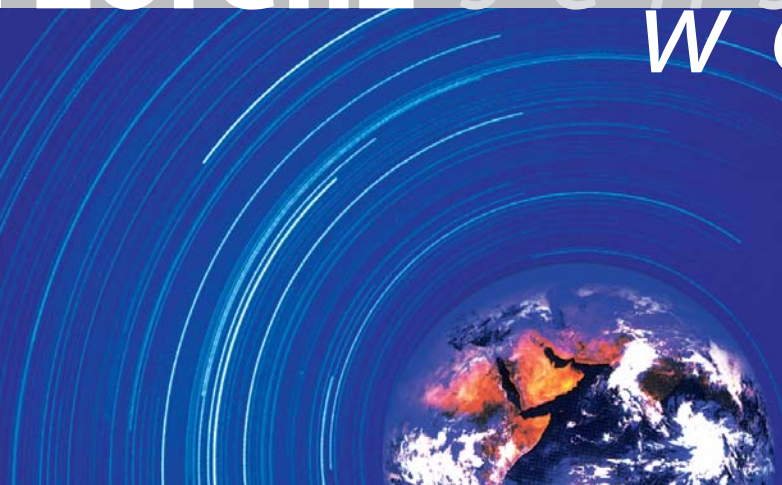


Lorenz *sensors* worldwide

Lorenz *sensors*



Our quality management system ensures quality at the highest level:



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Our customers include companies in the following sectors:

- Automotive Industry
- Process Measuring and Control Technology
- Manufacturing and Automation Technology
- Development and Research Institutes
- Aerospace Engineering
- Chemical Industry
- Mechanical Engineering
- Food Industry
- Medical Technology
- Pharmaceutical Industry
- Universities
- Electrical Engineering
- Construction of Apparatus
- Scales Manufacturing
- Metal Industry
- Drive Systems and Components Engineering
- Household Appliance Industry
- Building Industry
- Packaging Technology
- ...

Torque Sensors
Force Sensors
Multi-Component Sensors

Lorenz *amplifiers and measured data evaluation units* **Lorenz** *torque sensors*
Lorenz *weighing technology* **Lorenz** *customized sensor and system solutions*
Lorenz *custom-designed test benches and facilities* **Lorenz** *force sensors*



Development



Engineering



Application



Production



Calibration

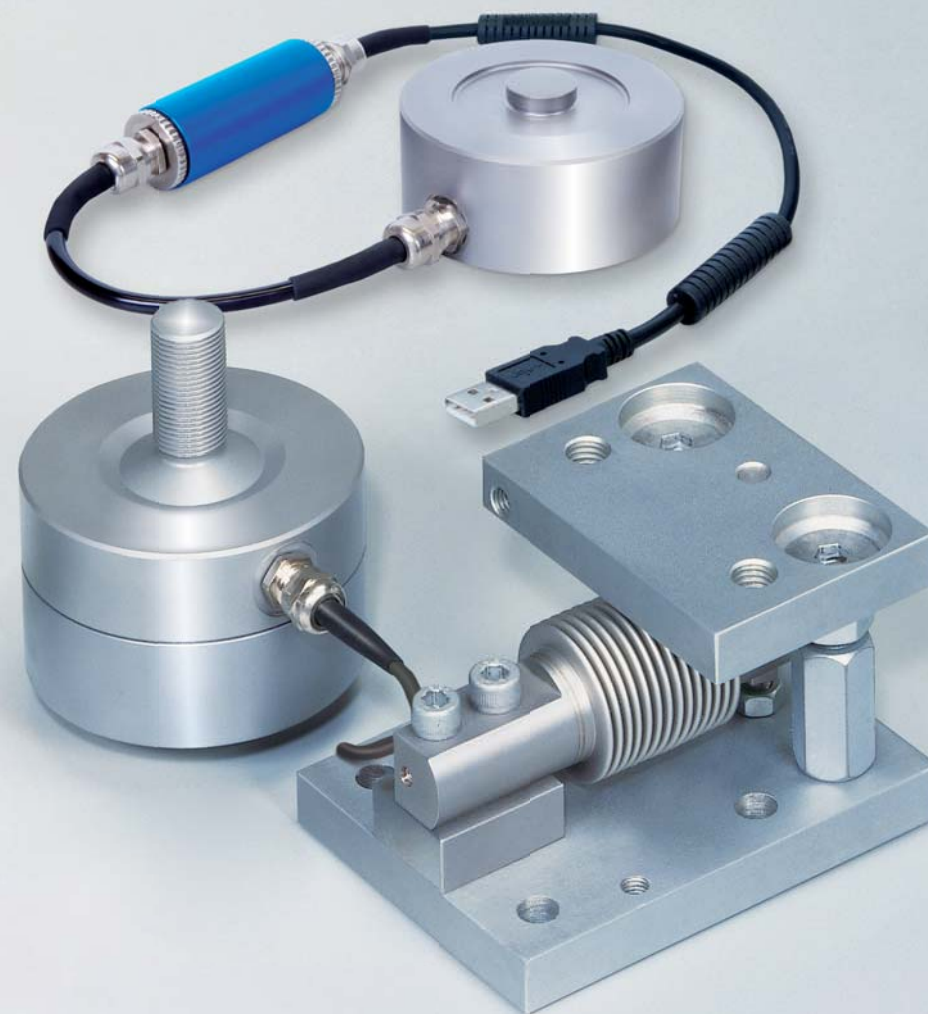


Repair Service

The Lorenz Messtechnik production spectrum:

Torque sensors, force sensors, load cells as well as the related measuring amplifiers.

Furthermore testing devices and system solutions which act for the acquisition, processing and analyses of torque, speed and angle of rotation as well as other physical and electrical sizes.

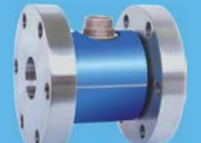


Calibration:
 DAKKS- Calibration
 Proprietary Calibration



Torque Sensors

Reaction, Non-Rotating	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	D-2452 D-2452-P	Cylindrical shaft	0.005 ... 20000	0.1 (0.05)	0.3 ... 1.5	2 ... 12	Reaction torque measurement, e.g. for extruders
	DK-15	Cylindrical shaft with keyway	1 ... 100	0.2	1	2 ... 12	Reaction torque measurement, e.g. test stands
	DV-14	Male square drive / Female square drive	1 ... 5000	0.2 (0.1)	0.5 1	2 ... 12	Survey of assembly tools for screws and nuts
	D-2431	¼" hexagon drive / Quick change chuck	0.1 ... 20	0.2	1 2	2 ... 12	Survey of assembly tools for screws and nuts
	DH-15	Flange with spigot and female threads / Cylindrical shaft	0.005 ... 20	0.2 (0.1)	0.3 ... 1	2 ... 12	For very small measuring ranges
	DFW-25	Flange with center hole and mounting holes / Cylindrical shaft with keyway	2 ... 2000	0.2 (0.1)	1	2 ... 12	Compact design
	DFW-35	Flange with center hole and mounting holes / Square	2 ... 2000	0.2 (0.1)	1	2 ... 12	Survey of assembly tools for screws and nuts
	D-2223	Flange with center hole and mounting holes / Square socket	2 ... 5000	0.2 (0.1)	1	2 ... 12	Survey of assembly tools for screws and nuts
	D-2209	Flange with spigot and mounting holes at both ends	1 ... 5	0.2	1	2 ... 12	Compact design
	D-2553	Flange with large through hole and center counter bore	10 ... 200	0.1	1	2 ... 12	Compact design

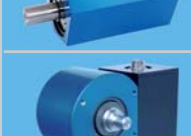
Reaction, Non-Rotating	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	DF-30	Flange with center hole and female threads at both ends	10 ... 20000	0.1 (0.05)	0.5 1	2 ... 12	Compact design
	D-2268	Flange with spigot and female threads / Flange with center hole and mounting holes	50 ... 10000	0.1 (0.05)	0.5 1	2 ... 12	Short design

Additional data is available from: <http://www.lorenz-messtechnik.de>

Torque Sensors

Rotating with Slip Ring	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal	Excitation [V]	Max. Speed [min ⁻¹]	Speed / Angle Measurement
	DR-2	Cylindrical shaft with keyway	1 ... 500	0.1	0.5 1	2 ... 12	1000 ... 2000	-
	DR-20	Cylindrical shaft with keyway	1 ... 500	0.1	0.5 1	2 ... 12	1000 ... 2000	✓ Standard
Rotating with Slip Ring for Screw Driving Systems	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal	Excitation [V]	Max. Speed [min ⁻¹]	Speed / Angle Measurement
	DR-1	Male square drive / Female square drive	1 ... 5000	0.1	0.5 1	2 ... 12	500 ... 2000	-
	DR-12	Male square drive / Female square drive	1 ... 5000	0.1	0.5 1	2 ... 12	500 ... 2000	✓ Standard
	DR-2291	¼" hexagon drive / Quick change chuck	1 ... 20	0.1	0.5 1	2 ... 12	2000	-
	DR-2335	¼" hexagon drive / Quick change chuck	1 ... 20	0.1	0.5 1	2 ... 12	2000	✓ Standard

Additional data is available from: <http://www.lorenz-messtechnik.de>

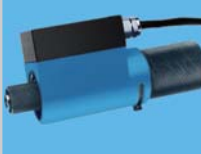
Non Contact Rotating	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal	Excitation [V]	Max. Speed [min ⁻¹]	Speed / Angle Measurement
	DR-3000 DR-3000-P	Cylindrical shaft	0.1 ... 5000	0.1 (0.05)	± 25000 digits	4 ... 6 from USB	12000 ... 30000	✓ Standard
	DR-2643 DR-2643-P	Cylindrical shaft	0.1 ... 5000	0.1 (0.05)	± 5 V (± 10 V)	12 ... 28	12000 ... 30000	✓ Option
	DR-2112 DR-2112-P DR-2412 DR-2412-P	Cylindrical shaft	0.1 ... 20000	0.1 (0.05)	± 5 V (± 10 V) ± 25000 digits	12 ... 28	5000 ... 15000	✓ Option
	DR-2112-R DR-2112-R-P DR-2412-R DR-2412-R-P	Cylindrical shaft	0.1 ... 1000	0.2	± 5 V (± 10 V) ± 25000 digits	12 ... 28	8000 ... 15000	✓ Option
	DR-2212 DR-2212-P DR-2512 DR-2512-P	Cylindrical shaft	0.1 ... 20000	0.1 (0.05)	± 5 V (± 10 V) ± 25000 digits	12 ... 28	3500 ... 15000	✓ Option
	DR-2212-R DR-2212-R-P DR-2512-R DR-2512-R-P	Cylindrical shaft	0.1 ... 1000	0.2	± 5 V (± 10 V) ± 25000 digits	12 ... 28	7000 ... 15000	✓ Option
	DR-2477 DR-2477-P	Cylindrical shaft	0.2 ... 200	0.25	± 5 V (± 10 V)	12 ... 28	8000 ... 10000	-
	DR-2500 DR-2600	Cylindrical shaft, without bearings	0.005 ... 150	0.1	± 5 V (± 10 V) ± 25000 digits	12 ... 28	20000 ... 30000	✓ Option (only speed measurement)
	DR-2554	Disk hub, clamping ring hub, keyway hub, without bearings	50 ... 1000	0.1	± 5 V (± 10 V)	12 ... 28	7300 ... 13600	✓ Option (only speed measurement)

Additional data is available from: <http://www.lorenz-messtechnik.de>

Torque Sensors

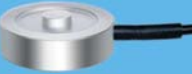
Non Contact Rotating	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal	Excitation [V]	Max. Speed [min ⁻¹]	Speed / Angle Measurement
	DR-2800	Flange with spigot and female threads / Flange with center hole and mounting holes, without bearings	50 ... 5000	0.1	± 5 V (± 10 V)	12 ... 28	8000 ... 15000	✓ Option (only speed measurement)
	MR-12	Center hole with keyway / Driving shaft with flange and mounting holes	20 ... 5000	0.1	± 5 V (± 10 V)	12 ... 28	5000 ... 12000	✓ Option
	DR-2481	External and Internal Spline Drive	260	0.5	± 10 V	12 ... 28	15000	-
Dual Range								
	DR-2208 DR-2208-P	Cylindrical shaft	0.5 / 5 ... 2000 / 20000	0.1	± 5 V (± 10 V)	12 ... 28	5000 ... 15000	✓ Option
	DR-2508 DR-2508-P				± 25000 digits			
	DR-2531 DR-2531-P	Cylindrical shaft	0.5 / 5 ... 2000 / 20000	0.1	± 5 V (± 10 V)	12 ... 28	3500 ... 12000	✓ Option
	DR-2831 DR-2831-P				± 25000 digits			

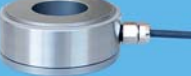
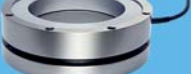
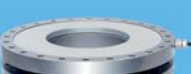
Additional data is available from: <http://www.lorenz-messtechnik.de>

Non Contact Rotating for Screw Driving Systems	Type	Mechanical Connection	Measuring Range [N·m]	Accuracy Class	Output Signal	Excitation [V]	Max. Speed [min ⁻¹]	Speed / Angle Measurement
	DR-3001	Male square drive / Female square drive	0.1 ... 5000	0.1	± 25000 digits	4 ... 6 from USB	1000 ... 4000	✓ Standard
	DR-2113	Male square drive / Female square drive	0.1 ... 5000	0.1	± 5 V (± 10 V)	12 ... 28	1000 ... 4000	✓
	DR-2413				± 25000 digits			Option
	DR-2493	Male square drive / Female square drive	0.1 ... 5000	0.25	± 5 V (± 10 V)	12 ... 28	1000 ... 4000	✓ Option
	DR-3003	¼" hexagon drive / Quick change chuck	0.1 ... 20	0.1	± 25000 digits	4 ... 6 from USB	3000 ... 4000	✓ Standard
	DR-2153	¼" hexagon drive / Quick change chuck	0.1 ... 20	0.1	± 5 V (± 10 V)	12 ... 28	3000 ... 4000	✓
	DR-2453				± 25000 digits			Option
	DR-2494	¼" hexagon drive / Quick change chuck	0.1 ... 20	0.25	± 5 V (± 10 V)	12 ... 28	3000 ... 4000	✓ Option
	DR-2114	¼" hexagon drive / Quick change chuck	0.1 ... 20	0.1	± 5 V (± 10 V)	12 ... 28	3000 ... 4000	✓
	DR-2414				± 25000 digits			Option
	DR-2124	External and internal spline drive	150 ... 500	0.3	± 5 V (± 10 V)	12 ... 28	2000	✓ Standard
	DR-1986	Male square drive / Female square drive	1 ... 12	0.3	± 5 V (± 10 V)	12 ... 28	2000	✓
	DR-1987		4 ... 80					Standard
	DR-1988		60 ... 240					

Additional data is available from: <http://www.lorenz-messtechnik.de>

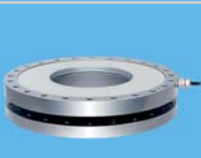
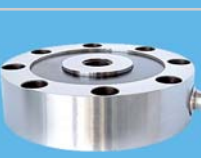
Force Sensors

Compressive Force Sensors	Type	Load Introduction / Mechanical Connection	Measuring Range [kN]	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	K-22	Load button in rocker pin design / Bearing surface	0.05 ... 2	0.5	1	2 ... 6	Miniature transducer for shear force and press-in force measurement
	K-1613	Load button in rocker pin design / Mounting side with female threads	0.1 ... 50	0.5	1	2 ... 12	Miniature transducer, e.g. for survey of press-in force
	K-13	Load button in rocker pin design / Mounting side with female threads	0.01 ... 100	0.5	0.5 ... 1	2 ... 6 ... 2 ... 12	E.g. for press-in force survey, tablet presses ..
	K-13B	Load button in rocker pin design / Mounting side with female threads	0.01 ... 100	0.5	0.5 ... 1	2 ... 6 ... 2 ... 12	With overload protection e.g. for press-in force survey, tablet presses ..
	K-450	Load button in rocker pin design / Fixing hole, female threads on the mounting face	1 ... 1000	0.1 ... 0.3	2	2 ... 12	Universal compression sensor, e.g. for survey of surface pressure plates or press-in force
	K-2071	Load button in rocker pin design / Mounting side with center hole	5 ... 15	0.3	1	2 ... 6	Miniature transducer, e.g. for industrial process control for press fitting, riveting, clinching, stamping ..
	K-2283	Plan surface at both ends	50 ... 150	1	1	2 ... 12	Miniature transducer, e.g. for pressing tools, impact measurements, crash testing, punch, stamping ..
	K-2528	Plan surface with central through hole and mounting holes	0.2 ... 10	1	1	2 ... 12	E.g. for press-in force survey
	K-2529	Plan surface with central through hole and mounting holes	0.5 ... 20	1	1	2 ... 12	E.g. for press-in force survey
	K-14	Plan surface with central through hole	0.05 ... 100	0.5	1	2 ... 12	E.g. for press-in force survey

Compressive Force Sensors	Type	Load Introduction / Mechanical Connection	Measuring Range [kN]	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	K-181	Plan surface with central through hole	15 ... 1500	1 ... 3	1	2 ... 6	E.g. for preload measurement of screws
	K-18	Plan surface with central through hole and spigot at both ends	5 ... 5000	0.5	1	2 ... 12	Small measured displacement < 0.1 mm, e.g. for press-in force survey
	K-1250	External ring surface with spigot at the lower external ring	2 ... 100	0.5	1	2 ... 12	E.g. for survey of press-in force
	K-2698	Plan surface with female threads at both ends	100 ... 600	0.5 ... 1.0	1	2 ... 12	E.g. for industrial process control for press fitting, riveting, clinching, stamping, drawing ..
Tension Force Sensors	Type	Load Introduction / Mechanical Connection	Measuring Range [kN]	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	K-1107	External threading at both ends	0.01 ... 0.2	0.2	0.5	2 ... 6	Miniature sensor, e.g. for survey of rope force or force determination of a bowden wire
	K-100	External threading at both ends	1 ... 100	0.3	1	2 ... 6 ... 2 ... 12	E.g. for solar wing control or rope force measurement
	K-1368	Link plates at both ends	0.01 ... 0.2	0.2	1	2 ... 6	Miniature transducer, e.g. for force determination of belt tensioners

Additional data is available from: <http://www.lorenz-messtechnik.de>

Force Sensors

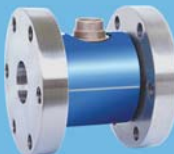
Tension and Compression Force Sensors	Type	Load Introduction / Mechanical Connection	Measuring Range [kN]	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	K-1563	External threading at both ends	0.1 ... 2	0.15 ... 0.3	1 ... 2	2 ... 12	E.g. for material testing or rope force measuring
	K-12	External threading at both ends	0.5 ... 1000	0.1 ... 0.25	1	2 ... 12	E.g. for tension / compressive testing machines or survey of actuating forces
	K-2145	External threading / Mounting face with female screw threads	0.5 ... 200	0.1 ... 0.25	1 ... 2	2 ... 12	E.g. for material testing or spring force measuring
	K-1427	External threading / Central internal screw thread	0.5 ... 200	0.1 ... 0.25	1 ... 2	2 ... 12	E.g. for material testing machines or press-in force measurement
	K-25	Internal threads at both ends	0.02 ... 50	0.1 ... 0.2	1 ... 2	2 ... 12	E.g. for tension / compressive testing machines
	K-2698	Plan surface with female threads at both ends	100 ... 600	0.5 ... 1.0	1	2 ... 12	E.g. for industrial process control for press fitting, riveting, clinching, stamping, drawing ..
	K-11	Plan surface with central internal thread, through holes for screws, fixing hole	0.5 ... 2000	0.05 ... 1.0	2	2 ... 12	E.g. for material testing machines, press-in force measurement, roll force applications ..
Dual Range							
	K-1882	Plan surface with spigot and female threads at both ends	1 / 10 15 / 150	0.2 ... 0.4	1	2 ... 12	E.g. for monitoring of assembly forces in the automobile industry
Force Transmissions							
	EF, EM, EF42, E2, ED, E3	Diverse					Force transmissions, thrust pieces and mounting flanges

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Special Sensors	Type	Load Introduction / Mechanical Connection	Measuring Range	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application
	K-1661	Shaft	20 ... 400 kN	1	1	2 ... 12	Load measuring pin, e.g. for load measurement in deflector rolls
	K-2148	Spigot with mounting holes / Center hole with clamping	1 ... 2 kN	0.5	0.5 ... 1	2 ... 12	Web tension sensor, e.g. for tension measurement of belt conveyors in the paper industry
	DZ-1	Link plate with holes at both ends	300 µm/m	0.5	ca. 0.5	2 ... 12	Stress sensor, e.g. for survey of press-in force, material stress or liquid level monitoring
	K-2565	Ergonomically shaped handle	1500 N	0.1	1	2 ... 12	Force sensor for hand force measurement (medical load cell)
	K-1509	Plan surface with mounting holes	2 ... 20 N	0.2	1	2 ... 6	Force sensor with very compact dimensions, e.g. for measurement of ball bearing friction
	K-2618	Around the circumference 3x 120°	30 ... 300 kN	1	1	2 ... 12	Force sensor , e.g. for measurement of tension forces in lathe chucks

Additional data is available from: <http://www.lorenz-messtechnik.de>

Multi-Component Sensors

Reaction Torque / Force Non-Rotating	Type	Load Introduction / Mechanical Connection	Measuring Range	Accuracy Class	Output Signal [mV/V]	Excitation [V]	Range of Application	
	M-2416	External thread / Spigot with female threads	0.1 N·m / 20 N 0.5 N·m / 50 N	0.2 (F); 0.2 (Mt)	0.5	2 ... 8	E.g. the optimization of the granulation of abrasives	
	M-1902	Central female thread / Mounting surface at the major diameter with female threads	100 N·m / 100 N·m / 100 kN	0.2	0.5	2 ... 12	Screw testing: Thread and screw head friction torque, preload measurement	
	M-2230	Central female thread / Mounting surface at the major diameter with female threads	100 N·m / 100 N·m / 100 kN	0.2	0.5	2 ... 12	Screw testing: Thread and screw head friction torque, preload measurement	
	M-1983	Central female thread / Mounting surface at the major diameter with female threads	60 N·m / 60 N·m / 40 kN	0.5	0.5	2 ... 12	Screw testing: Thread and screw head friction torque, preload measurement	
	M-2396	Flange with center hole and female threads at both ends	0.5 kN / 5 N·m 1 kN / 10 N·m 1 kN / 30 N·m 20 kN / 20 N·m 0.5 kN / 50 N·m 2 kN / 50 N·m	0.3 (F) 0.2 (Mt)	1	2 ... 12	E.g. optimization of the cutting force of drills	
	M-2025	Spigot with female threads / Plan surface with female threads	10 kN / 10 N·m 20 kN / 20 N·m	0.2 (F) 0.2 (Mt)	1	2 ... 12	E.g. survey of the characteristics of elastomers	
	M-2354	Plan surface with center hole and female threads at both ends	10 kN / 10 N·m	0.2 (F) 0.2 (Mt)	1	2 ... 12	E.g. survey of the bearing friction of ball bearings	
Non Contact Torque / Force Rotating	Type	Load Introduction / Mechanical Connection	Measuring Range	Accuracy Class	Output Signal	Excitation [V]	Max. Speed [min ⁻¹]	Measurement of Speed / Angle
	M-2371	Shaft end with keyway / external thread	2 N·m / 100 N 5 N·m / 250 N 5 N·m / 500 N	0.4 (F) 0.2 (Mt)	± 5 V (± 10 V)	12 ... 28	3000	✓ Option

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