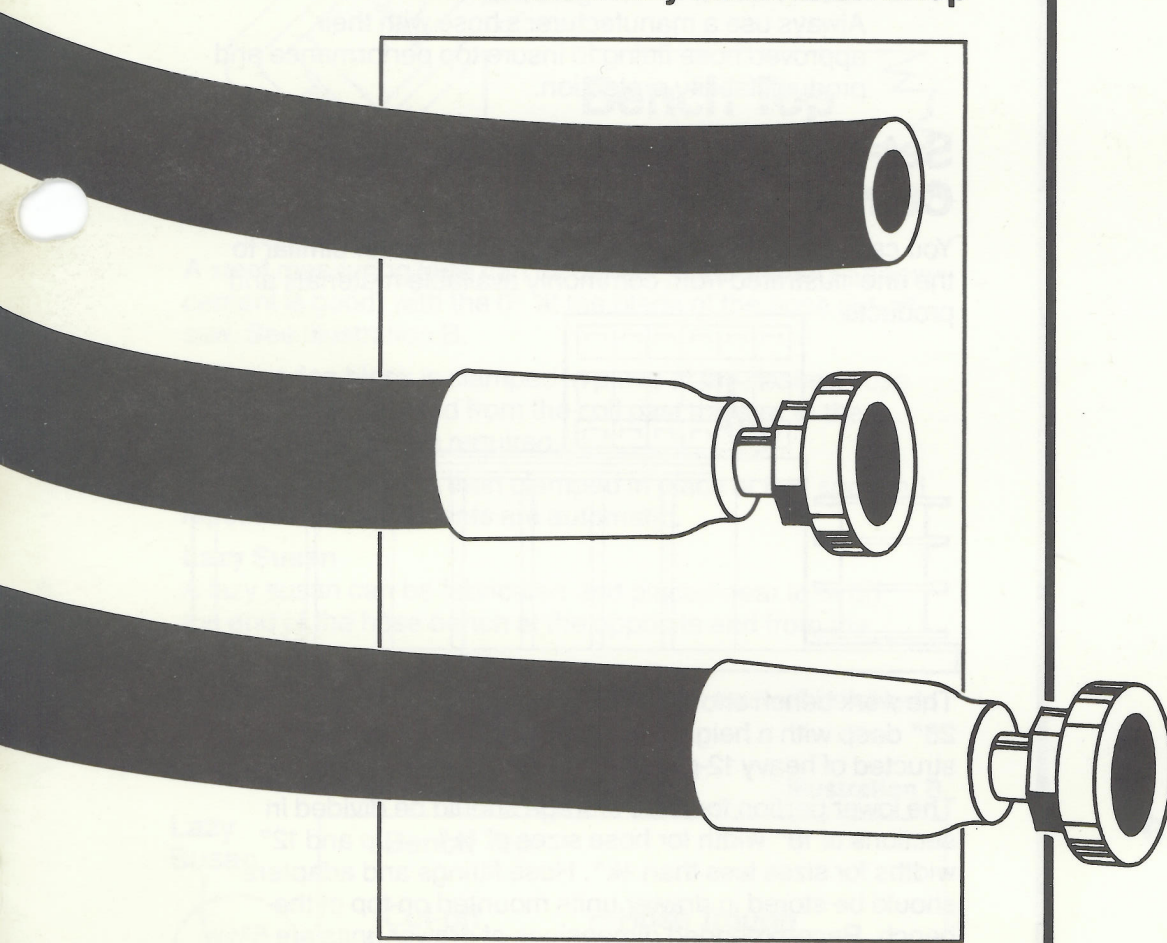


Hose Assembly Fabrication

SHOP SERVICE MANUAL

**A guide for setting up a
hose assembly fabrication shop**



**PROCEDURES &
STANDARD
PRACTICES**

The contents are intended to be a guide for setting up a hose assembly fabrication shop.

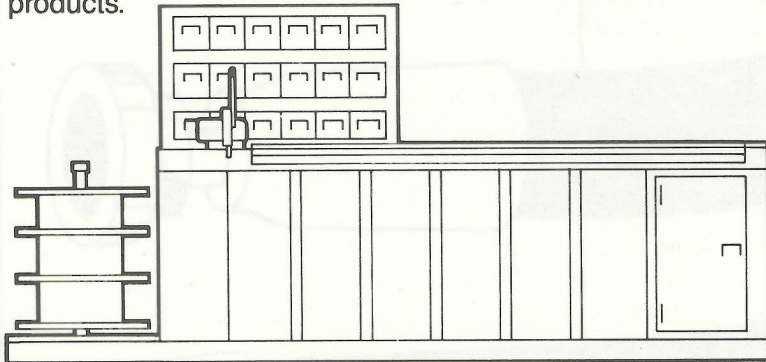
There are, of course, many ways this can be accomplished, however we have attempted to illustrate some of the practices that we find rather common throughout the industry.

Among the elements we would like to emphasize are:

- Proper Lighting
Good lighting contributes to safety, accuracy and productivity.
- Good Housekeeping
Cleanliness in the workplace aids in employee productivity and also promotes customer confidence.
- Utilize Manufacturer's Catalogs
Be sure that instructions given in manufacturer's catalogs are strictly adhered to and that your employees are totally familiar with them.
- Hose Utilization
Hose remnants or "shorts" accumulated when cutting hoses for assembly work, can represent lost profits, if a system is not set up to utilize them.
- Match Hose and Fittings
Always use a manufacturer's hose with their approved hose fitting to insure top performance and product liability protection.

Set-Up a Hose Assembly Work Center

You can construct a hose assembly work center similar to the one illustrated from commonly available materials and products.



The work bench should be a minimum of 90" in length and 28" deep with a height 34½". Bench top should be constructed of heavy 12-gauge steel.

The lower portion for hose storage should be divided in sections of 18" width for hose sizes of ¾" — up and 12" widths for sizes less than ¾". Hose fittings and adapters should be stored in drawer units mounted on top of the bench. Recommended dimensions of drawer units are 5¾w × 4½h × 11 deep, 8¾w × 2½h × 11 deep. These types of units can be purchased from local sources.

A hose trough greatly facilitates handling hose during the cutting. See Illustration A.

The trough can be fabricated from 3" or 4" steel angle iron or can be bent (on a bending brake) using 10 or 12 gauge sheet steel.

The trough should be almost as long as the hose bench.

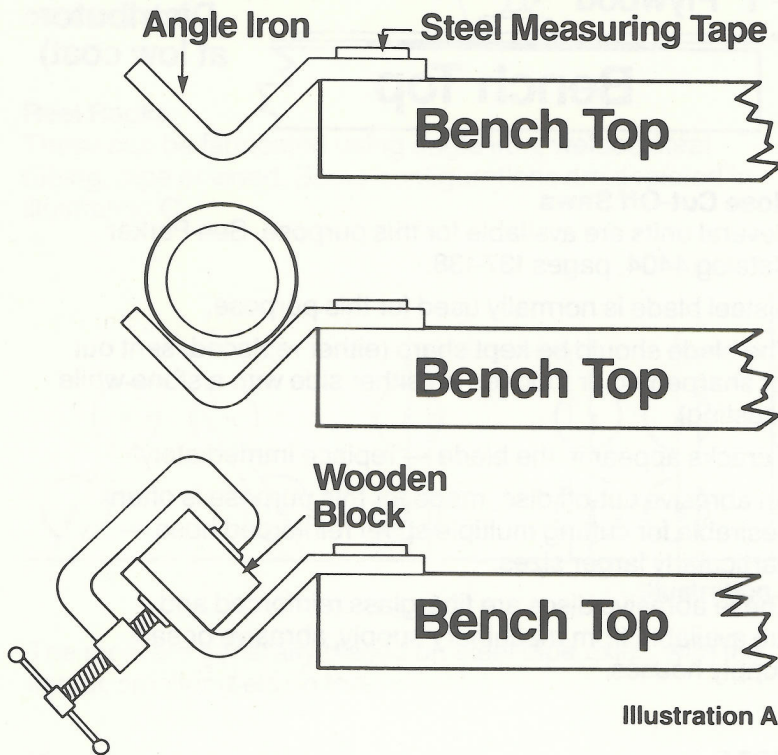


Illustration A

A steel measuring tape can be fastened to the bench (epoxy cement is good) with the 0" at the blade of the hose cut-off saw. See Illustration B.

The wooden block is clamped in place at the desired hose length, the hose is fed from the coil past the saw to the length (blade to end) required.

The wooden block is then clamped in place at that spot and repetitive measurements are automatic.

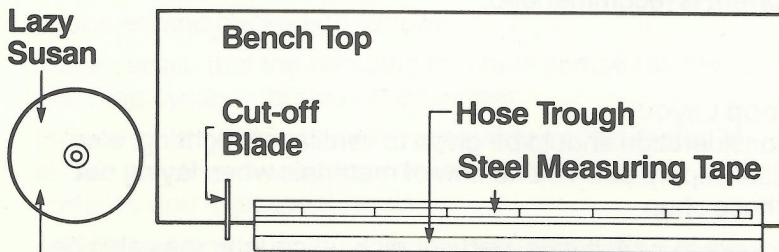
Lazy Susan

A lazy susan can be fabricated and placed near to or on the end of the hose bench at the opposite end from the cut-off saw.

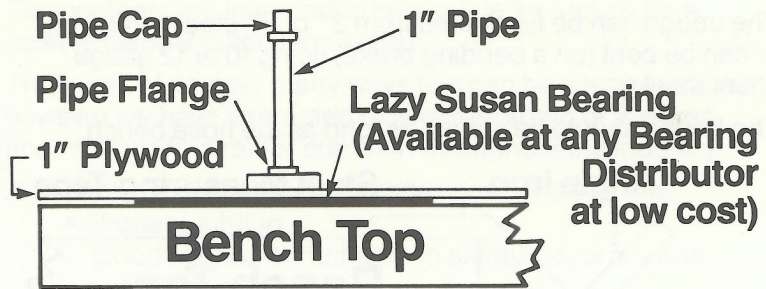
This will facilitate the handling of the hose and will be of help when more than one length is being cut.

Top View

Illustration B



Recommend a minimum 38" diameter



Hose Cut-Off Saws

Several units are available for this purpose. See Parker Catalog 4404, pages 137-138.

A steel blade is normally used for this purpose.

The blade should be kept sharp (either replaced, sent out for sharpening or touched on either side with a stone while coasting).

If cracks appear in the blade — replace immediately.

An abrasive cut-off disc, made for this purpose is often desirable for cutting multiple spiral reinforced hose — particularly larger sizes.

These abrasive discs are fiberglass reinforced and are available from machinery supply, abrasive or saw supply houses.

NOTE:

It is important to note the RPM restrictions printed on these blades.

Flexovit is a typical brand.

NOTE:

As with any cutting operation, some debris is generated. Unless the hose is properly cleaned, this debris can find its way into hydraulic system and possibly cause damage.

Cleaning

At the least, after being cut to length, the hose should be 'blown out' with compressed air.

It would be desirable to flush the hose after cutting and again after assembly with a suitable solvent.

Solvent Stoddard 3039 or another brand of safety cleaning solvent is recommended.

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Shop Layout

Consideration should be given to ventilation, lighting, electrical supply, source and flow of materials when laying out a hose shop.

Access to a cash sale, parts or pick-up counter may also be a consideration.

Hose Handling

Reels

Reels offer a convenient way to ship and store hose. They can be rolled from one location to another, stacked or placed on a reel rack.

Reel Racks

These can be fabricated using angle iron, welded steel tubing, pipe or wood. Some configurations are depicted in illustration C.

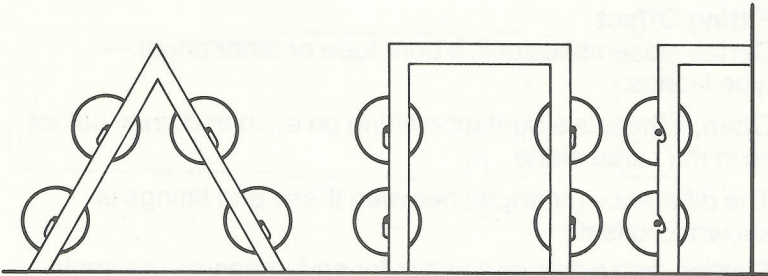


Illustration C

The reels are generally placed on steel pipe axles, with the lighter, smaller reels on top.

Hose Boxes

It is common practice to stand boxes on end, so they can easily be retrieved; this method facilitates a system of using the oldest hose first.

Hose Storage

Hose should be stored away from direct sunlight in a reasonably cool spot and away from sources of ozone, such as heavy electrical equipment.

Good Assembly Practice

The fitting should be examined before assembly to the hose.

Check for proper threads, check for a clear I.D. and that swivel nuts swivel freely, plus O-Rings are present where called for.

Always assure that the hose is bottomed into the fitting completely before crimping — or in the case of reusables, bottomed and backed-off $\frac{1}{2}$ turn.

Make certain that the crimping machine completes the crimping cycle — 'bottom' the crimper.

Hose should be cleaned after assembly and protected in such a way to prevent contamination and damage to sealing surfaces and exposed threads.

A Dial Caliper can be used to check for crimp diameters. See catalog for proper crimp diameters.

Hose Assembly Lengths

Proper fitting cut-off factors should be used to assure correct assembly length.

These factors are found in the appropriate fitting catalog adjacent to the fitting illustration.

Allowable tolerance — Industry standards call for the following overall length variation of a hose assembly.

Length — Inches	Tolerance
Up to 12"	$\pm \frac{1}{8}"$
Over 12" thru 18"	$\pm \frac{3}{16}"$
Over 18" thru 36"	$\pm \frac{1}{4}"$
Over 36"	$\pm 1\%$

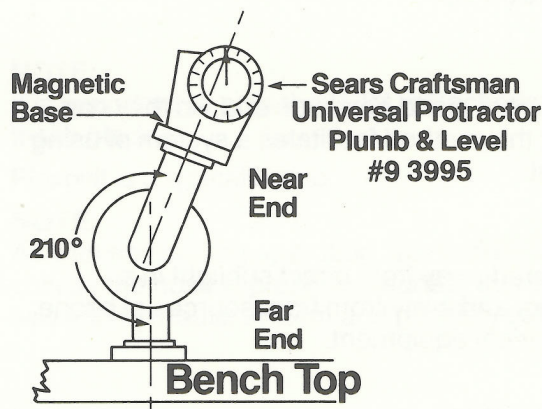
Fitting Offset

Certain assemblies utilize bent tube or other angle — type fittings.

Often, if there is a bent tube fitting on each end, they do not lie in the same plane.

The difference (or angle) between these end fittings is known as offset.

Starting with either end as the far end, measure the angle clockwise from the centerline of the far end to the centerline of the near end to describe the 210° displacement of the near end.



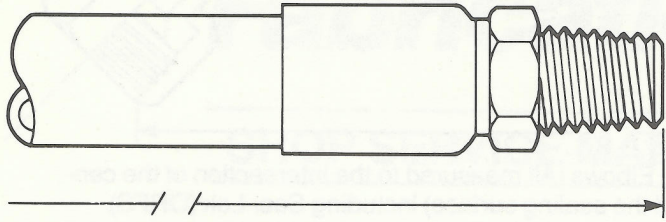
Procedure:

1. Place fitting #1 on the hose and crimp.
2. Place fitting #2 on the hose — do not crimp.
3. Rotate fitting # 2 in a clockwise direction until it is located at approximately the angle specified.
4. Place the magnetic protractor (Sears Craftsman Universal Protractor Plumb and Level #9 3995) across the face of the uncrimped fitting and position fitting at the correct angle.
5. Crimp the second end.

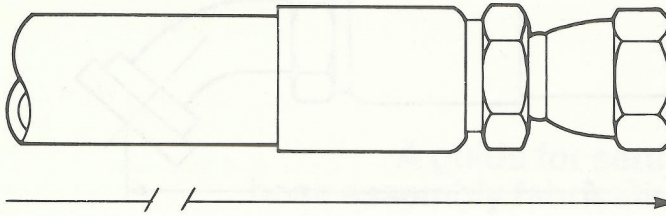
This method is not exact and is sometimes awkward, however without elaborate fixtures probably represents the best method available.

Hose Overall Length Measurement

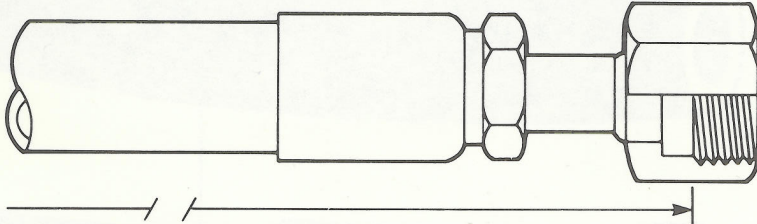
The proper method of measuring a hose assembly is as follows:



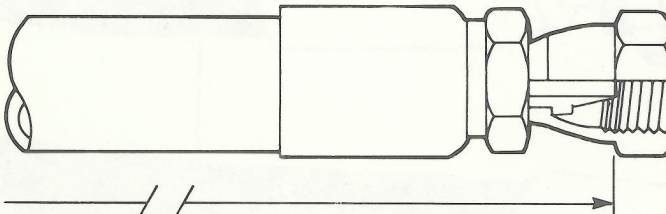
All male threads, JIC, Male Pipe, SAE



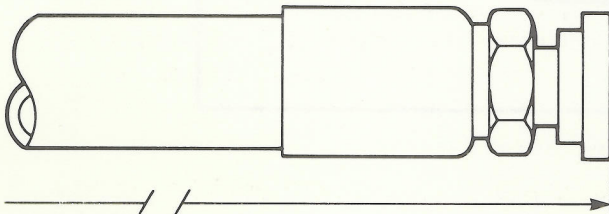
All U.S. Standards Swivels (except Seal-Lok [ORFS]), JIC, SAE, Female Pipe, Flareless.



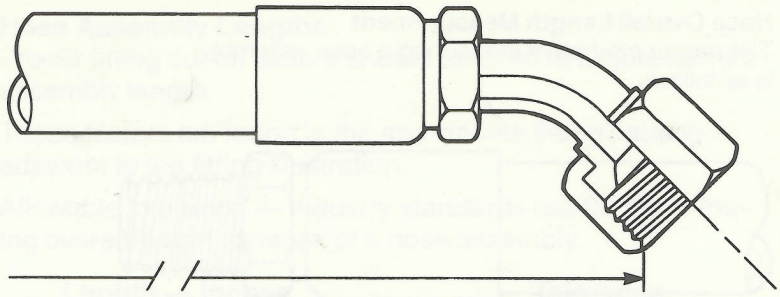
Seal-Lok (ORFS) Swivels.



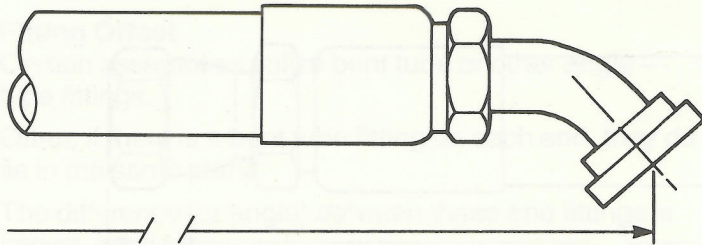
Metric and British Pipe Swivels (BSPP)



Straight Flange Fittings.



Bent Tube Elbows (All measured to the intersection of the centerline and the sealing surface) including Seal-Lok (ORFS).



Bent Tube Elbows (All measured to the intersection of the centerline and the sealing surface)