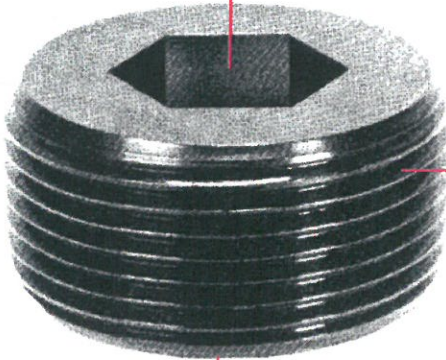


# PRESSURE PLUGS

DRYSEAL TYPE with 3/4-inch taper per foot



Precision hex socket with maximum depth for positive wrenching at higher seating torques

Dryseal-thread form achieves a seal without need for compound

Heat treated alloy steel for strength

Roundness-closely controlled for better sealing

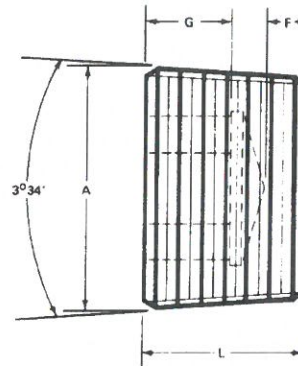
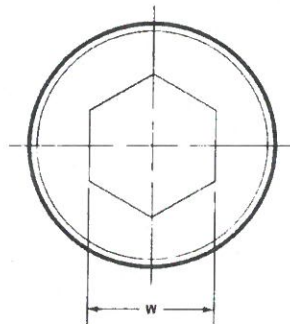
Uniform taper of 3/4 inch per foot

Controlled chamfer for faster starting

Threads NPTF per ANSI B1.20.3

See Notes on page 25

See Application Data on page 26



## DIMENSIONS

nominal thread size		threads per in.	A ref.	F min.	G min.	L ±.010	W nom.	X note 4	basic thread dimension		
									E <sub>0</sub>	E <sub>1</sub>	L <sub>1</sub>
1/16	.062	27	.318	.062	.140	.312	.156	.003	.27118	.28118	.160
1/8	.125	27	.411	.062	.140	.312	.188	.003	.36351	.37360	.1615
1/4	.250	18	.545	.073	.218	.437	.250	.003	.47739	.49163	.2278
3/8	.375	18	.684	.084	.250	.500	.312	.005	.61201	.62701	.240
1/2	.500	14	.847	.095	.312	.562	.375	.005	.75843	.77843	.320
3/4	.750	14	1.061	.125	.312	.625	.562	.007	.96768	.98887	.339
1	1.000	11 1/2	1.333	.125	.375	.750	.625	.007	1.21363	1.23863	.400
1 1/4	1.250	11 1/2	1.679	.156	.437	.812	.750	.010	1.55713	1.58338	.420
1 1/2	1.500	11 1/2	1.918	.156	.437	.812	1.000**	.010	1.79609	1.82234	.420
2	2.000	11 1/2	2.395	.156	.437	.875	1.000	.010	2.26902	2.29627	.436

\*\* .750 for LEVL-SEAL

## PRESSURE PLUGS ■ Application Data

Pressure plugs are not pipe plugs. Pipe plugs (plumber's fittings) are limited to pressures of 600 psi, are sealed with a compound, and are made of cast iron with cut threads and protruding square drive.

Pressure plugs are made to closer tolerances, are generally of higher quality, and almost all have taper threads. Properly made and used, they will seal at pressures to 5000 psi and without a sealing compound (pressure tests are usually at 20,000 psi.) they are often used in hydraulic and pneumatic designs.

### Performance Requirements

Pressure plugs used in industrial applications should:

- not leak at pressures to 5000 psi
- need no sealing compounds
- be reusable without seizure
- give a good seal when reused
- seal low viscosity fluids
- require minimum seating torque
- require minimum re-tooling or special tools.

For a satisfactory seal, the threads of the plug and those in the mating hole must not gall or seize up to maximum

possible tightening torque. Galling and seizure are caused by metal pickup on the mating surfaces and are directly related to force on the surface, material hardness, lubrication used, and thread finish.

### How Pressure Plugs Seal

Sealing is achieved by crushing the crest of one thread against the root of the mating thread. If too much of compressive force is required to torque the plug, it will tend to gall in the hole. Too little force will not deform the crest of threads enough to produce a seal. Increasing the hardness of the material will reduce galling but will also increase the required sealing force. Generally a hardness range of Rc 30 to 40 will meet most requirements. The tightening force must be low enough to cause no galling in this range.

### Cost Considerations

Dryseal plugs are more frequently used, especially where reuse is frequent. Reason: more threads are engaged and they therefore resist leakage better. They are also preferred in soft metals to reduce of over-torquing.

## TYPES OF PRESSURE PLUG THREADS

Three thread forms are commonly used for pipe plugs and pressure plugs:

**NPT:** National Pipe thread, Tapered. This is the thread form commonly used for commercial pipe and fittings for low pressure applications. A lubricant and sealer are generally used.

**ANPT:** Aeronautical National Pipe thread, Tapered. Covered by MIL-S-7105, this thread form was developed for aircraft use. It is basically the same as the NPT thread except that tolerances have been reduced about 50 percent. Plugs made with this thread should be used with lubricants and sealers. They are not to be used for hydraulic applications.

**NPTF:** National Pipe thread, Tapered, Fuel. This is the standard thread for pressure plugs. They make pressure-tight joints without a sealant. Tolerances are about 1/4 those for NPT threads. The standard which applies is ANSI B1.20.3. Applicable for fluid power applications.

## APPLICATION DATA – DRYSEAL TYPE

nom. size	threads per inch	tap drill size+	tap drill size ++	recommended torque in.-lbs*	
1/16	27	15/64	1/4	150	Unbrako recommends using a tapered reamer with corresponding size tap drill (see page 27). +With use of reamer (taper thread). ++Without use of tapered reamer. *Recommended torques for alloy steel only. Multiply by .65 for stainless steel and .50 for brass. NPTF fully formed Dryseal threads achieve seal in tapped holes without need for sealing compounds.
1/8	27	21/64	11/32	250	
1/4	18	27/64	7/16	600	
3/8	18	9/16	37/64	1200	
1/2	14	11/16	23/32	1800	
3/4	14	57/64	59/64	3000	
1	11 1/2	1 1/8	1 5/32	4200	
1 1/4	11 1/2	37.5mm	-	5400	
1 1/2	11 1/2	43.5mm	-	6900	
2	11 1/2	2 3/16	-	8500	

