



Measurement transducers

Torque and Torque & Angle



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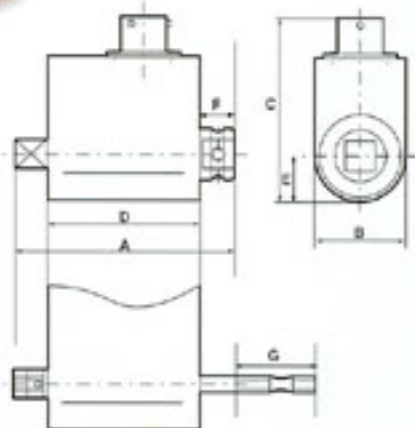
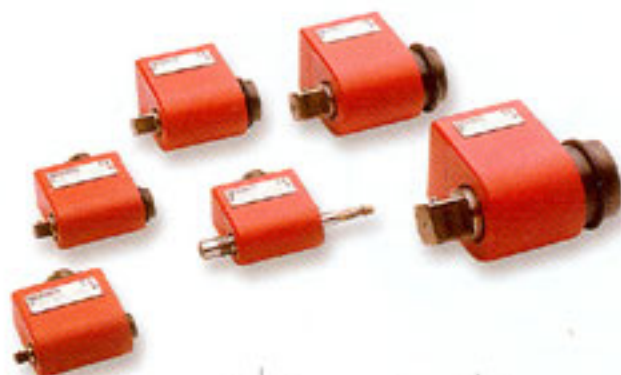
The new DRT4 (torque) and DRT5 (torque & angle) transducers cover a torque range from 0.15 to 1400 Nm (0.11 to 1032 Ft.lb). DRT5 transducers offer a angle resolution down to 0.5°. The built-in memory stores all transducer calibration information and is accessed from the Sigma or Delta series data collectors.

Features:

- Torque range from 0.15 to 1400 Nm (0.11 to 1032 Ft.lb).
- Strain gauges transducer
 - sensitivity 2mV/V.
 - accuracy $\pm 0.35\%$ full scale.
- Built-in smart chip memory with:
 - Calibration features: type of transducer – sensitivity – nominal load – serial number.
 - Maintenance information: date of last calibration – maximum torque applied on transducer.
- Unique contact system preventing the common problem of "brush bounce".
- Angle counting system 0.5° resolution
- Same size for Torque or Torque & Angle transducers
- Digital connection between data collector and transducer.
Torque value converted to a digital signal in the transducer.

Benefits:

- Transducers used in line with screwdrivers – pneumatic tools – impulse tools – electric nutrunners and spindles.
- The most accurate and reliable type of torque transducer.
- No need for transducer selection.
- The data collector automatically recognises the transducer connected.
- No risk for the operator by selecting a wrong type of transducer.
- Transducers can be used in line with impulse tools, (not impact tools – use CC series transducers).
- Checks all types of joints, hard and soft.
- Easy access to all applications.
- Cable length has no effect on accuracy.
- Reliability of torque values transmitted to the data collector.
- Only one type of transducer cable needed.
- Easy to recalibrate by modifying the sensitivity coefficient.
- No hardware adjustment.



OUTPUT	A mm	B mm	C mm	D mm	E mm	F mm	G mm
1/4"Hex	116	30	68	58	13	39	25.5
1/4"Sq	71.5	30	71.5	58	13	6	
3/8"Sq	77	30	74	58	15	8	
1/2"Sq	87	42	82.5	58	21	12	
3/4"Sq	106	52	93.5	60	26	21	
1"Sq	125	63	104	64.5	31.5	29	

Torque transducers DRT4

MODEL	PART NUMBER	TORQUE RANGE		OUTPUT
		Nm	Ft.lb	Hex-sq
DRT 4 H 2	615 165 209 0	0.15 – 2	0.11 – 1.47	Hex 1/4"
DRT 4 H 5	615 165 210 0	0.3 – 5	0.22 – 3.69	Hex 1/4"
DRT 4 H 20	615 165 211 0	1.5 – 20	1.11 – 14.7	Hex 1/4"
DRT 4 Sq 20	615 165 212 0	1.5 – 20	1.11 – 14.7	Sq 1/4"
DRT 4 Sq 25	615 165 213 0	1.8 – 25	1.33 – 18.4	Sq 3/8"
DRT 4 Sq 75	615 165 214 0	5.0 – 75	3.69 – 55.3	Sq 3/8"
DRT 4 Sq 180	615 165 215 0	12 – 180	8.85 – 132	Sq 1/2"
DRT 4 Sq 500	615 165 216 0	35 – 500	25.8 – 368	Sq 3/4"
DRT 4 Sq 1400	615 165 217 0	95 – 1400	70.0 – 1032	Sq 1"

for transducers with specific national certification, change last digit to "3" (eg: 615 165 209 3)

Torque & Angle transducers DRT5

MODEL	PART NUMBER	TORQUE RANGE		OUTPUT
		Nm	Ft.lb	Hex-sq
DRT 5 H 2	615 165 218 0	0.15 – 2	0.11 – 1.47	Hex 1/4"
DRT 5 H 5	615 165 219 0	0.3 – 5	0.22 – 3.69	Hex 1/4"
DRT 5 H 20	615 165 220 0	1.5 – 20	1.11 – 14.7	Hex 1/4"
DRT 5 Sq 20	615 165 221 0	1.5 – 20	1.11 – 14.7	Sq 1/4"
DRT 5 Sq 25	615 165 222 0	1.8 – 25	1.33 – 18.4	Sq 3/8"
DRT 5 Sq 75	615 165 223 0	5.0 – 75	3.69 – 55.3	Sq 3/8"
DRT 5 Sq 180	615 165 224 0	12 – 180	8.85 – 132	Sq 1/2"
DRT 5 Sq 500	615 165 225 0	35 – 500	25.8 – 368	Sq 3/4"
DRT 5 Sq 1400	615 165 226 0	95 – 1400	70.0 – 1032	Sq 1"

for transducers with specific national certification, change last digit to "3" (eg: 615 165 218 3)

OPTIONAL ACCESSORIES

Cables (same to DRT 4 or DRT 5)	PART NUMBER
• 2 m	615 917 430 0
• 5 m	615 917 433 0
• 2 m coiled	615 917 432 0

POWER REQUIREMENTS

POWER SUPPLY	Extractible and rechargeable battery of 6 (1.2 V) NiMH elements (i.e. 7.2 V) inside or outside the unit.
BATTERY LIFE	8 hours - 1,000 Discharging / Recharging cycles- Automatic stop when not used during the selected time.
BATTERY CONTROL	Weak battery indication - Power miser - Charge level test - Global backup of context during battery change.
CHARGER	Multi-voltage 115/230 Volts with multi-standard mains power cord.

TORQUE

2 TRANSDUCER INPUT CONNECTIONS	Connection of strain gauge transducers of CMD / ST / CD / CF /TD type or others. Digital serial link for connecting and reading the torque of fixed electric tightening tools.									
TRANSDUCER RANGE	4001		4005		4010		4050		4100	
	1-15 Nm	0.7-11 ft-lb	10-70 Nm	7.4-52 ft-lb	10-150 Nm	7.4-111 ft-lb	100-700 Nm	74-517 ft-lb	100-1500 Nm	74-1106 ft-lb
TORQUE RESOLUTION	0.001 Nm	0.0007 ft-lb	0.01 Nm	0.007 ft-lb	0.01 Nm	0.007 ft-lb	0.1 Nm	0.07 ft-lb	0.1 Nm	0.07 ft-lb
MAXIMUM RESOLUTION (unit alone)	± 0.006 Nm	± 0.004 ft-lb	± 0.06 Nm	± 0.04 ft-lb	± 0.06 Nm	± 0.04 ft-lb	± 0.6 Nm	± 0.44 ft-lb	± 0.6 Nm	± 0.44 ft-lb
RANGE SWITCHING	Automatic, according to the transducer selected.									
SENSITIVITY	Automatic selection according to the transducer selected. Automatic reading in case of fixed electric power tools. 0.5 to 2.5 mV/V for any other transducer (load to be specified).									
TRANSDUCER LOAD	Automatic selection according to the transducer selected. Automatic reading in case of fixed electric power tools. Torque: from 1 to 10 000 Nm for any other transducer. Force: from 1 to 50 000 daN.									
UNITS	Nm - Ft.lb - In.lb - N - daN - kN									

SETTING

JOINT	Selection of the type of joint and application: Hard - Standard - Soft Special mode for reading the torque of pneumatic oil pulse wrenches.
ZERO POINT ADJUSTMENT	Automatic zero correction independant from clearing of the display.
CLEARING THE DISPLAY	Manual - External - Automatic (programmable).
OPERATING MODE	Acquisition mode Programming mode

COMMUNICATION

MEMORY	Up to 1 000 results including Torque, Date and Time
PRINTER	Connected on SubD 25 point parallel port with printing: - either in order of occurrence (reading after reading, automatically) - or in increments of N readings starting from a given date
PC DOWNLOADING	Via serial link RS232 on SubD 9 points Via infrared link

MISCELLANEOUS

WEIGHT	875 g. / 1.93 lbs
OVERALL DIMENSIONS	Depth: 170 mm - Width: 230 mm - Height: 100 mm
TEMPERATURES	Storage: from -10°C to +70°C / 14°F to 140°F Operation: from 0°C to +50°C / 32°F to 122°F

General Information

ON THE OVERALL RANGE OF TRANSDUCERS

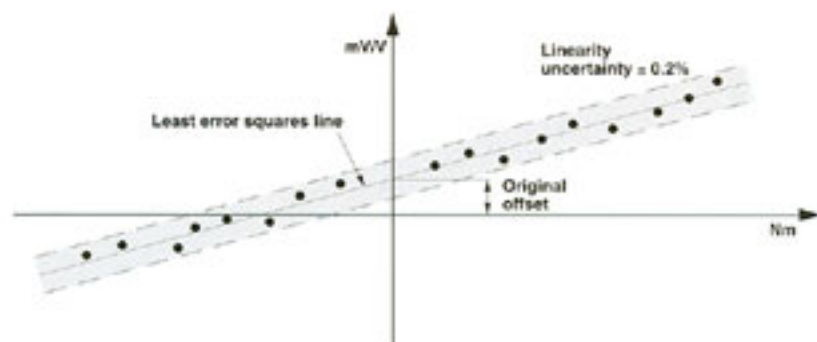
All **GEORGES RENAULT** transducers are designed to operate – for tightening as well as untightening procedures – within a temperature range from -10° up to $+60^{\circ}\text{C}$ and are fitted with an automatic compensation system against temperature effects. The principle consists in producing an electrical signal, through the intermediary of a wire strain gauge bridge, which is proportional to the distortion of the transducer test piece.

NOTE: The range above the rated capacity must be avoided, as the transducers are likely to exceed their limit of elasticity.

DEFINITIONS:

Linearity: Maximum deviation of the transducer tuning curve from the least error squares line of the points considered. It is a constant value expressed in Nm for the overall capacity rating.

Overall uncertainty: Interval around the measured value within which you are certain to find the actual value. It should be noted that the overall uncertainty of the measuring line is the sum of uncertainties related to the transducer and the uncertainties related to the measuring unit.



A torque transducer is checked and calibrated according to two criteria:

Linearity which is checked against the least error squares line: all the points must be within a defined torque interval (see tables related to transducers) with respect to this line for the transducer to be accepted.

The sensitivity of the transducer which is measured from the least error squares line and is represented by the slope of the line above. The acceptance limit is $\pm 0.3\%$ of the theoretical sensitivity.

Transducer tuning bench

Our torque balance for the tuning of torque transducers is located in an air-conditioned room. The magnitudes associated to the torque (length and weight) as well as the equipment necessary for measuring the electrical signal are strictly monitored and compared with national standards by the Bureau National de Métrologie (BNM) and the Laboratoire National d'Electricité (LNE). A tuning certificate showing the traceability of our equipment is issued with each transducer.



CONNECTIONS

TORQUE TRANSDUCERS

Connections

- A: + Power supply
- B: - Power supply
- C: + Measurement
- D: - Measurement
- E: Weight
- F: Automatic decimal point

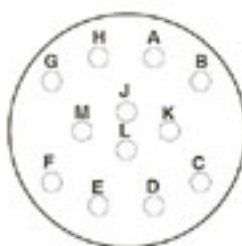


The automatic switching of the decimal point is only used with the former generations of measuring units (such as CMC2001).

TORQUE & ANGLE TRANSDUCERS

Connections

- A: Clock
- B: Count up / count down
- C: + 5 Volts
- D: 0 Volt
- E: Not connected
- F: Not connected
- G: Weight
- H: Decimal point
- J: + Transducer power supply
- K: - Transducer power supply
- L: + Measurement
- M: - Measurement



OPERATOR INTERFACE



CONNECTIONS



PART No

PART No

SIGMA2001 unit 615 935 037 0

ACCESSORIES INCLUDED

PART No

Univelsel charger 615 922 948 0

Multilanguages documentation 615 993 800 0

START-UP KIT
to be ordered with the controller
Including : Plug and cable

PLUG

PART No

A 615 917 201 0

C 615 917 202 0

D 615 917 205 0

B 615 917 203 0

E 615 917 204 0

OPTIONAL ACCESSORIES

PART No

Extra battery block 615 935 036 0

DELTA PC software 615 927 520 0

Analog torque cable, 2 m long 615 917 251 0

Analog torque cable, 5 m long 615 917 252 0

Spirally wound analog torque cable
(stretched: 2 m) 615 917 253 0

Unit/PC connection cable, type RS232C 615 917 047 0

Parallel printer cable 615 917 057 0



A



B



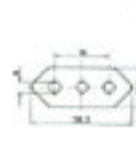
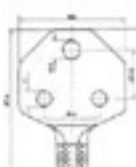
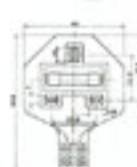
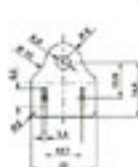
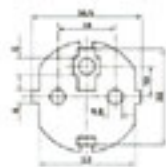
C



D



E

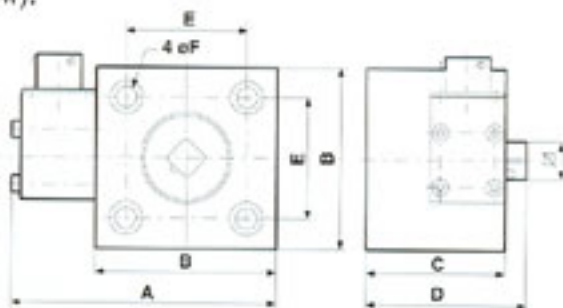


ST4000 SERIES STATIC TRANSDUCERS

SETTING PNEUMATIC NUTRUNNERS, TORQUE-LIMITING WRENCHES...

These static transducers are intended to be secured to a mounting base which can resist the applied torques. They are designed for the tuning of nutrunners (measuring stall or shut-off torque) and torque wrenches (torque-limiting, mechanical or digital reading type) and can be used with any type of **GEORGES RENAULT** measuring unit.

A small joint simulator can be inserted between the transducer and the nutrunner which sets the nutrunner to rotate for a better measurement of the setting torque (see accessories below).



Uncertainty for any type of transducer: $\pm (0.3\% \text{ of the measurement} + \text{Linearity})$

PART NUMBER	MODEL	TORQUE RANGE Nm	SENSITIVITY mV/V	For Nm	LINEARITY UNCERTAINTY Nm	SQUARE DRIVE		DIMENSIONS (mm)						WEIGHT kg
						Inch	mm	A	B	C	D	E	F	
615 165 141 0	ST4001	1 - 15	1.475	10	0.02	3/8	9.52	88	60	46	53	40	7.0	0.50
615 165 142 0	ST4005	5 - 70	1.475	100	0.10	3/8	9.52	88	60	46	53	40	7.0	0.50
615 165 143 0	ST4010	10 - 150	1.475	100	0.20	1/2	12.70	88	60	46	56	40	7.0	0.56
615 165 144 0	ST4050	50 - 700	1.475	1000	2.00	3/4	19.05	108	80	65	85	60	8.5	3.50
615 165 145 0	ST4100	100-1500	1.475	1000	2.00	1	25.40	108	80	65	90	60	8.5	3.50

Accessories

JOINT SIMULATORS FOR STATIC TRANSDUCERS

These are small joint simulators, consisting of screws and spring washers which are positioned in the square drive of the static transducer. They allow you to set any type of nutrunner to rotate (air shut-off, hydropneumatic, electric nutrunners...) for a better measurement of the setting torque.



PART NUMBER	MODEL	TRANS-DUCER	THREAD	PART NUMBER	MODEL	TRANS-DUCER	THREAD	PART NUMBER	MODEL	TRANS-DUCER	THREAD
615 910 925 0	ACS3.01	ST4001	M3	615 910 928 0	ACS6.05	ST4005	M6	615 910 932 0	ACS10.10	ST4010	M10
615 910 926 0	ACS4.01	ST4001	M4	615 910 929 0	ACS6.10	ST4010	M6	615 910 933 0	ACS10.50	ST4050	M10
		ST4005		615 910 930 0	ACS8.05	ST4005	M8	615 910 934 0	ACS12.50	ST4050	M12
615 910 927 0	ACS5.01	ST4001	M5	615 910 931 0	ACS8.10	ST4010	M8	615 910 935 0	ACS16.50	ST4050	M16

CABLES FOR CONNECTING MEASURING UNITS AND TRANSDUCERS

PART NUMBER	MODEL	FUNCTION	LENGTH m	CONNECTOR TYPE	CABLE TYPE	MEASURING UNIT END	TRANSDUCER END
615 917 251 0	CPNS	Torque	2	6 pt contact pin / 6 pt contact socket	Straight	Torque	Torque
615 917 252 0	CLPNS	Torque	5	6 pt contact pin / 6 pt contact socket	Straight	Torque	Torque
615 917 253 0	CSPS	Torque	0.5 - 2	6 pt contact pin / 6 pt contact socket	Spiral wound	Torque	Torque
615 917 254 0	CCAC	Torque	2	6 pt contact pin / 6 pt contact socket	Straight	Torque & Angle	Torque
615 917 255 0	CLCAC	Torque	5	12 pt contact pin / 12 pt contact socket	Straight	Torque & Angle	Torque
615 917 250 0	CNA	Torque & Angle	3	12 pt contact pin / 12 pt contact socket	Straight	Torque & Angle	Torque & Angle

TUNING AND CHECKING UNIT TO TEST MEASURING EQUIPMENT

The tuning and checking unit can substitute a torque transducer and simulate several sensitivity values to check the correct tuning of torque measuring equipment. This check can be carried out only on the "torque transducer" analog input of the units.

PART NUMBER	MODEL	DIMENSIONS mm	SENSITIVITY mV/V	UNCERTAINTY % value
615 936 007 0	BCE4005	122 x 78 x 56	0.5 - 0.7 - 1.475 - 1.75 - 2	± 0.07

