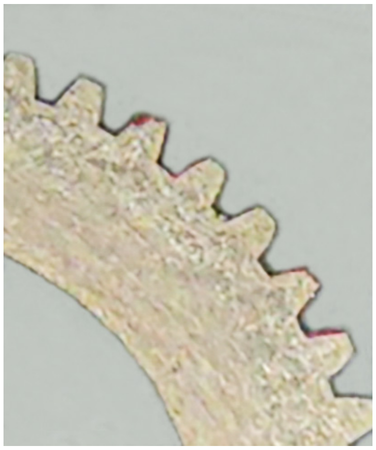
# BURNISHING PROCEDURE

## Introduction to Burnishing

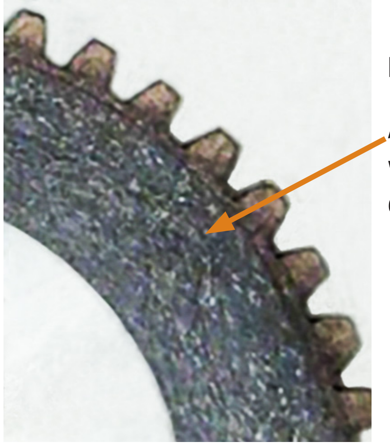
The initial, out-of-box torque on new clutches and brakes may be inconsistent and/or perform 30-40% below the catalog value until the friction interface (BOTH the friction facing and friction rotor) has been properly burnished. (NOTE: Low coefficient of friction materials may experience a decrease in torque when burnished, as intended.)

**Two Basic Goals of Burnishing Friction Material:**

- Create **full surface contact** by evenly wearing down asperities on a new facing
- Embed a **transfer layer** of friction material onto the rotor surface



New Friction Facing



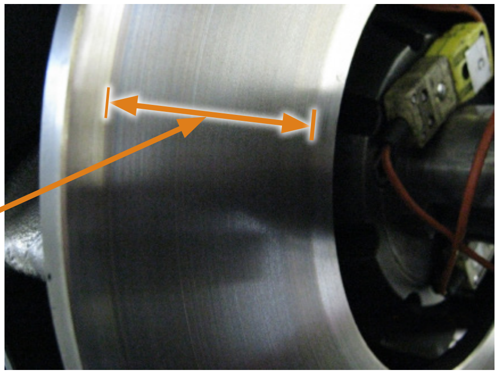
Fully Burnished Facing

**Full Surface Contact:**

Areas of friction facing in contact with the disc or rotor darken when dissipating friction energy.

**Transfer Layer:**

Friction facings develop a more consistent coefficient of friction against the embedded friction material than the bare metal of the disc or rotor.



## Burnishing Theory

A proper burnishing procedure introduces energy into the unit such that the interface maintains a maximum temperature of 200°F long enough to achieve **full surface contact** and develop a **transfer layer.**

| Constant Slip Method | Cyclic Method |
|---|---|
| Thermal Power = Rotational Speed **x** Torque | Thermal Power = $^1/2$ **x** Moment of Inertia **x** Rotational Speed$^2$ **x** Cycle Rate |

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## A Nexen's Burnishing Method

Continuous Rotational Speed = **250 RPM**

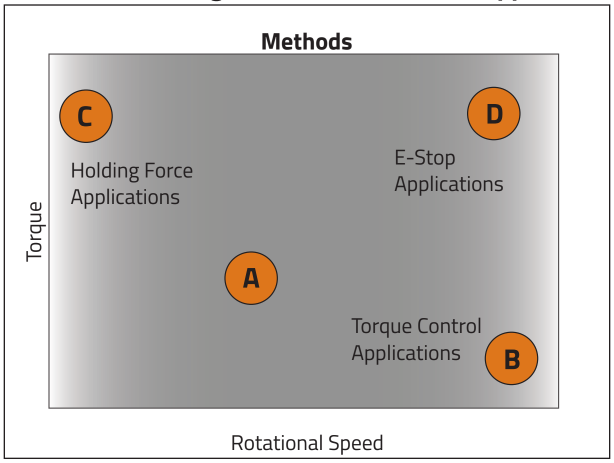
Interface Temperature = **200°F**
(Proper use of a non-contact IR sensor is recommended.)

Pressure = **Adjusted for Burnishing Temperature**
(As transfer layer develops, pressure needs to be adjusted regularly to compensate for the changing coefficient of friction.)

Time* = **4+ hours at Temp. (Estimate)**

**PROS:** Medium burnishing time, low torque requirements
**CONS:** Slight risk of overheating, generates dust

**Select a Burnishing Method that Fits Your Application**




## Alternative Methods

## B Constant Slip: High Speed/Low Torque

Continuous Rotational Speed = **750 RPM**

Interface Temperature = **200 °F**

Pressure = **Adjusted for Burnishing Temperature**
(As transfer layer developes, pressure needs to be adjusted regularly to compensate for the changing coefficient of friction.)

Time* = **1 to 2 hours at Temp. (Estimate)**

**PROS:** Fast burnishing time, low torque requirements
**CONS:** Higher risk of overheating, generates dust

## C Constant Slip: Low Speed / High Torque

Continuous Rotational Speed = **1 to 10 RPM**
(Or max application speed if less than 750 RPM)

Interface Temperature = **200°F**

Pressure = **Full Engagement**
(Adjust to prevent stalling the shaft)

Time* = **4 to 8 hours at Temp. (Estimate)**

**PROS:** Low risk of overheating material
**CONS:** High torque requirements, slow burnishing time, may create noise

## D Cyclic Method

Pressure = **Full Engagement**

Continuous Rotational Speed = **Adjusted for Thermal Dissipation**

**Burnishing Thermal Power < Continuous Thermal Power Dissipation**
(Continuous Thermal Dissipation found in catalog)

Time* = **1 to 2 hours at Temp. (Estimate)**

**PROS:** Rapid burnishing
**CONS:** Generates dust, calculations necessary to prevent overheating and damage

**CAUTION: These burnishing methods generate friction material dust. Ensure all appropriate air quality and PPE requirements are being addressed.**

**DO NOT EXCEED 200°F (Interface Temperature)**
**Proper use of non-contact IR Sensor is recommended.**

**Have questions?**
Email us at TSR@nexengroup.com
Or find your local rep at: https://www.nexengroup.com/nxn/contactus/salesreps