



MODULAR TOOLING COMPONENTS

BUSHINGS



Overview

Hardened steel bushing with ground ID/OD used to precisely locate dowel pins, T & L alignment pins, construction balls, shoulder screws, and locators of all types. Use where it is expected that the bushing will last for the life of the applicable tooling.

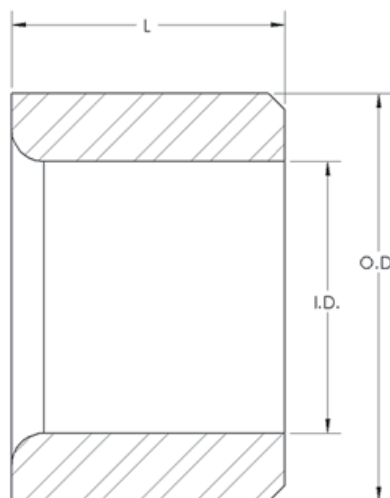
- Precision I.D. and concentric precision O.D. (.0001)
- Field replaceable without reworking bored hole

General Specifications

Material: Hardened (60 HRC) Steel

Finish: None

Part Number	ID	OD	L
F-80991	Ø.5001/.5005	Ø.7516/.7518	.50
F-80992	Ø.5001/.5005	Ø.7887/.7889	.50
F-80953	Ø.5001/.5005	Ø.7887/.7889	.50
F-80995	Ø.5007/.5013	Ø.7516/.7518	.50
F-80992-01	Ø.5007/.5013	Ø.7887/.7889	.50
F-80953-01	Ø.5007/.5013	Ø.8261/.8263	.50
F-80989	Ø.6251/.6255	Ø.8768/.8770	.75
F-80990	Ø.6251/.6255	Ø.9053/.9055	.75
F-80952	Ø.6251/.6255	Ø.9254/.9256	.75
F-80989-02	Ø.6257/.6263	Ø.8768/.8770	.75
F-80990-01	Ø.6257/.6263	Ø.9053/.9055	.75
F-80952-01	Ø.6257/.6263	Ø.9254/.9256	.75



THREADED INSERTS



Overview

Hardened steel insert used to prolong the life of the tool/ fixture in which it is placed, especially when the tool/ fixture is a soft metal. These inserts are extremely easy to install and remove with no requirement of staking, locking, swaging or keying required by other inserts. In addition, no additional stresses are introduced to the assembly - simply screw the insert in with a screw driver.

- High pull-out strength
- Strong wear resistant threads
- Vibration resistant
- Fast easy installation
- Field replaceable without reworking tapping hole.

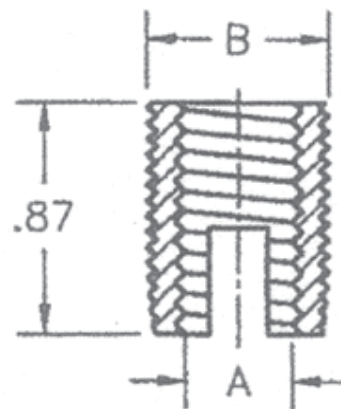
General Specifications

Material: Hardened (60 HRC) Steel

Finish: Clear chromate coated

Installation: Screw in with a screw driver or similar

Part Number	A Thread	B Thread	Length
F-87321	1/2"-13	M18 x 1.5	.87"
F-87787	1/2"-13	M20 x 1.5	.87"
F-87293	5/8"-11	M20 x 1.5	.87"
F-87788	5/8"-11	M22 x 1.5	.87"



HOLE PLUGS



Overview

These simple parts make a BIG difference when becoming more efficient and cost effective in manufacturing. Screw these plugs into your bored/ threaded holes (or bushed/ threaded inserted) and eliminate the time and effort necessary to blow the hole out for next use. Available in plastic, aluminum and stainless steel to accommodate different material types of the receiving metals as well as to provide the lowest cost solution.

Applications

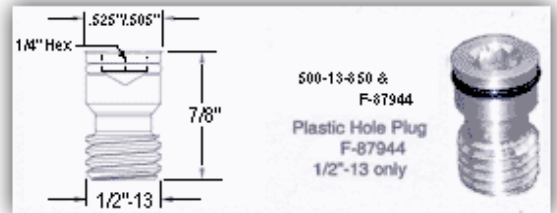
Hole plugs are used to "plug" the holes in the Universal Common Modular Fixture (UCMF) when the holes are not in use. By plugging the holes, operators will spend less time in setup and part changeover by not having to blow the holes out.

General Specifications

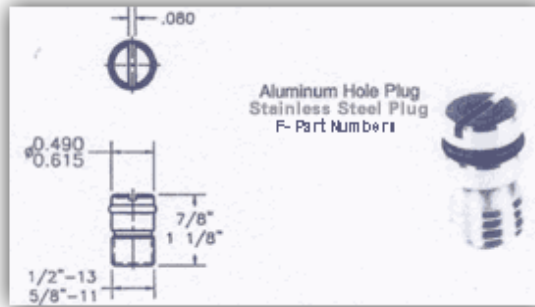
Material: Aluminum

Finish: None

Installation: Screw in with either a hex wrench or flat bladed screw driver



Part Number	Thread	Material
F-87944	1/2"-13	Plastic
500-13-850	1/2"-13	Aluminum
F-87919	5/8"-11	Aluminum
F-87945	1/2"-13	Stainless Steel
F-87947	5/8"-11	Stainless Steel



PRECISION LOCATING PINS



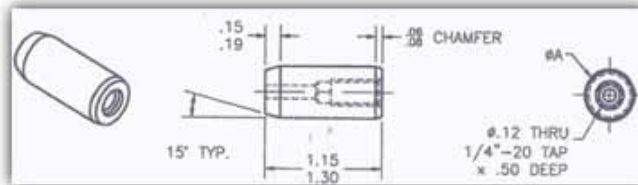
General Specifications

Material: 4140 steel, Rc 50-55

Finish: None

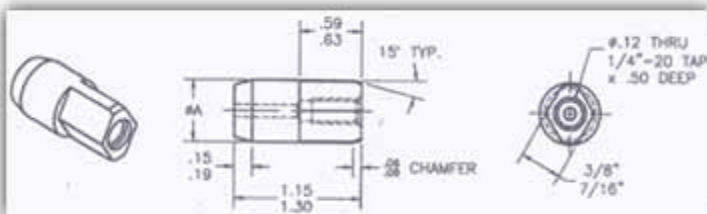
Installation: Can be withdrawn by screwing a 1/4-20 threaded screw into the end of the pin and pulling

ROUND



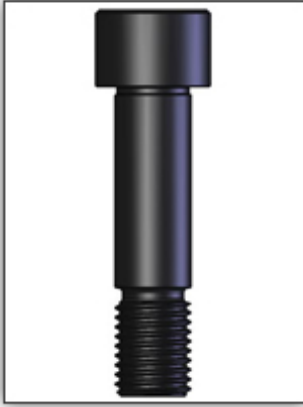
Part Number	Diameter
F-87708-01	.4997/.4999"
F-87708-02	.5003/.5005"
F-87709-01	.6247/.6249"
F-87709-02	.6253/.6255"

DIAMOND



Part Number	Diameter
F-87738-01	.4997/.4999"
F-87738-02	.5003/.5005"
F-87739-01	.6247/.6249"
F-87739-02	.6253/.6255"

PRECISION DOWEL PINS



Overview

For positioning and clamping of 2"x2" grids and universal fixture elements on grid bases, hardened and ground precision screws are used. These screws are also useful for locating fixture plates.

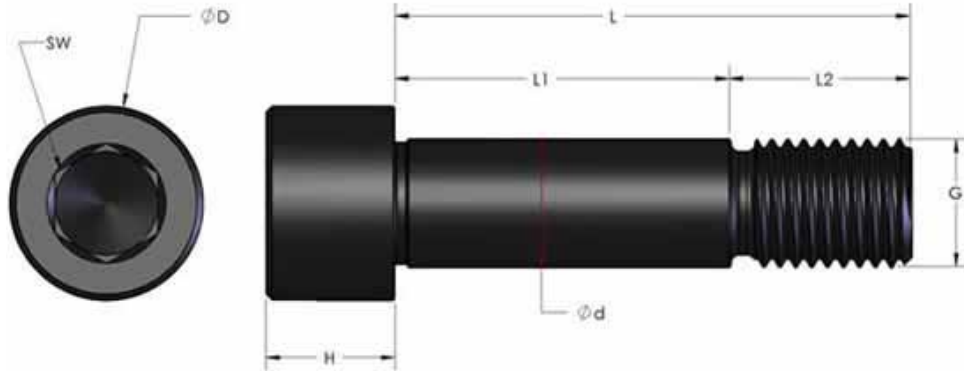
General Specifications

Material: 4140 Steel, Rc 33-39

Finish: Black oxide

Precision Shoulder (+.0000"/-.0005")

Accurate height



Part Number	D	Diameter	G=Thread	L=Overall Length Under Head	L1	L2	H	SW
F-87543	0.75"	500"	1/2"-13	1.469"	0.719"	0.75"	0.50"	3/8
F-87544	0.75"	500"	1/2"-13	1.719"	0.969"	0.75"	0.50"	3/8
F-87970	0.75"	500"	1/2"-13	1.953"	1.203"	0.75"	0.50"	3/8
F-87991	0.75"	500"	1/2"-13	2.070"	1.320"	0.75"	0.50"	3/8
F-87992	0.75"	500"	1/2"-13	2.187"	1.437"	0.75"	0.50"	3/8
F-87993	0.75"	500"	1/2"-13	2.305"	1.555"	0.75"	0.50"	3/8
F-87994	0.75"	500"	1/2"-13	2.422"	1.672"	0.75"	0.50"	3/8
F-87995	0.75"	500"	1/2"-13	2.539"	1.789"	0.75"	0.50"	3/8
F-87996	0.75"	500"	1/2"-13	2.646"	1.906"	0.75"	0.50"	3/8
F-87997	0.75"	500"	1/2"-13	2.773"	2.023"	0.75"	0.50"	3/8
F-87998	0.75"	500"	1/2"-13	2.891"	2.141"	0.75"	0.50"	3/8
F-87983	0.75"	500"	1/2"-13	3.000"	2.250"	0.75"	0.50"	3/8
F-87985	0.75"	500"	1/2"-13	3.150"	2.400"	0.75"	0.50"	3/8
F-87986	0.75"	500"	1/2"-13	3.400"	2.650"	0.75"	0.50"	3/8
F-87987	0.75"	500"	1/2"-13	3.650"	2.900"	0.75"	0.50"	3/8
F-87984	0.75"	500"	1/2"-13	3.750"	3.000"	0.75"	0.50"	3/8
F-87988	0.75"	500"	1/2"-13	3.900"	3.150"	0.75"	0.50"	3/8
F-87989	0.75"	500"	1/2"-13	4.150"	3.400"	0.75"	0.50"	3/8
F-59505	0.75"	500"	1/2"-13	5.000"	4.250"	0.75"	0.50"	3/8
F-59506	0.75"	500"	1/2"-13	5.500"	4.750"	0.75"	0.50"	3/8
F-87887	0.94"	.625"	5/8"-11	2.016"	1.078"	0.937"	0.63"	1/2
F-87886	0.94"	.625"	5/8"-11	2.266"	1.328"	0.937"	0.63"	1/2
F-87885	0.94"	.625"	5/8"-11	2.375"	1.437"	0.937"	0.63"	1/2
F-87884	0.94"	.625"	5/8"-11	2.750"	1.812"	0.937"	0.63"	1/2
F-87883	0.94"	.625"	5/8"-11	2.828"	1.891"	0.937"	0.63"	1/2
F-87882	0.94"	.625"	5/8"-11	3.312"	2.375"	0.937"	0.63"	1/2