



**FULL-TORQUE® – Permanent Thread Replacement
Catalogue 2006-A(R1)**

***The Ultimate Solutions to Stripped, Badly Damaged,
Crack and Broken Bolt Hole!***

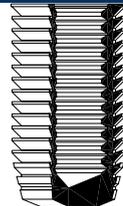




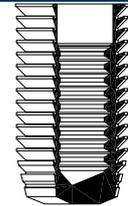
FFT



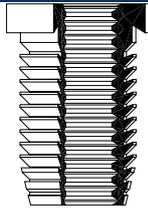
FFT Counter Bored



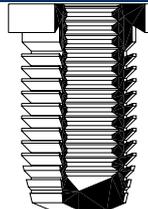
FFB



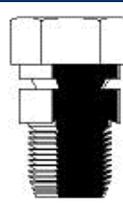
FFB Counter Bored



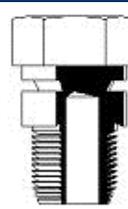
FST



FSB



FPS



FPD

FFT: Full-Torque® Flush Through

FFB: Full-Torque® Flush Blind

FST: Full-Torque® Shoulder Through

FSB: Full-Torque® Shoulder Blind

FPS: Full-Torque® Plug Solid

FPD: Full-Torque® Plug Drilled

- 01 About Full-Torque® Thread Repairs Insert
- 02 About Full-Torque® Thread Repairs Insert
- 03 Test Comparison Charts
- 04 FFT Inserts Selection Chart (Imperial – Inch)
- 05 FFT Inserts Selection Chart (Metric – mm)
- 06 FFT Inserts Selection Chart (For Special Applications)
- 07 FFB Inserts Selection Chart
- 08 FFB Inserts Selection Chart (For Special Applications)
- 09 FST Inserts Selection Chart
- 10 FSB Inserts Selection Chart
- 11 FPS, FPD & FST ID Pipe Thread Inserts Selection Chart
- 12 Drilling & Tapping Alignment Fixtures Chart
- 13 Caterpillar Pre-combustion Chambers Inserts Chart
- 14 Spark Plugs Thread Repair Inserts Chart
- 15 FFT Combination Kit – Part No. FFTC516-1K (Imperial Size)
- 16 FFT Combination Kit – Part No. C6M-24MK (Metric Size)
- 17 Replacement Tooling & Parts List
- 18 FULL-TORQUE® Tap Chart Guide
- 19 FAQ
- 20 FAQ
- 21 LOCK-N-STITCH® Metal Stitching Products
- 22 Repairs Examples
- 23 Repairs Examples
- 24 Full-Torque® Thread Repair Insert Technology

Full-Torque® Permanent Thread Replacement Insert

For permanent repairs of cracked, broken, stripped, and seized threaded holes & bolt holes.

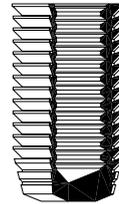
Our Standard Full-Torque® Inserts Profile



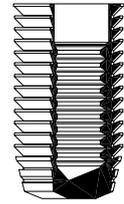
FFT
(Flush Through)



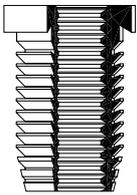
FFT Counter-bore
(Flush Through)



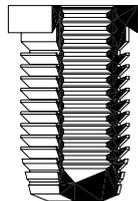
FFB
(Flush Blind)



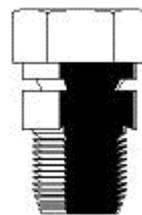
FFB Counter-bore
(Flush Blind)



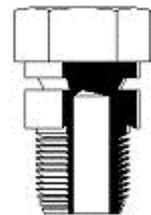
FST
(Should Through)



FSB
(Shoulder Blind)



FPS
(Style Solid Plug)

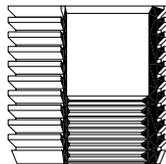


FPD
(Style Drilled Plug)

Special Application Inserts & Studs



Spark Plug Insert



FFT - Deep Counter-bore
Insert



FST (Style Tapered
Pipe Thread Insert



Spiralhook® Thread Design
on One End of Stud

All of our thread inserts are based on the CASTMASTER® - C Series Spiralhook® thread geometry for the outer diameter. These inserts restore both the needed strength and new threads at the same time.

Many sizes are available, including aluminum spark plug inserts. Many styles are manufacture including matching inserts for the Ford Triton 4.6, 5.4 and 6.8 engines. It is now possible to upgrade the entire engine to fully threaded spark plug holes if the cylinder heads are removed from the engine. In-frame repairs can also be made with the same repair kit. This is not a flimsy coil insert or another form of a common key locking insert with standard and incomplete external thread profile.

Only Full-Torque® thread replacement insert will add strength instead of removing strength of the surrounding metal. This is a product that will exceed your expectations.

Full-Torque® thread repair inserts provide a completely new solution to stripped and cracked bolt holes. No other thread repair method even comes close to the strength and durability you will realize

when you install our inserts. Full-Torque® thread inserts have a patented external thread style called Spiralhook®. This is a revolutionary new concept that makes our thread repair inserts the very best in the world.

Cracked bolt holes are now easily repaired and strengthened. Head bolt holes, main bearing bolt holes, starter motor bolt holes, the uses are endless. When a Full-Torque® thread insert is installed into a cracked bolt hole in cast iron, the crack is automatically drawn together and reinforced by the radial drawing ability of the Spiralhook® threads on the outside of the insert. All other thread designs create radial spreading force when tightened. This eventually leads to cracked and stripped bolt holes in machinery parts.

Say goodbye to threaded hole problems with our range of Full-Torque® Inserts

Our spark plug thread repair inserts will outlast the engine and won't come out the next time the plugs are changed. We have the only spark plug inserts for aluminum cylinder heads that are made of aluminum and are hard anodized for strength and durability. No other thread insert can create a liquid and pressure tight seal between the thread insert and the surrounding metal. Full-Torque inserts can withstand 3000 PSI hydraulic pressure seal on the external threads. Special insert could be made to withstand 10000 PSI. We have the only true pipe thread repair inserts capable of creating a better than new seal on both threaded surfaces.

Coil type inserts can only fix a simple stripped hole and tend to be temporary at best. All other solid and key locking threaded inserts are made from very soft steel and have incomplete external threads. All other types and styles of thread repair inserts have a reputation for coming loose and backing out the next time the fastener is removed. That won't happen with Full-Torque® thread repair inserts and plugs and they look really good after they are installed. Many US engine manufacturers use Full-Torque to solve the most demanding bolt hole failure problems in their remanufacturing operations.

Why Full-Torque®?

- Create a spiral drawing pressure when installed and torqued with a standard bolt. Our standard insert is manufacture with Spiralhook® design externally and various standard thread sizes internally.
- Will not be loosen when install or exert spreading force when torqued.
- Can be used to repairs stripped and/or cracked bolt hole.
- Available in through wall and blind inserts for pressure tight requirement.
- Available in solid plugs for plugging badly damaged or miss-drilled off centre hole. Simply install our plug, drill and tap your new hole in the right location.
- Made from high strength 1144 steel and can be order in heat-treated style for extra durability.
- Available in hard anodized aluminum for spark plug hole use in aluminum cylinder head for extra durability and matching heat transfer.
- Special made to order studs for special application with our Spiralhook® thread design on one end for the same benefit when there is no room for our insert.

Strain Gage Test Comparison Chart

Our test specimen has four separate tests carried out. Strain gauges are attached to all corners of the test specimen.

#1 (1X, 1Y) – M10 X 1.5 bolt hole c/w M10 bolt

#1 is a M10 X 1.5 bolt hole. This hole was tested by applying strain gauges to the sides of the test specimen spanning the bolt hole. This test measured the strain on the cast iron caused by applying torque onto the bolt.

#3 (3X,3Y) – Full-Torque® Thread Repairs Inserts

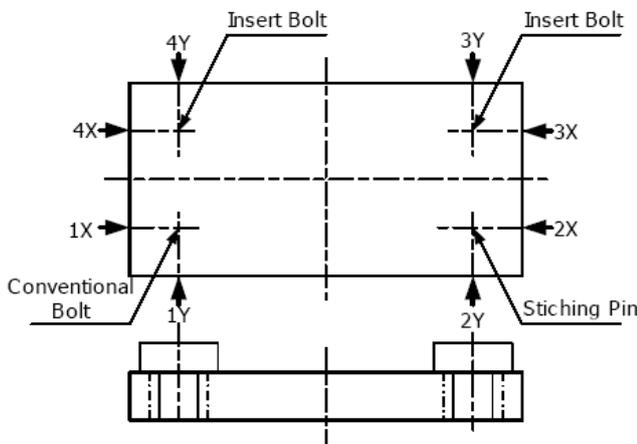
#3 is a test to measure the strain when installing a Full-Torque thread repair insert. The insert was tightened to 60ft.lb.

#2 (2X,2Y) – CASTMASTER® Stitching Pin

#2 is a test to measure the strain on the cast iron by installing a CASTMASTER® – C series stitching pin until the head of the bolt is twisted off.

#4 (4X,4Y) – Full-Torque® Inserts c/w M10 bolt

#4 is a test to measure the strain with a bolt torqued into a previously installed FFT thread repairs insert in the test specimen. The insert had been previously installed and torqued to 60ft.lb, a M10 bolt was installed into the insert and torqued to 55ft.lb with the strain being measured and recorded.



Torque Applied Chart

Bolt #1 (Conventional Bolt)	55 ft.lb (7.6 kgf.m)
Bolt #2 (Stitching Pin)	55 ft.lb (7.6 kgf.m)
Bolt #3 (Thread Insert)	60 ft.lb (8.45 kgf.m)
Bolt #4 (Thread Insert & Bolt)	60 ft.lb (8.45 kgf.m)

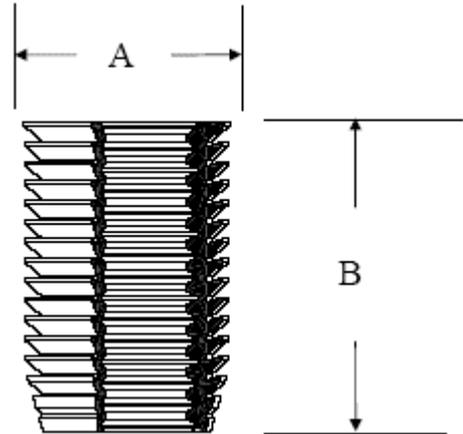
Strain Measured Test Results

Gage No.	Measured Strain (µm)
1X	+ 3,800
1Y	+ 3,760
2X	- 326
2Y	- 274
3X	- 547
3Y	- 563
4X	- 587
4Y	- 568

Full-Torque® Insert Vs Original Bolt Hole Comparison Chart

Specimen	Picture of Specimen	Description	Strength (N)
F		M10 bolt installed and torqued	29,658
D		M10 threaded hole	39,337
E		M10 Full-Torque Thread Insert installed and torqued	39,735

FFT Inserts (Imperial – Inch) Selection Chart



FFT Inserts (Imperial – Inch)

Internal Thread Size	A	B	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N
1/4-20	0.353	0.315	0.316	FT2DB-1	FT2FT-1	FP21420K	FFT2S1420K
1/4-20	0.353	0.630	0.316	FT2DB-1	FT2FT-1	FP21420K	FFT21420K
1/4-28	0.353	0.315	0.316	FT2DB-1	FT2FT-1	FP21428K	FFT2S1428K
1/4-28	0.353	0.630	0.316	FT2DB-1	FT2FT-1	FP21428K	FFT21428K
5/16-18	0.465	0.400	27/64"	FT3DB-1	FT3FT-1	FP351618K	FFT3S51618K
5/16-18	0.465	0.780	27/64"	FT3DB-1	FT3FT-1	FP351618K	FFT351618K
5/16-24	0.465	0.400	27/64"	FT3DB-1	FT3FT-1	FP351624K	FFT3S51624K
5/16-24	0.465	0.780	27/64"	FT3DB-1	FT3FT-1	FP351624K	FFT351624K
3/8-16	0.595	0.470	33/64"	FT4DB-1	FT4FT-1	FP43816K	FFT4S3816K
3/8-16	0.595	0.935	33/64"	FT4DB-1	FT4FT-1	FP43816K	FFT43816K
3/8-24	0.595	0.470	33/64"	FT4DB-1	FT4FT-1	FP43824K	FFT4S3824K
3/8-24	0.595	0.935	33/64"	FT4DB-1	FT4FT-1	FP43824K	FFT43824K
7/16-14	0.595	0.625	33/64"	FT4DB-1	FT4FT-1	FP471614K	FFT4S71614K
7/16-14	0.595	1.100	33/64"	FT4DB-1	FT4FT-1	FP471614K	FFT471614K
7/16-20	0.595	0.625	33/64"	FT4DB-1	FT4FT-1	FP471620K	FFT4S71620K
7/16-20	0.595	1.100	33/64"	FT4DB-1	FT4FT-1	FP471620K	FFT471620K
1/2-13	0.735	0.750	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFT5S1213K
1/2-13	0.735	1.500	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFT51213K
1/2-20	0.735	0.750	21/32"	FT5DB-1	FT5FT-1	FP51220K	FFT5S1220K
1/2-20	0.735	1.500	21/32"	FT5DB-1	FT5FT-1	FP51220K	FFT51220K
9/16-12	0.860	0.750	51/64"	FT6DB-1	FT6FT-1	FP691612K	FFT6S91612K
9/16-12	0.860	1.410	51/64"	FT6DB-1	FT6FT-1	FP691612K	FFT691612K
9/16-18	0.860	0.750	51/64"	FT6DB-1	FT6FT-1	FP691618K	FFT6S91618K
9/16-18	0.860	1.410	51/64"	FT6DB-1	FT6FT-1	FP691618K	FFT691618K
5/8-11	0.860	0.780	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFT6S5811K
5/8-11	0.860	1.560	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFT65811K
5/8-18	0.860	0.780	51/64"	FT6DB-1	FT6FT-1	FP65818K	FFT6S5818K
5/8-18	0.860	1.560	51/64"	FT6DB-1	FT6FT-1	FP65818K	FFT65818K
3/4-10	1.095	0.940	1-1/64"	FT8DB-1	FT8FT-1	FP83410K	FFT8S3410K
3/4-10	1.095	1.875	1-1/64"	FT8DB-1	FT8FT-1	FP83410K	FFT83410K
3/4-16	1.095	0.940	1-1/64"	FT8DB-1	FT8FT-1	FP83416K	FFT8S3416K
3/4-16	1.095	1.875	1-1/64"	FT8DB-1	FT8FT-1	FP83416K	FFT83416K
7/8-9	1.220	1.100	1-9/64"	FT9DB-1	FT9FT-1	FP97809K	FFT9S7809K
7/8-9	1.220	1.750	1-9/64"	FT9DB-1	FT9FT-1	FP97809K	FFT97809K
7/8-14	1.220	1.100	1-9/64"	FT9DB-1	FT9FT-1	FP97814K	FFT9S7814K
7/8-14	1.220	1.750	1-9/64"	FT9DB-1	FT9FT-1	FP97814K	FFT97814K
1"-8	1.220	1.125	1-9/64"	FT9DB-1	FT9FT-1	FP91008K	FFT9S1008K
1"-8	1.220	2.500	1-9/64"	FT9DB-1	FT9FT-1	FP91008K	FFT91008K
1"-14	1.220	1.125	1-9/64"	FT9DB-1	FT9FT-1	FP91014K	FFT9S1014K
1"-14	1.220	2.000	1-9/64"	FT9DB-1	FT9FT-1	FP91014K	FFT91014K

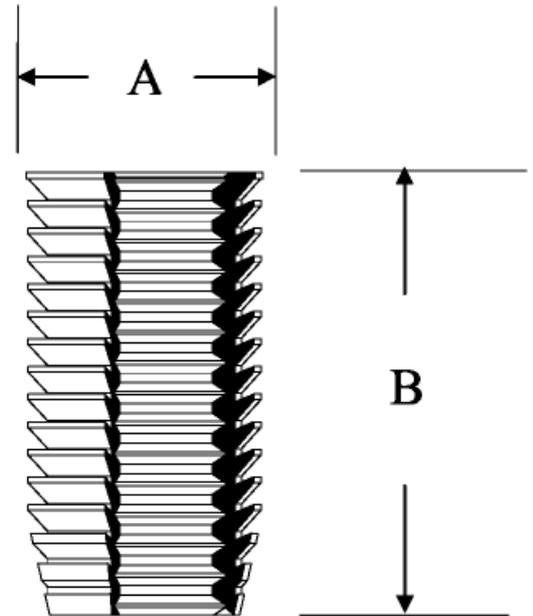
FFT Style inserts are one of the most popular and easiest to install.

Our insert Finishing is flush to the surface when installed.

Torque tightening of the bolt into the insert creates an upward drawing force required to maintain the radial drawing force that reinforces the surrounding metal.

All dimensions are in Imperial – Inches unless otherwise stated

FFT Inserts (Metric – mm) Selection Chart



FFT Inserts (Metric – mm)

Internal Thread Size	A (mm)	B (mm)	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N
6mm X 1.00	8.97	8.00	0.316"	FT2DB-1	FT2FT-1	FP26100K	FFT2S6100K
6mm X 1.00	8.97	14.99	0.316"	FT2DB-1	FT2FT-1	FP26100K	FFT26100K
7mm X 1.00	8.97	8.64	0.316"	FT2DB-1	FT2FT-1	FP27100K	FFT2S7100K
7mm X 1.00	8.97	17.53	0.316"	FT2DB-1	FT2FT-1	FP27100K	FFT27100K
8mm x 1.25	11.81	10.16	27/64"	FT3DB-1	FT3FT-1	FP38125K	FFT3S8125K
8mm x 1.25	11.81	19.81	27/64"	FT3DB-1	FT3FT-1	FP38125K	FFT38125K
10mm x 1.50	15.11	12.70	33/64"	FT4DB-1	FT4FT-1	FP410150K	FFT4S10150K
10mm x 1.50	15.11	25.02	33/64"	FT4DB-1	FT4FT-1	FP410150K	FFT410150K
11mm x 1.50	15.11	12.70	33/64"	FT4DB-1	FT4FT-1	FP411150K	FFT4S11150K
11mm x 1.50	15.11	25.02	33/64"	FT4DB-1	FT4FT-1	FP411150K	FFT411150K
12mm x 1.75	18.67	15.24	21/32"	FT5DB-1	FT5FT-1	FP512175K	FFT5S12175K
12mm x 1.75	18.67	30.23	21/32"	FT5DB-1	FT5FT-1	FP512175K	FFT512175K
14mm x 2.00	18.67	15.24	21/32"	FT5DB-1	FT5FT-1	FP514200K	FFT5S14200K
14mm x 2.00	18.67	28.45	21/32"	FT5DB-1	FT5FT-1	FP514200K	FFT514200K
16mm x 2.00	21.84	19.81	51/64"	FT6DB-1	FT6FT-1	FP616200K	FFT6S16200K
16mm x 2.00	21.84	39.75	51/64"	FT6DB-1	FT6FT-1	FP616200K	FFT616200K
18mm x 2.50	24.64	22.48	57/64"	FT7DB-1	FT7FT-1	FP718250K	FFT7S18250K
18mm x 2.50	24.64	44.98	57/64"	FT7DB-1	FT7FT-1	FP718250K	FFT718250K
20mm x 2.50	27.81	23.88	1-1/64"	FT8DB-1	FT8FT-1	FP820250K	FFT8S20250K
20mm x 2.50	27.81	47.63	1-1/64"	FT8DB-1	FT8FT-1	FP820250K	FFT820250K
24mm x 3.00	30.99	30.48	1-9/64"	FT9DB-1	FT9FT-1	FP924300K	FFT9S24300K
24mm x 3.00	30.99	60.33	1-9/64"	FT9DB-1	FT9FT-1	FP924300K	FFT924300K

FFT Style inserts are one of the most popular and easiest to install.

There finishing is flush to the surface when installed.

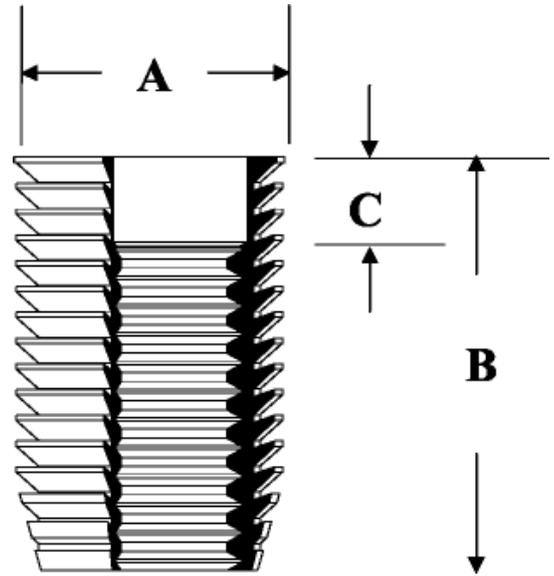
Torque tightening of the bolt into the insert creates an upward drawing force required to maintain the radial drawing force that reinforces the surrounding metal.

All dimensions are in Imperial – Inches unless otherwise stated

FFT Inserts (For Special Applications) Selection Chart



FFT Special Application inserts are made to match exact geometry of various applications such as head bolt and main bearing bolt holes for engine blocks. Many have counter-bores at the top of the inserts or are made to a specific length.



For Special Application Inserts (Imperial - Inch)

Internal Thread Size	A	B	C	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N	Application
7/16-14	0.595	1.655	0.800	33/64"	FT4DB-1	FT4FT-1	FP471614K	FFT4SP001K	GM Small block M B
7/16-14	0.595	1.053	0.225	33/64"	FT4DB-1	FT4FT-1	FP471614K	FFT4SP003K	GM Small block M B
1/2-13	0.735	1.000	0.000	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFT5SP009K	Chrysler 318-340 HB
1/2-13	0.735	1.540	0.375	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFT5SP004K	6.9 & 7.3 Int. MB
1/2-13	0.735	1.438	0.250	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFT5SP006K	Cat 3208 HB
9/16-18	0.735	2.375	0.375	21/32"	FT5DB-1	FT5FT-1	FP591618K	FFT5SP002K	DD 71&92 crankshaft
9/16-12	0.860	2.550	0.775	51/64"	FT6DB-1	FT6FT-1	FP691612K	FFT6SP004K	DD 53 series MB
5/8-18	0.860	2.125	0.625	51/64"	FT6DB-1	FT6FT-1	FP65818K	FFT6SP001K	KT Cummins crankshaft
7/8-14	1.220	3.875	1.437	1-9/64"	FT9DB-1	FT9FT-1	FP97814K	FFT9SP002K	Cat 3508-16 M B
7/8-14	1.220	3.250	0.900	1-9/64"	FT9DB-1	FT9FT-1	FP97814K	FFT9SP003K	Cat 3400 MB
1-1/4-12	1.610	1.250	0.000	1-33/64"	FT12DB-1	FT12FT-1	FP1211412K	FFT12SP01K	

For Special Application Inserts (Metric –mm)

Internal Thread Size	A (mm)	B (mm)	C (mm)	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N	Application
10mm x 1.50	15.11	35.56	8.20	33/64"	FT4DB-1	FT4FT-1	FP410150K	FFT4SP004K	GM 6.2-6.5 MB
10mm x 1.50	15.11	40.01	12.70	33/64"	FT4DB-1	FT4FT-1	FP410150K	FFT4SP005K	GM starter motor BH
12mm x 1.75	18.67	40.64	6.35	21/32"	FT5DB-1	FT5FT-1	FP512175K	FFT5SP003K	7.3 Int. Powerstroke MB
12mm x 1.75	18.67	28.58	8.18	21/32"	FT5DB-1	FT5FT-1	FP512175K	FFT5SP001K	GM 6.2-6.5 MB
12mm x 1.75	18.67	52.07	19.05	21/32"	FT5DB-1	FT5FT-1	FP512175K	FFT5SP005K	7.3 Int. DI inner MB
12mm x 1.75	21.84	25.40	6.35	51/64"	FT6DB-1	FT6FT-1	FP612175K	FFT6SP002K	6.5 GM HB
14mm X 2.00	18.67	36.07	5.33	21/32"	FT5DB-1	FT5FT-1	FP514200K	FFT5SP007K	Navistar 6.0 L outer MB
14mm X 2.00	18.67	48.26	17.27	21/32"	FT5DB-1	FT5FT-1	FP514200K	FFT5SP008K	Navistar 6.0 L inner MB
24mm x 3.00	30.99	50.80	None	1-9/64"	FT9DB-1	FT9FT-1	FP924300K	FFT9SP001K	Cat 793 wheel hub BH
30mm x 3.50	37.72	49.99	None	1-25/64"	*1	FT11FT-1	FP1130350K	FFT11SP001K	Cat 797 wheel hub BH
36mm x 4.00	43.99	60.02	None	1-41/64"	*2	FT13FT-1	FP133640K	FFT13SP001K	Cat 797 wheel hub BH

NOTE: *1 - FTSDH1114 and FT11SDI

NOTE: *2 - FTSDH1114 and FT13SDI

MB: Main Bearing Bolt Hole

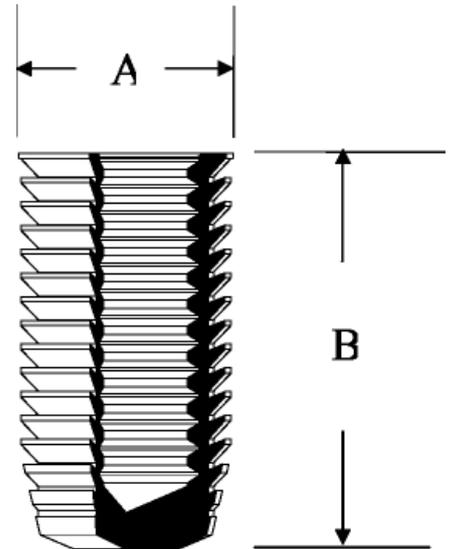
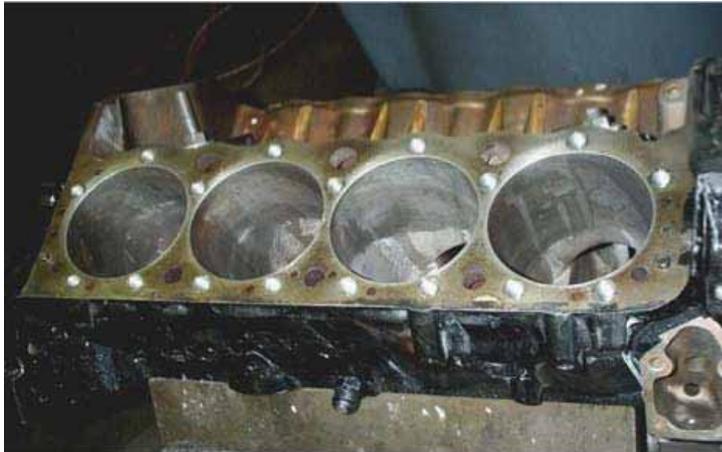
HB: Head Bolt

BH: Bolt Hole

DD: Detroit Diesel

All dimensions are in Imperial – Inches unless otherwise stated

FFB Inserts Selection Chart



FFB inserts can be used to seal a bolt hole. It is now easy to change a through hole to a blind hole or to seal a cracked hole permanently and easily

FFB Inserts (Imperial – Inch)

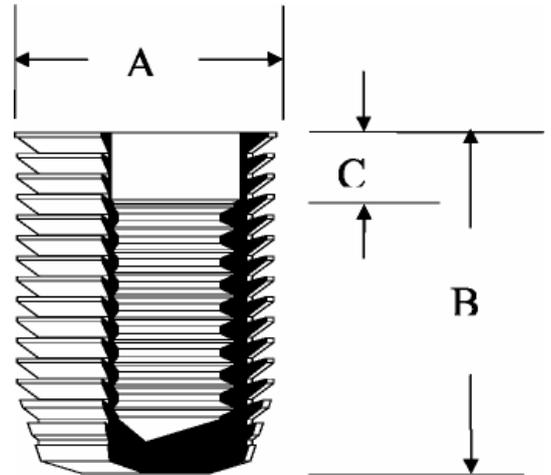
Internal Thread Size	A	B	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N
1/4-20	0.353	0.800	0.316	FT2DB-1	FT2FT-1	FP21420K	FFB2S1420K
1/4-28	0.353	0.800	0.316	FT2DB-1	FT2FT-1	FP21428K	FFB2S1428K
5/16-18	0.465	1.105	27/64"	FT3DB-1	FT3FT-1	FP351618K	FFB3S1618K
5/16-24	0.465	1.105	27/64"	FT3DB-1	FT3FT-1	FP351624K	FFB3S1624K
3/8-16	0.595	1.200	33/64"	FT4DB-1	FT4FT-1	FP43816K	FFB43816K
3/8-24	0.595	1.200	33/64"	FT4DB-1	FT4FT-1	FP43824K	FFB43824K
7/16-14	0.595	1.330	33/64"	FT4DB-1	FT4FT-1	FP471614K	FFB471614K
7/16-20	0.595	1.330	33/64"	FT4DB-1	FT4FT-1	FP471620K	FFB471620K
1/2-13	0.735	1.500	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFB51213K
1/2-20	0.735	1.500	21/32"	FT5DB-1	FT5FT-1	FP51220K	FFB51220K
9/16-12	0.860	1.656	51/64"	FT6DB-1	FT6FT-1	FP691612K	FFB691612K
9/16-18	0.860	1.650	51/64"	FT6DB-1	FT6FT-1	FP691618K	FFB691618K
5/8-11	0.860	1.900	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFB65811K
5/8-18	0.860	1.900	51/64"	FT6DB-1	FT6FT-1	FP65818K	FFB65818K
3/4-10	1.095	2.275	1-1/64"	FT8DB-1	FT8FT-1	FP83410K	FFB83410K
3/4-16	1.095	2.275	1-1/64"	FT8DB-1	FT8FT-1	FP83416K	FFB83416K
7/8-9	1.220	2.500	1-9/64"	FT9DB-1	FT9FT-1	FP97809K	FFB97809K
7/8-14	1.220	2.500	1-9/64"	FT9DB-1	FT9FT-1	FP97814K	FFB97814K
1"-8	1.220	2.880	1-9/64"	FT9DB-1	FT9FT-1	FP91008K	FFB91008K
1"-14	1.220	2.880	1-9/64"	FT9DB-1	FT9FT-1	FP910014K	FFB910014K

FFB Inserts (Metric – mm)

Internal Thread Size	A (mm)	B (mm)	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N
6mm x 1.00	8.97	19.30	0.316"	FT2DB-1	FT2FT-1	FP26100K	FFB26100K
7mm x 1.00	8.97	21.84	0.316"	FT2DB-1	FT2FT-1	FP27100K	FFB27100K
8mm x 1.25	11.81	28.07	27/64"	FT3DB-1	FT3FT-1	FP38125K	FFB38125K
10mm x 1.50	15.11	27.56	33/64"	FT4DB-1	FT4FT-1	FP410150K	FFB410150K
11mm x 1.50	15.11	33.78	33/64"	FT4DB-1	FT4FT-1	FP411150K	FFB411150K
12mm x 1.75	18.67	36.83	21/32"	FT5DB-1	FT5FT-1	FP512175K	FFB512175K
14mm x 2.00	18.67	44.45	21/32"	FT5DB-1	FT5FT-1	FP514200K	FFB514200K
16mm x 2.00	21.84	47.50	51/64"	FT6DB-1	FT6FT-1	FP616200K	FFB616200K
18mm x 2.50	24.64	47.62	57/64"	FT7DB-1	FT7FT-1	FP718250K	FFB718250K
20mm x 2.50	27.81	47.62	1-1/64"	FT8DB-1	FT8FT-1	FP820250K	FFB820250K
24mm x 3.00	30.99	73.15	1-9/64"	FT9DB-1	FT9FT-1	FP924300K	FFB924300K

All dimensions are in Imperial – Inches unless otherwise stated

FFB Special Application Inserts Selection Chart



Special Application inserts match the original geometry of the bolt hole. Common applications include head bolt and main bearing bolt holes in gas and engine diesel engines

FFB Special Inserts (Imperial – Inch)

Internal Thread Size	A	B	C	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N	Application
7/16-14	0.595	2.450	0.500	33/64"	FT4DB-1	FT4FT-1	FP471614K	FFB4SP003K	Alum small blk GM MB
1/2-13	0.648	2.200	None	37/64"	FT4.5DB-1	FT4.5FT-1	FP4.51213K	FFB4.5SP001K	Ford 351 alum MB
1/2-13	0.735	2.020	0.350	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFB5SP006K	300 series JD block HB
1/2-13	0.735	2.057	0.475	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFB5SP001K	Cat 3208 HB
1/2-13	0.735	1.330	None	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFB5SP010K	Cat 3208 HB
1/2-13	0.735	2.850	None	21/32"	FT5DB-1	FT5FT-1	FP51213K	FFB5SP007K	Cat 3500 pan rail
9/16-12	0.860	2.150	0.210	51/64"	FT6DB-1	FT6FT-1	FP691612K	FFB6SP005K	Cat 3208 HB, JD 404 MB
5/8-11	0.860	3.000	0.750	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFB6SP004K	Cat 3208 HB, DD 71 HB
5/8-11	0.860	2.900	0.230	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFB6SP008K	Detroit Diesel 53 HB
5/8-11	0.860	2.900	0.500	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFB6SP009K	Detroit Diesel 53 HB
5/8-11	0.860	2.000	0.400	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFB6SP001K	Mack HB
5/8-11	0.860	2.415	0.240	51/64"	FT6DB-1	FT6FT-1	FP65811K	FFB6SP007K	JD 619 HB
9/16-12	0.860	2.000	0.210	51/64"	FT6DB-1	FT6FT-1	FP691612K	FFB6SP006K	JD HB6 HB
11/16-12	0.970	2.500	0.800	57/64"	FT7DB-1	FT7FT-1	FP7111612K	FFB7SP002K	Mack HB
11/16-12	0.970	2.500	1.005	57/64"	FT7DB-1	FT7FT-1	FP7111612K	FFB7SP001K	Mack MB
3/4-16	1.970	3.750	1.940	57/64"	FT7DB-1	FT7FT-1	FP73416K	FFB7SP003K	Cummins KT19 H B
3/4-16	1.095	4.290	2.000	1-1/64"	FT8DB-1	FT8FT-1	FP83410K	FFB8SP005K	Cat 3400 series HB
3/4-16	1.095	4.150	1.500	1-1/64"	FT8DB-1	FT8FT-1	FP83410K	FFB8SP006K	Cat 3400 series H B
7/8-14	1.095	3.688	0.900	1-1/64"	FT8DB-1	FT8FT-1	FP87814K	FFB8SP002K	Cat 3400 series M B

FFB Special Inserts (Metric – mm)

Internal Thread Size	A (mm)	B (mm)	C (mm)	Drill Size	Drill P/N	Tap P/N	Install Tool P/N	Starter Kit P/N	Application
10mm x 1.50	15.11	41.91	6.99	33/64"	FT4DB-1	FT4FT-1	FP410150K	FFB4SP002K	GM 6.2-6.5 MB
11mm x 1.50	15.11	38.10	None	33/64"	FT4DB-1	C4FT-1	None	FFB4SP001K	Cadillac Northstar / Honda HB
12mm x 1.50	18.67	39.24	7.00	21/32"	FT5DB-1	FT5FT-1	FP512150K	FFB5SP005K	Mazda HB
12mm x 1.75	18.67	50.04	6.48	21/32"	FT5DB-1	FT5FT-1	FP5121175K	FFB5SP008K	Cummins 5.9 HB
12mm x 1.75	18.67	58.93	6.48	21/32"	FT5DB-1	FT5FT-1	FP5121175K	FFB5SP009K	Cummins 5.9 HB Side
14mm x 1.50	18.67	57.15	12.70	21/32"	FT5DB-1	FT5FT-1	None	FFB5SP002K	Cummins L10 HB
14mm x 2.00	18.67	65.91	13.34	21/32"	FT5DB-1	FT5FT-1	FP514200K	FFB5SP003K	Cummins 8.3 HB
16mm x 2.00	21.84	46.99	8.89	51/64"	FT6DB-1	FT6FT-1	FP616200K	FFB6SP003K	Mack HB
16mm x 2.00	21.84	76.20	29.21	51/64"	FT6DB-1	FT6FT-1	FP616200K	FFB6SP002K	Mack HB
20mm x 2.50	24.64	74.30	22.61	57/64"	FT7DB-1	FT7FT-1	FP720250K	FFB7SP005K	Cat 3116 HB
20mm x 2.50	27.81	74.30	22.61	1-1/64"	FT8DB-1	FT8FT-1	FP820250K	FFB8SP004K	Cat 316-26 HB

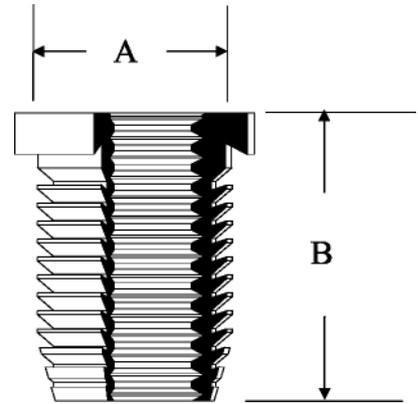
MB: Main Bearing Bolt Hole

HB: Head Bolt

JD: John Deere

All dimensions are in Imperial – Inches unless otherwise stated

FST Inserts Selection Chart



The shoulder at the top of the insert adds additional hoop strength around the threaded hole for better resistance to side loading.

FST Inserts Chart (Imperial – Inch)

Internal Thread Size	A	B	Shoulder Diameter	Shoulder Diameter	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Install Tool P/N	Starter Kit P/N
3/8-16	0.595	0.750	0.730	0.150	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP43816K	FST43816K
3/8-24	0.595	0.750	0.730	0.150	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP43824K	FST43824K
7/16-14	0.595	0.750	0.730	0.150	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP471614K	FST471614K
7/16-20	0.595	0.750	0.730	0.200	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP471620K	FST471620K
1/2-13	0.735	1.000	0.852	0.200	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FP51213K	FST51213K
1/2-20	0.735	1.000	0.852	0.200	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FP51220K	FST51220K
5/8-11	0.860	1.250	0.991	0.225	25/32"	FT6DB-1	FT6FT-1	FT6PSF-1	FP65811K	FST65811K
5/8-18	0.860	1.250	0.991	0.225	25/32"	FT6DB-1	FT6FT-1	FT6PSF-1	FP65818K	FST65818K
3/4-12	0.970	0.830	1.168	0.140	57/64"	FT7DB-1	FT7FT-1	FT7PSF-1	None	FST73412K
3/4-10	1.095	1.500	1.228	0.275	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP83410K	FST83410K
3/4-16	1.095	1.500	1.228	0.275	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP83416K	FST83416K
7/8-12	1.095	0.850	1.228	0.150	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	None	FST87812K
7/8-14	1.220	1.750	1.355	0.300	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP97814K	FST97814K
7/8-18	1.095	0.700	1.228	0.150	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP87818K	FST87818K
7/8-9	1.220	1.750	1.355	0.300	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP97809K	FST97809K
1"-8	1.220	2.000	1.355	0.300	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP91008K	FST91008K
1"-12	1.220	0.850	1.355	0.150	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	None	FST910012K
1"-14	1.220	2.000	1.355	0.300	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP91014K	FST91014K
1-1/8"-12	1.364	0.980	1.565	0.150	1-17/64"	*#	FT10FT-1	FT10PSF-1	None	FST1011812K

***#NOTE: FTSDH4810 and FT10SDI**

FST Inserts (Metric – mm)

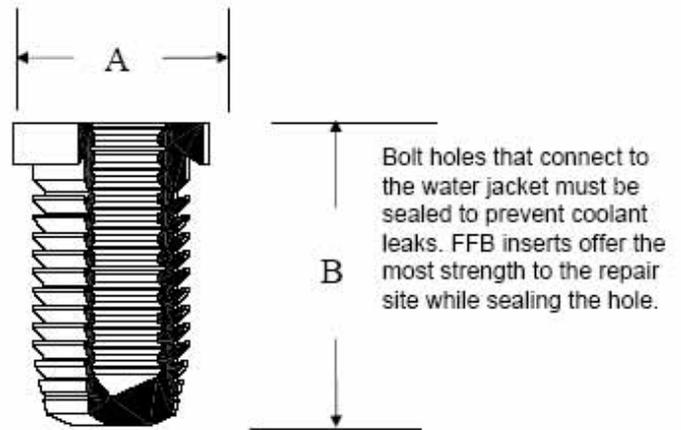
Internal Thread Size	A (mm)	B (mm)	Shoulder Diameter (mm)	Shoulder Length (mm)	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Install Tool P/N	Starter Kit P/N
10mm x 1.50	15.11	19.05	18.57	3.81	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP410150K	FST410150K
11mm x 1.50	15.11	38.10	18.57	3.81	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP411150K	FST411150K
14mm x 2.00	18.67	19.05	21.64	3.81	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FP514200K	FST514200K
16mm x 2.00	21.84	31.75	25.17	5.72	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FP616200K	FST616200K
18mm x 2.50	24.64	35.56	29.67	6.35	57/64"	FT7DB-1	FT7FT-1	FT7PSF-1	FP718250K	FST718250K
20mm x 2.50	27.81	40.01	31.19	6.99	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP820250K	FST820250K
24mm x 3.00	30.99	50.80	34.42	7.62	1-33/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP924300K	FST924300K

FST Special Application (Metric – mm)

Internal Thread Size	A (mm)	B (mm)	Shoulder Diameter (mm)	Shoulder Length (mm)	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Install Tool P/N	Starter Kit P/N
20mm x 2.50	27.81	53.98	31.19	6.99	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP820250K	FST8SP001K

All dimensions are in Imperial – Inches unless otherwise stated

FSB Inserts Selection Chart



FSB Inserts (Imperial – Inch)

Internal Thread Size	A	B	Shoulder Diameter	Shoulder Length	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Install Tool P/N	Starter Kit P/N
3/8-16	0.595	1.125	0.730	0.150	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP43816K	FSB43816K
3/8-24	0.595	1.125	0.730	0.150	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP43824K	FSB43824K
7/16-14	0.595	1.300	0.730	0.150	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP471614K	FSB471614K
1/2-13	0.735	1.700	0.852	0.200	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FP51213K	FSB51213K
5/8-11	0.860	1.800	0.991	0.225	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FP65811K	FSB65811K
3/4-10	1.095	2.150	1.228	0.275	51/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP83410K	FSB83410K
7/8-9	1.220	2.450	1.355	0.300	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP97809K	FSB97809K
1"-8	1.220	2.800	1.355	0.300	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP91008K	FSB91008K

FSB Inserts (Metric – mm)

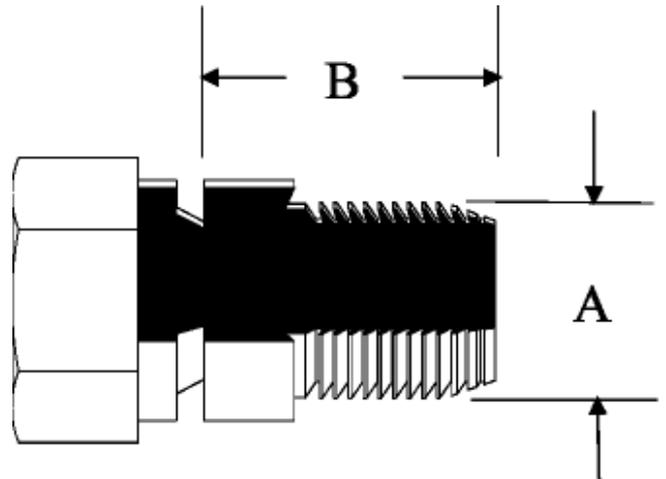
Internal Thread Size	A (mm)	B (mm)	Shoulder Diameter (mm)	Shoulder Length (mm)	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Install Tool P/N	Starter Kit P/N
10mm x 1.50	15.11	29.97	18.57	5.08	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP410150K	FSB410150K
12mm x 1.75	15.11	36.37	18.57	5.08	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FP412175K	FSB412175K
14mm x 2.00	18.67	41.28	21.64	5.08	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FP514200K	FSB514200K
16mm x 2.00	24.64	46.99	25.17	5.72	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FP616200K	FSB616200K
18mm x 2.50	24.64	52.32	29.67	6.35	57/64"	FT7DB-1	FT7FT-1	FT7PSF-1	FP718250K	FSB718250K
20mm x 2.50	27.81	57.15	31.19	6.99	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FP820250K	FSB820250K
22mm x 2.50	30.99	65.43	34.42	7.62	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP922250K	FSB922250K
24mm x 3.00	30.99	68.58	34.42	7.62	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FP924300K	FSB924300K

All dimensions are in Imperial – Inches unless otherwise stated

FPS (Solid Plug) & FPD (Pipe) Inserts Selection Chart

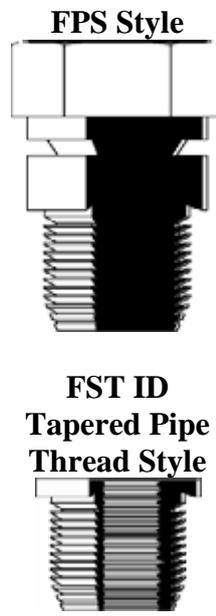


3516 Cat block with eroded water holes repaired on the deck surface. FPS plugs are installed and new water holes are drilled through the plugs



FPS Inserts (Solid Plug)

Max ID Thread Size	A	B	Shoulder Diameter	Shoulder Length	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Starter Kit P/N
0.250	0.353	0.525	0.450	0.150	0.316"	FT2DB-1	FT2FT-1	FT2PSF-1	FPS20375K
0.250	0.353	0.850	0.450	0.150	0.316"	FT2DB-1	FT2FT-1	FT2PSF-1	FPS20700K
0.313	0.465	0.575	0.600	0.175	27/64"	FT3FT-1	FT3FT-1	FT3PSF-1	FPS30400K
0.313	0.465	0.975	0.600	0.175	27/64"	FT3FT-1	FT3FT-1	FT3PSF-1	FPS30800K
0.375	0.595	0.750	0.731	0.250	33/64"	FT4FT-1	FT4FT-1	FT4PSF-1	FPS40500K
0.375	0.595	1.450	0.731	0.250	33/64"	FT4FT-1	FT4FT-1	FT4PSF-1	FPS41200K
0.500	0.735	0.620	0.825	0.150	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FPS50470K
0.500	0.735	0.975	0.852	0.375	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FPS50600K
0.500	0.735	1.875	0.852	0.375	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FPS51500K
0.500	0.735	2.875	0.852	0.375	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FPS52500K
0.625	0.860	1.325	0.991	0.325	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FPS61000K
0.625	0.860	2.325	0.991	0.325	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FPS62000K
0.750	0.970	1.100	1.168	0.300	57/64"	FT7DB-1	FT7FT-1	FT7PSF-1	FPS70800K
0.750	0.970	1.550	1.168	0.300	57/64"	FT7DB-1	FT7FT-1	FT7PSF-1	FPS71250K
0.750	0.970	2.550	1.168	0.300	57/64"	FT7DB-1	FT7FT-1	FT7PSF-1	FPS72250K
0.875	1.095	0.700	1.229	0.200	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FPS80500K
0.875	1.095	1.875	1.229	0.375	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FPS81500K
0.875	1.095	2.375	1.229	0.375	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FPS82000K
1.000	1.220	0.750	1.355	0.250	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FPS90500K
1.000	1.220	1.000	1.355	0.250	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FPS90750K
1.000	1.220	1.875	1.355	0.375	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FPS91500K



FPD Inserts (Hole Drilled) Plug Inserts

A	B	Hole Size	Shoulder Diameter	Shoulder Diameter	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Starter Kit P/N
0.860	0.650	0.406	0.991	0.200	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FPD6SP001K
0.860	2.770	0.563	0.991	0.375	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FPD6SP002K
0.860	3.960	0.563	0.991	0.375	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FPD6SP003K
1.095	0.700	0.563	1.228	0.200	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FPD8SP001K
1.095	4.000	0.563	1.228	0.375	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FPD8SP002K
1.095	2.750	0.563	1.228	0.375	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FPD8SP003K
1.220	0.975	0.563	1.355	0.375	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FPD9SP001K



FST ID Tapered Pipe Thread Inserts

Internal Thread Size	A	B	Shoulder Diameter	Shoulder Length	Drill Size	Drill P/N	Tap P/N	Spotfacer P/N	Install Tool P/N	Starter Kit P/N
1/8- 27NPTF	0.595	0.500	0.731	0.125	33/64"	FT4DB-1	FT4FT-1	FT4PSF-1	FT18NPTT	FST418NPTK
1/4- 18NPTF	0.735	0.600	0.852	0.130	21/32"	FT5DB-1	FT5FT-1	FT5PSF-1	FT14NPTT	FST514NPTK
3/8- 18NPTF	0.860	0.750	0.991	0.150	51/64"	FT6DB-1	FT6FT-1	FT6PSF-1	FT38NPTT	FST638NPTK
1/2- 14NPTF	1.095	0.875	1.228	0.150	1-1/64"	FT8DB-1	FT8FT-1	FT8PSF-1	FT12NPTT	FST812NPTK
3/4- 14NPTF	1.220	1.000	1.355	0.160	1-9/64"	FT9DB-1	FT9FT-1	FT9PSF-1	FT34NPTT	FST934NPTK

NPTK: National Pipe Fine Thread

All dimensions are in Imperial – Inches unless otherwise stated

Drilling & Tapping Alignment Fixtures Chart

Drill and Tap Alignment Kit for CADILLAC NORTHSTAR FT4DTK		
The items in this table are included in the FT4DTK	Description	Part Number
	Right Angle Drill Plate	FTDIP
	9/16"-12 Tap	91612 TAP
	9/16"-12 Bolt OAL 2"	B91612
	9/16" Washer (Hardened SAE)	W91612
	0.516" Drill Bushing	FTTID516
	Alignment Pin	FT516AP
	0.609" Drill Bushing	FTTID609
	39/64" Drill Bit	39/64 BIT
	C4 Tap Guide	FT4CM4TG



FT4DTK

When installing head bolt inserts into a recessed hole such as the Cadillac Northstar using a hand held drill, the above kit must be used to ensure proper alignment. Using these alignment will ensure that the inserts will be installed perpendicular to the surface.

Item	Tap Size	Use With	Drill Size	Description	Part Number	
Drill fixture plate for drilling perpendicular to the surface. This fixture works with both the FT4 and FT5 drill bushings listed below.	FT4 & FT5	FTTID516 or FTTID656	N/A	Right Angle Drill Plate	FTDIP	
Drill bushing for attaching to the FTDIP plate for drilling tap drill holes for FT3 through FT6 size inserts.	FT3	FT3DB	27/64"	0.422" Drill Bushing	FTTID422	
	FT4	FT4DB	0.516"	0.516" Drill Bushing	FTTID516	
	FT5	FT5DB	0.656"	0.656" Drill Bushing	FTTID656	
	FT6	FT6DB	51/64"	0.797" Drill Bushing	FTTID797	
	FT3		27/64"	27/64" Alignment Pin	FT422AP	
	FT4		33/64"	33/64" Alignment Pin	FT516AP	
	FT5		21/32"	21/32" Alignment Pin	FT656AP	
	FT6		51/64"	51/64" Alignment Pin	FT797AP	
Cadillac NorthStar			39/64"	0.609" Drill Bushing	FTTID609	
	FT3		N/A	FT3 Tap Guide	FT3TG	
	FT4		N/A	FT4 Tap Guide	FT4TG	
	FT5		N/A	FT5 Tap Guide	FT5TG	
	FT6		N/A	FT6 Tap Guide	FT6TG	
	C4		N/A	C4 Tap Guide	FT4CM4TG	

All dimensions are in Imperial – Inches unless otherwise stated

Caterpillar Pre-combustion Chamber Inserts Chart



Item	Use for engine model	Bushing OD	Part number
Alignment Bushing	3406	1.585"	FTCAB-1
Alignment Bushing	1676, 3208, D336	1.837"	FTCAB-2
Alignment Bushing	1673, D343, D346, D348, D349	2.082"	FTCAB-3
Alignment Bushing	3406, 3408, D334	2.154"	FTCAB-4
Alignment Bushing	3304, 3306, D315, D318, D333C	2.186"	FTCAB-5
Alignment Bushing	1670, D330, D333	2.428"	FTCAB-6
Alignment Bushing	D339, D342, D353	2.742"	FTCAB-7



#3 Morse Taper, Tap and Spotfacer Split Sleeve Driver Adapter	All	—	FTD.695
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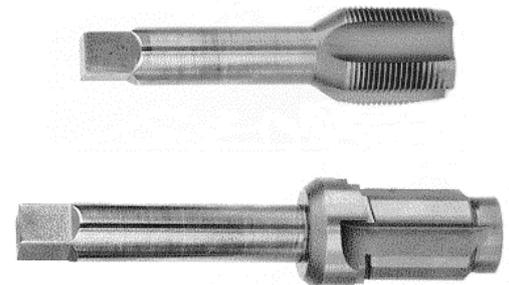
#3 Morse Taper Extension that fits all FTCAB Bushings, Taps, Spotfacers and Adapter	All	—	FTDEXT
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Note: The insert creates a new gasket surface with no finish machining required for the pre-cup gasket.

A Caterpillar Pre-combustion Chamber is used to install the thread repair insert

Insert Part Number	Thread size	Tap Part number	Spotfacer Part number
FST73412	3/4" x 12 tpi	FT7FT-1	FT7PDS-1
FST87812	7/8" x 12 tpi	FT8FT-1	FT8PDS-1
FST910012	1" x 12 tpi	FT9FT-1	FT9PDS-1
FST1011812	1-1/8" x 12 tpi	FT10FT-1	FT10PDS-1

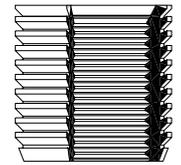


NOTE: When ordering individual kits you must include the Split Sleeve Adapter, Morse Taper Extension and at least one CAB Bushing		
Caterpillar Pre-Combustion Chamber Thread Insert Kits		
Thread size	Contents	Kit Part number
3/4" x 12 tpi	5 each 3/4" inserts, tap, piloted drill/spotfacer, tapping fluid and sealant	FST73412K
7/8" x 12 tpi	5 each 7/8" inserts, tap, piloted drill/spotfacer, tapping fluid and sealant	FST87812K
1" x 12 tpi	5 each 1" inserts, tap, piloted drill/spotfacer, tapping fluid and sealant	FST910012K
1-1/8" x 12 tpi	5 each 1" inserts, tap, piloted drill/spotfacer, tapping fluid and sealant	FST1011812K
3/4" to 1" Kit	This Kit combines all of the contents of the 3/4", 7/8" and 1" Kits plus all 7 CAB Bushings, Split Sleeve Adapter and #3 Morse Taper Extension	FSTCCTIK

All dimensions are in Imperial – Inches unless otherwise stated

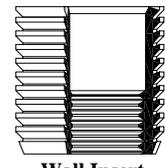
Spark Plug Thread Repair Inserts Chart

Thin Wall Sparkplug Inserts						
Internal Thread Size	STYLE	Thread OD	O.A.L.	Application	Kit Part Number	Insert Part Number
12mm x 1.25	FFT	0.638	0.645	Aluminum	FFT4.512125LK	FFT4.512125L
12mm x 1.25	FFT	0.638	0.400	Aluminum	FFT4.5S12125LK	FFT4.5S12125L
14mm x 1.25	FFT	0.700	0.703	Cast Iron	FFT514125K	FFT514125
14mm x 1.25	FFT(AN)	0.700	0.700	Aluminum	FFT514125LK	FFT514125L
14mm x 1.25	FFT(AN)	0.700	0.700	Deep Reach Aluminum	FFT514125LDK	FFT514125LD
14mm x 1.25	FFT	0.703	0.700	Deep Reach Cast Iron	FFT514125DK	FFT514125D
14mm x 1.25	FFT	0.703	0.450	Cast Iron	FFT5S14125K	FFT5S14125
14mm x 1.25	FFT(AN)	0.700	0.450	Aluminum	FFT5S14125LK	FFT5S14125L
14mm x 1.25	FFT(AN)	0.735	0.700	Aluminum Oversized	FFT514125LOK	FFT514125LO
18mm X 1.50	FFT	0.855	0.420	Cast Iron	FFT618150K	FFT618150
18mm X 1.50	FFT(AN)	0.855	0.420	Aluminum	FFT618150LK	FFT618150L
7/8"-18	FST	1.095	1.000	Cast Iron	FST8SP002K	FST8SP002
7/8"-18	FST	1.095	1.100	Cast Iron	FST8SP003K	FST8SP003



FFT Style Fully Threaded Insert

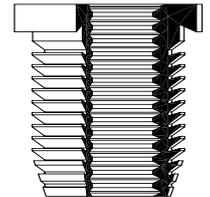
Combination Thin Wall Sparkplug Insert Kits	
Kit Part Number	Description
FFT514125LCK	14mm x 1.25 Thin wall aluminum combination kit
FFT514125SCK	14mm x 1.25 Thin wall steel combination kit
FFT514125SCK	14mm x 1.25 Thin wall aluminum and steel combination kit
FFT514125LTK	Ford Triton Fully Threaded style aluminum kit
FFT514125LDTK	Ford Triton Deep Reach style aluminum kit



Wall Insert

Heavy wall inserts are large enough to repair a hole that had failed a solid or coil type insert

Heavy Wall Sparkplug Inserts						
Internal Thread Size	STYLE	Thread OD	O.A.L.	Application	Kit Part Number	Insert Part Number
14mm x 1.25	FST	0.735	0.750	Cast Iron	FST514125K	FST514125
14mm x 1.25	FST(AN)	0.735	0.750	Aluminum	FST514125LK	FST514125L
14mm x 1.25	FST(AN)	0.735	0.750	Deep Reach Aluminum	FST514125LDK	FST514125LD
14mm x 1.25	FST	0.735	0.750	Deep Reach Cast Iron	FST514125DK	FST514125D
14mm x 1.25	FST	0.735	0.450	Cast Iron	FST5S14125K	FST5S14125
14mm x 1.25	FST	0.860	0.700	Conversion 18 to 14mm Cast Iron	FST614125K	FST614125
7/8 - 18	FST	1.095	0.700	Cast Iron	FST87818K	FST87818



All inserts work with both tapered seal and gasket seal type spark plugs

Sparkplug Insert Installation Tooling

Item description	Use with Insert	Part Number
Installation Tool	All 12mm x 1.25 Inserts	FT4.512125T
Installation Tool	All 14mm x 1.25 Inserts	FT514125T
Installation Tool	All 18mm x 1.50 Inserts	FT618150T
Installation Tool	All 7/8"-18 Inserts	FT87818T
1/16" Drill Tube	All Sparkplug Inserts	FT116DT
1/16" Extension Drill Bit	All Sparkplug Inserts	FT116EXD
37/64" Piloted Core Drill	All 12mm x 1.25 Inserts	FT3764CD
41/64" Piloted Core Drill	All 14mm x 1.25 Inserts	FT4164CD
51/64" Piloted Core Drill	All 18mm x 1.50 Inserts	FT5164CD
Counterbore cutter for 37/64" Core Drill	All FFT 12mm x 1.25 Inserts	FT12125CC
Counterbore cutter for 41/64" Core Drill	All FFT 14mm x 1.25 Inserts	FT14125CC
Spotfacers Shell Cutter	All FST style 14mm x 1.25 Inserts	FT14125SC
Height Gage	All FST style 14mm x 1.25 Inserts	FT14125HG
Spotfacers Extension	All Spotfacers with 1/2" Shank	FT500DXT
Locking Pins	All .700" Long Sparkplug Inserts	FR116516
Locking Pins	All Short Sparkplug Inserts	FR116316
Alignment Bushing for the Core Drill	Ford Triton Heads	FT54164AB
Alignment Bushing for the Tap	Ford Triton Heads	FT5RPLTAB
FT4.5 Tap	All 12mm x 1.25 Thin Wall Inserts	FT4.5PLT
FT4 Tap	All 12mm x 1.25 Heavy Wall Inserts	FT4PLT
FT5 Tap	All FST style 14mm x 1.25 Inserts	FT5PLT
FT5R Tap	All FFT 14mm x 1.25 Inserts	FT5RPLT
FT6 Tap	All FST style 18mm x 1.50 Inserts	FT6PLT
FT8 Tap	All FST 7/8"-18 Inserts	FT8FT



FFT(AN): AN stand for Anodized

All dimensions are in Imperial – Inches unless otherwise stated

We have 2 types of Flush-Through Style inserts combination kits in imperial and metric sizes for plants maintenance and repairs shops requirement. If you need other styles of inserts, simply order additional inserts, as each of our FT taps can be use for various insert styles.

Part No: FFTC516-1K

Flush-Through Combination from 5/16” to 1” Thread Repair Insert Kit for Cast Iron Repairs

Part Number	Description	Qty
FFT351618	Sz 3, 5/16-18 FFT	5
FFT43816	Sz 4, 3/8-16 FFT	5
FFT471614	Sz 4, 7/16-14 FFT	5
FFT51213	Sz 5, 1/2-13 FFT	5
FFT65811	Sz 6, 5/8-11 FFT	5
FFT83410	Sz 8, 3/4-10 FFT	5
FFT97809	Sz 9, 7/8-9 FFT	5
FFT9SP004	Sz 9, 1-8 FFT	5
FR11614-6	1/16 x ¼ retaining pin for FT insert; qty 6	1
FR116516-12	1/16 x 5/16 retaining pin for FT insert; qty 12	1
FR116516-6	1/16 x 5/16 retaining pin for FT insert; qty 6	1
FR116716-12	1/16 x 7/16 retaining pin for FT insert; qty 12	1
FR332716-27	3/32 X 7/16 retaining pin for FT insert; qty 27	1
27/64 BIT	27/64 drill bit – For FT3 Tap	1
33/64 BIT	33/64 drill bit – For FT4 Tap	1
21/32 BIT	21/32 drill bit - For FT5 Tap	1
51/64 BIT	51/64 drill bit – For FT6 Tap	1
1-1/64 BIT	1-1/64 drill bit – For FT8 Tap	1
1-9/64 BIT	1-9/64 drill bit – For FT9 Tap	1
FT3FT-1	Sz 3 FT finishing tap	1
FT4FT-1	Sz 4 FT finishing tap	1
FT5FT-1	Sz 5 FT finishing tap	1
FT6FT-1	Sz 6 FT finishing tap	1
FT8FT-1	Sz 8 FT finishing tap	1
FT9FT-1	Sz 9 FT finishing tap	1
FP351618	Installation tools for FP351618K	1
FP43816	Installation tools for sz 4 3/8-16 insert.	1
FP471614	Installation tools for FP471614K	1
FP51213	Installation tools for FP51213K	1
FP65811	Installation tools for FP65811K	1
FP83410	Installation tools for FP83410K	1
FP97809	Installation tools for FP9789K	1
FP91008	Installation tools for FP91008K	1
FT116350DB	1/16 drill bit, 3-1/2" for use with FT inserts	2
FT116SDT	1/16 short drill tube STOCK	2
FT332DB-1	3/32 drill bit, qty 1	1
LDS3/32	LDS-3/32; STOCK	1
LHC724	Heat conductive sealant for cast iron; qty 60 ml	1
L750-4	L750 cutting fluid; 4 ounces	1
LOB	Organizer box	1

Part No: FFTC6M-24MK

Flush-Through Full-Torque® Combination Kit From 6mm to 24mm Thread Repair Inserts Kit

Part No	Description	Qty	Part No.	Description	Qty
FFT26100	Sz 2 FFT - M6 x 1.00	5	FT2FT-1	Sz 2 FT finishing tap, (for cast iron) qty 1	1
FFT2S6100	Sz 2 FFT short - M6 x 1.00	5	FT2FTG-1	Sz 2 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT27100	Sz 2 FFT - M7 x 1.00	5	FT3FT-1	Sz 3 FT finishing tap (for cast iron), qty 1	1
FFT2S7100	Sz 2 FFT short - M7 x 1.00	5	FT3FTG-1	Sz 3 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT38125	Sz 3 FFT - M8 x 1.25	5	FT4FT-1	Sz 4 FT finishing tap (for cast iron), qty 1	1
FFT3S8125	Sz 3 FFT short - M8 x 1.25	5	FT4FTG-1	Sz 4 FT spiral finishing tap 1 (for steel and aluminum), qty 1	1
FFT410150	Sz 4 FFT - M10 x 1.5	5	FT5FT-1	Sz 5 FT finishing tap (for cast iron), qty 1	1
FFT4S10150	Sz 4 FFT short - M10mm x 1.50	5	FT5FTG-1	Sz 5 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT512175	Sz 5 FFT - M12 x 1.75	5	FT6FT-1	Sz 6 FT finishing tap (for cast iron), qty 1	1
FFT5S12175	Sz 5 FFT short - M12 x 1.75	5	FT6FTG-1	Sz 6 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT514200	Sz 5 FFT - M14 x 2.0	5	FT7FT-1	Sz 7 FT finishing tap (for cast iron), qty 1	1
FFT5S14200	Sz 5 FFT short - M14 x 2.0	5	FT7FTG-1	Sz 7 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT616200	Sz 6 FFT - M16 x 2.0	5	FT8FT-1	Sz 8 FT finishing tap (for cast iron), qty 1	1
FFT6S16200	Sz 6 FFT short - M16 x 2.0	5	FT8FTG-1	Sz 8 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT718250	Sz 7 FFT - M18 x 2.5	5	FT9FT-1	Sz 9 FT finishing tap (for cast iron), qty 1	1
FFT7S18250	Sz 7 FFT short - M18 x 2.5	5	FT9FTG-1	Sz 9 FT spiral finishing tap (for steel and aluminum), qty 1	1
FFT820250	Sz 8 FFT - M20mm x 2.5	5	FP26100	Installation tools for FP26100K	1
FFT8S20250	Sz 8, FFT short - M20 x 2.50	5	FP27100	Installation tools for FP27100K	1
FFT924300	Sz 9 FFT - M24mm x 3.00	5	FP38125	Installation tools for FP38125K	1
FFT9S24300	Sz 9 FFT short - M24mm x 3.0	5	FP410150	Installation tools for FP410150K	1
FR116316-12	1/16 x 3/16 retaining pin for FT insert; qty 12	2	FP512175	Installation tools for FP512175K	1
FR11614-27	1/16 x 1/4 retaining pin for FT insert; qty 27	1	FP514200	Installation tools for FP514200K	1
FR116516-6	1/16 x 5/16 retaining pin for FT insert; qty 6	1	FP616200	Installation tools for FP616200K	1
FR116516-27	1/16 x 5/16 retaining pin for FT insert; qty 27	1	FP718250	Installation tools for FP718250K	1
FR116716-6	1/16 x 7/16 retaining pin for FT insert; qty 6	1	FP820250	Installation tools for FP820250K	1
FR116716-12	1/16 x 7/16 retaining pin for FT insert; qty 12	1	FP924300	Installation tools for FP924300K	1
FR332716-12	3/32 x 7/16 retaining pin for FT insert; qty 12	2	1/16 X 3.50 BIT	1/16" bit 3-1/2"	2
FT2DB-1	Sz 2 FT O drill bit, qty 1	1	FT116SDT	1/16 short drill tube	2
FT3DB-1	Sz 3 FT 27/64 drill bit, qty 1	1	3/32 EXT BIT	3/32 bit 6 extension	1
FT4DB-1	Sz 4 FT 33/64 drill bit, qty 1	1	FT332DT	3/32 drill tube	1
FT5DB-1	Sz 5 FT 21/32 drill bit, qty 1	1	L750-4	L750 cutting fluid; 4 ounces	1
FT6DB-1	Sz 6 FT 51/64 drill bit, qty 1	1	L852-4	Aluminum tapping fluid; 4 oz	1
FT7DB-1	Sz 7 FT 57/64 drill bit, qty 1	1	LHC724	Heat conductive sealant for cast iron; qty 60 ml	1
FT8DB-1	Sz 8 FT 1-1/64 drill bit, qty 1	1	Data Sheet	Material Safety Date Sheet	1
FT9DB-1	sz 9 FT 1-9/64 drill bit, qty 1	1	LOB	Organizer box	2

FULL-TORQUE® TAPS CHART GUIDE

	Tap - Drill Size			Tap - Outer Diameter	
	Inches	Inches	Metric	Inches	Metric
FT2	-	0.316	8.03mm	0.353	8.97mm
FT3	27/64"	0.421	10.70mm	0.465	11.81mm
FT4	33/64"	0.516	13.10mm	0.595	15.11mm
FT4.5	37/64"	0.578	14.68mm	0.648	16.46mm
FT5	21/32"	0.656	16.67mm	0.735	18.67mm
FT6	51/64"	0.797	20.24mm	0.860	21.84mm
FT7	57/64"	0.891	22.62mm	0.970	24.64mm
FT8	1-1/64"	1.016	25.81mm	1.095	27.81mm
FT9	1- 9/64"	1.140	28.97mm	1.220	30.99mm
FT10	1 - 17/64"	1.266	32.15mm	1.364	34.64mm
FT11	1 - 25/64"	1.391	35.32mm	1.485	37.72mm
FT12	1 - 33/64"	1.516	38.49mm	1.610	40.90mm
FT13	1 - 41/64"	1.640	41.67mm	1.732	43.99mm
FT14	1 - 55/64"	1.859	47.22mm	1.980	50.29mm
FT15	2 - 7/64"	2.109	53.56mm	2.230	56.64mm
FT16	2 - 23/64"	2.359	59.91mm	2.480	62.99mm
<i>Internal insert thread size should not exceed 83% of tap drill size</i>					

Our Typical Full-Torque starter kit contains the following:-

- 5 Inserts
- 1 Drill Bit
- 1 Tap
- Locking Pins
- Insert Installation Kit
- Spotfacers (Not available with FFT & FFB)
- 1 Bottle of LHC 724 Thread Sealant
- 1 Bottle of LT50 Tapping Fluid
- 1 set of MSDS (Material Safety Data Sheet)
- 1 copy of Installation Instruction
- 1 Plastic Organizer Box

Replacement insert is available in packing of 5, 10 and 25 pieces.

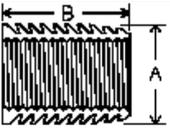
Custom Made Special Insert Order Form

If your insert requirement is not in our catalogue, we can manufacture insert to as per your requirement. Simply fill in the information in our “Custom Made Insert Order Form” and we will revert back to you with our prices.

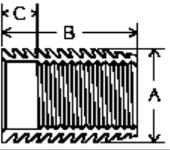
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Select Insert Style

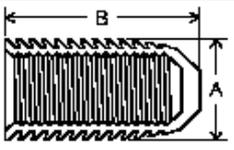
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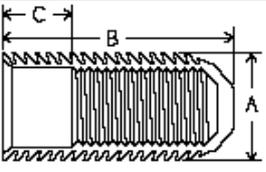
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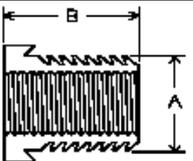
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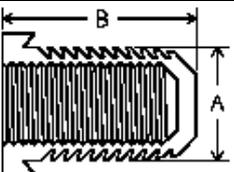
FFB counter bored



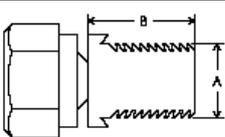
FST



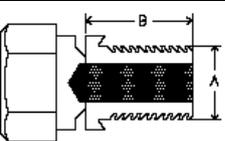
FSB



FPS



FPD



Customer Information	
Name	
Company	
Telephone	
Fax	
Type of Application	
Quantity Required	
Internal Thread Size	
A=FT Size	
B=OAL	
C=CB	
Check metal to be installed into	
FPD drilled hole size	
Remarks	

Here is a list of Frequently Asked Questions about types of thread repair inserts. They are separated by insert types available in the markets.

Coil Type Inserts

Q1. What is the difference between Full-Torque® thread repair inserts and coil type thread repair inserts?

A1. Coil type inserts are made of stainless steel wire whereas Full-Torque® inserts are machined out of solid 1144 stress proof bar stock.

Q2. What are the disadvantages of coil type inserts?

A2. They can be difficult to install, they have a history of coming out, and they will only repair a stripped hole which means they cannot fix any other type of damage.

Q3. Why should I not use a coil type insert to fix a stripped spark plug hole?

A3. Stainless steel cannot transfer heat fast enough to allow the spark plug to properly cool. It is also very difficult to break off the installation tang during an in-frame repair.

Q4. Can I install a Full-Torque® insert after a coil type repair has failed?

A4. Yes, the Full-Torque Thread repair inserts are larger in diameter than the coil inserts.

Q5. Can I fix a tapered pipe thread hole with a coil type insert?

A5. Coil type thread repair inserts have a difficult time sealing because it is impossible to seal completely around the coiled wire. Full-Torque® inserts can seal up to 3,000 psi.

Q6. Can I stack coils on top of each other to repair a hole that is deeper than the coil?

A6. No this will not work and can cause the bolt to cross thread as it reaches the second coil. Full-Torque® repair inserts are available in long lengths to meet your application.

Q7. Where should I use Coil type inserts?

A7. Only in light duty applications where a hole is stripped or in soft metal like aluminum to help prevent the bolt hole from stripping.

Q8. What will happen if I install a coil type insert into a cracked bolt hole.

A8. The crack will spread when the bolt is tightened. Installing a Full-Torque® thread repair insert will draw the crack together as it is installed and will hold it together after the bolt is tightened.

Q9. Can I put a coil insert back in after it comes out.

A9. No, the installation tang was removed during the installation process.

Q10. What do I do if the installation tang doesn't break off when I try to install the coil?

A10. The coil will need to be replaced. The first one is now unusable.

Key-locking Inserts

Q1. If solid type thread repair inserts are better than coil type inserts, why do key-locking inserts strip out so often?

A1. Most key locking inserts are made of very soft steel and have an incomplete or shallow thread profile on the outside.

Q2. Can Key-locking inserts seal pressure tight?

A2. No, the key grooves extend over the full length of the insert and liquids and gasses can easily pass by.

Q3. What will happen if I install a key-locking insert into a cracked bolt hole?

A3. The crack will spread when the bolt is tightened into the inserts. Only a Full-Torque® thread repair insert can pull the crack back together.

Q4. Why do the locking keys fail to keep the inserts from turning in aluminum?

A4. The keys do not extend outward far enough to get past the threads. The locking pins used to secure the Full-Torque® inserts extend into the solid metal beyond the threads preventing rotation even in heated aluminum.

Q5. Can I stack the key locking inserts on top of each other to repair a deep hole.

A5. No, the keys need to be removed if the insert is installed below the surface so there is no way to keep it from turning and locking up on the bolt as the two inserts get out of time with each other. Full-Torque® inserts are made long enough to meet your needs.

Q6. What is the advantage of having the internal threads lining up directly under the external threads?

A6. This is done to reduce the wall thickness of the insert to try to limit the loss of strength in the part being repaired. If the new drilled and tapped hole gets too close to an edge when installing any type of insert other than Full-Torque® insert, a crack can form from the bolt hole to the edge of the part. Only Full-Torque® can add strength to the part.

Q7. Why does every size of key-locking insert require a different drill and special tap size?

A7. Because of the need to limit the wall thickness of the insert to reduce the loss of strength that occurs if heavy wall inserts with standard V style threads are used.

Only Full-Torque® thread repair inserts uses the same drill and tap for several different internal size threads. Only 15 different tap sizes are used for all sizes ranging from 1/4" or 6mm up to 2-3/8" or 60mm internal threads.

Key-locking Inserts (Con't)

Q8. What can I do when a Key locking insert fails?

A8. Most often you will be able to use a standard Full-Torque® thread insert. If an oversized key-locking insert has been used to replace a failed thin wall key-locking insert, you can install a large Full-Torque® FPS solid insert to fill in the hole. After the hole is filled in you can drill and tap a new hole inside the FPS insert with what ever size threaded hole you want.

Q9. What should I do if I drill too deep when trying to install a key-locking insert and create a leak into the hole?

A9. You can install a Full-Torque® FFB or FSB blind insert that has a solid bottom to prevent and seal leaks.

Q10. What do I do if I cannot find the exact insert that I need?

A10. You can install a stock FPS solid insert and simply drill and tap the hole size and geometry that you need. Alternatively, we can make them for you to your specifications.

Self Tapping Thread Repair Inserts;

Q1. What are the advantages of a self tapping thread repair insert?

A1. The only advantage is that you don't have to tap the hole.

Q2. What are the disadvantages of self tapping repair inserts?

A2. Not using a tap to create the receiving hole for the new thread repair insert is similar to screwing a wood screw into a piece of wood. The thread cutting ability is very limited due to the shape of the flute and cutting edges of the insert so the threads are mostly formed much the same way the threads are rolled. This works fairly well in thin walls but has reduced ability to work in deeper holes. The biggest problem comes in attempting to install them into cast or ductile iron. A severe spreading pressure is created when the insert is forced in that can easily crack the casting. Just like screwing a wood screw into wood too close to and edge will cause the wood to split.

Q3. What will keep the self tapping insert from coming out with the bolt the next time the bolt is removed?

A3. The self tapping inserts use capsulated thread locker as a retaining measure. The problem is that the thread cutting process strips the capsulated thread locker off the threads during installation. There is no clearance between the insert and the newly threaded hole for the thread locker.

Full-Torque® Permanent Thread Replacement

Q1. Where can I buy Full-Torque® products?

A1. Direct from LOCK-N-STITCH (SEA) Pte Ltd or from any authorised distributor within your area.

Q2. How do I know it will work where every thing else I have tried has failed.

A2. We guarantee it or we will refund 100% of cost including shipping. Hundreds of thousands of them have been installed in some of the most extreme conditions possible with no failures.

Q3. How many different inserts can I install with a single drill and tap which makes up most of the price for a kit?

A3. Here is an example; with an FT4 drill and tap you can install all of the following sizes in all the styles we make, M10 x 1.5mm, M11 x 1.5mm, 3/8-16, 3/8-24, 7/16-14, and 7/16-20

Q4. How much better will the bolt hole be after installing a Full-Torque® insert?

A4. It will be stronger than the bolt or stud.

Q5. How close to an edge can I install a Full-Torque® insert without weakening the part I want to repair?

A5. It doesn't matter. The insert can actually even hang off the edge and the bolt hole will still be stronger than new.

Q6. What should I do if my bolt hole has a counter-bore or non-threaded area above the threads?

A6. We manufacture many special inserts for special applications where counter-bores are found such as head bolt holes and main bearing bolt holes in engine blocks. If we don't have what you need on the shelf we can make it for you to match the original bolt hole. You can also order an FPS solid plug and make your own. Either way you will end up with the special Spiralhook threads that make all the difference in the world.

Q7. How well does Full-Torque® work in soft metals like aluminum?

A7. Aluminum is very soft so any bolt hole that will receive even a few tightening and loosening cycles requires something harder for the threads to rotate against. It's hard to measure the strength of a threaded hole beyond the strength of a grade 8 bolt with a tensile strength of 120,000 psi when they break before the insert fails. If you need more than that we can harden the inserts to 40Rc which increases their strength to 180,000 psi which is the same as a grade 9 bolt. *We believe that the bolt should fail before the insert.*

Q8. Can I install spark plug inserts in an assembled engine without removing the heads?

A8. Yes, this is a common practice.

Q9. Where would I use an FST insert rather than an FFT style?

A9. The shoulder of the FST insert adds hoop strength around the bolt hole and new flat surface around the hole that can fill in a chip or low spot.

LOCK-N-STITCH® Metal Stitching Products

CASTMASTER™ - C Series Pins, L Series Pins and Locks

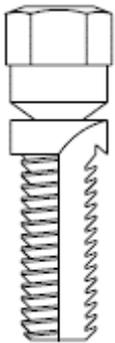


L Series

L Series stitching pins are machined from soft, free machining steel that has the same thermal expansion rate as cast iron. These pins seal the hole that is drilled and tapped with interference in the thread diameter.

A break-off groove is provided to cause head to twist off, thus does not cause over-tightening during installation.

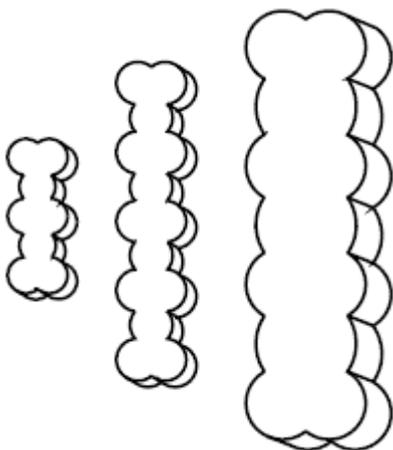
L Series pins when installed into the casting the pin will be seal in the threads as the diameter of the pin is bigger than the tapped hole.



CASTMASTER® - C Series

CASTMASTER® - C Series stitching pins were patented in 1995 and represent the single most important innovation in crack repair. For the first time ever, cracks can be repaired with strength over the entire length of the crack rather than just at intervals where locks are installed.

CASTMASTER® - C Series pins with revolutionary Spiralhook thread design create a drawing pressure and pull the sides of the crack together, permanent seal and lock the surrounding material together.



LOCK

Locks are cut by wire EDM from high tensile steel heat-treated to 175,000 PSI. The hole patterns are created by precision drilling. The grip established by LNS locks is so strong the locks will break before the lock slips in the hole pattern.

The design creates a pulling force on the side of the crack when driven in. This ensures that no spreading force is generated that could cause the crack to extend the way other older lock design did.

A separate catalogue has been created for our range of LOCK-N-STITCH® products range.

**Please see our LOCK-N-STITCH catalogue or our website:
www.lns-sea.com for further information.**

Repairs Examples



A1) Broken Threaded Bolt Hole



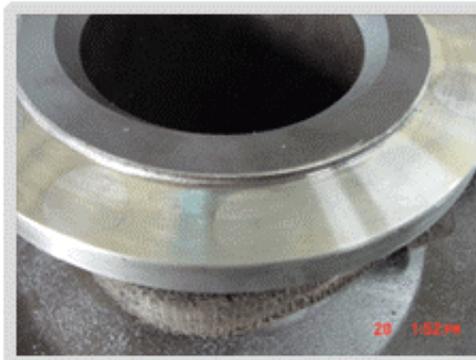
A2) Repairs with Full-Torque inserts and Castmaster pins



B1) Out of Round Bolt Holes



B2) Plugging of all bolt holes with our FPS style plugs



B3) Machining of Surface to Trueness



B4) Drilling of Holes



C) Special made stud bolt with our Spiralhook thread design on one end and standard thread on the other end.



D) Installation of stud bolt with our Spiralhook thread design (For situation when our insert is unable to be install due to insufficient wall thickness to accommodate our insert)

Repairs Examples



Valve Actuator



Cracked Bolt Hole



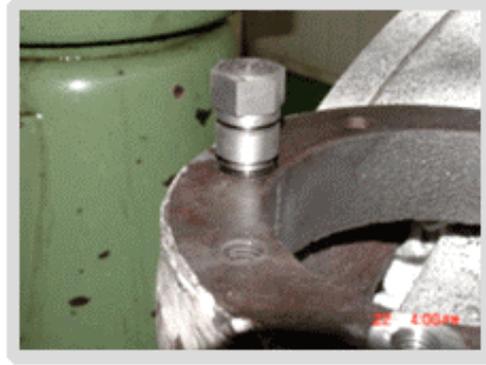
Metal Stitching with Castmaster® Pins



Metal Stitching in Progress



Tapping with our Special FT Tap



Installation of FPS Insert



Completion of Repairs



Completion of Repairs

Full-Torque® - Thread Repair Insert Technology

Can you imagine having the threaded hole repaired or reinforced stronger than the bolt installed? Say goodbye to threaded hole problems with Full-Torque® thread repair inserts!

Cracked threaded holes have always been difficult to repair because of the spreading force exerted when the bolt or threaded device is torque tightened. Standard thread repair inserts and coils are ineffective in these situations. They can even make the problem worse by removing material around the threaded hole.

Threaded holes in cast iron, aluminum, bronze and soft steel, exhibit a high frequency of cracking and stripping. The radial outward spreading force common to all threaded fasteners is the main cause of these problems.

Repairing the threads only solves part of the problem. By installing Full-Torque® thread repair inserts you will solve the problem that caused the crack in the first place. The Full-Torque® thread repair insert absorbs the spreading pressure of the fastener and transforms that pressure into a radial drawing force. This reversal of forces totally changes the effect that the fastener has on the repaired metal. Solving the problem is critical to making permanent repairs. When completed, the repaired hole will be stronger and more durable than new.

Full-Torque® thread repair inserts restore both the needed strength and new threads at the same time. The threads on the outside of our inserts are the same unique Spiralhook® threads used by our patented C Series crack repair stitching pins. Torque tightening the bolt, stud, pipe plug, or spark plug pulls up on the insert, increases the load on the Spiralhook® threads and adds to the radial drawing force of the threads.

If the size you need isn't in this catalog, give us a call. We are continuing to introduce new sizes; one of them may be just what you need!

One of the best things to remember about Full-Torque® inserts is that they can be installed very close to the edge without weakening the parent metal. This is a very valuable improvement over old thread repair technologies that actually weaken the area by making a larger hole and installing an insert that exerts radial spreading force when the bolt is tightened.

The FT inserts are solid steel inserts made from 1144 stress-proof steel. The steel has 120,000PSI of tensile strength as machined. The FT external threads all have the Spiralhook® form. Many of the FT sizes accommodate several different internal thread sizes and pitches. This means that with one FT tap such as the FT4 size you can install several different internal thread sizes including 10mm x 1.5, 11mm x 1.5, 3/8-16, 3/8-24, 7/16-14 and 7/16-20. Buy one size kit and you will have everything you need to install other size inserts except for the inserts and installation stud, washer and nut for that specific size. The stud, washer and nut come in a small kit with everything you need for that size. The installation tool kit number is found right next to the kit part number.





**For more information, please contact our friendly staffs at
LOCK-N-STITCH (South-East Asia)**

LOCK-N-STITCH (SEA) Pte Ltd

6 Tuas View Loop

Singapore 637672

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Fax: (65) 6898 5040

Email: mailbox@lms-sea.com

Website: www.lms-sea.com

**If your requirement cannot be found in here, we can make inserts
to meet your special needs.**

Contact us, You will be glad you did.

Our Network

LOCK-N-STITCH International Co. Ltd (Korea)
LOCK-N-STITCH Inc (USA)
LOCK-N-STITCH (Japan)

LOCK-N-STITCH (SEA) Pte Ltd

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Website: www.lns-sea.com

www.lns-sea.com

Sales Department - Email: sales@lns-sea.com

- Products enquiry
- Purchase of products
- Distributors, dealers, authorised service centres location

Business Development Department - Email: business.development@lns-sea.com

- Distributors and dealers opportunities
- Authorised services centres opportunities

LOCK-N-STITCH Repair Services Department - Email: services@lns-sea.com

- Emergency repair services (24 hours)
- Authorised service centre location
- Technical enquiry
- After sales help desk support

Training Department - Email: training@lns-sea.com

- Learn-N-Stitch Training Course – Level 1
- Learn-N-Stitch Training Course – Level 2
- Learn-N-Stitch Training Course – Level 3
- LOCK-N-STITCH Certification Course – Level 1
- LOCK-N-STITCH Certification Course – Level 2
- Purchase of Training Videos

Warranty

LOCK-N-STITCH (SEA) Pte Ltd (hereinafter known as LNS SEA) supplies quality products but has no control over the place, manner of use or the user. Therefore LNS SEA warrants that only the LNS casting repair tooling and supplies made by or expressly for it are free from defects in materials and workmanship and meet LNS SEA quality control specifications. For six months after delivery to the first user, LNS SEA will, at its sole discretion, repairs or replace warranted parts which are shown to be defective when delivered to the user and returned to LNS SEA no later than ten days after expiration of the warranty period. This warranty does not apply to items that have been subjected to misuse or abuse. LNS SEA makes no warranty with respect to tools manufactured by others. The warranty applicable to such tools is that offered to the user by the manufacturer. This warranty sets out the purchaser's exclusive remedies with respect to the products covered by it, whether for negligence or otherwise. Neither LNS SEA nor any of its affiliates will be liable for consequential or incidental damages or other losses or expenses incurred by reason of the use or sale of such products. This warranty is in lieu of all other warranties, expressed or implied, whether for merchantability or fitness for a particular purpose or otherwise.

