

# Lifting Height and Stall Protection for Ball Screw Pushers in AICHELIN Pusher Furnaces

Performance optimization + process reliability by improved production reliability



**REBUILDING AND MODERNIZATION**

Performance optimization + process reliability

## IMPROVED PRODUCTION RELIABILITY THROUGH OPTIMIZED BALL SCREW PUSHER

Through **lifting height monitoring**

- Recognition of the opening and mounting of the base tray
- Recognition of defective controls

Through **stall protection**

- Ensures the return movement of the pusher type drive
  - when blocking the backward movement
  - when traveling over/failure of the rear inductive limit switch

■ Occurrence of these hazards

- when exchanging the ball screw
- when the shaft is driven against the end position (human error)

## THE AICHELIN SOLUTION: COMBINATION OF TWO SAFETY DEVICES

**Combination of both safety devices**

- Optimal protection of the expensive and complex pusher type drive
- Valuable addition to the furnace operation through early detection of failures and avoidance of consequential damage

**Lifting height monitoring**

- Counts pulses during the lifting movement (working stroke) of the pusher type drive with direction detection
- Averaging of the pulses of the last 25 strokes and comparison with the last working stroke
- Drive downtime and activation of an alarm message when the permissible tolerance range is exceeded
- Reaction of the lifting height monitoring in each temperature-range (from cold furnace to maximum operating temperature)

**Stall protection**

- Consists of a spring-loaded torque arm and a roller lever limit switch
- Reliably prevents damage to the ball screw during backward movement

Durchstoßer Diffusionszone	aktuelle Impulse	Vorgabe [mm]	Temperatur Impulse Wert [Puls]	toleranz Bereich [mm]	akt. Temp. [°C]	toleranz Impulse	toleranz Impulse
1	3400	3400	1700	3400,0			
2	3400	3400	1700	3400,0			
3	3400	3400	1700	3400,0			
4	3400	3400	1700	3400,0			
5	3400	3400	1700	3400,0			
6	3400	3400	1700	3400,0			
7	3400	3400	1700	3400,0			
8	3400	3400	1700	3400,0			
9	3400	3400	1700	3400,0			
10	3400	3400	1700	3400,0			
11	3400	3400	1700	3400,0			
12	3400	3400	1700	3400,0			
13	3400	3400	1700	3400,0			
14	3400	3400	1700	3400,0			
15	3400	3400	1700	3400,0			
16	3400	3400	1700	3400,0			
17	3400	3400	1700	3400,0			
18	3400	3400	1700	3400,0			
19	3400	3400	1700	3400,0			
20	3400	3400	1700	3400,0			
21	3400	3400	1700	3400,0			

Integration into the user interface

## YOUR ADVANTAGES

- Ball screw is protected in the event of failure and after replacement or maintenance of the end position control
- Adjustments are unnecessary between cold and hot operation and after typical aging of trays
- Recognition of impermissible dimensional deviations of the charge trays
- Perfect integration (mechanical incl. control adaptation) into your AICHELIN plant by the original manufacturer

## YOUR RELIABLE PARTNER

- Competent engineering partner
- High level of expertise in plant modernization
- Experienced partner

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