GEORGES RENAULT

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CVIC tightening controller

CVIC: Mastering assembly

GEORGES RENAULT: Excellence in assembly

OBJECTIVES

MEETING YOUR ACTUAL NEED

Wish to secure all the critical and difficult-to-perform tightenings, offering improved control, joint integrity and even more advantages over pneumatic tools normally used?

The new **CVIC** electric tightening system is controlled by measuring the power consumption of the tool and monitoring the angle rotation. This technology provides a complement to the range of systems equipped with a torque transducer (CVI range). The **CVIC** system retains all the facilities and user-friendliness which make the reputation of the **GEORGES RENAULT** tightening systems: easy to use and quickly installed.

The **CVIC** is therefore the natural solution for any critical assembly task.

RELIABILITY AND QUALITY OF TIGHTENING

The quality of each tightening is assessed in an "ACCEPT/REJECT" report shown by LEDs on the tool, on the CVIC display and via "relay" contacts. The control of the assembly station by the CVIC eliminates the risk of delivering non conforming parts, (tightening forgotten, pitch thread difference, lack of washer or wrong washer, re-tightening of a screw... seizing, crossthread nut). Besides, the problems of reliability of the tightening posed by the use of pneumatic power tools are solved with the use of electric motors: no variation in connection with the air supply, the shut-off system, the mains voltage, the fluctuations in the torque rate or the operator's influence.

The traceability of the tightening is ensured by the editing of results after each tightening operation (label) or by checking the last 100 tightening results on the screen (version M-H).

The value displayed is the result of the following readings: current measured at each phase of the servomotor, motor speed, motor temperature.

Quality tightening is provided by measuring angle rotation, while angle tolerances allow you to detect any abnormality which may occur during a tightening operation and to monitor the variations of the product.

GEORGES RENAULT
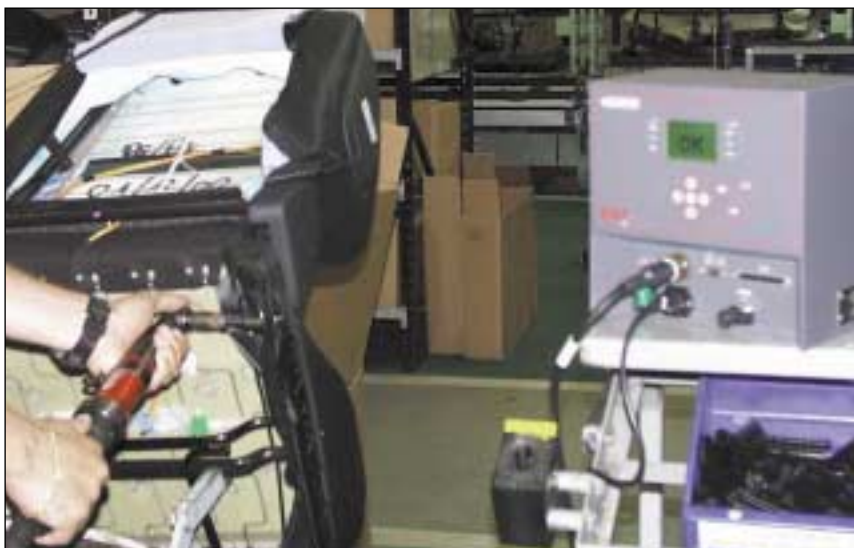
REDUCED COSTS AND MAINTENANCE

The necessary investment for a **CVIC** tool is low, due to the use of a technology without torque transducer. The brushless type motor does not require any maintenance.

The energy consumption (less than 100 watt/hour) is significantly lower than the consumption required for driving a pneumatic tool.
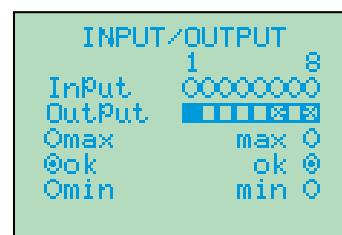
Each **CVIC** controller is fitted with an automatic failure detection programme, which allows targeted and therefore low cost maintenance. This generation of tools has passed durability tests including up to 1 500 000 cycles according to the models.
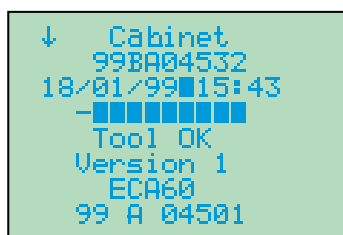
Reading of the tool features.
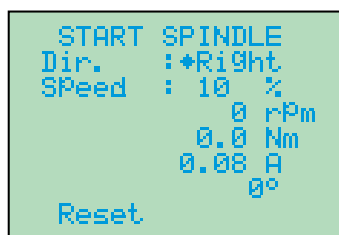
Tool rotation test

Reading of input/output

OPERATOR COMFORT

The tools of the **CVIC** range are among the lightest and the most silent of the market <70 dB(A). With their ergonomics, they suit all working conditions thanks to a multi-position angle head on ECA models and an ergonomic grip designed with ergonomics experts.

The progressive start of **CVIC** tools, smooth tightening, as well as the damped reaction torque at the end of the cycle provide maximum comfort for the operator.

HIGH PRODUCTIVITY

The ultra-quick motor braking allows for high working speeds and contributes to reducing cycle time. The perfect control of servo-motors makes it possible to sometimes increase speed by 50 % as compared with pneumatic screwdrivers.

The reliability of the assemblies with a **CVIC** eliminates the need for check and repair operations as well as discards.

CVIC: Technological expertise

OPTION: CONNECTION

CVIS/CVICPC 2000 SOFTWARE
You do not need to be a computer specialist to use this software, very easy to install and with intuitive ergonomics. It allows you to program your tightening cycles in advance, to download them to the controller, or to save them.
Besides, the tightening results can be stored in a data base to be used for software-integrated statistical analyses.
You will find 3 programming modes: quick programming, self-learning and personalised programming.

CVIPC NETWORK 2000 SOFTWARE
To take up the challenges of productivity, **GEORGES RENAULT** has developed a unique **CVIPC NETWORK 2000** software, shared by the entire **CVI** range. With this option, it is possible to connect several units. Designed to control up to 32 tools simultaneously, this software offers quick and user-friendly programming. With its increased memory, it allows you to ensure the traceability of the results, the collection of the "OK"or "NOK" results with the date and time of the recording and to sort out and process your assembly tasks.
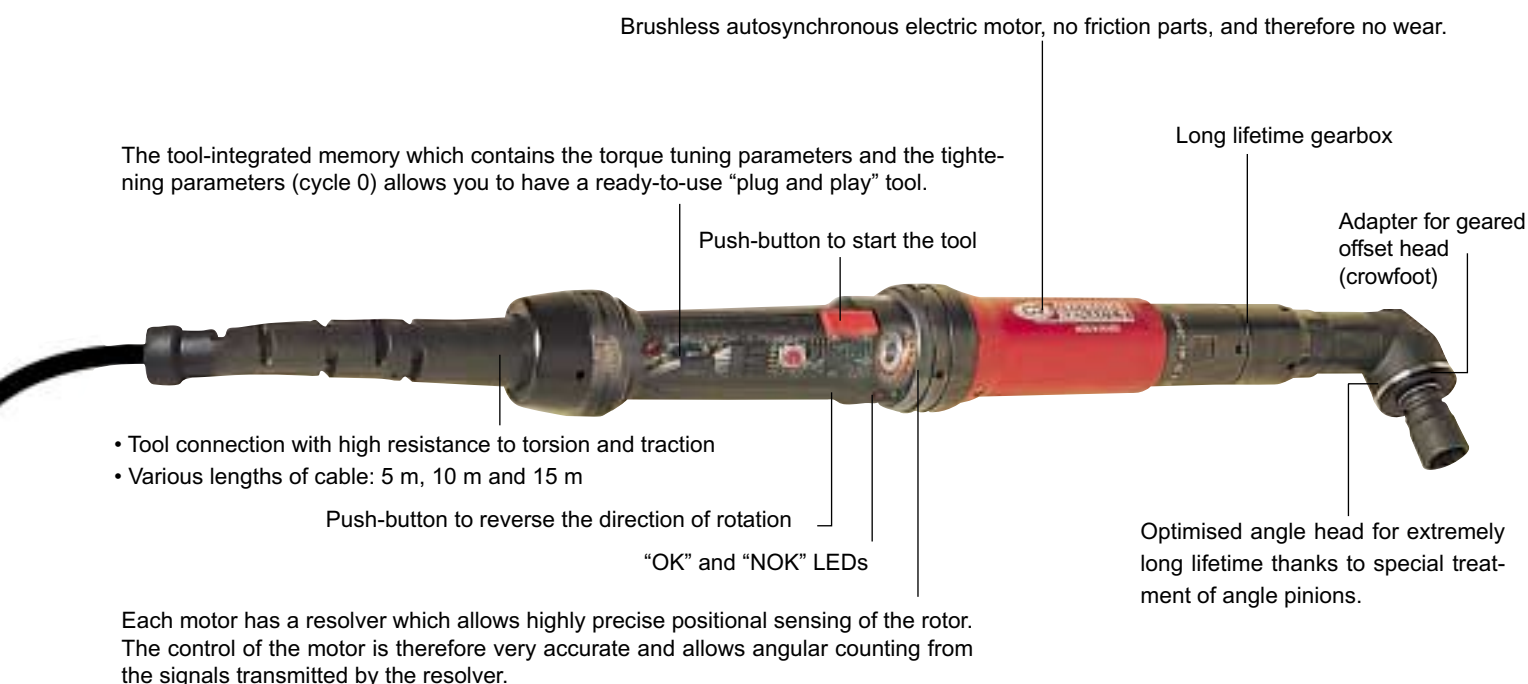
PC
• Networking
• Programming

PRINTER
• All types of serial printers, including label printers

GEORGES RENAULT

Brushless autosynchronous electric motor, no friction parts, and therefore no wear.

Long lifetime gearbox

The tool-integrated memory which contains the torque tuning parameters and the tightening parameters (cycle 0) allows you to have a ready-to-use "plug and play" tool.

Adapter for geared offset head (crowfoot)

Push-button to start the tool

• Tool connection with high resistance to torsion and traction
• Various lengths of cable: 5 m, 10 m and 15 m

Push-button to reverse the direction of rotation

"OK" and "NOK" LEDs

Optimised angle head for extremely long lifetime thanks to special treatment of angle pinions.

Each motor has a resolver which allows highly precise positional sensing of the rotor. The control of the motor is therefore very accurate and allows angular counting from the signals transmitted by the resolver.

OF PERIPHERALS

SOCKET TRAY

The socket tray allows you to automatically select a tightening cycle on picking the appropriate socket. By lighting up, the corresponding LED shows that the cycle number has been taken into account. Each tray includes 4 sockets. Two trays can be serially connected to form a unit of up to 8 sockets.

BAR CODE READER
• It selects a tightening cycle.
• The bar code read is memorised with the results.

CVIC Mastering assembly

GEORGES RENAULT: Excellence in assembly

EASY TO USE

Connect the tool to the controller via the cable, then connect the controller to a standard wall outlet (110-230V 50-60 Hz), enter your tightening data according to the desired programming and perform your first assembly.

The **CVIC** range is quickly installed because all the set parameters are auto-programmed as soon as the controller is switched on (identification of the type of tool and its specific features, approach speeds, final working speeds, tolerances, etc.)

IN QUICK PROGRAMMING MODE
Enter the torque value and maximum angle and the controller will determine the parameters to tighten most joints at a given torque value with angle monitoring.

IN SELF-LEARNING MODE
Enter the torque, perform a few tightenings, and the self-learning system will automatically calculate the torque rate of your joint, optimising the tightening parameters and determining the correct and incorrect acceptance thresholds.

IN PERSONALISED PROGRAMMING MODE
You can program all the tightening data that you want.

SUITED TO EACH AND EVERY APPLICATION

A tightening cycle is often simple to run. It consists of a quick approach phase at low power and then a final phase at low speed which allows a better control of the torque transmitted to the joint. Each tightening cycle may be divided into elementary phases providing accuracy of the torque and optimisation of cycle times:
Example of typical cycle:
• Search sequence
• Screw approach at fast speed
• Final speed phase at slow speed with torque and angle monitoring
In the case of particularly critical joints, the **CVIC** offers a high degree of versatility to solve problems through its programmable parameters of speed and acceleration in all tightening phases.

3 software versions are available in the **CVIC** range:
Version L: allows you to tighten (right-hand, left-hand) at a given torque after self-learning of the joint and allows you to detect incorrect tightenings.

Version M: performs all the functions of version **L** and at the same time provides access to 7 tightening cycles with different torques and in 4 phases available: Search sequence - runDown speed - Final speed phase and Corrective action in case of defect, together with the storing of the last 100 results.
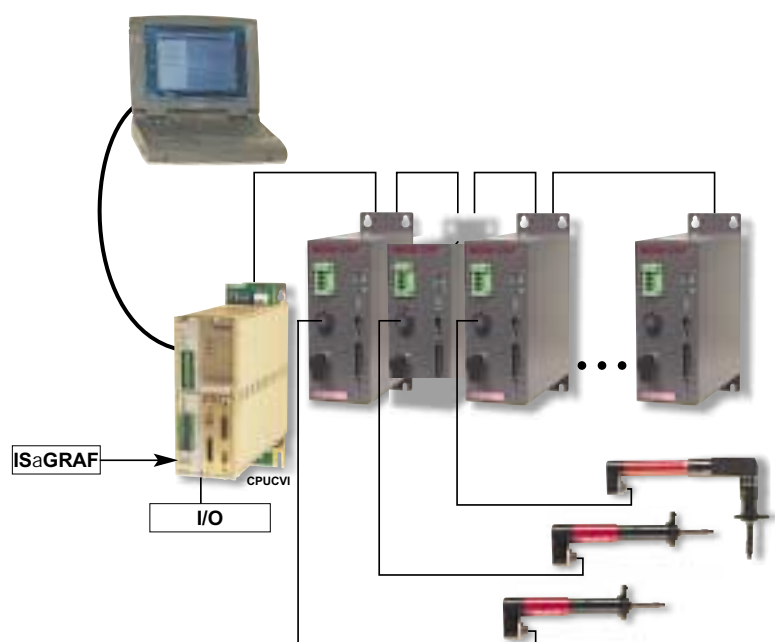
Version H: performs all the functions of version **M** and at the same time provides access to sophisticated tightening strategies: 15 phases available, the control of the friction torque during a predetermined number of rotations and the tightening or untightening at a determined angle value.

GEORGES RENAULT

MULTICVIC - Flexible multi-spindle system

Control system 1 to 32 channels

Hardware upon request manufactured by our special machinery department.
PLEASE ASK OUR DEPARTMENT.

ISaGRAF

CPUCVI

I/O

• The **MODCVIC is the rack version of the CVIC**. It has no screen or keyboard. It is programmed by the **CVIS/CVICPC 2000** software.

2 software versions L and H are available, with all the functions of the CVIC controller. The Rack version "H" can be connected through a PC network to make programming easier.

• The **MULTICVIC** consists of several MODCVIC-H modules adapted to the number of tools connected and a CPUCVI module as an interface between the PLC and the modules. It is used to fully control the tightening sequence, centralise the control functions and the results while monitoring the MODCVIC.

It is capable of controlling "**body and chassis assembly line**" type machines while centralising the control functions and the results. In case of NOK results, it allows cycle restart.

• The flexibility of the **MULTICVIC** can be even more increased by controlling the available 26 input and 32 output connections of the CPUCVI module through an ISaGRAF process control application integrated in this module.

PACKCVIC - Multi-station system

Control system 1 to 6 channels

6 channel controller

MODCVIC

Power supply 400 Volts

Input/Output to PLC (optional)
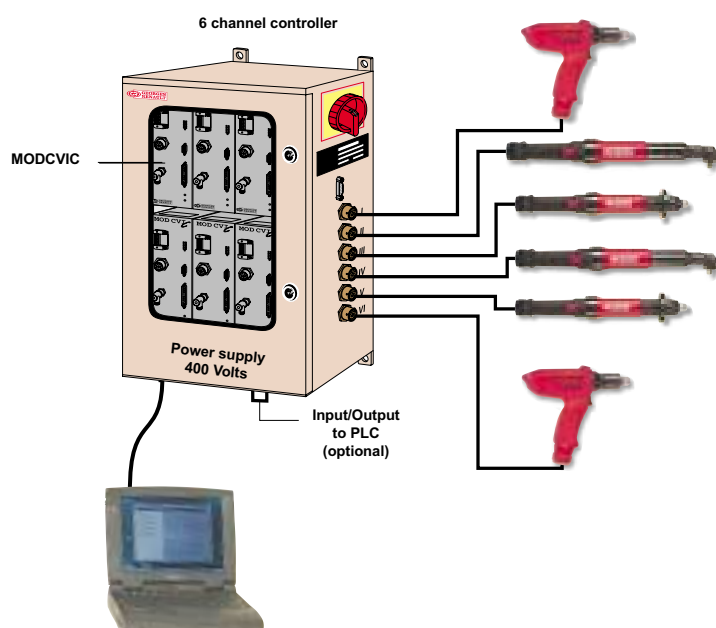
• The **PACKCVIC** performs the same functions as the CVIC version L or H and allows you to connect up to 6 different tools. The controller is automatically programmed with the data contained in the tool memory, which allows you to connect the tools to any channel and to start tightening.

The tools can be programmed directly on the **PACKCVIC** using a PC or on a separate CVIC controller.

The **PACKCVIC** is clean and silent, can use the standard software products, is easy to connect to a PLC to open the system to the outside and complies with the current **EMC** and low voltage standards.

Dimensions: Width 818 mm - Height 1028 mm - Depth 400 mm
Power supply: three-phase 400 volts (others upon request)

GEORGES RENAULT

Portable Electric Nutrunners
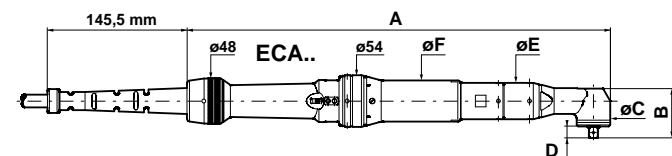
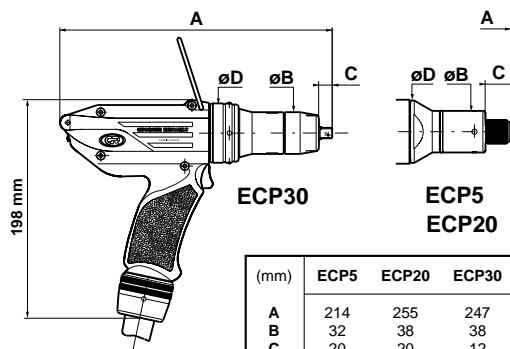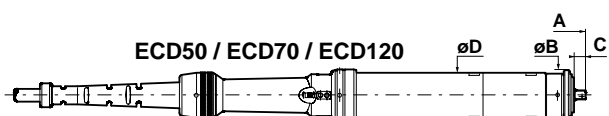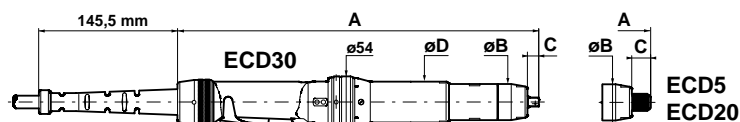| (mm)	ECA20	ECA30	ECA40	ECA60	ECA70	ECA90	ECA115	ECA125	ECA150	ECA200
A	431	431	441	453	538	538	538	541	541	591
B	45,5	45,5	51,5	57,5	66	66	66	69	69	86
C	28	28	35	40	45	45	45	50	50	60
D	12	12	12	12	16,5	16,5	16,5	16,5	16,5	25
E	38	38	38	38	51	51	51	51	51	51
F	43	43	43	43	51	51	51	51	51	51

(mm)	ECP5	ECP20	ECP30
A	214	255	247
B	32	38	38
C	20	20	12
D	48	54	54

(mm)	ECD5	ECD20	ECD30	ECD50	ECD70	ECD120
A	346	388	380	456	461	488
B	32	38	38	54	54	54
C	20	20	12	12	16,5	16,5
D	43	43	43	51	51	51

OPTIONAL ACCESSORIES

		PART NO.			PART NO.
Cable	length 5 m	**615 917 212 0**	Extension cable	length 5 m	**615 917 222 0**
Cable	length 10 m	**615 917 214 0**	Extension cable	length 10 m	**615 917 224 0**
Cable	length 15 m	**615 917 215 0**	Extension cable	length 15 m	**615 917 225 0**
			Extension cable	length 20 m	**615 917 226 0**
			Extension cable	length 25 m	**615 917 227 0**
			Extension cable	length 30 m	**615 917 228 0**

SUSPENSION BAIL

	FIXED	LING SWIVEL
For ECD5/20/30 - ECA20/30/40/60	**615 571 056 0**	**615 396 228 0**
For ECD50/70/120 - ECA70/90/115/125/150/200	**615 571 050 0**	**615 396 229 0**

REACTION BAR RING

	ECA60	ECA70/90/115/125/150	ECA200
	615 396 226 0	**615 396 227 0**	**615 396 230 0**

HANDLE LEVER

	PART NO.
Included in standard features on ECD5	**615 321 189 0**

BALANCERS

CAPACITY Min Max	CABLE LENGTH m	WEIGHT kg	PART NO.
1.4 - 2.4 kg	1.5	0.6	**50542**
2.0 - 5.0 kg	2.4	2.7	**50052**
5.0 - 7.0 kg	2.4	3.2	**50062**

INDICATOR BOX

	PART NO.
LED-type indicator box to display the reports	**615 936 001 0**

SOCKET TRAY

		PART NO.
Socket tray (sockets are not supplied)		**615 936 005 0**
Cable for SOCKET TRAY :	Length 1 m	**615 917 241 0**
	Length 5 m	**615 917 242 0**
	Length 10 m	**615 917 244 0**
	Length 15 m	**615 917 245 0**

GEARED OFFSET HEADS (Crowfoot)
(Please ask our department)

GEORGES RENAULT

Portable Electric Nutrunners
EC range
2 to 200 Nm (1.5 to 147 ft.lb) - 170 to 1590 rpm

Sound level lower than 70 dBA as per EN 50144-1
Vibration level lower than 2.5 m/s^2 as per EN 50144-2-2

TOOLS TO BE USED WITH ARTICULATED ARMS: From 20 Nm upwards, the portable electric power tools of the ECD range are supplied with a reaction bar ring.

PICTURE REF	MODEL	PART NUMBER	TORQUE RANGE		ROTATION SPEED	SQUARE DRIVE	LENGTH	WEIGHT		MIN.CENTRE / EDGE DIST
			Nm	ft.lb	rpm	inch	mm	kg	lb.	mm
ANGLE HEAD										
A	ECA20	615 165 100 0	7 - 20	5.2 - 15	1140	3/8	431	1.7	3.7	14.0
A	ECA30	615 165 101 0	10 - 30	7.4 - 22	880	3/8	431	1.7	3.7	14.0
A	ECA40	615 165 102 0	13 - 40	9.6 - 29	690	3/8	441	1.8	4.0	17.5
A	ECA60	615 165 103 0	20 - 60	15.0 - 44	440	3/8	453	1.9	4.2	20.0
A	ECA70	615 165 104 0	23 - 70	17.0 - 52	530	1/2	538	3.3	7.3	22.5
A	ECA90	615 165 105 0	30 - 90	22.0 - 66	420	1/2	538	3.3	7.3	22.5
A	ECA115	615 165 106 0	39 - 115	29.0 - 85	290	1/2	538	3.3	7.3	22.5
A	ECA125	615 165 188 0	40 - 125	29.5 - 92	280	1/2	541	3.6	7.9	22.5
A	ECA150	615 165 189 0	50 - 150	37.0 - 11	230	1/2	541	3.6	7.9	22.5
A	ECA200*	615 165 190 0	70 - 200	51.6 - 147	170	3/4	591	3.8	8.4	30.0
IN-LINE										
B	ECD5	615 165 068 0	2 - 6	1.5 - 4.4	1590	HEX 1/4	346	1.1	2.4	16.0
B	ECD20	615 165 093 0	7 - 20	5.2 - 15.0	1200	HEX 1/4	388	1.5	3.3	19.0
B	ECD30	615 165 094 0	10 - 30	7.4 - 22.0	850	3/8	380	1.5	3.3	19.0
B	ECD50	615 165 095 0	16 - 50	12.0 - 37.0	790	3/8	456	2.6	5.7	27.0
B	ECD70	615 165 096 0	23 - 70	17.0 - 52.0	500	1/2	461	2.6	5.7	27.0
B	ECD120	615 165 097 0	40 - 120	29.4 - 88.0	310	1/2	488	3.1	6.8	27.0
PISTOL GRIP										
C	ECP5	615 165 069 0	2 - 8	1.5 - 5.9	1590	HEX 1/4	214	1.1	2.4	16.0
C	ECP20	615 165 098 0	7 - 20	5.2 - 15.0	1200	HEX 1/4	255	1.5	3.3	19.0
C	ECP30	615 165 099 0	10 - 30	7.4 - 22.0	850	3/8	247	1.5	3.3	19.0

* Available at end of 2000

GEORGES RENAULT

Technical features

CVIC and MODCVIC controllers

MAIN FUNCTIONS	VERSIONS		
	L	M	H
Access to tool parameters (tool memory)	✔	✔	✔
Maintenance aid	✔	✔	✔
Number of stored results	0	100	100

PERIPHERALS			
PC point-to-point connection	✔	✔	✔
PC network connection		✔	✔
Bar code reader connection to select a cycle		✔	✔

TIGHTENING CYCLES AND STRATEGIES			
Quick cycle with self-learning of the joint	✔	✔	✔
Number of cycles in the controller	0	7	7
Cycle in the tool	1	1	1
Number of phases	2	4	15
Counting of the number of cycles run "OK" (99)		✔	✔

TYPES OF PHASES IN A CYCLE			
Search Sequence		✔	✔
Run Down	✔	✔	✔
Torque controlled final speed phase	✔	✔	✔
Angle-controlled final speed phase			✔
Angle-controlled run reverse			✔
Restart cycle in case of defect		✔	✔
Prevailing torque monitoring			✔

TIGHTENING STRATEGIES			
Torque and angle monitoring	✔	✔	✔
Angle and torque monitoring			✔

MODEL PART NO.			
CONTROLLER for ECD5 / ECP5 / MC35-10	CVIC L-2	CVIC M-2	CVIC H-2
MODULE for ECD5 / ECP5 / MC 35-10	MODCVIC L-2		MODCVIC H-2
CONTROLLER for the other tools	CVIC L-4	CVIC M-4	CVIC H-4
MODULE for the other tools	MODCVIC L-4		MODCVIC H-4

Example of order for 1 complete station of portablable nutrunner

			PART NO.
Tool	1	Portable angle nutrunner ECA60	615 165 103 0
	1	Cable length 10 m	615 917 214 0
Controller	1	CVIC M-4	615 932 603 0
	1	Start-up kit (U.K)	615 928 041 0

GEORGES RENAULT

CVIC and MODCVIC
Controllers

TECHNICAL FEATURES

CVIC controller	
Mains supply	Single-phase 100 to 250 Volts 50 / 60 hertz
Consumption (current)	**CVIC-2** : 4 A (115 V) - 2 A (230 V)
	CVIC-4 : 8 A (115 V) - 4 A (230 V)
Weight	5 kg
Overall size	Width 260 mm / Height 270 mm / Depth 170 mm

MODCVIC module	
Mains supply	Single-phase or three-phase 100 to 250 Volts 50 / 60 hertz
	MODCVIC-2 : 4 A (115 V) - 2 A (230 V)
	MODCVIC-4 : 8 A (115 V) - 4 A (230 V)
Weight	4 kg
Overall size	Width 100 mm / Height 320 mm / Depth 270 mm

PART NO.

CVIC controller		PART NO.		
For ECD5 /	**CVIC L-2**	**CVIC M-2**	**CVIC H-2**	
ECP5 / MC35-10	**615 932 608 0**	**615 932 601 0**	**615 932 610 0**	
For	**CVIC L-4**	**CVIC M-4**	**CVIC H-4**	
the other tools	**615 932 609 0**	**615 932 603 0**	**615 932 611 0**	

MODCVIC module		PART NO.	
For ECD5 / ECP5 / MC35-10		**MODCVIC L-2**	**MODCVIC H-2**
		615 932 612 0	**615 932 602 0**
For the other tools		**MODCVIC L-4**	**MODCVIC H-4**
		615 932 613 0	**615 932 604 0**

| PACK controller (see detail on page 7)	PART NO.
PACKCVIC (supplied without MODCVIC)	**615 932 607 0**

START-UP KIT to be ordered with the controller
Including: **Plug + Literature + Connector**

PLUG	LITERATURE	PART NO.
A	French	**615 928 040 0**
C	English	**615 928 041 0**
A	English	**615 928 046 0**
D	English	**615 928 047 0**
B	English	**615 928 049 0**
A	German	**615 928 042 0**
A	Spanish	**615 928 043 0**
E	Italian	**615 928 044 0**
A	Dutch	**615 928 048 0**
A	Swedish	**615 928 045 0**

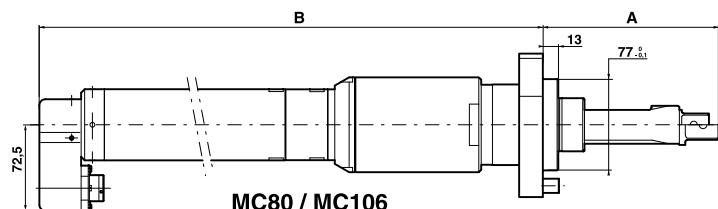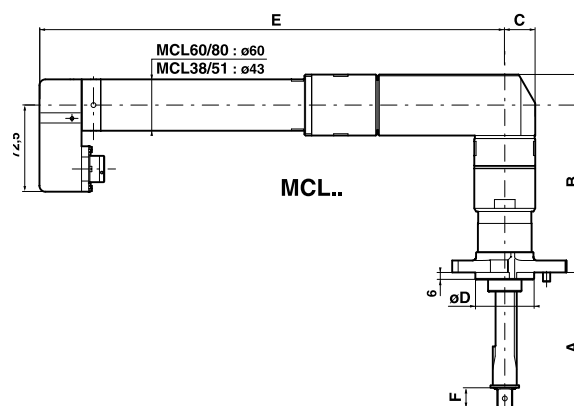| OPTIONAL ACCESSORIES		
		PART NO.
CVIS/CVICPC 2000 software		**615 927 521 0**
CVICPC NETWORK 2000 software		**615 927 523 0**
PC cable	Length 2 m	**615 917 047 0**
Printer cable	Length 2 m	**615 917 011 0**
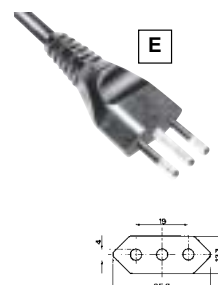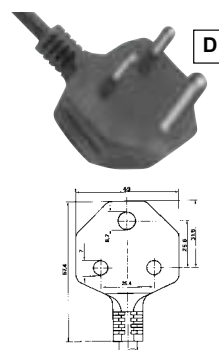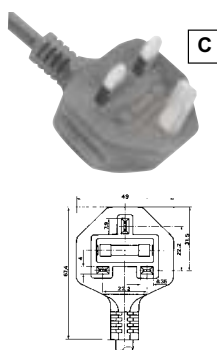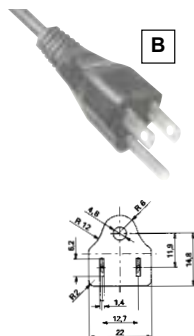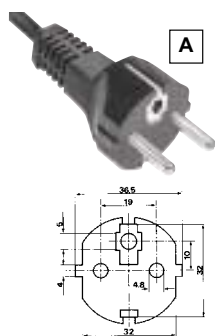
Fixed electric tools

For further information, please ask for our data sheet
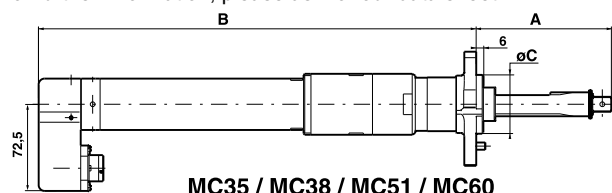
MC35 / MC38 / MC51 / MC60

MC80 / MC106

MCL..

(mm)	MC35-10	MC35-20	MC38-10	MC38-20	MC51-10	MC51-20	MC60-10	MC60-20	MC60-30
A	87	87	87	87	113	113	113	113	121,5
B	276	301	347	347	366	393	417	417	453
C	35	35	35	35	49,2	49,2	49,2	49,2	49,2

(mm)	MC80-10	MC80-20	MC80-30	MC80-40	MC106-10	MC106-20
A	140	140	148	148	148	148
B	480	480	480	480	556	556

(mm)	MCL38-20	MCL51-20	MCL60-20	MCL60-30	MCL80-40
A	87	112	121	121	148
B	140,5	166	178	178	240
C	19	25,5	25,5	25,5	25,5
D	35	49,2	49,2	49,2	77
E	351	389	423	423	423
F	11	15,5	23	23	28

OPTIONAL ACCESSORIES

		PART NO.
Cable	Length 5 m	**615 917 232 0**
Cable	Length 10 m	**615 917 234 0**
Cable	Length 15 m	**615 917 235 0**
Cable	Length 20 m	**615 917 236 0**
Cable	Length 25 m	**615 917 237 0**
Cable	Length 30 m	**615 917 238 0**
Extension cable	Length 5 m	**615 917 222 0**
Extension cable	Length 10 m	**615 917 224 0**
Extension cable	Length 15 m	**615 917 225 0**
Extension cable	Length 20 m	**615 917 226 0**
Extension cable	Length 25 m	**615 917 227 0**
Extension cable	Length 30 m	**615 917 228 0**

INDICATOR BOX

	PART NO.
LED-type indicator box to display the reports	**615 936 001 0**

GEORGES RENAULT

Fixed electric tools
MC - MCL range
2 to 1 900 Nm (1.5 to 1400 ft.lb) - 30 to 1590 rpm

* Tool rotation speeds are provided for a supply voltage of 230 Volts to the CVIC. For 115 Volts, these speeds are reduced by 15%.

PICTURE REF	MODEL	PART NUMBER	TORQUE RANGE		ROTATION SPEED*	SQUARE DRIVE	MIN DISTANCE BET. CENTRES	STROKE	WEIGHT	
			Nm	ft.lb	rpm	inch	mm	mm	kg	lb.
A	MC35-10	615 165 107 0	2 - 8	1.5 - 5.9	1 590	3/8"	43.2	50	1.5	3.3
A	MC35-20	615 165 108 0	5 - 15	3.7 - 11.0	1 590	3/8"	43.2	50	1.5	3.3
A	MC38-10	615 165 109 0	10 - 30	7.4 - 22.0	990	3/8"	43.2	50	2.0	4.4
A	MC38-20	615 165 110 0	15 - 45	11.0 - 33.0	840	3/8"	43.2	50	2.0	4.4
A	MC51-10	615 165 111 0	25 - 70	18.0 - 52.0	500	1/2"	51.2	50	2.9	6.4
A	MC51-20	615 165 112 0	45 - 135	33.0 - 99.0	310	1/2"	51.2	50	3.2	7.0
A	MC60-10	615 165 113 0	30 - 95	22.0 - 70.0	710	1/2"	60.2	50	4.8	10.6
A	MC60-20	615 165 114 0	60 - 175	44.0 - 129.0	390	3/4"	60.2	50	4.8	10.6
A	MC60-30	615 165 115 0	80 - 250	59.0 - 184.0	230	3/4"	60.2	50	5.2	11.5
A	MC80-10	615 165 116 0	100 - 300	74.0 - 221.0	220	3/4"	80.2	60	9.8	21.6
A	MC80-20	615 165 117 0	150 - 450	110.0 - 332.0	150	3/4"	80.2	60	9.8	21.6
A	MC80-30	615 165 118 0	220 - 650	162.0 - 479.0	100	1"	80.2	60	9.8	21.6
A	MC80-40	615 165 119 0	270 - 800	199.0 - 589.0	70	1"	80.2	60	9.8	21.6
A	MC106-10	615 165 120 0	500 - 1500	368.0 - 1105.0	40	1"	106.2	60	15.0	33.0
A	MC106-20	615 165 121 0	600 - 1900	442.0 - 1400.0	30	1"	106.2	60	15.0	33.0
B	MCL38-20	615 165 124 0	15 - 45	11.0 - 33.0	840	3/8"	43.2	50	3.0	6.6
B	MCL51-20	615 165 125 0	45 - 135	33.0 - 99.0	310	1/2"	51.2	50	4.0	8.8
B	MCL60-20	615 165 126 0	60 - 175	44.0 - 130.0	370	3/4"	60.2	50	6.0	13.2
B	MCL60-30	615 165 127 0	80 - 250	59.0 - 184.0	240	3/4"	60.2	50	6.0	13.2
B	MCL80-40	615 165 128 0	270 - 800	199.0 - 590.0	70	1"	80.2	60	11.0	24.2

GEORGES RENAULT

Automatic or Manual Torque Tuning

The tools supplied have been tuned and can perform thousands of tightening operations without re-tuning, but to comply with ISO9000, you will have to re-tune your tools at regular intervals. This task can be performed by you or our aftersales department. You can choose between two processes:

1. Your tool is used on a station for tightening at a given torque, then you can use the manual tuning process with all the **GEORGES RENAULT** torque and torque + angle measuring units

2. Your tool is used for several torque values. We recommend that you use the automatic tuning process in order to optimise the time and accuracy of the tool over its entire operating range.

AUTOMATIC TORQUE TUNING PRINCIPLE

The standard measuring line consists of a torque transducer connected to the tool and a measuring unit of the new **DELTA4000** generation to control the tool associated to the **CVIC**.

The results of the standard measuring line are automatically compared with the results of the tool over the entire torque range to set up a conversion table between the actual torque and the electric power consumption.

This linearisation table is memorised in the tool. It allows you to use the tool over its entire torque range with no need to readjust the torque tuning coefficient.

BEFORE TORQUE TUNING

Torque

Actual torque

Current read
=
Torque displayed

Time

AFTER TORQUE TUNING

Torque

Actual torque

Torque displayed

Time

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