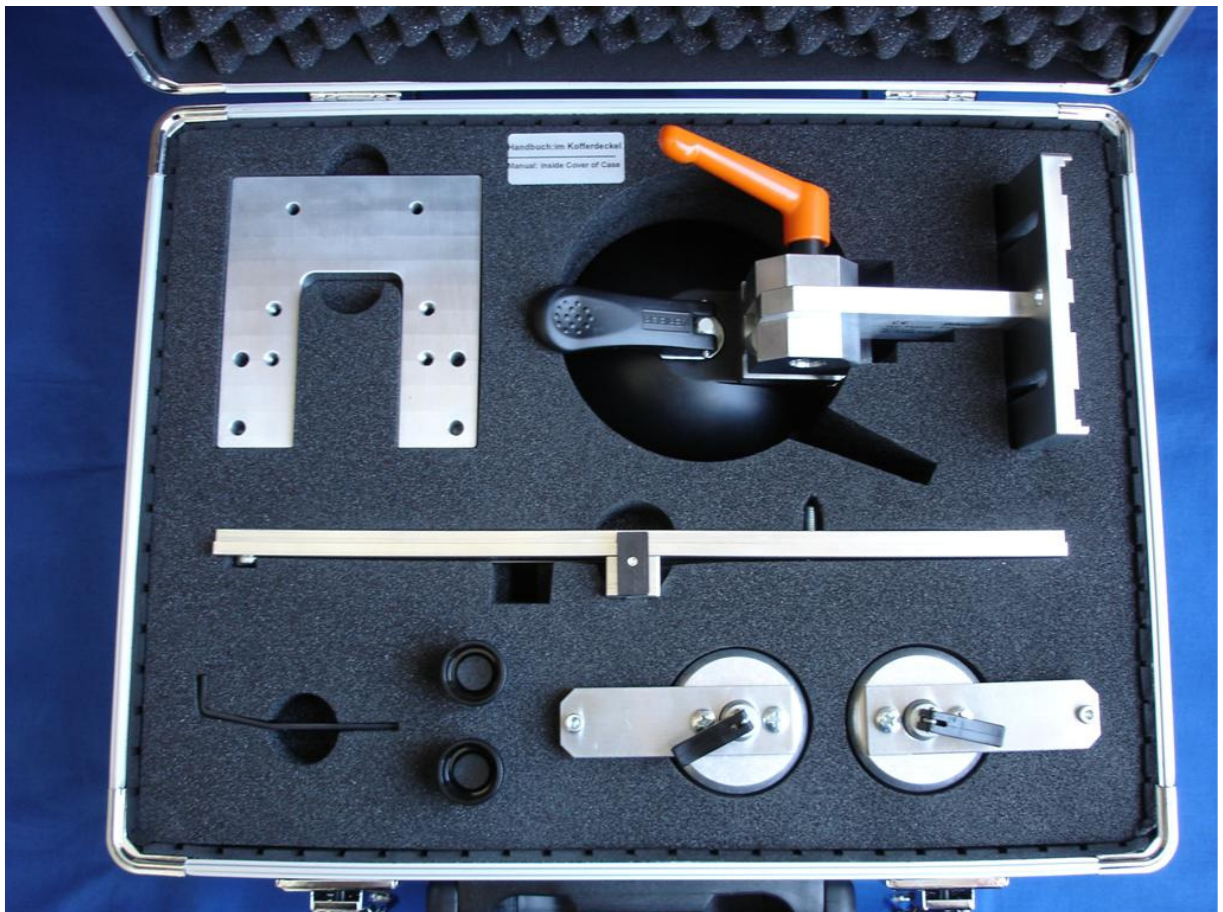


FM200

Fixture Set for Sunroofs



Manual

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1 PURPOSE OF USE

The FM200 fixture sets are auxiliary equipment sets to ease the measurement of the closing force of sunroofs. The advantages are:

- Measurement can be executed by one person
- Measured results are highly reproducible

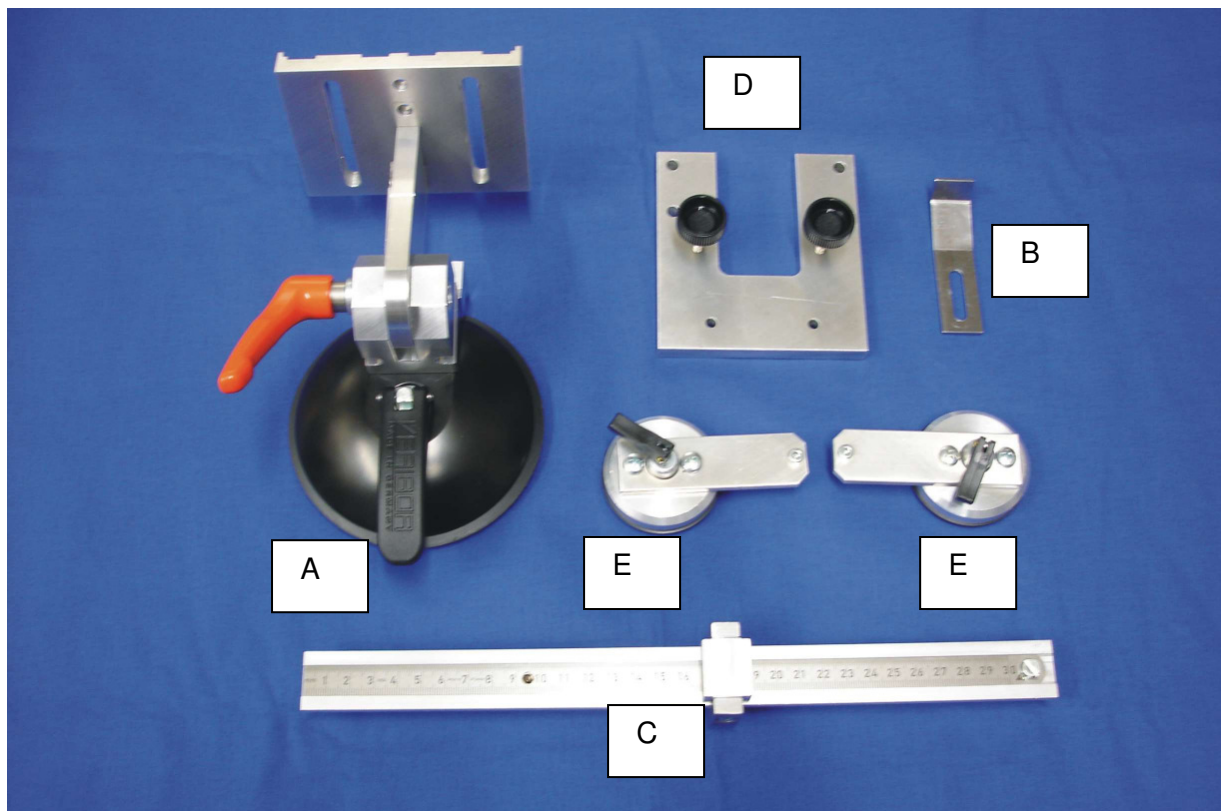
Two applications are supported:

- Sunroof, tilt close
- Sunroof, slide close

Both applications use the same sensor but different fixture components.

2 PREPARATION

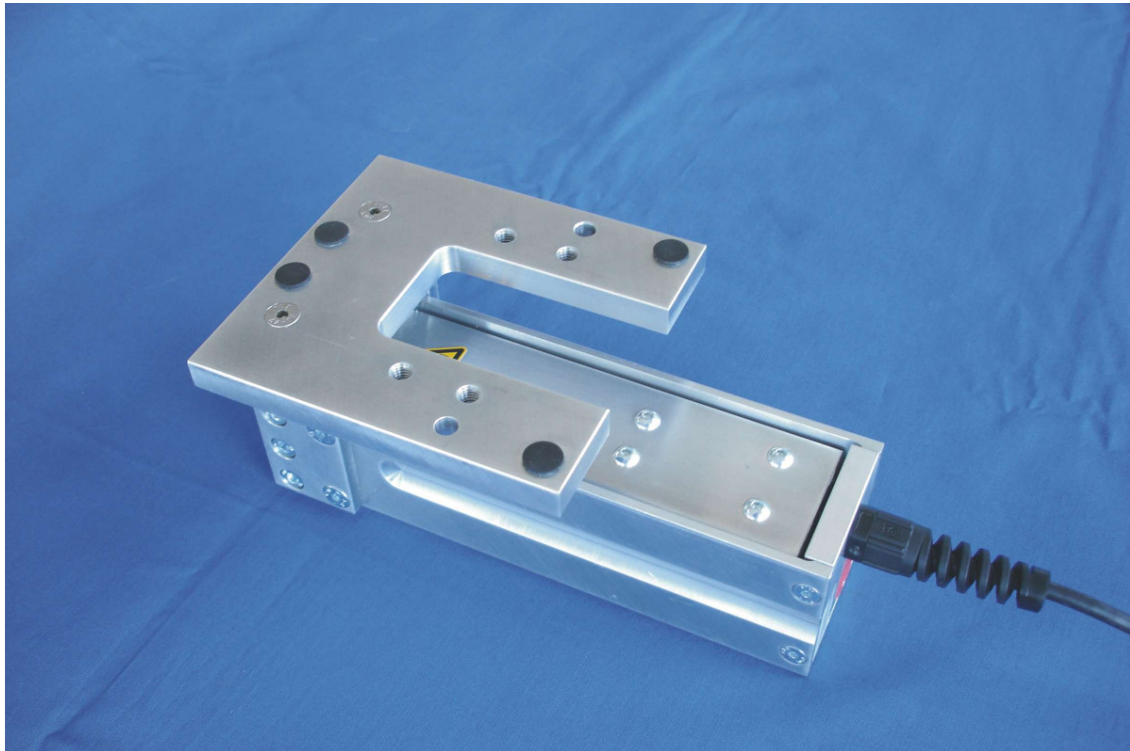
2.1 DETERMINING THE COMPLETENESS OF THE SYSTEM



- | | |
|----------|------------------------|
| - Part A | suck fastener slide |
| - Part B | force initiation tilt |
| - Part C | force initiation slide |
| - Part D | sensor base plate |
| - Part E | suck fastener tilt |

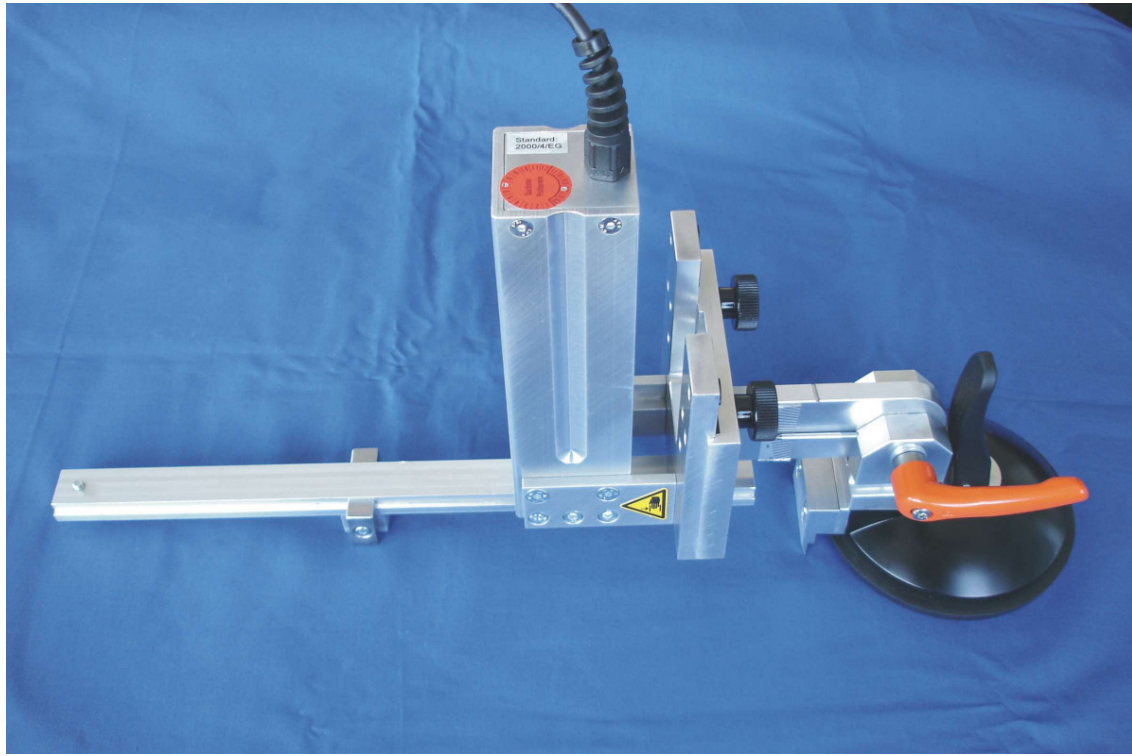
3 OPERATION

The FM200 system is delivered with a standard force initiation of an area of 50x50 sqmm. In order to use a fixture set, the standard force initiation has to be removed (upper and lower initiation). Mount sensor base plate D to the sensor. This combination will be used for both applications (slide and tilt). Depending on the intended application, the appropriate parts have to be added.



3.1 SUNROOF, SLIDE CLOSE

Parts to be used: Part A, C, D



- Fix the suck fastener at the edge of the car roof frame
- Adjust angle and height of the sensor
- Adjust desired gap by sliding the force initiator.



Basic height adjustment



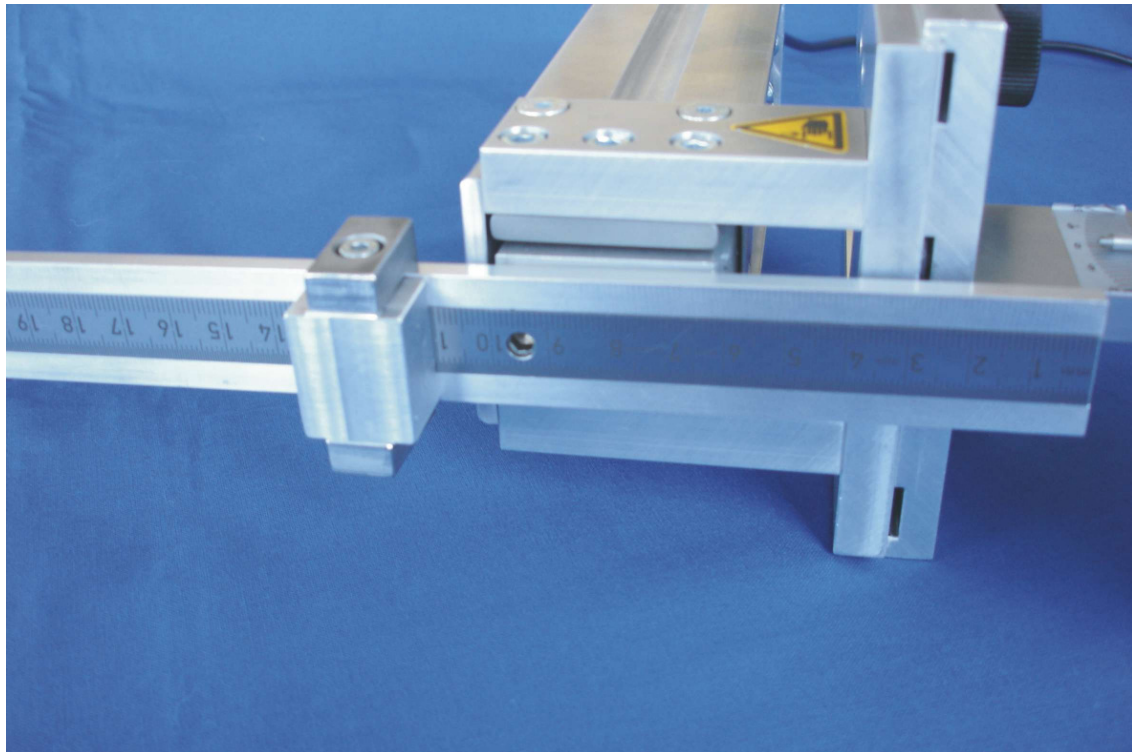
Unscrew mounting plate and fix it in the desired height by using the appropriate mounting holes.

Inclination adjustment:



Orange knob can be pulled for setting purpose

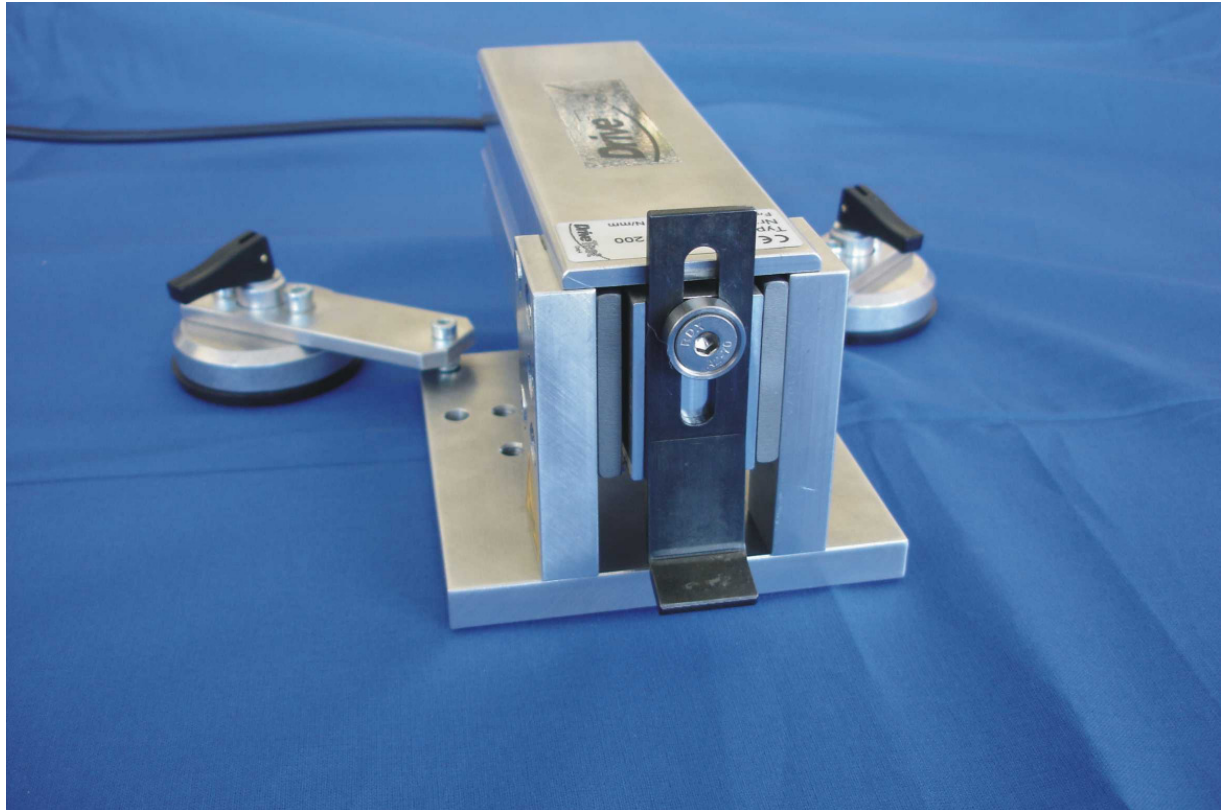
Gap adjustment



Loosen slide screw and move it to the desired position.

3.2 SUNROOF TILT CLOSE

Parts to be used: Part B, D, 2xE





- Place the instrument into the correct position
- Fix the position with the two suck fastener
- Adjust the vertical position of the force initiation

3.3 CAR WINDOW

Using an optional car windows fixture, the FM200 system can also measure car windows.

Special care must be taken when the window reverses. At a certain extend of the reverse motion the fixture including the sensor will fall to the ground.



The car windows fixture is not part of the sunroof fixture set and must be ordered separately.

4 FM200 FORCE SENSORS

Type	Deflection rate [N/mm]	Fmax [N]
FM200-10/200	10	200
FM200-20/300	20	300
FM200-25/300	25	300
FM200-65/300	65	300
FM200-100/300	100	300

5 TECHNICAL DATA OF FM200 FAMILY

Quantity	FM200-10/200	FM200-20/300	FM200-25/300	FM200-65/300	FM200-100/300
deflection rate	10	20	25	65	100 N/mm
tolerance of deflection rate	-5	+10	±10	+10	±10 %
max. force	200	300	300	300	300 N
Overload protection	Yes	Yes	Yes	Yes	Yes
max. gap width	55	45	45	35	35 mm
min. gap width	10 (4)	10 (4)	10 (4)	10 (4)	10 (4) mm
Force initiation area	50x50	50x50	50x50	50x50	50x50 mm
Weight (ca.)	1300	1300	1300	1300	1300g
Measures (ca.)	240x80 x60	240x70 x60	240x70 x60	240x60 x60	240x60x 60 mm

Quantity	Value
Force Measuring:	
Range	0 – 500 N
Resolution	1 N
Precision (greater tolerance is valid)	± 3 N or ± 3% of measured value
Sample frequency / -rate	500 Hz / 2 ms
Memory	80 single measurements or 80 triple measurements
Power Supply:	
Battery	9 V-Block, i.e. 6LR61
Battery voltage supervision (Warning)	Yes
No. of measurements per battery	> 500
Environment:	
Operation temperature range	-10 bis +40 °C
Extended operating temperature range 1)	-40 bis +90 °C
Humidity	max. 90% rel.H., non condensing

1) Experimentally determined temperature range; values within precision range, not for permanent operation.

6 CONTACT

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