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Fittings and Connections for Flexible Polyethylene Pipe Used in Microirrigation Systems[1]

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Before installation of a microirrigation system, the necessary parts and connectors for laterals, manifolds, submains and main-lines must be determined. The components of a piping system include various fittings and connections for joining and adapting pipe and other parts. The material most frequently used for lateral lines in microirrigation systems is polyethylene (PE) pipe. The purpose of this publication is to provide present information on available connectors and fittings for PE pipe used in microirrigation systems.

It is important to recognize that not all flexible pipe used in irrigation is PE pipe. Flexible polyvinyl chloride (PVC) pipe is also available and it can be connected using methods and fittings for PVC described in another publication.

Polyethylene lines cannot be connected in the same way as polyvinyl chloride pipe which are connected using PVC cement. Because of that, connecting PE lines is usually done by insert fittings or compression fittings. Insert fittings fit tightly inside the PE line. Compression fittings fit over the outside of the pipe and should create less friction loss and fewer stress cracking problems.

To be able to connect PE laterals to PVC manifolds, submains or other PVC parts of the system, it is necessary to use combination fittings. They have a combination of slip or threaded (male or female) fittings with insert or compression fittings.

CONNECTIONS AND FITTINGS

Abbreviations

In catalogs, parts are specified by type and size.

The following abbreviations are commonly used in catalogs and in this publication: • INS--insert

• COMP--compression

• FPT--female pipe thread

• MPT--male pipe thread

• RED--reducing

• S--slip

For example, a reducing elbow insert by insert with 3/4" inlet and 1/2" outlet would be described as

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follows: reducing elbow (INSxRED INS) 3/4" x 1/2".

Adapter

A fitting used for changing from one type of end condition to another. For PE pipe it is a combination fitting with one insert (Fig. 1) or compression end (Fig. 2) and the other end slip or pipe thread (male or female). Adapters which are used for a change of size as well as for a change of the end condition are called reducing adapters.

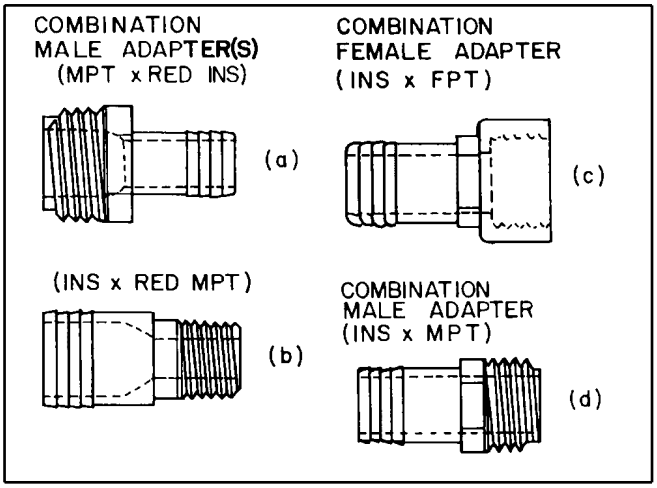

Fig. 1. Insert/combination adapters.

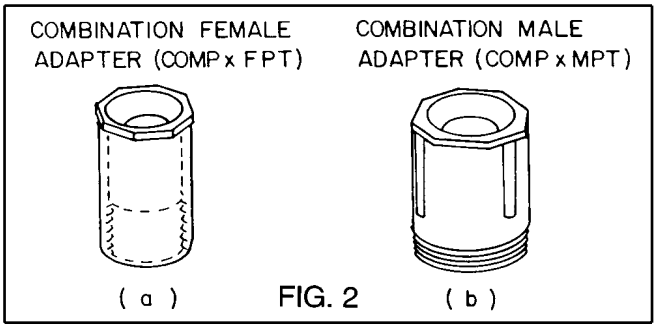

Fig. 2. Compression end adapters.

Coupling

A fitting used to couple or connect two pieces of PE tubing. If the diameters of the PE pipes are different, a reducing coupling should be used. For PE tubing couplings are usually insert by insert (Fig. 3) or compression by compression (Fig. 4).

Cross

A cross is used for 4-way branch connections in irrigation systems. For PE pipe, insert crosses (Fig. 5) are usually used.

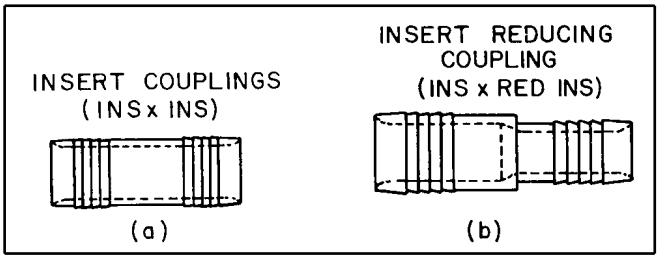

Fig. 3.

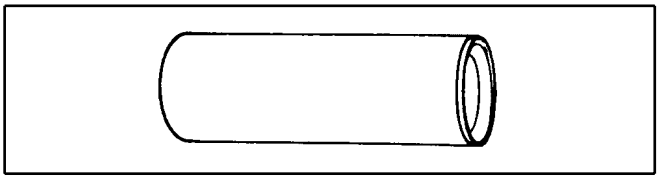

Fig. 4. Compression coupling (Comp x Comp).

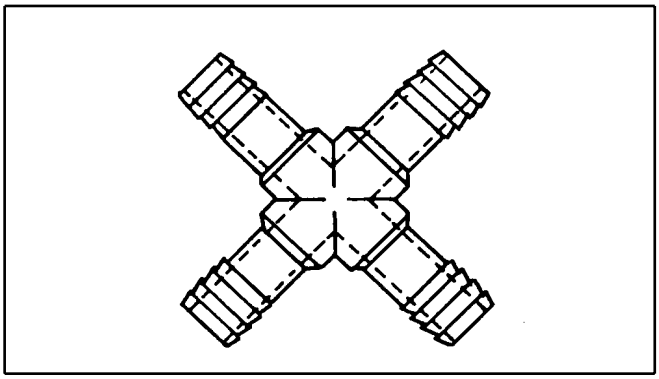

Fig. 5. Insert cross (Ins x Ins x Ins x Ins).

Elbow

A fitting used to connect two PE pipes with the same or different diameter at 90° change in direction of the line. A combination elbow must be used when PE lines are connected to PVC lines (Fig. 6). The end connected to the PE tubing can be an insert (Fig. 7) or compression fitting (Fig. 8).

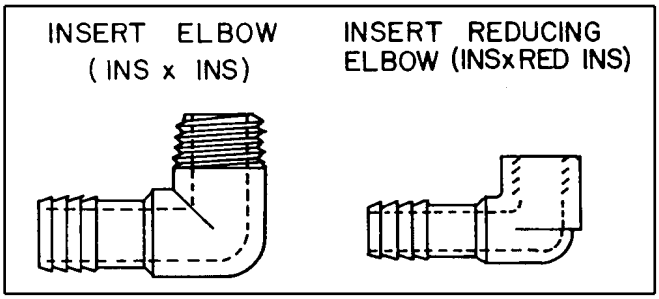

Fig. 6. Cobination elbows.

Plug

Plugs are used at the ends of laterals or on tees to plug the line Fig. 9. Devices for flushing the lateral lines may be incorporated into the plugs (Fig. 10).

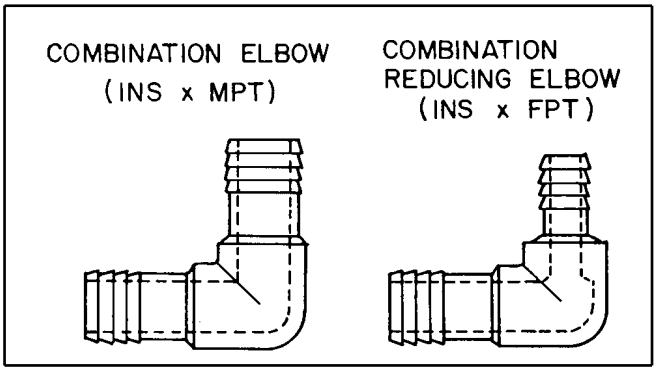

Fig. 7. Insert elbows.

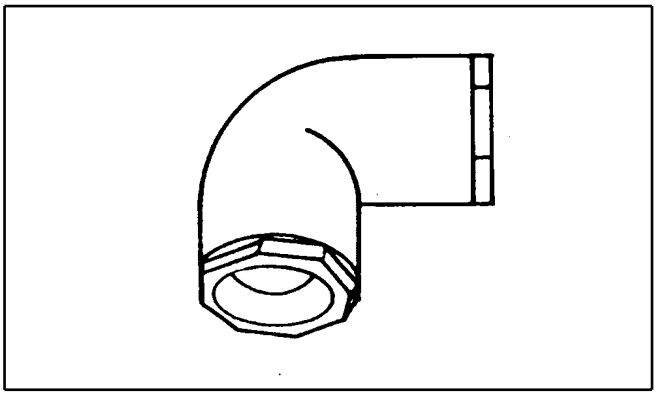

Fig. 8. Compression elbows (Comp x Comp).

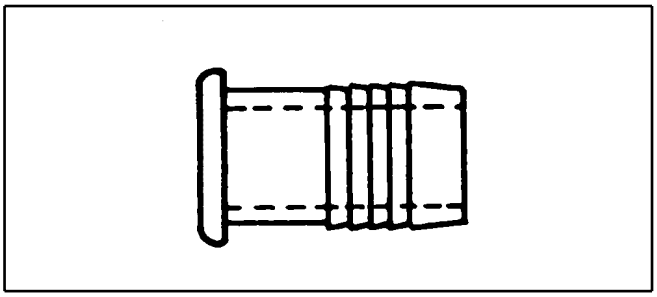

Fig. 9. Insert plug.

Tee

Tees for PE pipe may have insert (Fig. 11) or compression (Fig. 12) ends. They are used for branch connections in irrigation systems. Combination tees are used to attach PE tubing to PVC pipe and fittings (Fig. 13). Tees can have all outlets of the same size or they can be reducing tees with a combination of different outlet sizes.

SUMMARY

The special uses of various available connectors and fittings for PE flexible pipe used in microirrigation systems were presented. Connectors and fittings were classified in groups and illustrated.

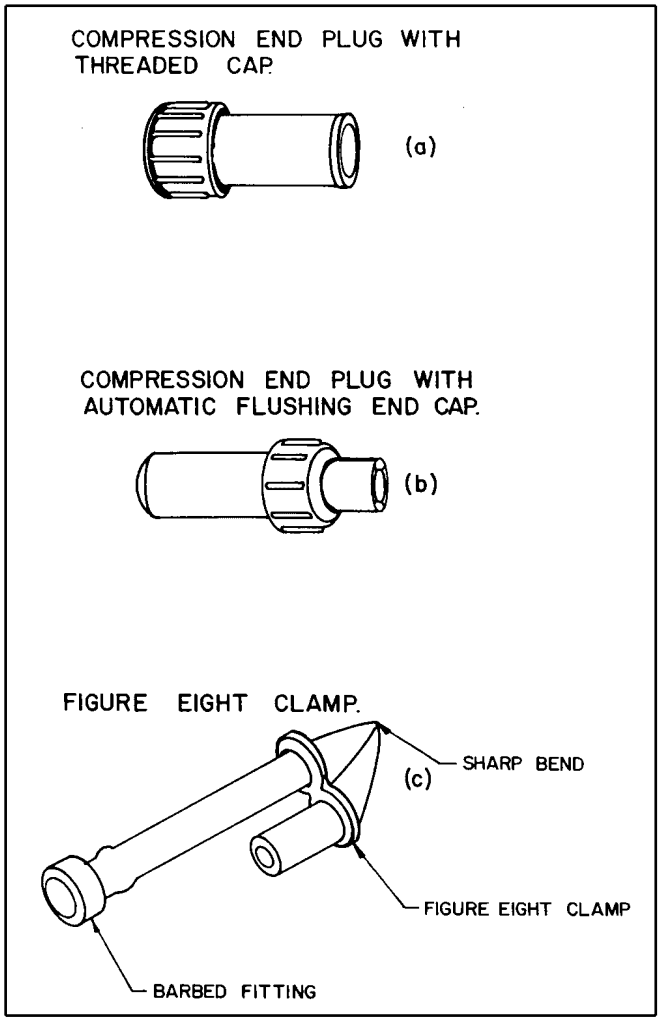

Fig. 10. Various Devices.

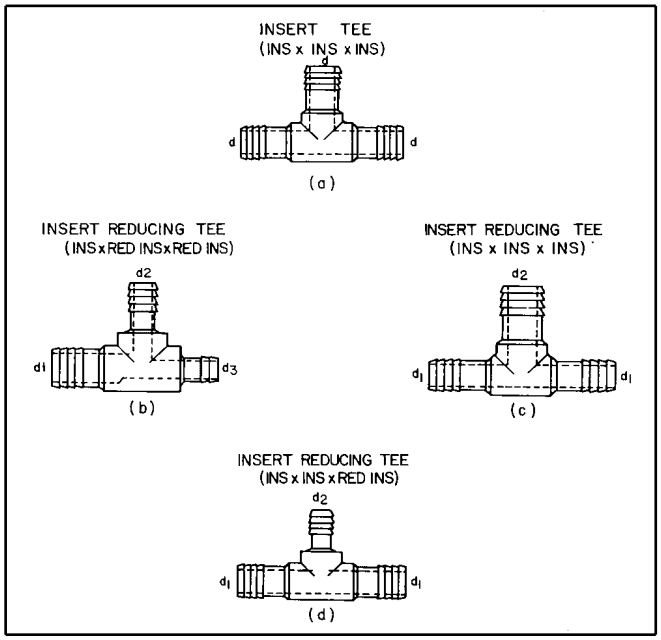

Fig. 11. Insert tees.

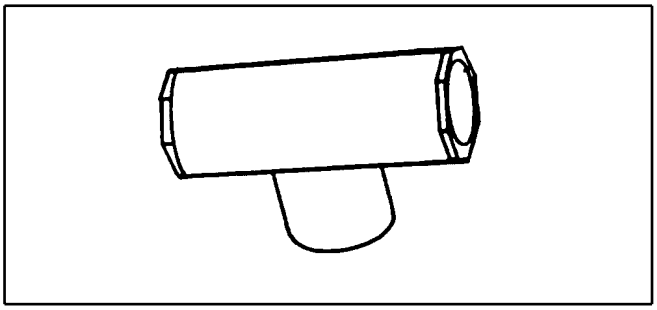

Fig. 12. Compression tee (Comp x Comp x Slip Socket).

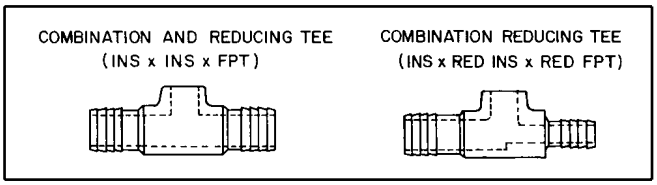

Fig. 13. Combination tee.