

High-temperature pressure sensor

for combustion engine measurements

High-temperature pressure sensor with very small dimensions are ideal for use in internal combustion engines with complex structural geometry of the cylinder head. The sensor is installed with front sealing in an M5x0.5 bore. Type 6052C can be used in applications with classic fuels as well as with alternative fuels including hydrogen.

- · Good temperature stability of the sensitivity
- · High sensitivity
- Low thermal shock error
- Long service life due to front seal
- · Suitable for use in hydrogen combustion engines

Description

Type 6052C... uses a piezoelectric crystal which achieves high sensitivity in conjunction with an extremely small sensor structure. This sensitivity varies by not more than ± 0.5 % in the temperature range from 150 ... 250°C. The passive acceleration compensation patented by Kistler keeps the influence of engine vibrations to a minimum.

The front seal provides very good heat transfer and keeps the sensor at a save operating temperature. The optimized diaphragm produces good measuring results and ensures a long service life.

Application

The sensor Type 6052C... is an excellent all-rounder. Its rugged construction makes it suitable for measurements at the knock limit as well as for thermodynamic investigations. This sensor is used mainly for complex cylinder head geometry. As well as for motor cycles and other small engines and for combustion analysis in vehicles.

For applications mainly in the knocking range or at very high peak pressures, use of Type 6052C...U20 with reinforced diaphragm (heavy duty version) is recommended.

Type 6052C...U40 is provided with additional damping and is suitable for applications on engines with extremely high vibrations, e.g. racing engines, but with a limited temperature range.

For standard applications, a rugged metal braided PFA cable is recommended. If the sensor plug is directly exposed to the engine oil, e.g. when installing through the valve cover, the oil-tight FPM cable is recommended.

This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

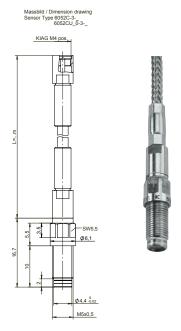
Type 6052C...

Patent No. US 6,105,434









Technical data

Type 6052C...

Measuring range	bar	0 250
Calibrated partial ranges	bar	0 50, 0 100,
		0 150, 0 250
Overload	bar	300
Sensitivity	pC/bar	≈–20
Natural frequency (measuring element)	kHz	≈160
Linearity, all ranges (at 23°C)	%/FSO	≤±0.3
Acceleration sensitivity		
axial	mbar/g	<0.8
radial	mbar/g	<0.5
Operating temperature range	°C	–20 350
Temperature min./max.	°C	<i>–</i> 50 400
Sensitivity change		
200 °C ±50°C	%	≤±0.5
23 350°C	%	≤±2
Thermal shock error		
(at 1 500 1/min, IMEP = 9 bar)		
Δp (short-term drift)	bar	≤±0.5
Δp_{mi}	%	≤±2
Δp_{max}	%	≤±1
Insulation resistance at 23°C	Ω	≥10 ¹³

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Technical data, continuation

Shock resistance	g	2 000
Tightening torque	N⋅m	1.5
Capacitance, without cable	pF	5
Weight with cable	grams	2
Connector, ceramic insulator	-	M4x0.35

Type 6052C...U20 (other specifications as for Type 6052C...)

bar	0 300
bar	0100, 0 200,
	0 300
bar	350
pC/bar	≈–18
%/FSO	≤±0.5
mbar/g	<0.8
mbar/g	<0.5
%	≤±3
bar	≤±0.7
%	≤±3
%	≤±1.5
	bar bar pC/bar %/FSO mbar/g mbar/g % bar %

Type 6052C...U40 (other specifications as for Type 6052C...)

Operating temperature range	°C	-20 200
Temperature min./max.	°C	-50 250
Calibrated partial ranges	bar	0 100, 0 200,
		0 250
Sensitivity change 23 200°C	%	≤±2

Mounting

Direct mounting:

Sensor Type 6052C... can be mounted directly in the cylinder head, see Fig. 2. Machining of the bore must correspond exactly to the bore specifications shown in Fig. 1.

The Kistler tools:

Step drill Type 1300A51 Special tap Type 1357A Type 1300A79 Finishing tool for bore

must be used in order to comply with the tolerances required. The bore must be machined in one clamping. Before mounting the sensor, the sealing surface in particular must be checked; use of the finishing tool (reamer) Type 1300A79 is mandatory. When mounting the sensor, it is essential to comply with the tightening torque of 1.5 N·m. The sensor should be mounted with the cable attached and the appropriate mounting tool and torque wrench. You will find additional information for machining the bore and mounting in the instruction manual. Your Kistler distributor will provide you with information, for example concerning the preferred position of the indicating bore in the combustion chamber.

Mounting sleeve:

When space allows or if the water jacket of the cylinder head will be breached, a mounting sleeve is recommended. Mounting sleeves are manufactured to customer requirements; Fig. 3 shows a version with M7x0,75 thread. An additional advantage of mounting sleeves is that the actual sensor bore in the sleeve can be very precisely machined. On request, Kistler will provide custom made adapters for your particular mounting situation.

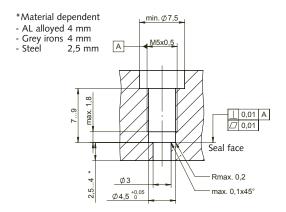


Fig. 1: Mounting bore

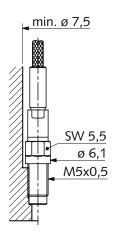


Fig. 2: Direct mounting

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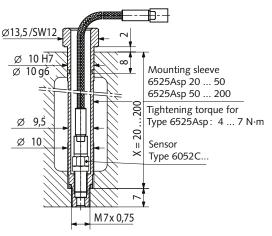


Fig. 3: Using the mounting sleeve

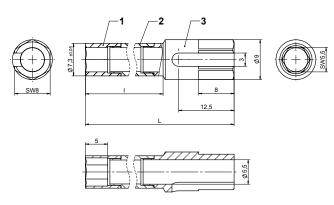


Fig. 4: Mounting key SW 5.5 Type 1300A9 with I = 204/L = 220Type 1300A9Q02 with I = 239/L = 255

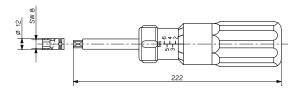


Fig. 5: Torque wrench 1 ... 6 N·m Type 1300A17

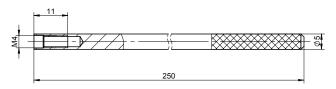


Fig. 6: Extraction tool for dummy sensor Type 1319

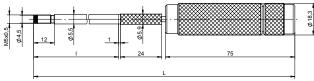
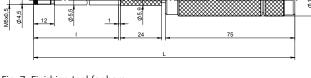


Fig. 7: Finishing tool for bore

Type 1300A79 with I = 60/L = 162Type 1300A79Q01 with I = 170/L = 273

Type 1300A79Q02 with I = 220/L = 323



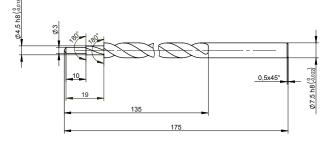


Fig. 8: Step drill Type 1300A51

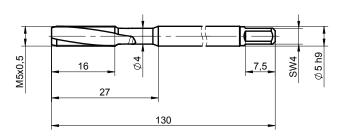


Fig. 9: Special tap M5x0.5 Type 1357A

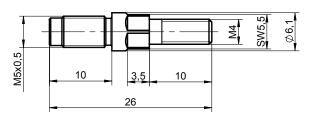


Fig. 10: Dummy sensor Type 6445 (for Type 6052...)



Pressure sensor 6052C Connecting cable acct. to ordering key Connecting cable acct. to ordering key Calibration certificate Standard Adapter M4 neg. – BNC pos. (not for PiezoSmart) 1705 Reinforced diaphragm U20 Optional accessories Type/Art. No. PiezoSmart Without PiezoSmart (standard) – - L = 1 m 1987B1 With PiezoSmart (standard) – - L = 1 m 1929A2 – - L = 2 m 1929A3 PFA with steel braiding (standard) 3 - L = 3 m 1929A3 PFA with Steel braiding (standard) 3 - with PiezoSmart, L = 1 m 1985A15311 1 m (standard) – - L = 1 m 1985A15321 2 m (standard) – - with PiezoSmart, L = 2 m 1985A15321 3 m (standard) – - L = 1 m 1985A15321 3 m (standard) – - L = 1 m 1985A15321 3 m (standard) –3 - Replacement connecting cables, FPM oil-tight – – – - L = 1 m 1985A15221 – – <th>Scope of delivery</th> <th>Type/Art. No.</th> <th>Ordering key</th> <th></th> <th></th>	Scope of delivery	Type/Art. No.	Ordering key		
 Calibration certificate Adapter M4 neg. – BNC pos. (not for PiezoSmart) PiezoSmart extension cable − L = 1 m − L = 2 m − L = 10 m − Replacement connecting cables, PFA steel braiding − L = 2 m − L = 3 m − Hy29A1 − L = 1 m − L = 2 m − L = 2 m − L = 3 m − Hy29A2 − L = 1 m − L = 2 m − L = 3 m − Hy29A3 − With PiezoSmart, L = 1 m − Hy85A15311 − L = 1 m − Hy85A15311 − With PiezoSmart, L = 3 m − Hy85A15311 − L = 1 m − Hy85A15311 − L = 1 m − Hy85A15311 − L = 1 m − Hy85A15311 − With PiezoSmart, L = 3 m − Hy85A15311 − L = 1 m − Hy85A15311 − With PiezoSmart, L = 1 m − Hy85A15311 − Hy85A15311					
 Adapter MA neg. – BNC pos. (not for PiezoSmart) Optional accessories FlezoSmart extension cable PiezoSmart extension cable L = 1 m L = 2 m L = 10 m Replacement connecting cables, PFA steel braiding L = 1 m L = 2 m L = 3 m with PiezoSmart, L = 2 m with PiezoSmart, L = 2 m with PiezoSmart, L = 3 m with PiezoSmart, L = 1 m with PiezoSmart, L = 3 m with PiezoSmart, L = 1 m with PiezoSmart, L = 3 m with PiezoSmart, L = 1 m with PiezoSmart, L = 3 m brank PiezoSmart, L = 3 m with PiezoSmart, L = 2 m 1985A157311 Adapter M neg KIAG 10-32 neg. Robusting Seeve M7x0.25 6525ASE (custom made) Adapter for pressure generator Type 6904 Steptac. tool for dummy sensor Type 6445 Extrac. tool for dummy sensor Type 6450 Step drill Tap M5x0.5 Tap M	 Connecting cable acc. to ordering key 		Version		\uparrow \uparrow \uparrow
Coptional accessories Type/Art. No. PiezoSmart extension cable Without PiezoSmart (standard) − - L = 1 m 1987B1 Without PiezoSmart (standard) − - L = 1 m 1987B10 With PiezoSmart (standard) − - L = 1 m 1929A1 FPM with PiezoSmart (standard) 3 - L = 2 m 1929A2 FPM with steel braiding (standard) 3 - L = 3 m 1929A3 Cable length 3 - with PiezoSmart, L = 1 m 1985A15321 1 m (standard) -1 - with PiezoSmart, L = 3 m 1985A15321 2 m (standard) -2 - with PiezoSmart, L = 3 m 1985A15321 3 m (standard) -3 - Replacement connecting cables, FPM oil-tight -1 2 m (standard) -2 - L = 1 m 1985A15321 3 m (standard) -3 - Replacement connecting cables, FPM oil-tight -1 2 m (standard) -2 3 m (standard) -3 - L = 1 m 1983AA1 -1 2 m (standard) -3 -1 2 m (standard) -1 2 m (standard) -1	Calibration certificate		Standard		
Coptional accessories Type/Art. No. PiezoSmart extension cable Without PiezoSmart (standard) − L = 1 m 198781 Without PiezoSmart (standard) − L = 2 m 1987810 With PiezoSmart (standard) − Replacement connecting cables, PFA steel braiding 1 = 1 m 1929A1 FPA with steel braiding (standard) 3 L = 2 m 1929A2 FPM oil-proof 7 L = 3 m 1929A3 Cable length 1 m (standard) 3 - L = 3 m 1985A15321 1 m (standard) -1 2 m (standard) -2 - with PiezoSmart, L = 3 m 1985A15321 1 m (standard) -2 3 m (standard) -3 • Replacement connecting cables, FPM oil-tight 1 m (standard) -2 3 m (standard) -3 • Replacement connecting cables, FPM oil-tight 1 m (standard) -3 -1 2 m (standard) -3 • Replacement connecting cables, FPM oil-tight -1 m (standard) -1 2 m (stan	 Adapter M4 neg. – BNC pos. 	1705	Reinforced diaphragm	U20 —	_
 PiezoSmart extension cable	(not for PiezoSmart)		·	U40	
 PiezoSmart extension cable					
L = 1 m	Optional accessories	Type/Art. No.	PiezoSmart		
- L = 2 m	 PiezoSmart extension cable 		Without PiezoSmart (standard)	_	
- L = 10 m	- L = 1 m	1987B1	With PiezoSmart (standard)	S	
PRA with steel braiding (standard) 3 - L = 1 m 1929A1 - L = 3 m 1929A2 - L = 3 m 1929A3 - with PiezoSmart, L = 1 m 1985A15311 - with PiezoSmart, L = 3 m 1985A15321 - with PiezoSmart, L = 3 m 1985A15331 - Replacement connecting cables, FPM oil-tight - L = 1 m 1983AA2 - L = 3 m 1983AA2 - L = 3 m 1983AA3 - with PiezoSmart, L = 3 m 1983AA3 - with PiezoSmart, L = 1 m 1983AA2 - L = 3 m 1983AA2 - L = 3 m 1983AA3 - with PiezoSmart, L = 1 m 1985A15731 - with PiezoSmart, L = 1 m 1985A15711 - with PiezoSmart, L = 3 m 1985A15721 - with PiezoSmart, L = 3 m 1985A15731 - Whith PiezoSmart, L = 3 m 1985A15731 - Whith PiezoSmart, L = 3 m 1985A15731 - Adapter M4 neg. − KIAG 10-32 neg. 1700A13 - Adapter M5 neg. − KIAG 10-32 neg. 1300A3 - Whounting sleeve M7x0.25 - Custom made) - Adapter for pressure generator Type 6904 - Step drill 1300A51 - Tap M5x0.5 - 1357A - Mounting key SW 5.5 L = 220 - Torque wrench 1 6 N·m 1300A79 - bore depth ≤60 mm 1300A79 - bore depth ≤60 mm 1300A79 - bore depth ≤170 mm 1300A79 - bore depth ≤20 mm 1300A79 - bore depth ≤20 mm 1300A79 - bore depth ≤20 mm 1300A79 - M10x1/SW12 - 6595A1 - M10x1/SW10 - 6595A1Q01	- L = 2 m	1987B2			
- L = 1 m	- L = 10 m	1987B10	Cable version		
- L = 2 m 1929A2 - L = 3 m 1929A3 - with PiezoSmart, L = 1 m 1985A15311 - with PiezoSmart, L = 2 m 1985A15321 - with PiezoSmart, L = 3 m 1985A15331 - Replacement connecting cables, FPM oil-tight - L = 1 m 1983AA3 - with PiezoSmart, L = 2 m 1983AA3 - with PiezoSmart, L = 2 m 1985A15721 - with PiezoSmart, L = 3 m 1985A15721 - with PiezoSmart, L = 3 m 1985A15721 - with PiezoSmart, L = 3 m 1985A15731 - Adapter M4 neg KIAG 10-32 neg. 1700A13 - Dummy sensor - Extrac. tool for dummy sensor Type 6445 - Extrac. tool for dummy sensor Type 6455 - Extrac. tool for dummy sensor Type 6904 - Adapter for pressure generator Type 6904 - Mounting key SW 5.5 L = 220 - Mounting key SW 5.5 L = 255 - Mounting key SW 5.5 L = 255 - Torque wrench 1 6 N·m 1300A79 - bore depth ≤60 mm 1300A79 - bore depth ≤20 mm 1300A79 - bore depth ≤20 mm 1300A79Q02 - Engine adapter - M8x0.75 - M10x1/SW10 - M10x1/SW10 - M30x17SW12 - M59SA15231 - 1 m (standard) - 1 m (standard) - 2 m	 Replacement connecting cables, PFA steel I 	oraiding	PFA with steel braiding (standard)	3	
- L = 3 m	- L = 1 m	1929A1	FPM oil-proof	7	
- with PiezoSmart, L = 1 m	- L = 2 m	1929A2	-		
- with PiezoSmart, L = 2 m	- L = 3 m	1929A3	Cable length		
Replacement connecting cables, FPM oil-tight	- with PiezoSmart, L = 1 m	1985A1S311	1 m (standard)	-1	
Replacement connecting cables, FPM oil-tight 1983AA1 L = 1 m 1983AA2 L = 2 m 1983AA3 - with PiezoSmart, L = 1 m 1985A15711 - with PiezoSmart, L = 2 m 1985A15721 - with PiezoSmart, L = 3 m 1985A15731 Adapter M4 neg KIAG 10-32 neg. 1700A13 Extrac. tool for dummy sensor 6445 Extrac. tool for dummy sensor Type 6445 1319 Mounting sleeve M7x0.25 6525ASP (custom made) 6585A Step drill 1300A51 Tap M5x0.5 1357A Mounting key SW 5.5 L = 220 1300A9 Mounting key SW 5.5 L = 255 1300A9Q02 Torque wrench 1 6 N·m 1300A17 Finishing tool for bore bore depth ≤00 mm 1300A79 - bore depth ≤170 mm 1300A79Q01 - bore depth ≤220 mm 1300A79Q02 Engine adapter 6595 - M10x1/SW12 6595A1 - M10x1/SW10 6595A1Q01	- with PiezoSmart, L = 2 m	1985A1S321	2 m (standard)	-2 —	
L = 1 m	- with PiezoSmart, L = 3 m	1985A1S331	3 m (standard)	-3	
C 2 m 1983AA2 1983AA3 1985A15721 1986B152C57-2 1985A15731 1986B1572 1985A15721 1986B1572	• Replacement connecting cables, FPM oil-tig	ght			
- L = 3 m - with PiezoSmart, L = 1 m - with PiezoSmart, L = 2 m - with PiezoSmart, L = 2 m - with PiezoSmart, L = 3 m - 1985A15721 - with PiezoSmart, L = 3 m - 1985A15731 - With PiezoSmart, L = 3 m - 1985A15731 - With PiezoSmart, L = 3 m - 1985A15731 - With PiezoSmart, L = 3 m - 1985A15731 - With PiezoSmart, L = 3 m - 1985A15731 - With PiezoSmart, L = 3 m - 1985A15731 - Type 6052C57-2 - With PiezoSmart and 1 m PFA steel braid cable: Type 6052C57-2 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - Without PiezoSmart and 2 m FPM cable (oil-proof): - With Call PiezoSmart and 2 m FPM cable (oil-proof): - Without Piezo	- L = 1 m	1983AA1			
- with PiezoSmart, L = 1 m 1985A15711 Ordering examples: - with PiezoSmart, L = 2 m 1985A15721 Standard sensor with PiezoSmart and 2 m FPM cable (oil-proof): - with PiezoSmart, L = 3 m 1985A15731 Type 6052C57-2 • Adapter M4 neg KIAG 10-32 neg. 1700A13 Standard sensor without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 • Extrac. tool for dummy sensor Type 6445 1319 cable: Type 6052C-3-1 • Mounting sleeve M7x0.25 6525ASP custom made) • Adapter for pressure generator Type 6904 6585A step drill • Tap M5x0.5 1357A 400 multing key SW 5.5 L = 220 1300A9 • Mounting key SW 5.5 L = 220 1300A9Q02 1300A9Q02 • Torque wrench 1 6 N·m 1300A17 1300A17 • Finishing tool for bore 1300A79 1300A79Q01 • bore depth ≤60 mm 1300A79Q02 1300A79Q02 • Engine adapter 6595 6595 • M8x0.75 6595 6595A1 • M10x1/SW12 6595A1Q01 6595A1Q01	- L = 2 m	1983AA2			
- with PiezoSmart, L = 2 m 1985A15721 Standard sensor with PiezoSmart and 2 m FPM cable (oil-proof): - with PiezoSmart, L = 3 m 1985A15731 Type 6052CS7-2 • Adapter M4 neg. – KIAG 10-32 neg. 1700A13 Standard sensor without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 • Dummy sensor 6445 Standard sensor without PiezoSmart and 1 m PFA steel braid cable: Type 6052C-3-1 • Extrac. tool for dummy sensor Type 6445 1319 • Mounting sleeve M7x0.25 (custom made) 6525ASP • Adapter for pressure generator Type 6904 6585A • Step drill 1300A51 • Tap M5x0.5 1357A • Mounting key SW 5.5 L = 220 1300A9 • Mounting key SW 5.5 L = 255 1300A9Q02 • Torque wrench 1 6 N·m 1300A79 • bore depth ≤60 mm 1300A79 • bore depth ≤220 mm 1300A79Q01 • bore depth ≤220 mm 1300A79Q02 • Engine adapter 6595 • M10x1/SW12 6595A1 • M10x1/SW10 6595A1Q01	- L = 3 m	1983AA3			
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 Step drill Tap M5x0.5 Mounting key SW 5.5 L = 220 Mounting key SW 5.5 L = 255 Mounting key SW 5.5 L = 255 Torque wrench 1 6 N·m Finishing tool for bore bore depth ≤60 mm bore depth ≤170 mm bore depth ≤220 mm Engine adapter M8x0.75 M10x1/SW12 M10x1/SW10 1300A51 1300A9Q02 1300A79Q01 6595A1Q01 	•	C=0= 1			
 Tap M5x0.5 Mounting key SW 5.5 L = 220 Mounting key SW 5.5 L = 255 1300A9Q02 Torque wrench 1 6 N·m Finishing tool for bore bore depth ≤60 mm bore depth ≤170 mm bore depth ≤220 mm Engine adapter M8x0.75 M10x1/SW12 M10x1/SW10 6595A1 M10x1/SW10 1300A9 1300A79Q01 6595A1 M10x1/SW10 					
 Mounting key SW 5.5 L = 220 Mounting key SW 5.5 L = 255 1300A9Q02 Torque wrench 1 6 N·m 1300A17 Finishing tool for bore bore depth ≤60 mm bore depth ≤170 mm bore depth ≤220 mm 1300A79Q01 bore depth ≤220 mm 1300A79Q02 Engine adapter M8x0.75 M10x1/SW12 6595A1 M10x1/SW10 6595A1Q01 	•				
 Mounting key SW 5.5 L = 255 1300A9Q02 Torque wrench 1 6 N·m 1300A17 Finishing tool for bore bore depth ≤60 mm 1300A79 bore depth ≤170 mm 1300A79Q01 bore depth ≤220 mm 1300A79Q02 Engine adapter M8x0.75 M10x1/SW12 M10x1/SW10 6595A1Q01 	·				
 Torque wrench 1 6 N·m Finishing tool for bore bore depth ≤60 mm bore depth ≤170 mm bore depth ≤220 mm 1300A79Q01 bore depth ≤220 mm 1300A79Q02 Engine adapter M8x0.75 M10x1/SW12 6595A1 M10x1/SW10 6595A1Q01 					
 Finishing tool for bore bore depth ≤60 mm bore depth ≤170 mm bore depth ≤220 mm 1300A79Q01 bore depth ≤220 mm 1300A79Q02 Engine adapter M8x0.75 M10x1/SW12 6595A1 M10x1/SW10 6595A1Q01 					
- bore depth ≤60 mm 1300A79 - bore depth ≤170 mm 1300A79Q01 - bore depth ≤220 mm 1300A79Q02 • Engine adapter - M8x0.75 6595 - M10x1/SW12 6595A1 - M10x1/SW10 6595A1Q01	•	1300A17			
- bore depth ≤170 mm 1300A79Q01 - bore depth ≤220 mm 1300A79Q02 • Engine adapter - M8x0.75 6595 - M10x1/SW12 6595A1 - M10x1/SW10 6595A1Q01					
- bore depth ≤220 mm 1300A79Q02 • Engine adapter - M8x0.75 6595 - M10x1/SW12 6595A1 - M10x1/SW10 6595A1Q01	•				
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- M8x0.75 6595 - M10x1/SW12 6595A1 - M10x1/SW10 6595A1Q01	•	1300A79Q02			
- M10x1/SW12 6595A1 - M10x1/SW10 6595A1Q01	•				
- M10x1/SW10 6595A1Q01		6595			
	- M10x1/SW12	6595A1			
- M14x1 25 6585AO01	- M10x1/SW10	6595A1Q01			
מוזארו.עט טייסארעטיו	- M14x1.25	6585AQ01			



Description of Icons

ቲ ^{ዘን} -ላ	H2 tested:
, C	Suitable for the use in hydrogen combustion
	engines
-\\\-	Ready to Use:
	Easy installation - minimal modifications
	Closed Loop Combustion Control: Suitable for closed loop control applications
(CLCC)	Suitable for closed loop control applications

⇒ <u>†</u>	Anti Strain Design: Insensitive to mechanical strain effects
→	High Thermal Stability: Temperature stable over measuring range
多中代	High Robustness: High durability with good thermodynamic performance