

THRUST BLOCKING

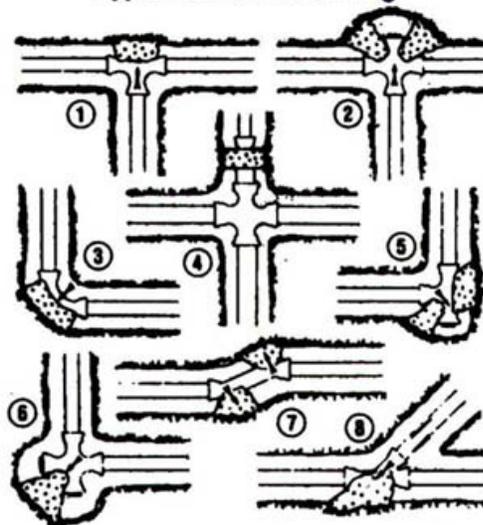
THRUST BLOCKING OF PRESSURE PIPE

Thrust blocking prevents pipe movement when a pressure system is activated and pressurized. Thrust blocking is required at all points of change of direction in the pipe line. Most blocking is done where a fitting, valve, or hydrant is installed. There may be times when side blocking is necessary because of curvature occurring without the use of fittings. Usually good compacted backfill will provide the necessary anchor for side thrust. Concrete blocking is the most commonly recommended method of blocking. Concrete is placed directly on the fitting against the line of thrust. The concrete must also pour against undisturbed earth. The size of the blocking will vary with the size of pipe, working pressure exerted, type of fitting, degree of flow direction change, and the soil conditions. PVC pipe is flexible and may pulsate under pressure variations. This does not harm the pipe or that part which is enclosed in concrete. It may cause wear at the interface of the concrete block and the backfill. For this reason, pipe and fittings should be wrapped with a one mill or heavier plastic sheeting prior to being embedded in concrete to prevent any possible damage.

THRUST DEVELOPED PER 100 PSI PRESSURE (LBS. FORCE)

PIPE SIZE	FITTING 90° ELBOW	FITTING 45° ELBOW	VALVES, TEES, DEAD END
1 ½	300	200	200
2	500	300	400
3	1,000	600	800
4	1,800	1,100	1,300
6	4,000	2,300	2,900
8	7,200	4,100	5,100
10	11,200	6,300	7,900
12	16,000	9,100	11,300

Types of Thrust Blocking



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| 1. Thru line connection, tee | 5. Direction change, tee |
| 2. Thru line connection, cross used as tee | 6. Direction change, cross used as elbow |
| 3. Direction change, elbow | 7. Direction change |
| 4. Change line size, reducer | 8. Thru line connection, wye |

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THRUST BLOCKING (CONTINUED)

BACKFILLING PVC PIPE

Backfilling varies according to project specifications. There are several practices common to all backfilling. PVC pipe must be installed with proper bedding to provide support under the pipe. Initial backfilling should be completed as soon as possible after the pipe is laid because this will protect the pipe from shifting due to cave-ins. Material immediately surrounding the pipe should not exceed 3/4" size. All voids under and around the sides of the pipe should be hand filled and compacted. If joints are to be left open for inspection during testing, the center section of the pipe must be covered and compacted to eliminate movement of the pipe when pressurized. If backfill material is put over the pipe in lifts and mechanically compacted, extreme care must be used not to fracture the pipe. Never use a hydrohammer compactor directly over the pipe until at least 30" of backfill material has been placed. All backfill material should be void of rock, frozen chunks and debris.

FILLING THE LINE

The pipe line should be filled as slowly as possible (not more than 1 ft/sec) to avoid any unnecessary surges. Venting air from the line during filling is of major importance.

The line can be filled from any available water source. The water can be introduced from lines already in service through valved connections.

Northern Pipe Products Inc. recommends filling the new pipeline from the lowest point in the line.

Where a portion of pipe is to be tested but has not yet been tied to the final source, another source of water must be found.

To avoid water hammer during the filling process, always fill the line slowly. Avoid high water velocities because the resulting water hammer could cause pipe failure.

Air needs to be vented out of the filled line at all high spots while filling and before making pressure and leakage tests. Automatic air release valves are recommended.