

# TORQUE VALUES & ULTRA-FLEX 650™ CRIMP DIMENSIONS

## TECHNICAL SECTION

### TORQUE VALUES

The table below gives the torque tightening values for JIC (AN) fittings in both stainless steel and aluminum. When a combination of aluminum and stainless steel fittings are being mated always use the aluminum fitting torque values

DASH SIZE	ALUMINUM		STAINLESS STEEL	
	INCH/LVS MIN-MAX	NEWTON/m MIN-MAX	INCH/LBS MIN-MAX	NEWTON/m MIN-MAX
-02	50 - 80	5.64 - 9.03	75 - 120	8.47 - 13.55
-03	70 - 105	7.90 - 11.86	95 - 140	10.73 - 15.81
-04	100 - 104	11.29 - 15.81	135 - 190	15.25 - 21.46
-05	130 - 180	14.68 - 20.33	170 - 240	19.20 - 27.11
-06	150 - 195	16.94 - 22.03	215 - 280	24.29 - 31.63
-08	270 - 350	30.50 - 39.54	470 - 550	53.08 - 62.14
-10	360 - 430	40.67 - 48.58	620 - 745	70.05 - 84.17
-12	460 - 550	51.97 - 62.14	855 - 1055	96.60 - 119.18
-16	700 - 840	79.08 - 94.90	1140 - 1370	128.80 - 154.78
-20	850 - 1020	96.03 - 115.24	1520 - 1825	171.73 - 206.19
-24	900 - 1080	101.68 - 122.02	1900 - 2280	214.67 - 257.60
-32	1800 - 2000	203.37 - 255.97	2660 - 2940	300.54 - 332.17

The torque values apply to machined fitting connections only, not flared tube or compression. Fitting mating faces and threads should be lubricated prior to assembly. Generally the system working fluid (engine oil, hydraulic etc.) is used. If another lubricant is used, insure it is compatible with the working fluid and system. Dry assembly should be avoided if all possible.

It is important not to over tighten hose fittings to their mating adapters. Over tightening causes permanent deformation of the fitting seat (37° AN flare) and will result in the mating adapter sealing face to be made concave, this will inhibit repeated reliable use of both the fitting and the adapter.

### ULTRA-FLEX 650™ CRIMP DIMENSIONS

The target settings for the Earl's Ultra-Flex 650™ Kevlar & Stainless Steel covered hose, to be applied when using the Earl's Ultra-Flex Crimper and dies, are provided to aid in establishing actual diameters. While the Earl's Ultra-Flex crimper and dies for our Ultra-Flex hose will give crimp diameters close to, or at, specified diameters, the machine operator must check to verify actual dimensions.

SIZE	Dia. after Crimp (in.)	Dia. After Crimp (mm)
-4	Ø 0.465 +/- .005	Ø11.81mm +/- .12mm
-6	Ø 0.606 +/- .005	Ø15.39mm +/- .12mm
-8	Ø 0.800 +/- .005	Ø20.32mm +/- .12mm
-10	Ø 0.930 +/- .005	Ø23.6mm +/- .12mm
-12	Ø 1.151 +/- .005	Ø29.23mm +/- .12mm
-16	Ø 1.345 +/- .005	Ø33.63mm +/- .12mm

Failure to follow these instructions could result in serious injury or property damage during crimping. Improperly crimped fittings can be dangerous to the user of the hose assembly.

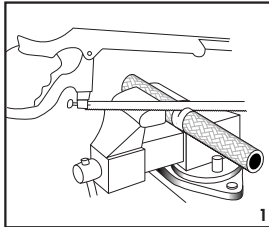
- Do not crimp Earl's hose or fittings with another manufacturer's hose or fitting.
- These dimensions are for Earl's Ultra-Flex Kevlar & Stainless covered hose and Ultra-Flex hose ends only.
- Wear safety glasses and keep hands away from moving objects.
- Always check for proper crimping dimensions

Always test assemblies for leakage prior to installation.

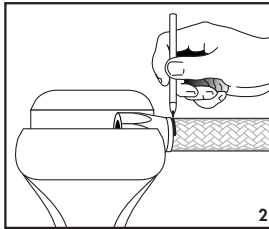


**Pressure Test All Hose Assemblies Before Installation!**

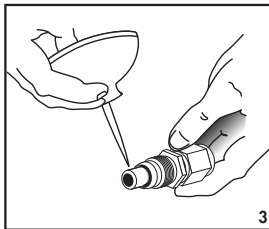
### SWIVEL-SEAL™ HOSE ENDS WITH PERFORM-O-FLEX™, PRO-LITE 350™ OR AUTO-FLEX™ HOSE



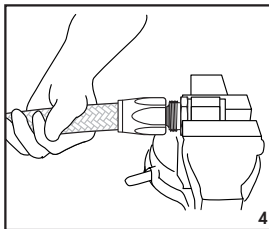
1. Cut the hose to the required length.
  - a. Measure distance between ports or adapter fittings along the path that the hose run will follow—allowing for bend radius, hose end length and offset to obtain length and hose required.
  - b. Cut the hose square with a radiac wheel or a sharp 32 teeth per inch hacksaw blade. It is necessary to wrap it tightly with electrical or masking tape before cutting and to cut through the tape. This helps to prevent the stainless wire braid from fraying.
  - c. Trim any frayed ends of the braid with a sharp pair of metal snips or diagonal cutters and remove the tape.



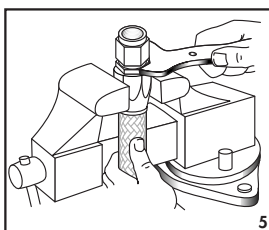
2. Place the socket in a vise and insert the end of the hose into the socket until the hose butts against the bottom of the threads provided for the cutter. Gently pull the hose back until there is a 1/16" to 1/8" gap between the end of the hose and the bottom of the threads—mark hose at bottom of socket with a felt pen so that you can detect any tendency of the hose to be pushed out as you complete the assembly.



3. Lubricate the inside of the hose, the cutter threads and the socket threads with Earl's assembly lube or engine oil. Place the nipple in a vise.



4. Holding the hose and not the socket, push the hose and the socket onto the nipple until the socket threads can be started on the cutter. Holding the hose and not the socket, start the threads and go as far as you can by hand. Depending on the size of the hose, some force may be necessary in this part of the operation.



5. To complete the assembly it doesn't matter whether the nipple or the socket is held in the vise. Holding one or the other in the vise and using a suitable wrench on the other, tighten the socket onto the cutter threads until the socket is within .060" of bottoming on the nipple. Do not use an adjustable or over-size wrench or you will damage either the nipple or the socket.



6. Check the mark that you made on the hose in Step 2. If the hose has backed more than about 1/16" out of the socket as you assembled it, return to Step 3.

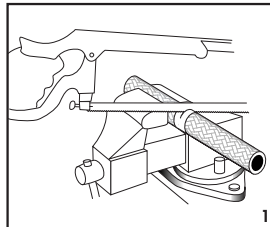


7. Clean the hose and the hose ends with CLEAN solvent.

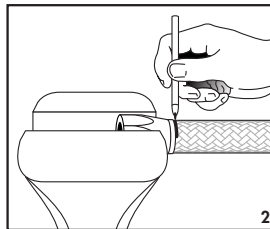


8. Pressure test the assembly before letting it out of your sight. Further check the assembly by running the system at full pressure while you observe the hose, hose ends, and adapters for leaks.

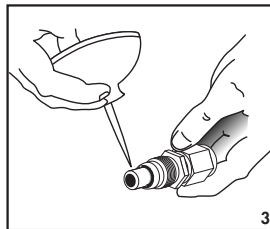
### AUTO-FIT™ HOSE ENDS WITH PERFORM-O-FLEX™, AUTO-FLEX™, OR PRO-LITE 350™ HOSE



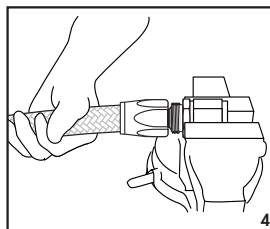
1. Cut the hose to the required length.
  - a. Measure distance between ports or adapter fittings along the path that the hose run will follow—allowing for bend radius, hose end length and offset to obtain length and hose required.
  - b. Cut the hose square with a radiac wheel or a sharp 32 teeth per inch hacksaw blade. It is necessary to wrap it tightly with electrical or masking tape before cutting and to cut through the tape. This helps to prevent the stainless wire braid from fraying.
  - c. Trim any frayed ends of the braid with a sharp pair of metal snips or diagonal cutters and remove the tape.



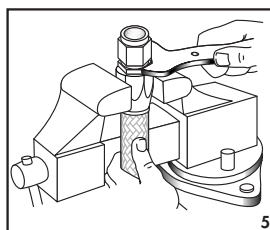
2. Place the socket in a vise and insert the end of the hose into the socket until the hose butts against the bottom of the threads. Gently pull the hose back until there is a 1/16" to 1/8" gap between the end of the hose and the bottom of the socket—mark hose at bottom of socket with a felt pen so that you can detect any tendency of the hose to be pushed out as you complete the assembly.



3. Lubricate the inside of the hose, the nipple threads and the socket threads with Earl's Assembly Lube or Engine Oil. Place the nipple in a vise.



4. Holding the hose and not the socket, push the hose and the socket onto the nipple until the socket threads can be started on the nipple. Holding the hose and not the socket, start the threads and go as far as you can by hand. Depending on the size of the hose, some force may be necessary in this part of the operation.



5. To complete the assembly it doesn't matter whether the nipple or the socket is held in the vise. Holding one or the other in the vise and using a suitable wrench on the other, tighten the socket onto the cutter threads until the socket is within .060" of bottoming on the nipple. Do not use an adjustable or over-size wrench or you will damage either the nipple or the socket.



6. Check the mark that you made on the hose in Step 2. If the hose has backed more than about 1/16" out of the socket as you assembled it, return to Step 3.



7. Clean the hose and the hose ends with CLEAN solvent.



8. Pressure test the assembly before letting it out of your sight. Further check the assembly by running the system at full pressure while you observe the hose, hose ends, and adapters for leaks.

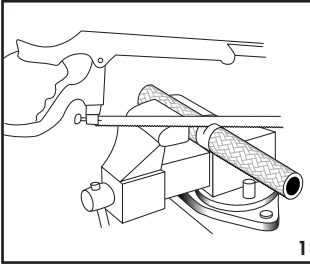
# ASSEMBLY INSTRUCTIONS

## TECHNICAL SECTION

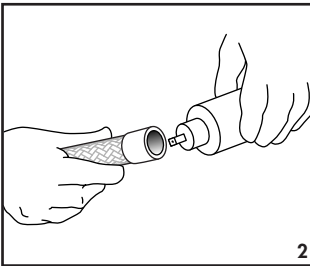


Pressure Test All Hose Assemblies Before Installation!

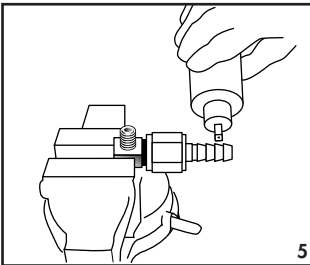
### AUTO-CRIMP™ Hose Ends with PERFORM-O-FLEX™, PRO-LITE 350™ or AUTO-FLEX™ Hose



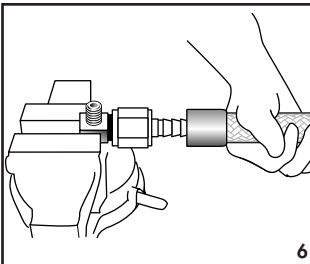
1. Cut the hose square with a radiac wheel or a fine tooth hacksaw. It is necessary to wrap the hose tightly with masking or electrical tape and to cut through the tape. This helps to prevent the stainless braid from fraying.



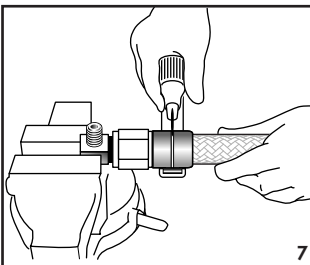
2. Trim any frayed ends of the braid with sharp snips or diagonal cutters and remove the tape.



3. Slip the AUTO-CRIMP collar over the end of the hose.



4. Lubricate the inside of the hose and the outside of the AUTO-MATE nipple.



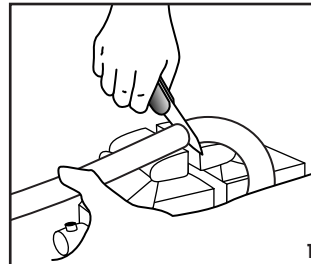
5. Place a suitable adapter fitting in a vise. Screw the AUTO-MATE hose end onto the adapter and tighten.

6. Push the AUTO-MATE hose end into the hose until it bottoms against the collar.

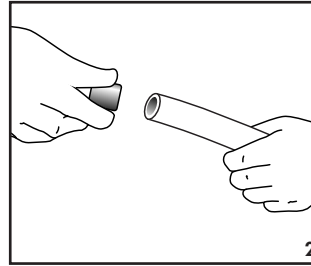
7. Place the AUTO-CRIMP tool approximately in the center of the collar. Tighten the roller until it contacts the collar. Alternately turning the handle and tightening the roller, crimp the collar until its diameter has been reduced sufficiently to show the hose end barbs as ridges in the collar.

8. Blow the assembly clean and pressure test before running the car.

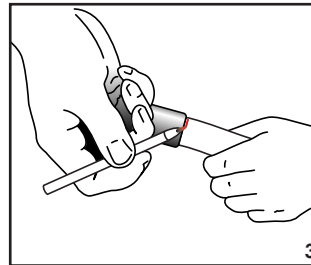
### SUPER STOCK™ Hose Ends with SUPER-STOCK™ Hose



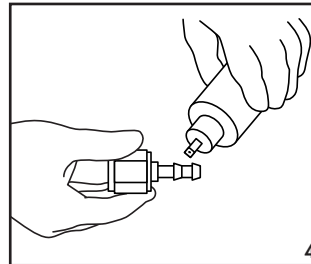
1. Cut the hose square with a sharp knife.



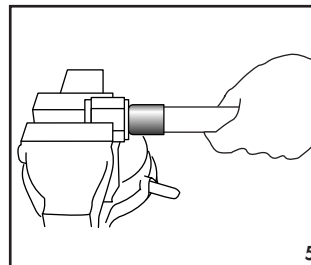
2. Slip the aluminum collar over the hose.



3. Mark the hose at the back of the collar.



4. Lubricate the inside of the hose and the outside of the nipple. Use assembly lube or engine oil. Do not use a silicon-based lube.



5. Push the hose end into the hose until it bottoms.

6. Check the mark made on the hose in Step 3 to ensure that the hose end has indeed bottomed against the end of the hose.

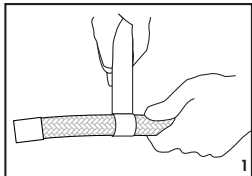
7. Blow the assembly clean and pressure test before running the car.

\*Hose ends should be crimped if close to 250 PSI max.

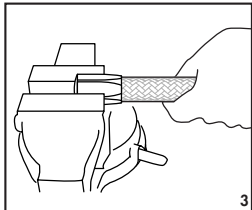


Pressure Test All Hose Assemblies Before Installation!

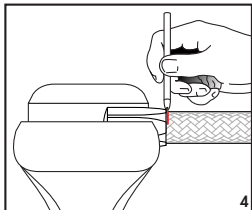
### POWER STEERING HOSE ENDS WITH POWER STEERING HOSE



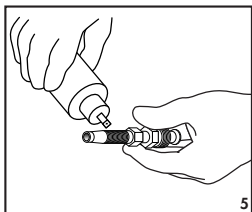
1. Cut the hose square with a ratchet wheel or a fine tooth hacksaw. It is necessary to wrap the hose tightly with masking or electrical tape and to cut through the tape. This helps to prevent the steel braid from fraying.



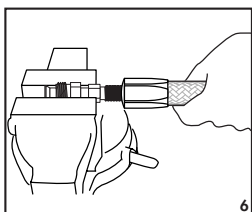
2. Trim any frayed ends of the braid with sharp snips or diagonal cutters and remove the tape.



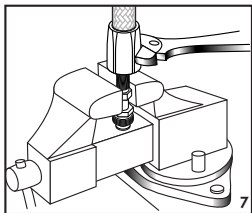
3. Thread the socket over the end of the hose until it bottoms. NOTE: Thread is left handed.



4. Mark the hose at the back end of the socket.



5. Lubricate the inside of the hose and the outside of the nipple (including the threads).



6. Push the hose end into the hose and thread the nipple onto the hose end as far as possible by hand.



7. Clamp the nipple in a vise and tighten the hose end until it bottoms against the nipple.

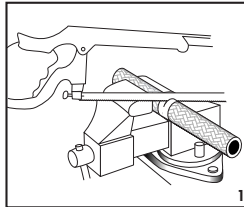


8. Check the mark made on the hose in Step 3 to ensure that the hose did not back out of the socket while tightening.



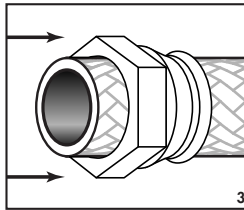
9. Blow the assembly clean and pressure test before running the car.

### SPEED-SEAL™ HOSE ENDS WITH SPEED-FLEX™ HOSE

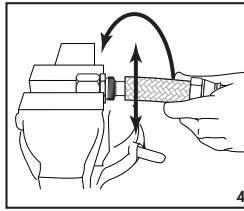


BRAKE LINES are critical items. The potential penalties for improper assembly are severe. Although there is nothing complicated about the procedure and no special tools are required, extreme care must be used in assembly. We strongly recommend that the following procedures be used:

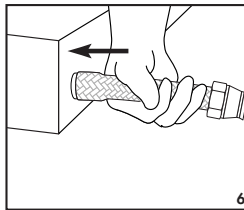
1. Cut the hose to the required length. We recommend the use of a ratchet wheel but it can be done satisfactorily with a 32 teeth per inch hacksaw blade. In either case, the hose must be tightly wrapped with electrical or masking tape and the cut made through the tape. Do not cut SPEED-FLEX hose with a chisel, snips, pliers, or a shear as these may crush the Teflon liner.



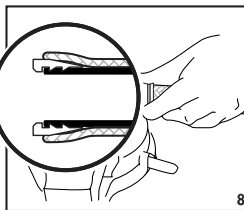
2. De-burr the Teflon and trim any loose ends of braid with sharp snips or diagonal cutting pliers.



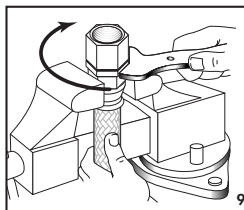
3. Install the socket on the hose with the threaded end of the socket toward the cut end of the hose. This will be a lot easier and you will end up with fewer holes in your hand if you clamp the socket in a vise. Push socket on well beyond end.



4. Place the hex portion of the nipple in the vise. Insert the end of the hose into the nipple and bottom the hose against the chamfer seat of the nipple with a rotary motion of the hose. This will size the I.D. of the Teflon tube.



5. Separate the braid from the O.D. of the Teflon tube. The best way is to use Earl's special braid spreader tool for sizes 3+4 (see Plumbing Accessories Section). In the absence of the tool, separate the braid with a small screwdriver or a scribe. Be careful not to scratch or nick the Teflon.



6. Install the sleeve between the braid and the Teflon tube. Make sure that none of the braid is trapped between the Teflon and the sleeve. Bottom the tube against the shoulder of the sleeve and make sure that the sleeve is inserted square.

7. With the nipple held in the vise, push the hose and the sleeve onto the nipple until the sleeve bottoms. Remove the hose and make sure that the Teflon tube is still bottomed against the shoulder of the sleeve and that the sleeve is still square.

8. Push the hose and sleeve back onto the nipple and bottom against the chamfer. Oil the nipple threads. Start the socket onto the nipple threads and hand tighten.

9. Place the socket in the vise and complete the assembly by tightening the nipple onto the socket with a wrench until the gap between the face of the socket and the hex of the nipple .023" to .046" —use a feeler gauge.

10. Blow the assembly clean and pressure test before running the car.

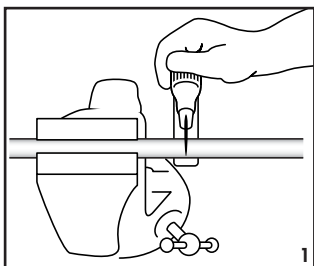
# ASSEMBLY INSTRUCTIONS

## TECHNICAL SECTION

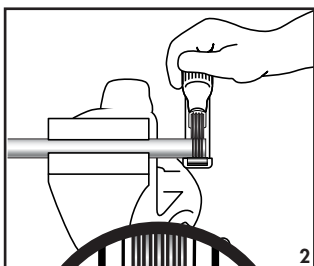


Pressure Test All Hose Assemblies Before Installation!

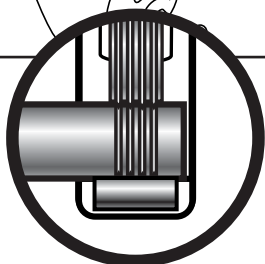
### TUBE-MATE™, AUTO-FIT™ HOSE ENDS



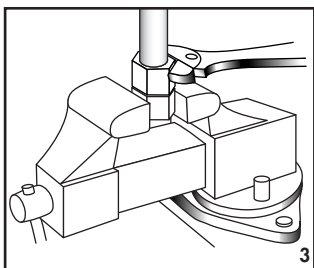
1. Assemble the tube-mate end onto the hose onto the hose per Auto-Fit hose and instructions.
2. Cut and de-burr the tubing. The cut must be square.



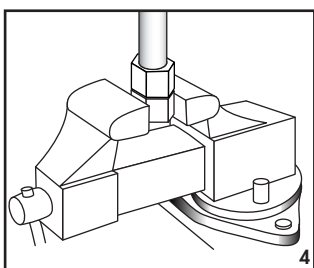
3. Using the TUBE-MATE grooving tool, groove the tubing. The tubing may also be beaded (or barbed). See Earl's new tube beading tool.



4. Push the tubing into the correct size Tube-Mate until it bottoms.

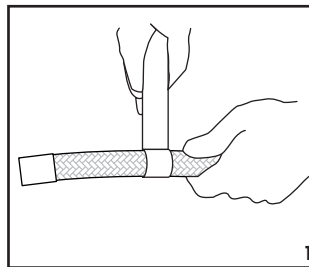


5. Tighten the TUBE-MATE nut.
6. Blow the assembly clean and pressure test before running the car.

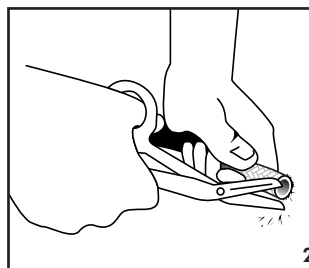


**NOTE:** TUBE-MATE hose ends are designed to be used only with beaded, barbed or grooved rigid tubing at no more than 25 psi working pressure.

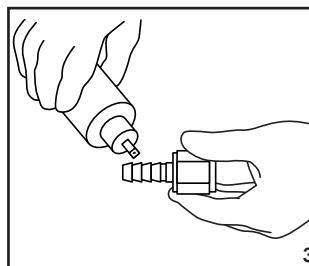
### AUTO-MATE™ HOSE ENDS WITH PERFORM-O-FLEX™ AUTO-FLEX™ OR PRO-LITE 350™ HOSE



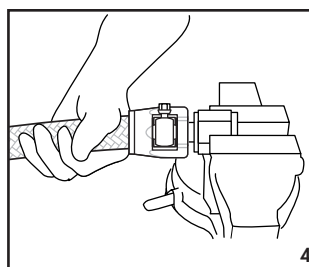
1. Cut the hose square with a Radiac wheel or a fine tooth hacksaw. It is necessary to wrap the hose tightly with masking or electrical tape and to cut through the tape. This helps to prevent the stainless braid from fraying.



2. Trim any frayed ends of the braid with sharp snips or diagonal cutters and remove the tape.

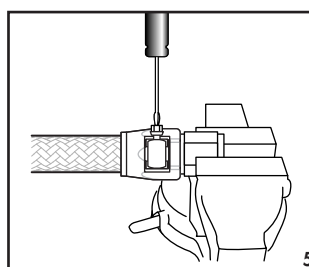


3. Slip the ECON-O-FIT collar over the end of the hose.



4. Lubricate the inside of the hose and the outside of the AUTO-MATE nipple.

5. Push the AUTO-MATE into the hose until it bottoms against the socket.



6. Tighten the ECON-O-FIT hose clamp.

7. Blow the assembly clean and pressure test before running the car.