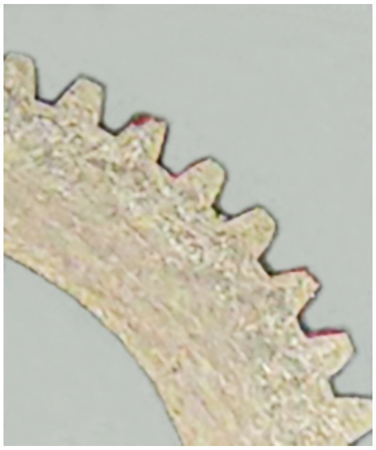
BURNISHING PROCEDURE

Introduction to Burnishing

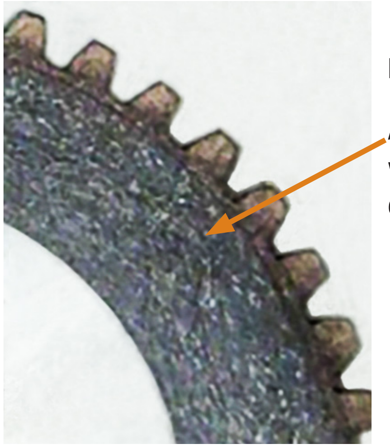
The initial, out-of-box torque on new clutches and brakes may be inconsistent and/or perform 30-40% below the catalog value until the friction interface (BOTH the friction facing and friction rotor) has been properly burnished. (NOTE: Low coefficient of friction materials may experience a decrease in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



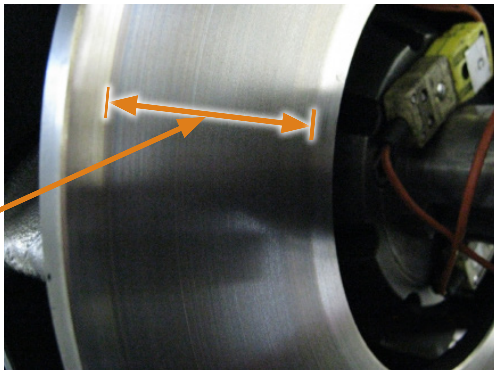
Fully Burnished Facing

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 Speed² **x** Cycle Rate

BURNISHING PROCEDURE

A Nexen's Burnishing Method

Continuous Rotational Speed **= 250 RPM**

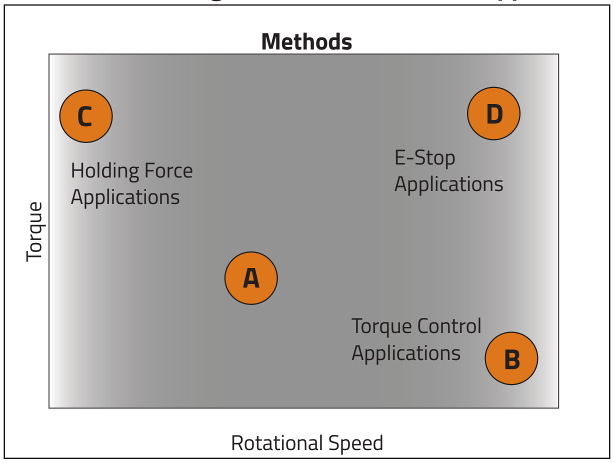
Interface Temperature **= 200°F**
(Proper use of a non-contact IR sensor is recommended.)

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