

T-092 Inspection Limits and Repair

Engine Application(s):	250-B17, -B17B, -B17C, -B17D, -B17E, -B17F/1, -B17F/2, -C20, -C20B, -C20C, -C20F, -C20J, -C20R, -C20R/1, -C20R/2, -C20R/4, -C20S
Compliance:	Any time the Gearshaft is removed for overhaul. Refer to Table 1 as applicable for Inspection Limits.
Notes:	Refer to OEM's published data for installation, engine operation and disassembly.
Revisions:	N/C 1/25/06 Initial Release. A 8/07/09 Updated EXTEX to TIMKEN. B 2/05/16 Updated Timken to EXTEX Engineered Products.

E6896437
Gearshaft, Spur – Fuel Control & Oil Pump
Inspection and Rework Limits

Condition	Service Limit	Repair Limit	Corrective Action
Wear	Slight normal wear with all mating parts in good condition and within PD limits.	No Repair.	Remove sharp edges by stoning. Replace gear with evidence of healed prior scuffing.
Spalling (Use 2X Magnification)	Spalling as witnessed by matte worn area over a maximum of 35% of tooth area.	No Repair.	Remove sharp edges by stoning.
Scuffing	Scuffing when accompanied by wear-off of metal pickup if gear assembly is still matched with mating gears.	No Repair.	Remove sharp edges by stoning.
External Gear , 84 Tooth	Service limit is 5.4225" minimum when measured over 0.1080" diameter pins.	No Repair.	Replace.
External Gear, 35 Tooth	Service limit is 2.2576" minimum when measured over 0.1080" diameter pins.	No Repair.	Replace.
Cracks In Radii Root Corners Of Spline Teeth Or In Line Or Parallel In Close Proximity On Involute Of A Gear Toothside (Visual With Magnification).	None.	No Repair.	Replace.
Nonmetallic Inclusion On Small Gears And Gearshafts (MPI*)	Light scattered inclusions parallel to material flow lines. Open inclusion on shaft 3/8 in. max. length and not extending into a radius, hole or gear root.	No Repair.	Replace.

Table 1 (sheet 1 of 2)

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Condition	Service Limit	Repair Limit	Corrective Action
Grinding Checks On Bearing Shaft Thrust Shoulders	Checks not breaking on edges or extending into a radius.	No Repair.	Replace.
Nicks And Dents	Max. of 0.010 inch length, width, or dia. and without sharp corners.	Max. of 0.060 inch length, width, or dia. after sharp corners are removed.	Remove sharp edges by stoning.
Tooth Damage Which Involves Metal Displacement To The Degree That Subsurface Damage Is Detected By Magnetic Inspection	None.	No Repair.	Replace.
Dimensional Inspection	Both bearing journals at end of shaft shall be .3942/.3937" diameter and concentric within .001", with a surface finish of 20 Ra or finer.	Journals measuring .390" diameter or larger may be repaired per note 3.	Replace parts having journals less than .390".

Table 1 (sheet 2 of 2)

NOTES:

1. Magnetic Particle Inspect all parts per ASTM E-1444 or equivalent. No cracks allowed.
2. Dimensions Are In Inches.
3. Restoration of Journals:
 - a. Chromium plate per AMS 2406 to build up journal diameters is permitted.
 - b. Do not plate within .06" of journal shoulder.
 - c. After finish grinding to service dimension, the plating must be a minimum of .0005" thick.
 - d. When the journal(s) is machined or ground prior to plating, MPI inspect per note 1 and stress relieve at 275F ±10F for 5 hours minimum before plating.
 - e. CAUTION: Do Not process at a temperature in excess of 300F.
 - f. After finish grinding the plated surface, Fluorescent Penetrant Inspect (FPI) per ASTM E 1417 or equivalent. No cracks allowed.
 - g. Chromium does not require heat treat after plating.
 - h. Journals for tight fitting bearings that are undersized from .0001" to .0003" may be restored by using a copper plate flash per AMS 2418.