

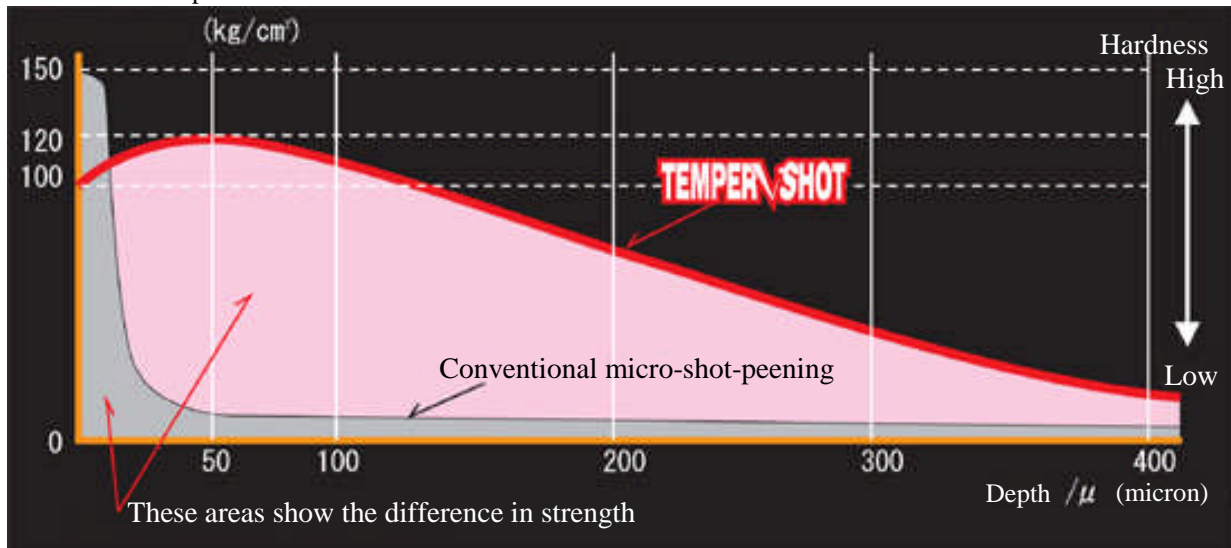
### What is Temper shot?

It is a type of shot-peening process in which the surface of processed parts is bombarded by minute particles at a high velocity in order to modify and strengthen the material composition near the surface.

### Advantages of Temper Shot

1. Compared to the conventional surface-modifying treatment (micro-shot-peening), this process can create a hardened layer of a depth up to 10 times greater (400  $\Phi$ ). This delivers a superior improvement in strength that was unthinkable with the conventional techniques. Temper Shot is considered to be an indispensable technology by automotive manufactureers as well as F1 teams.
2. This process creates a hardened layer so deep that it can hardly be damaged by external pressure and depressinos. The superior strength will be stably maintained even under severe conditions of use.
3. This process will improve the lubricity by creating dimples (semi-spherical indentations) on the surface. These imples will also increase the surface area and improve the cooling ability.
4. This strengthening process can target only the low-strength spots, thereby preventing stress concentration.

Residual Compressive Stress



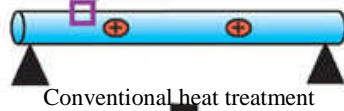
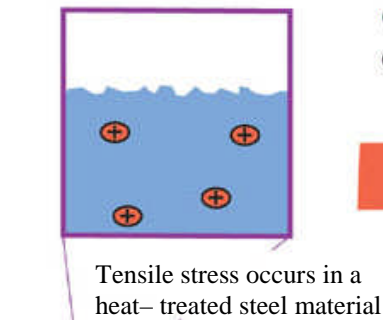
Graph showing the relationship between the depth and the residual compressive stress (hardness) of machine parts after shot-peening

***Road race, drag race, drift competition, auto cross, dirt trail and rally - in any racing condition, Temper Shot is very effective.***

- A synchro treated by Temper Shot prevents the shifting trouble in any endurance race. There are several race teams finished two consecutive endurance races without shifting trouble with Temper Shot.
- FD3s race team with full Temper Shot treatment on the transmission finished the whole season without any problem

## Strength Improvement Mechanism

A material processed by a conventional heat treatment



Conventional heat treatment

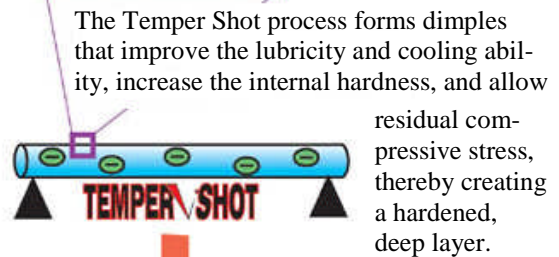
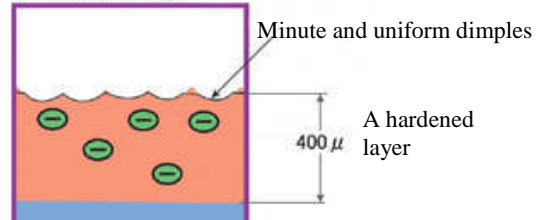
Damage will occur when a load is repeatedly applied

Without Temper Shot

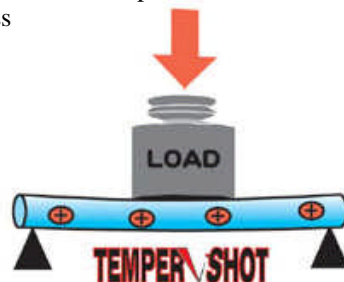


⊕ Tensile Stress  
⊖ Compressive Stress

**TEMPER SHOT** processed

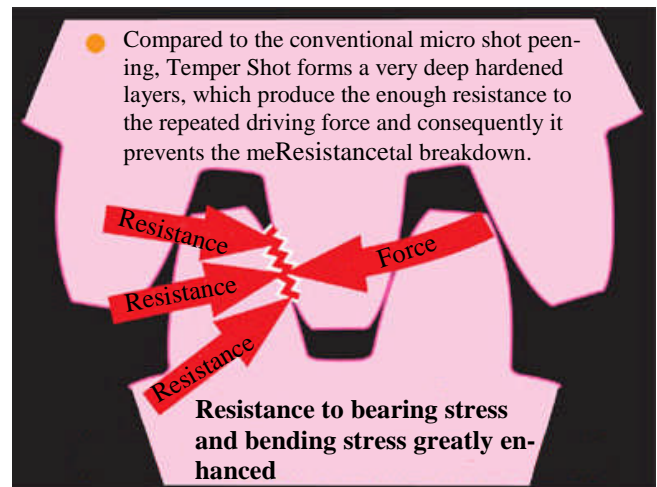


The residual compressive stress reduces the tensile stress



The fatigue strength is greatly increased

**With Temper Shot**





ATS & ACROSS

# TEMPER SHOT テンパーショット。 それは、勝利の決定打。

ATS supported Lotus Exige won the victory in the 7th round of All Japan Gymkhana (2009). The transmission as well as the other drive train parts are processed by Temper Shot to increase the strength dramatically. It was a moment of proving Temper Shot effectiveness.

TEMPER SHOT

## Drivers Voice

2009 JAF全日本ジムカーナ選手権 (鈴鹿サーキット南コース)

第7戦 N3クラス優勝

●Best Time: 1'14.406 ●ドライバー: 田原 憲

●エントリー: URGtzzDL☆EXIGE / 車両: EXIGE 1117



全日本ジムカーナドライバー 田原 憲 / 松本 敏

エキジージの致命傷ともいえるファイナルギヤのトラブル。全日本選手権においても各チームでその対策に悩んでいます。 私たちも開幕戦でファイナルギヤが破損し、その組み替え等で慌しく開幕戦に望むことになりました。そんな中、テンパーショット処理をしてみてもATSからアドバイスをいただき第2戦以降、テンパーショットを施したファイナルギヤを全日本に持ち込みました。 私たちはマシンを共有してのダブルエントリーのため、1年間の周回数は他の選手の約倍。タイヤテスト等その他の走行も考えると1年間で約3年分の走行を強いられます。 驚くことに他の選手が1年で1回のファイナルギヤ交換を迫られる中、私たちの車では現在においても交換の必要が全くなく、しかもノトラブル。これはランニングコストの低減はもちろん、スタートラインに何の心配も無くつけるといふ精神的強みに繋がりました。駆動系に関して絶対的な信用をテンパーショットは生み出してくれたのです。ファイナル・ドライブシャフト等、破損に悩んでいるドライバーにはぜひ「テンパーショット」をお勧めしたいと思います。

## Team Testimonial (the translation of "Drivers Voice" in the above)

JAF All Japan Gymkhana Round 7 Class N3 1st Prize Driver Mr. Tahara & Mr. Matsumoto

A trouble in the final gear is a serious problem for Exige. Many teams in the all Japan series are struggling to find some kind of countermeasures. We were not the exception. We broke the final gear in the opening round and spent a lot of time and energy to fix it. That was the time when we got an advice from ATS to use the Temper Shot. Our drivers shares the same Exige and consequently the car runs twice as much distance as the other teams. If you include all the testing and practices, we drive about three years worth in one year. To our surprise, the other teams are forced to change the final gear several times, we have not changed it after finishing 6 rounds. We have not experienced any trouble in the drive trains. The Temper Shot gave us a great assurance and we are confident every time we line up at the start line. WE STRONGLY RECOMMEND TEMPER SHOT for any team / driver who are experiencing a trouble in final gear, drive shaft, and other drive train parts.