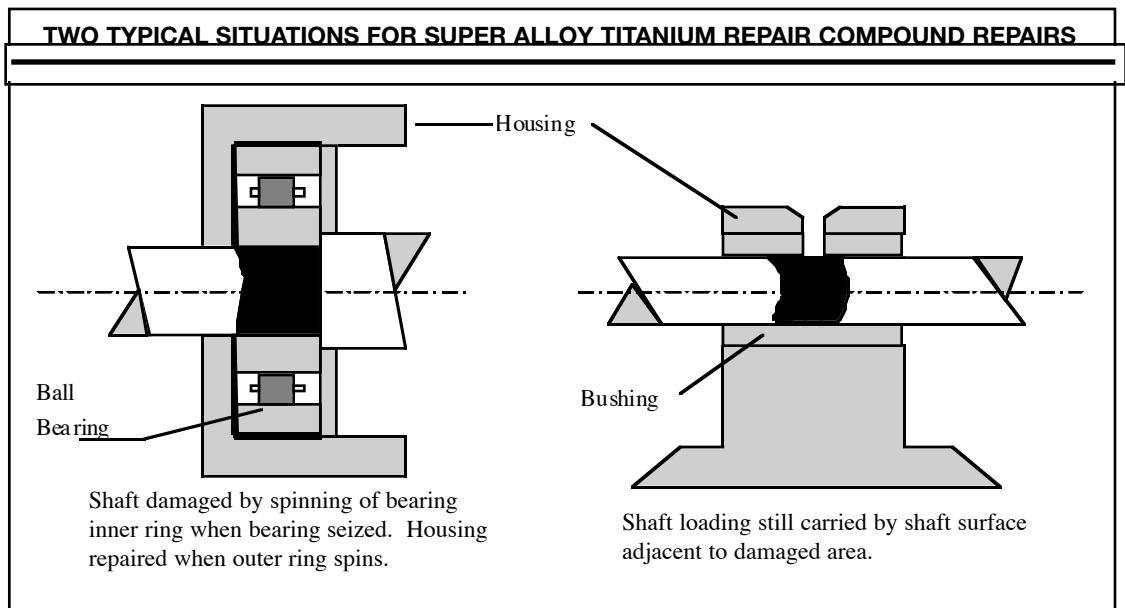


**shaft repair techniques and surface preparation recommendations**

The most important point is which shafts may be repaired with ITW Resin Technologies, SUPER ALLOY TITANIUM REPAIR COMPOUND.

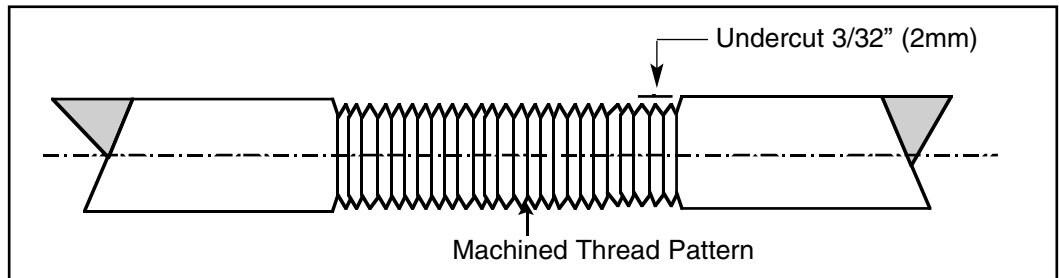
SUPER ALLOY TITANIUM REPAIR COMPOUND is not recommended for high speed shafting, which has been worn by normal operating conditions.

SUPER ALLOY TITANIUM REPAIR COMPOUND is suitable for hundreds of other types of repairs found in industry. See Figure 1 for two typical situations.



Shafts riding in cutlass' or other non-metallic bearings can also be repaired. From the smallest pump shaft to a 100 ton marine propeller shafts, the following procedures should be followed:

- A. **Surface Preparation:** The worn area should be machined down to a minimum of 3/32" (2mm), leaving a threaded pattern in the repair area equal to 32 threads per inch (see FIGURE 2). This surface preparation provides the best possible mechanical lock for SUPER ALLOY TITANIUM REPAIR COMPOUND.



## shaft repair techniques and surface preparation recommendations

The repair area should now be solvent washed with IMPAX 1XT-59 Safety Solvent to remove all grease, oil and cutting fluids (use a stiff bristle brush to remove minute particles.) Allow to air dry.

[NOTE: Be sure to wear safety glasses and rubber gloves.]

- B. Mix SUPER ALLOY TITANIUM REPAIR COMPOUND: Refer to Bulletin #473 for complete mixing instructions.
- C. Application: Using the putty knife provided, "butter" the threaded area with a very thin layer of SUPER ALLOY making certain it's filled to the bottom of each machined thread.

[NOTE: When possible, rotating the shaft at slow speed in a lathe allows a "hands free" situation.]

Additional SUPER ALLOY TITANIUM REPAIR COMPOUND is now applied taking care to avoid air entrapment. Fill the repair area until its diameter is 1/16" (1.6mm) greater than the original shaft diameter. Allow SUPER ALLOY to cure 3 hours at 72°F (21°C).

- D. Machining: Machine the cured material using either carbide cutting tools or high speed, heat treated steel tips. Use the following guide for best results with carbide tools:

Machine Tool Cutting Speed	500 ft./min. (152m/min.)
Tool Rake	0°
Top Rest	7°
Front Clearance	1/2° – 5°
Side Clearance	1/2° – 5°
Feed Rate – First Cut	0.0300"/rev (0.76mm/rev)
Finish Cut	0.0100"/rev (0.25mm/rev)

Cut Dry. Machine material within 5 hours of cure. Reduce cutting speed by 50% after 12 hours or after a higher temperature post cure (See Bulletin #820). Reduce feed rate 50% for high speed steel tools.

- E. Low Friction Applications: For shafts riding in cutlass bearings or high wear situations, the machined area should be polished at 1,500 ft./min (457m/min.) with a "soft" graphite rod or molybdenum-disulfide paste.

Packing sleeves and shafts in contact with packing glands can also be repaired, provided the packing is not pulled too tightly (overtightened packing will damage a steel shaft.) Maintenance people should be made aware of the fact that a normally operating packing gland component will have a very slight leakage.

- F. Surface Preparation By Blasting:

Sandblast recommendation:

American Standard "Near White Finish" SSPC-SP-10-63T

British Standard 4232 "Second Quality"

Components previously exposed to acids or sea water should be reblasted after 24 hours to allow imbedded salts to leach to the surface. Flame treating may be necessary to remove contaminants from components exposed to long term oil immersion.

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