



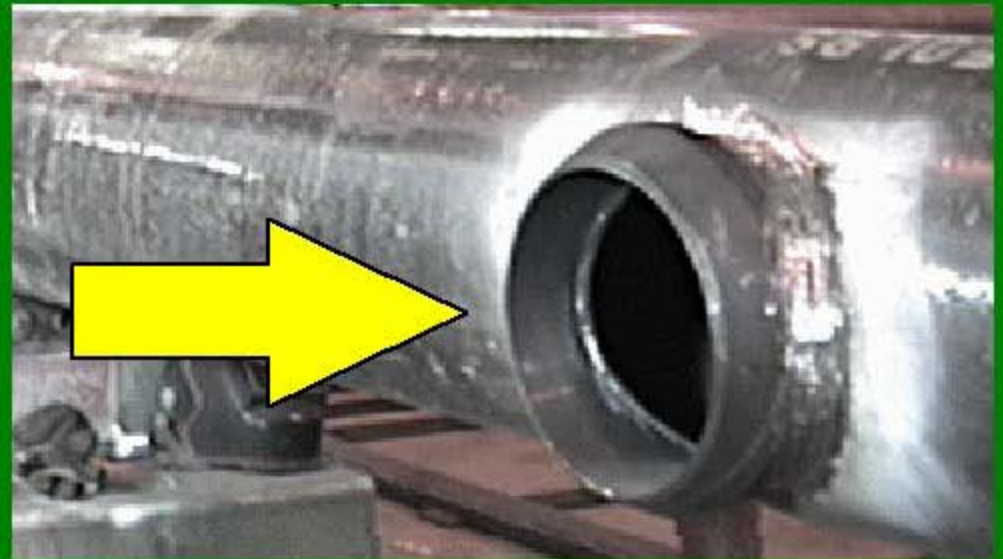
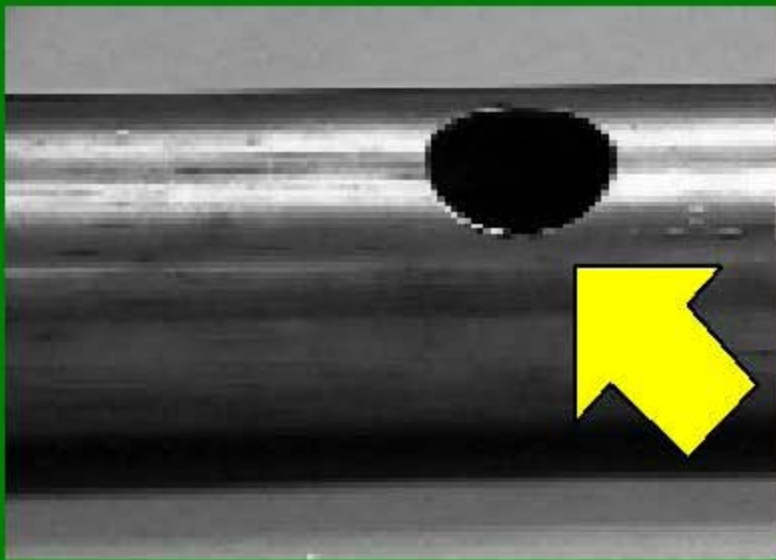
Penn Machine

Presents

Branch Outlet Fittings

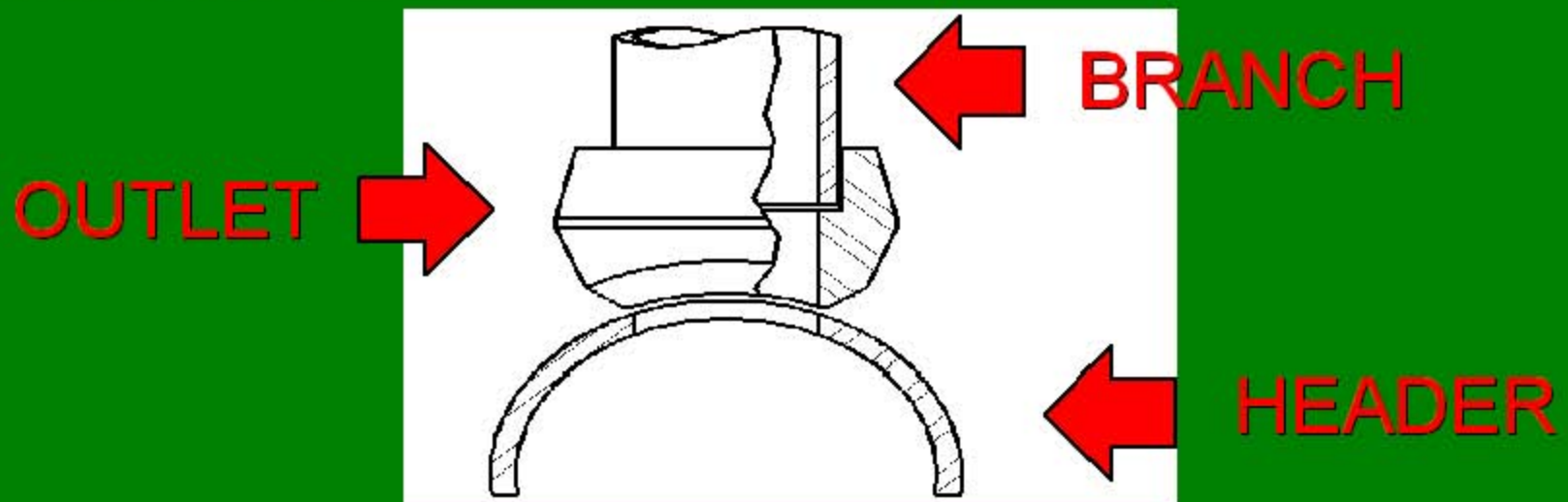
begin

"Outlet" is a generic term for all branch type connections. They can come with threaded, socket-weld, and butt-weld end connections. The most common types are used in place of a tee. A hole is cut in the side of the pipe, the outlet is welded in place over the hole and then the additional length of pipe is attached to the outlet.



Similar to reducing tees, outlets are usually described by two sizes. The Run or Header size refers to the pipe on which the outlet is mounted. The Outlet or Branch size refers to the length of pipe branching off of the run.

Sometimes the run sizes are given as a possible range or consolidation. This means the outlet can be used on several different pipe sizes. For example, a 36-3 x 1 outlet could be used to branch 1" pipe off of any run pipe from 3" up through 36".



Commonly Used Branch Outlet Connections

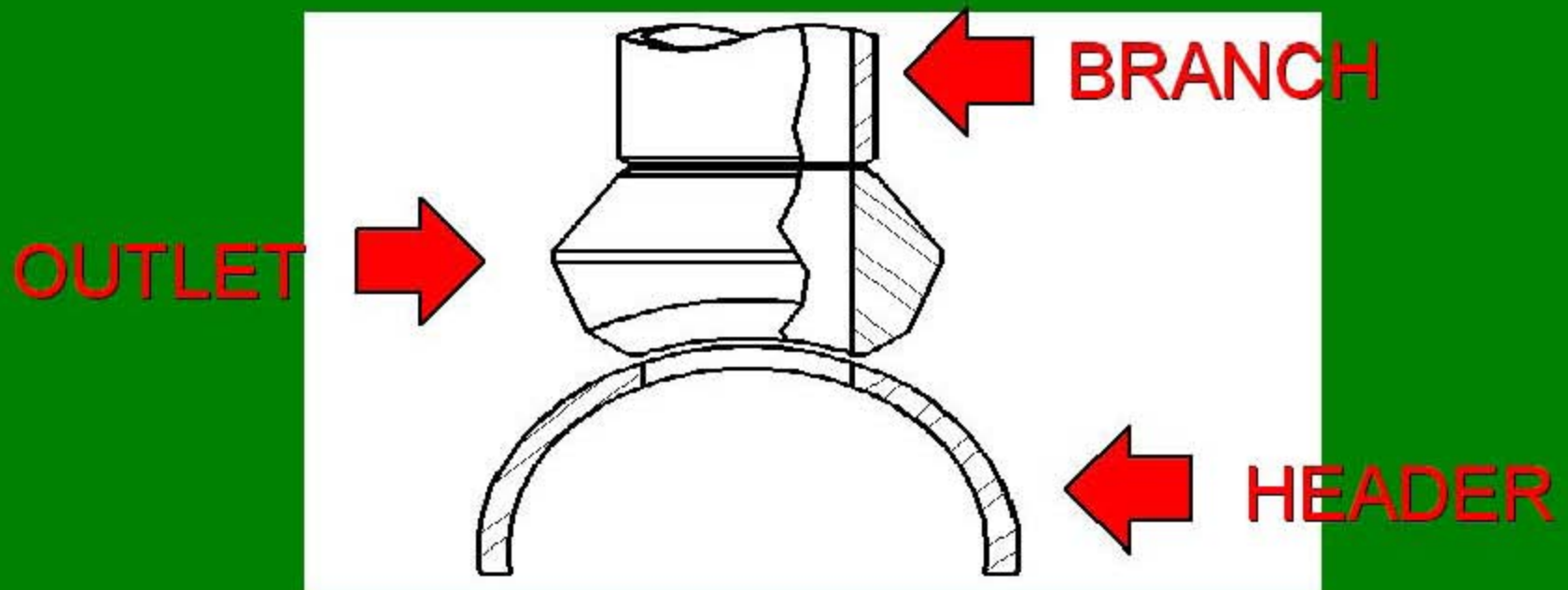
Butt-Weld

Threaded

Socket-Weld

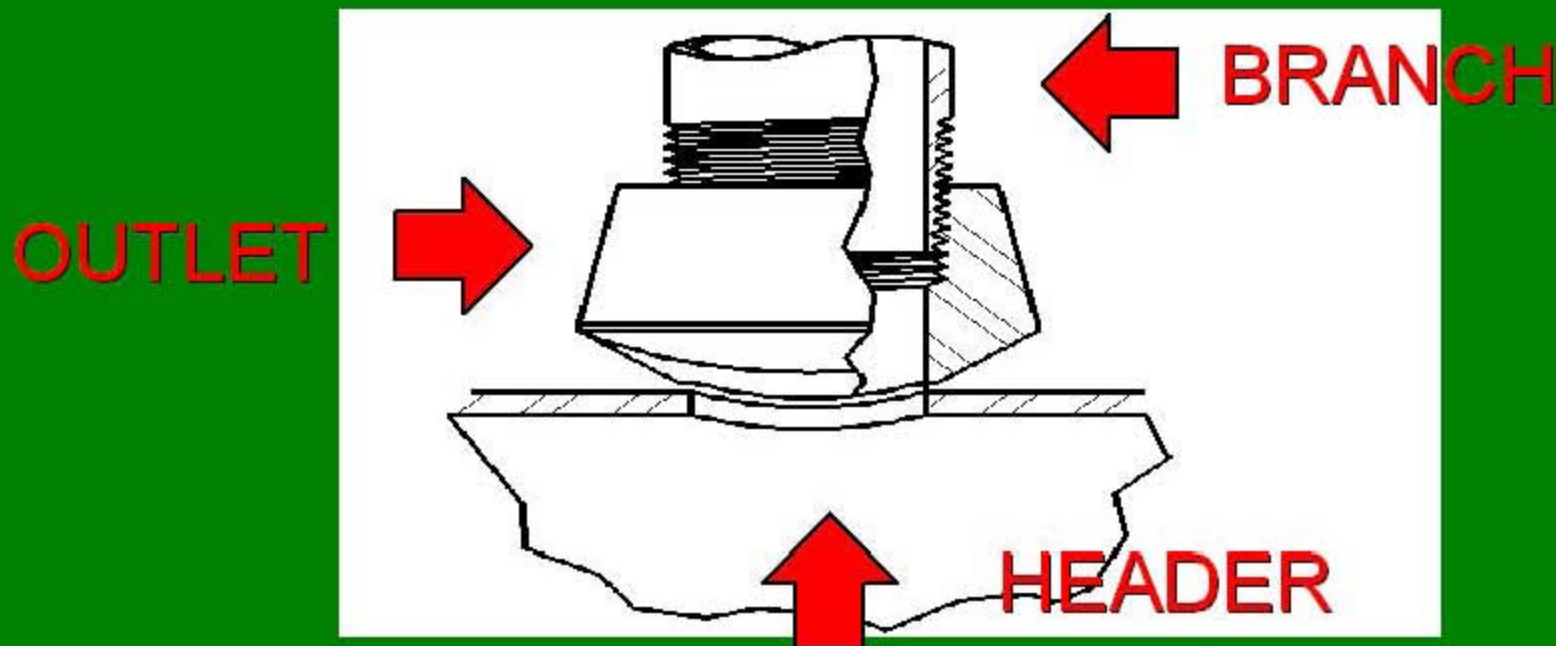
BUTT-WELD BRANCH OUTLET

This type of fitting is contoured to match the curve on the Header Pipe and beveled on the branch side to mate up with a beveled piece of the branch pipe



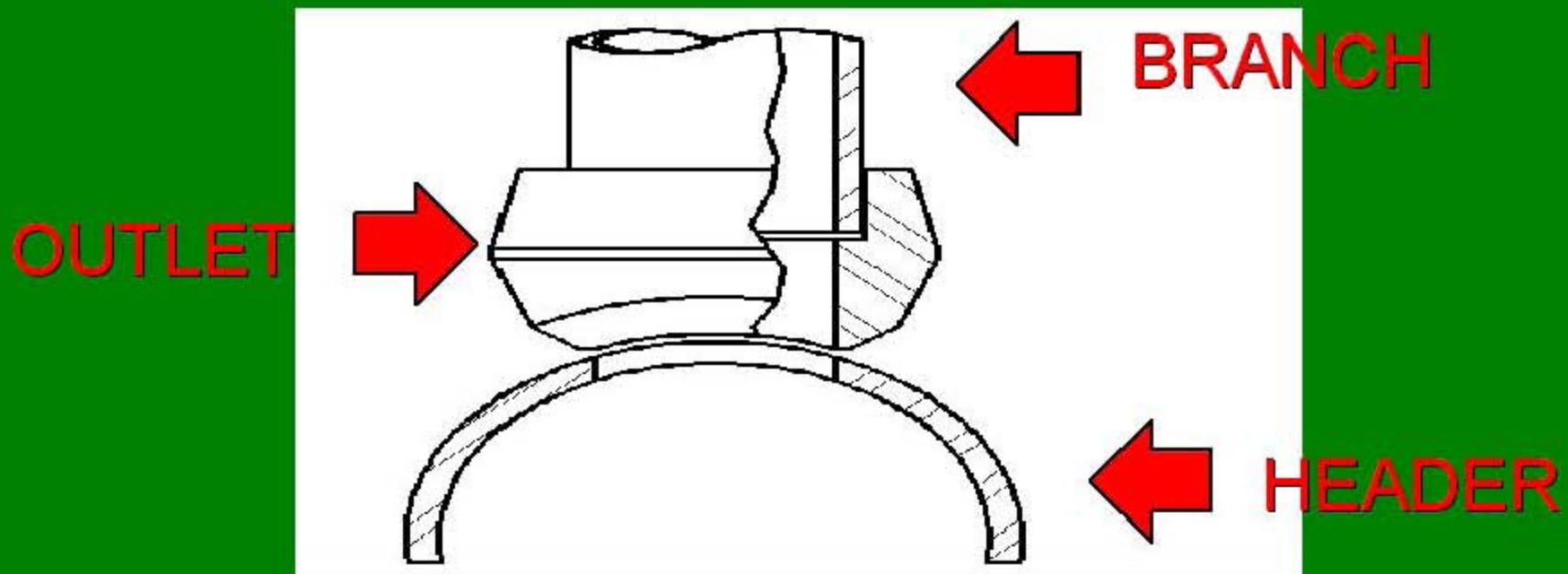
THREADED BRANCH OUTLET

This type of fitting is contoured to match the curve of the Header Pipe and on the branch side of the fitting has an NPS thread according to ASME B1.20.1. Normally, Thread Branch Outlet Fittings are used for NPS under 2".

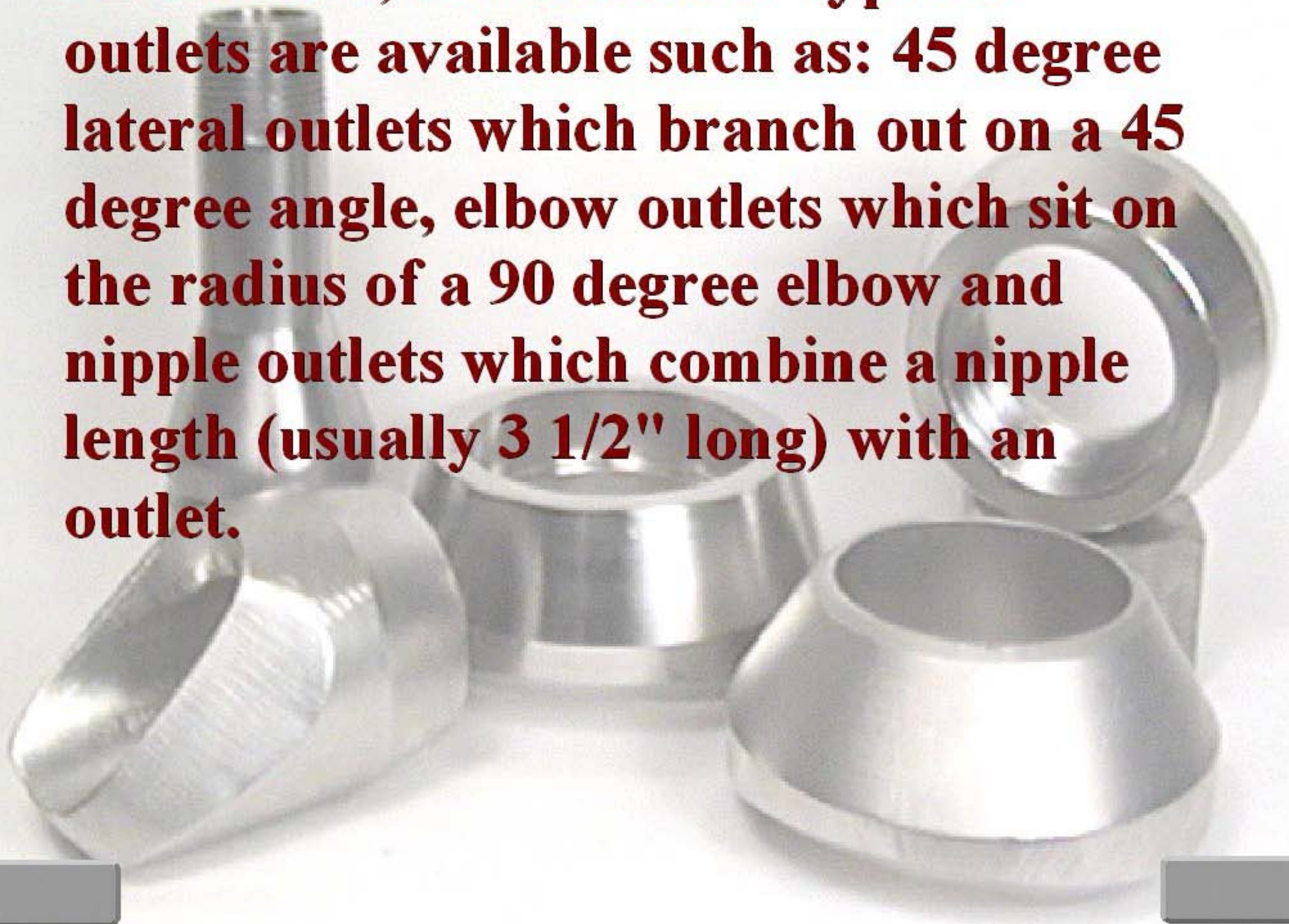


SOCKET-WELD BRANCH OUTLET

This type of fitting is contoured to match the curve of the Header Pipe and on the branch side of the fitting has Socket Dimensions to ASME-B16.11. Like Threaded Outlets, most Socket-Weld Branch Outlet Fittings are used under 2" NPS.



In addition, various other types of outlets are available such as: 45 degree lateral outlets which branch out on a 45 degree angle, elbow outlets which sit on the radius of a 90 degree elbow and nipple outlets which combine a nipple length (usually 3 1/2" long) with an outlet.



What is required in the design of a Branch Outlet?

When the hole is made for the branch connection, the header pipe is weakened.

The outlet has to be designed for reinforcement of the opening and to restore the header pipe to its original strength.



REINFORCEMENT



Specifications for Branch Outlets

MSS-SP-97

- Basic tolerances for the manufacturing of branch outlets

ASME-B31.1

- How to perform design reinforcement for branch outlets

ASME-B16.11

- Threaded & Socket Weld dimensions and tolerances

ANSI-B16.25

- Weld Bevel tolerances for branch outlets

How to determine Outlet type

HEADER SIZE

CONNECTION TYPE

1/2" thru 6"	NPS	Socket-Weld or Threaded
8" thru 36"	NPS	Socket-Weld, Threaded or Butt-Weld
42" & larger	NPS	Butt-Weld only

CLASS VS TYPE of OUTLET FITTING AS PER MSS SP-97

<u>OUTLET FITTING</u>	<u>CLASS</u>	<u>PIPE WALL</u>
Threaded & Socket-Weld	3000	Extra Strong
Threaded & Socket-Weld	6000	Sch. 160
Socket-Weld	9000	XXH
Butt-Weld	Standard	Standard
Butt-Weld	Extra Strong	Extra Strong
Butt-Weld	Sch. 160	Sch. 160

FORGED BRANCH OUTLETS

1/8" THRU 72"

**Socket-Weld, Threaded, and Butt-Weld
Branch Outlets in Inventory**

We inventory Sch 10, Std, XH, Sch 160, XXH

**Special Bores of Sch. 5, Sch. 100, Sch. 120,
True 40 and True 80 can be made to meet
your requests on short lead times**

Penn Machine offers special services

24 hour/7day emergency service

Web accessible Material Test Reports

Online price sheets, msds sheets, & fitting catalog

Custom box labeling

EDI

Finite Element Analysis design service

Major AML product acceptance

Registered CRN(s) in all Canadian Provinces

Navy Level I registered program

Product liability insurance

Outlet Design Certification

90 degree, lateral, and nipple type Branch Outlets

On-line order tracking

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us to come out and conduct a more
detailed
program you can reach us online at
<http://www.pennusa.com>
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