 1.399 (1.384)	1.329 1.399 (1.384)
1 1/4"	1.371 1.379	1.370 1.380	1.375 1.385	1.754 1.832 (1.804)	1.754 1.832 (1.804)
1 1/2"	1.621 1.630	1.619 1.631	1.625 1.637	2.050 2.141 (2.109)	2.050 2.141 (2.109)
2"	2.120 2.130	2.119 2.131	2.125 2.137	2.637 2.742 (2.709)	2.637 2.742 (2.709)

() • Maximum pipe O.D. that will work with A.Y. McDonald fittings.



WARNING: Beginning January 1, 2010, it is unlawful in CALIFORNIA and VERMONT to use any product in the installation or repair of any public water system or any plumbing in a facility or system that provides water for human consumption if the wetted surface area of the product has a weighted average lead content greater than 0.25%. This prohibition does not extend to service saddles used in the state of CALIFORNIA.

(OVER)

