Injection Molding Barrel and Feed Screw Wear

The level of acceptable wear varies from machine size, generally the higher the required injection pressure the lower the tolerance for wear/clearance between the components.

Wear impacts the melt quality, out-put, overall cycle time, however the largest concern is process inconsistency leading to increased scrap rates. Limited wear levels can generally be overcome thru the machines control functions,

Operating Parameter Modifications

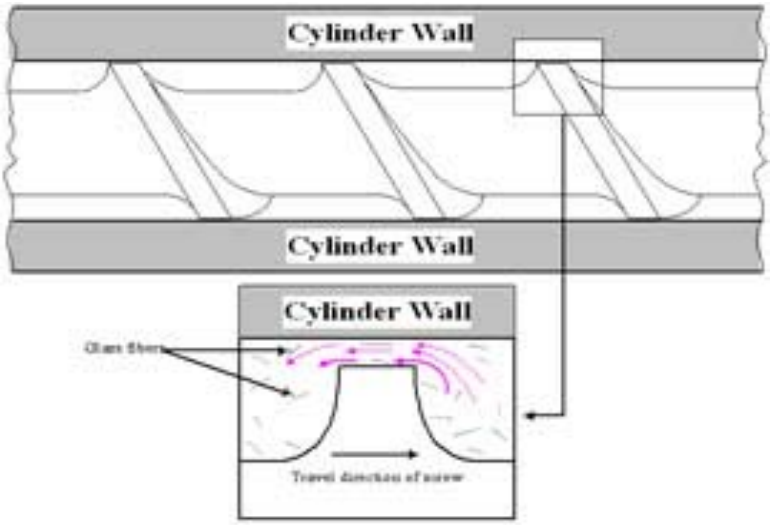
- Compensating for screw/barrel wear through machine parameter modifications can cause excessive shear, burning, and polymer degradation!
- Modifications are typically made to maintain out-put rates or decrease scrap rates

Costs of wear!

- Quality - Resin of quality may be defined as resin that is free of un-melt, was exposed to minimal shear, has seen standard residence time, and is therefore free of degradation.
- Degradation - Loss of polymeric physical properties such as compression strength, tensile strength, impact strength, tensional strength, or other tangible or intangible engineered properties

Production Efficiency Advantage Factor! (PEAF)

- Defined as the quantified cost of inefficiency on a per machine, per month basis, and in most cases factors in as a reduction to feed screw and barrel expense.



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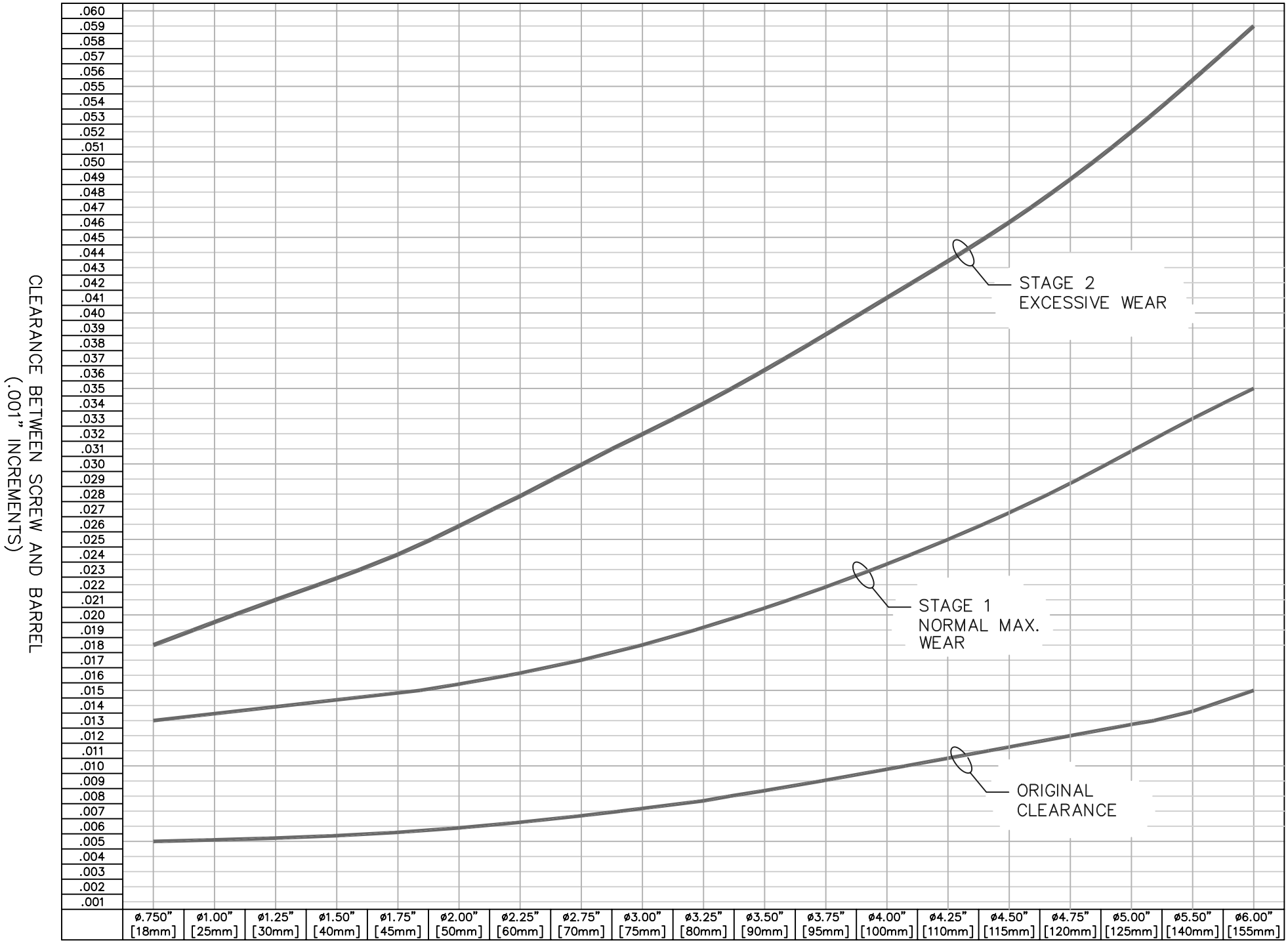
CLEARANCE BETWEEN SCREW AND BARREL
(.001" INCREMENTS)
.060
.059
.058
.057
.056
.055
.054
.053
.052
.051
.050
.049
.048
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.005
.004
.003
.002
.001
STAGE 2
EXCESSIVE WEAR
STAGE 1
NORMAL MAX.
WEAR
ORIGINAL
CLEARANCE
ø.750" [18mm]
ø1.00" [25mm]
ø1.25" [30mm]
ø1.50" [40mm]
ø1.75" [45mm]
ø2.00" [50mm]
ø2.25" [60mm]
ø2.75" [70mm]
ø3.00" [75mm]
ø3.25" [80mm]
ø3.50" [90mm]
ø3.75" [95mm]
ø4.00" [100mm]
ø4.25" [110mm]
ø4.50" [115mm]
ø4.75" [120mm]
ø5.00" [125mm]
ø5.50" [140mm]
ø6.00" [155mm]
SCREW AND BARREL NOMINAL SIZE