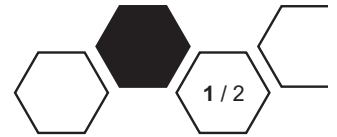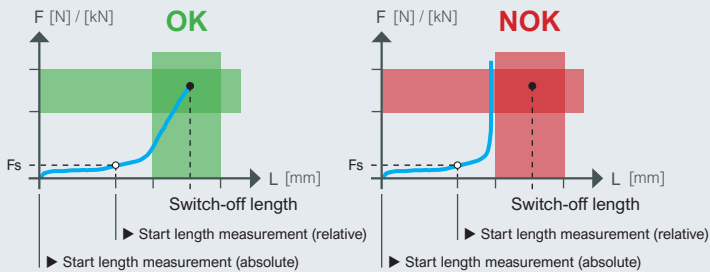# MultiPro 3G
Press-in processes and functions
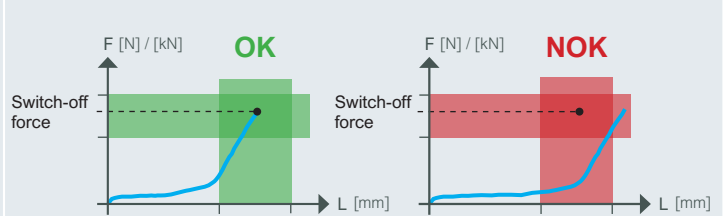
Move to length
Press-in until switch-off length is reached. Control of force.

F [N] / [kN] **OK**

Fs

L [mm]

Switch-off length

▶ Start length measurement (relative)

▶ Start length measurement (absolute)

F [N] / [kN] **NOK**

Fs

L [mm]

Switch-off length

▶ Start length measurement (relative)

▶ Start length measurement (absolute)

Move to force
Press-in until switch-off force is reached. Control of length.

F [N] / [kN] **OK**

Switch-off force

L [mm]

F [N] / [kN] **NOK**

Switch-off force

L [mm]

Move to initiator
Press-in until a signal is active at the defined switch-off input. Control of force and length.

F [N] / [kN] **OK**

Switch-off input

L [mm]

F [N] / [kN] **NOK**

Switch-off input

L [mm]
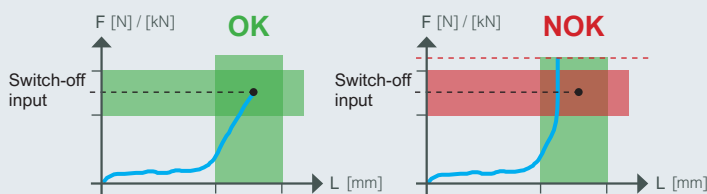
Move to external length
Press-in until a defined external target position is reached with monitoring of force and length.

F [N] / [kN]   **OK**   Ext. length LE [mm]

max.

F

min.

max.
Switch-off press-in unit
min.

L [mm]

min.   L   max.
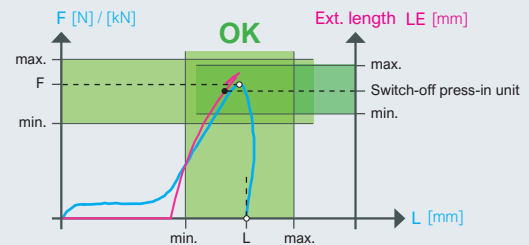
Force progression in OK window
Monitors the entry of the force/length into the OK window. Entry must be from the left and remain within the OK window in the further procedure.
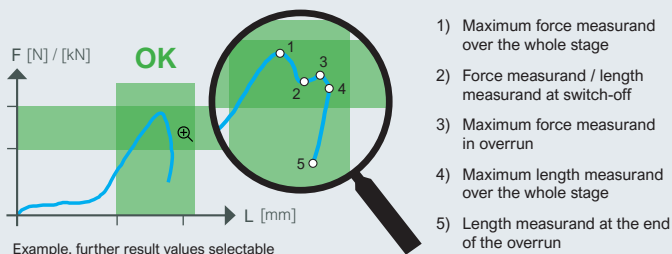
F [N] / [kN] **OK**

OK window

L [mm]

Lstp

F [N] / [kN] **NOK**

OK window

L [mm]

Lstp
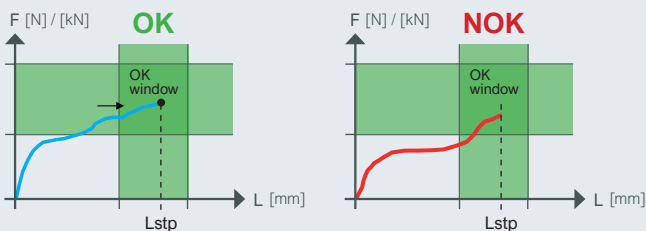
Filter
With the DSM filter functions it is possible to blend out unwanted interferences of the process sequence.

F [N] / [kN]

Filter Low pass
Filter Smoothing

filtered
unfiltered

L [mm]
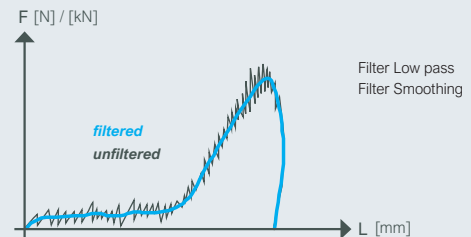
Result selection force / length / ext. length
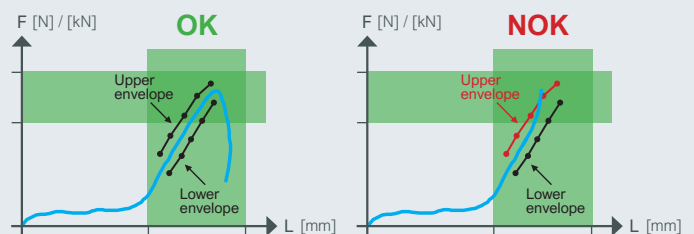With the result selection you specify the result values for the evaluation of the process. This will evaluate the result relevant to your process.

F [N] / [kN] **OK**

L [mm]

Example, further result values selectable

1) Maximum force measurand over the whole stage
2) Force measurand / length measurand at switch-off
3) Maximum force measurand in overrun
4) Maximum length measurand over the whole stage
5) Length measurand at the end of the overrun

Envelope monitoring
Additional evaluation element for control of the press-in process. The measuring curve may not break the upper and/or lower envelope.

F [N] / [kN] **OK**

Upper envelope

Lower envelope

L [mm]

F [N] / [kN] **NOK**

Upper envelope

Lower envelope

L [mm]

The press-in process is defined with one or more procedures within a program sequence.
Additional functions to optimise the assembly operation are easy to integrate.
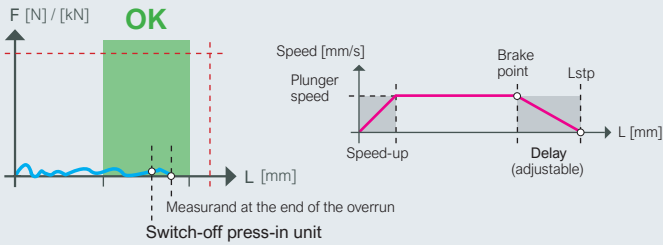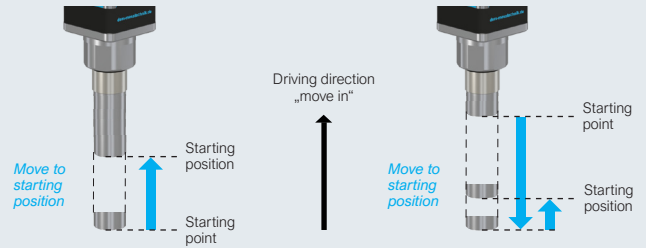
MultiPro 3G
Press-in processes and functions
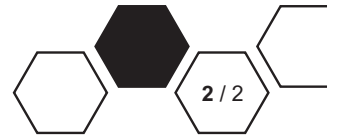
Move empty

The plunger of the press-in unit is moved without a defined force until it reaches a defined target position (switch-off length).

F [N] / [kN]
OK
L [mm]
Measurand at the end of the overrun
Switch-off press-in unit

Speed [mm/s]
Plunger speed
Brake point
Lstp
Speed-up
Delay (adjustable)
L [mm]

Move to starting position

Moves the plunger of the press-in unit to the user defined starting position – to avoid long strokes.

Driving direction „move in"

Move to starting position
Starting position
Starting point

Move to starting position
Starting point
Starting position

Starting point
Starting position

Hold mode Force

After reaching the switch-off criterion, the force measured at this time is held for a defined period of time.

F [N] / [kN]
▶ Hold time
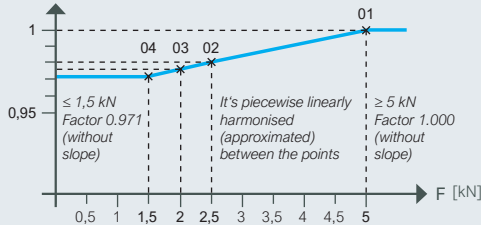Fmax
Fmin
OK
t [s]
Switch-off criterion of the procedure
Switch-off press-in unit
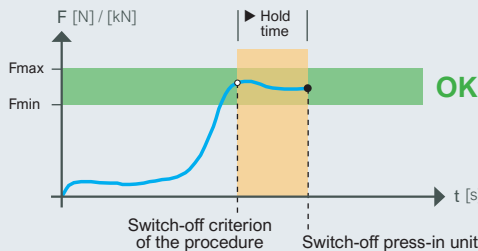
Hold mode Position

After reaching the switch-off criterion, the position (length) measured at this time is held for a defined period of time.

L [mm]
▶ Hold time
Lmax
Lmin
OK
t [s]
Switch-off criterion of the procedure
Switch-off press-in unit
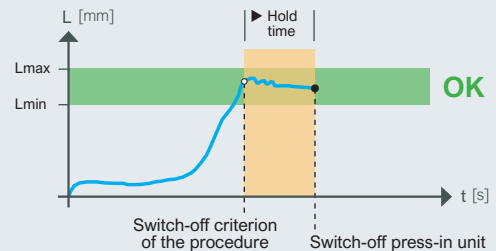
Linearisation force

Non-linearities of the characteristic curve between reference value and displayed value are piecewise linearly approximated with the force linearisation.
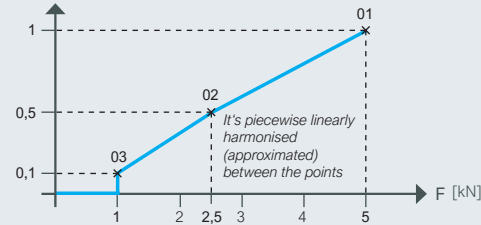
Calculated factor (FacF)

1
01
04 03 02
0,95
≤ 1,5 kN Factor 0.971 (without slope)
It's piecewise linearly harmonised (approximated) between the points
≥ 5 kN Factor 1.000 (without slope)
F [kN]
0,5 1 1,5 2 2,5 3 3,5 4 4,5 5

Pos	F [kN]	Factor
01	5.00	1.000
02	2.50	0.980
03	2.00	0.975
04	1.50	0.971
05	-	-

Chart stored in the control system (example values)

Linearisation length

The physically caused elastic fractions (bending up, setting, etc.) in the assembly process can be compensated with the length linearisation.

Length offset [mm]

1
01
0,5
02
It's piecewise linearly harmonised (approximated) between the points
0,1
03
F [kN]
1 2 2,5 3 4 5

Chart 1 / 5

Pos	F [kN]	Loff [mm]
01	5.00	1.00
02	2.50	0.50
03	1.00	0.10
04	-	-
05	-	-

Chart stored in the control system (example values)
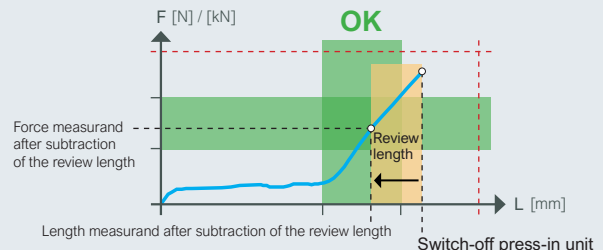
Gradient detection

Function for detection of a defined gradient – detects positive as well as negative peaks and their quantity.

F [kN]
Positive peak
Negative peak
t [s]
Switch-off press-in unit

G
Positive peak
Gtrg
t [s]
Gtrg
Negative peak
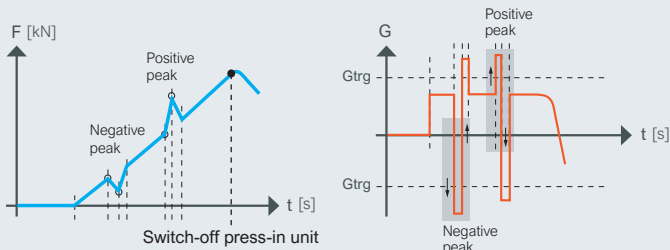
Review length

The evaluation of the procedure is done at the position resulting after subtracting the defined review stroke.

F [N] / [kN]
OK
Force measurand after subtraction of the review length
Review length
L [mm]
Length measurand after subtraction of the review length
Switch-off press-in unit

The press-in process is defined with one or more procedures within a program sequence.
Additional functions to optimise the assembly operation are easy to integrate.