



## CVI Assembly Systems

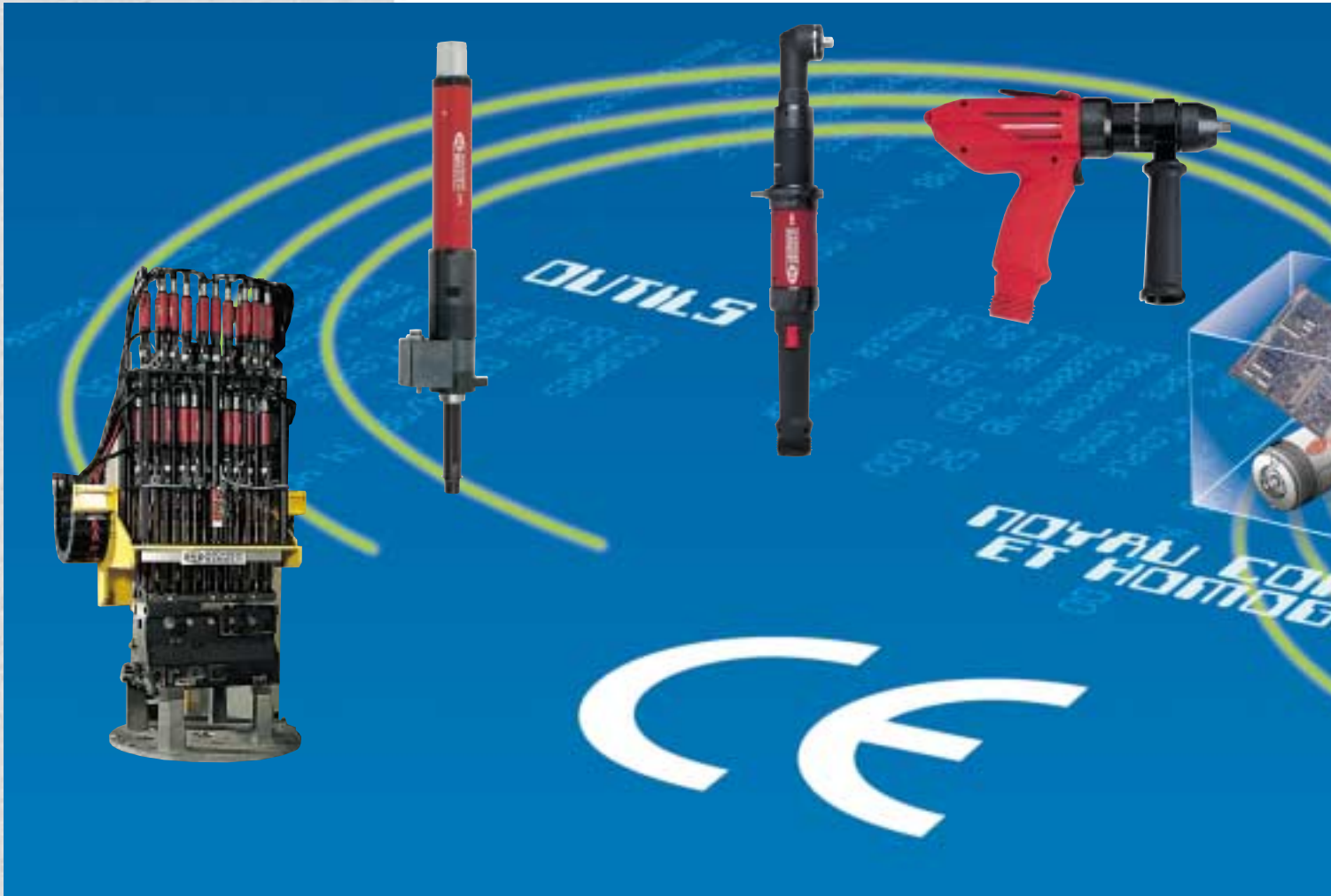


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# Generation: excellence in

*FROM THE SIMPLEST TO THE MOST DEMANDI*



## A STATE-OF-THE-ART COMPLETE AND HOMOGENEOUS RANGE:

From the single-channel "CVIS" to the "MULTICVI" 32-channel system applications, GEORGES RENAULT offers a range evolution based on a common core, the main elements of which are the following:

### Fixed and Portable Tools

The portable electric tightening tools of the "ER" range or fixed type of the "EM" range can be connected with all types of controllers or racks. Thanks to their integrated memory board, they are automatically recognised by the system to which they are connected.

### Motor Servodrive

Common to the whole range and based on a 100% GEORGES RENAULT concept, the servodrive is optimised to control the various electric motors installed on tightening tools.

### Control Board

Thanks to its real time monitor, it controls the operation of the servodrive, the tightening cycle and communication with the outside at the same time.

### "CVIPC" 2000 Software

The single CVIPC software combines the PC user-friendliness and memory size with the functionalities of control systems. It can be used with all systems and allows the user to program from the simplest to the most sophisticated cycle. Besides, it can centralise the results of networked controllers and allows the user to test the good working order of tools and controllers at any time.

# assembly

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## ING APPLICATIONS



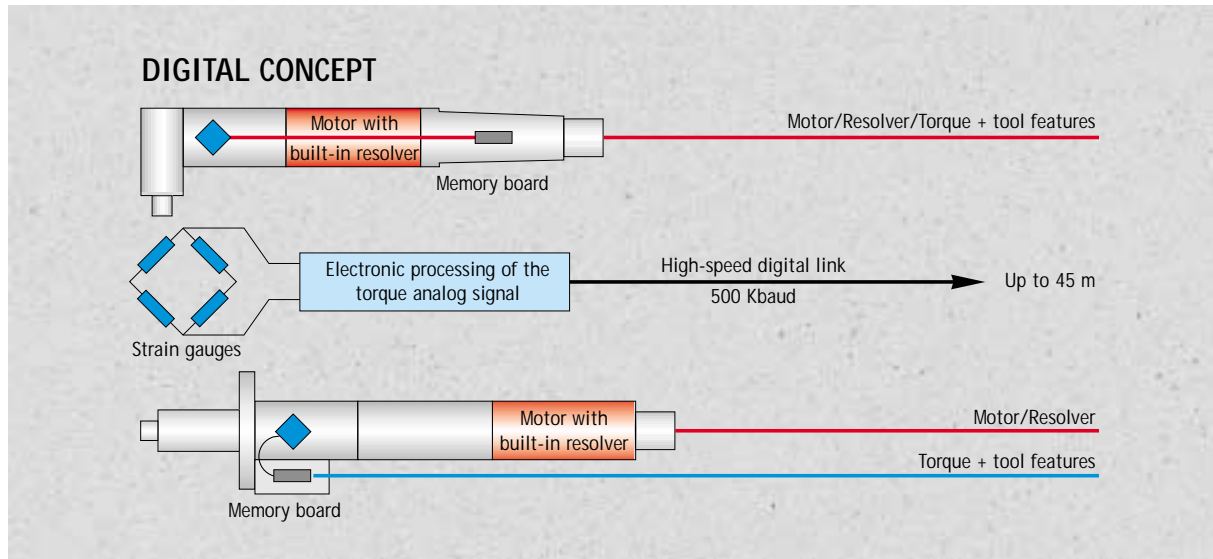
**The ISaGRAF Workbench** adds to the control systems the functionalities of a "mini-PLC" capable of controlling simple applications.

### Industrial Networks:

MODBUS, UniTelway, FIP, PROFIBUS, DEVICENET, INTERBUS S  
(Please consult us for further information)



# The "all-integrated, all-digi



## MEMORY

The controller automatically recognizes the tool features by reading the tool built-in memory board. The sensitivity value, the number of cycles run by the tool, the year of manufacturing, the date of the last maintenance operation are constantly available to maintenance technicians. Linearity and calibration accuracy of the transducer are permanently controlled.

## TORQUE TRANSDUCER

Analog signal of the torque transducer is processed and digitised as close as possible to the strain gauge. Torque values are then transferred to the controller via a high-speed digital link. Sensitivity and nominal load of the transducer are optimised to the nominal torque of the tool.



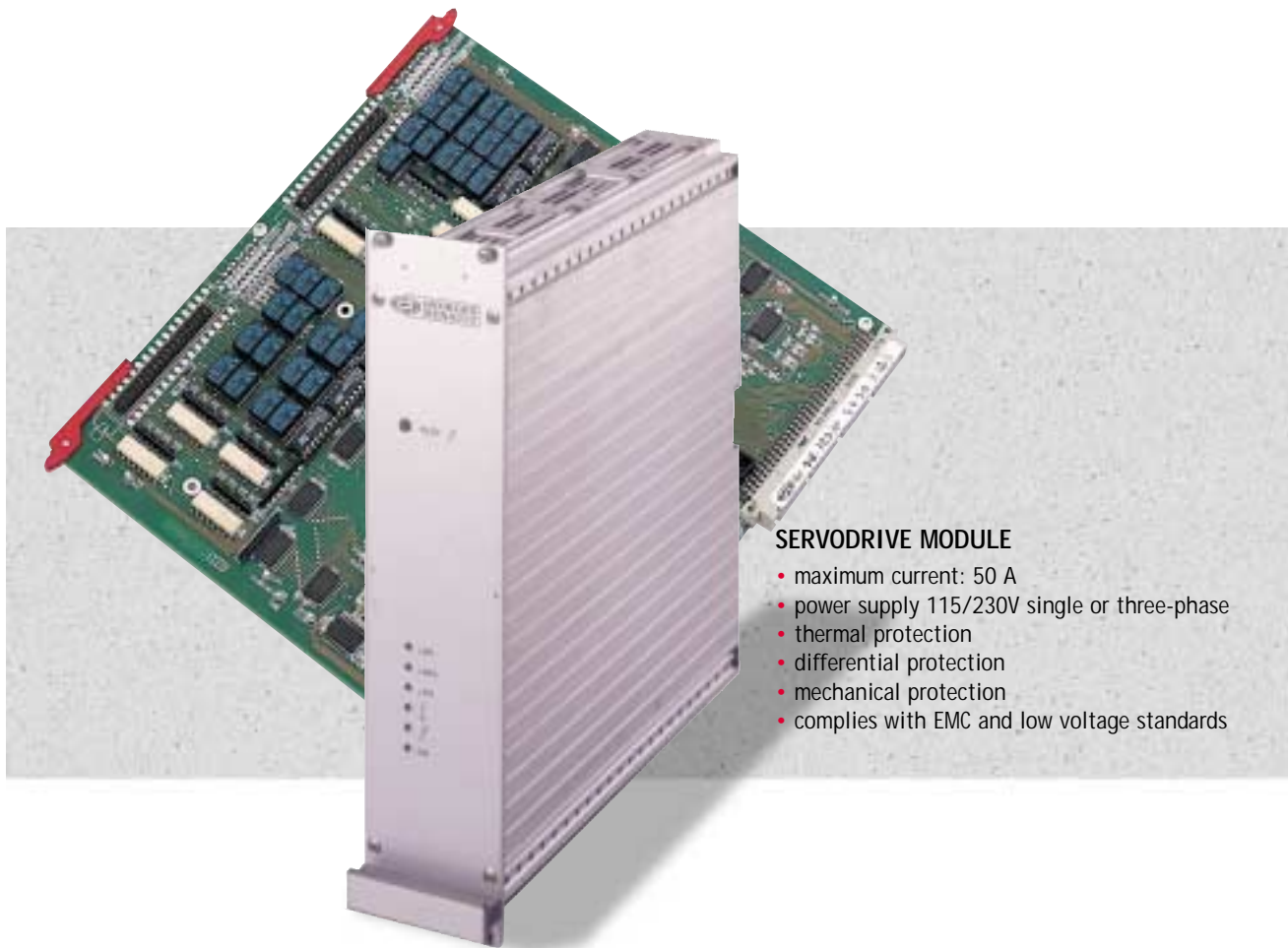
## RESOLVER

The resolver technology allows precise positional sensing of the motor (4095 points per rotation). The control of the motor phases is therefore more accurate. The angular counting is processed from the resolver signals. The resolution of the rotational angle is  $0.10^\circ$ .

## ELECTRIC MOTOR

Tools are equipped with a three-phase A.C. servo motor. Current sine control ensures perfect control of the speed and motor stop thus providing the operator a smooth torque reaction.

# al" technology

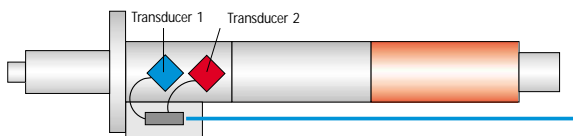


## SERVODRIVE MODULE

- maximum current: 50 A
- power supply 115/230V single or three-phase
- thermal protection
- differential protection
- mechanical protection
- complies with EMC and low voltage standards

The new GEORGES RENAULT electric tools can be equipped with a second torque transducer used as a stand-by unit. This second transducer allows the user to check the main transducer used in the control system for a possible drift.

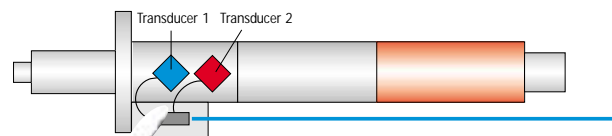
### 1ST APPLICATION:



The signals of both transducers are multiplexed on the same torque cable. As soon as the drift between the two transducers exceeds a programmed value, the control system generates an alarm which can be interpreted by the user.

A second angle encoder can be added to the torque unit. This angle encoder is used as a stand-by unit.

### 2ND APPLICATION:



The second transducer can be connected to a torque meter used to check that the torque value applied is correct.





## CONTROLLER

### SINGLE-CHANNEL CONTROLLER FOR ELECTRIC PORTABLE OR FIXED TOOLS.

The CVIS control system can control a portable "ER" type or fixed "EM" type electric tool.

The CVIS+TOOL+CABLE assembly is ready to start producing immediately, requiring the input of torque and angle parameters only.

The **all-digital concept** of the controller + tool assembly provides more safety for the operator and offers higher tightening performance. Signals from torque transducer are processed and digitised as close as possible to the strain gauge and sent to the controller via a fast digital link.

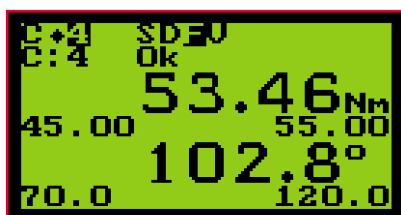
15 tightening cycles can be divided into a maximum of 20 elementary phases. The logical and structured programming allows a fine-tuning of critical joints via direct friendly displays.

With the FlashEeprom memory, the software can be upgraded without changing components.

### TIGHTENING OR LOOSENING STRATEGIES:

- Torque and angle
- Angle and torque

During each cycle phase, the motor power is fully monitored.



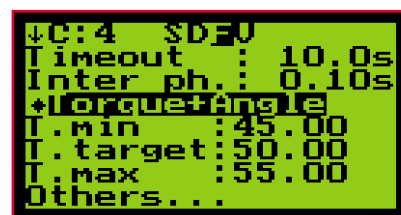
#### CONTROL SCREENS:

- Display of torque and angle values, mean and range of the last 5 results and tolerances.
- A comment is added for each cycle number.



#### MAINTENANCE SCREEN:

- Autotest of the complete system.
- Spindle rotation test.
- Input/Output selection.
- Date of the last maintenance operation.
- Total cycle counter.
- Daily counter.



#### CHANGING CYCLE PROGRAMMING:

- The operator can change the tightening strategy and the torque and angle values (minimum, target, maximum) at any time.
- Additional cycles can be created using the "CVISPC" software delivered with the controller.

#### PERIPHERALS

NUMBER OF INPUT	8
NUMBER OF OUTPUT	6
EMERGENCY STOP	1
SERIAL PORT	1 (RS 232 / 485)
PRINTER	1 (PARALLEL CENTRONIX)

#### TECHNICAL FEATURES

NUMBER OF CYCLES	15
NUMBER OF PHASES	8 per cycle
MEMORY SIZE	From 1,000 to 3,000 tightening results according to the programmed number of cycles
MAINS SUPPLY	Single-phase 115-230 Volts with automatic switching
AMPERAGE	16 A (115 V) - 8 A (230 V)
WEIGHT	15 kg
DIMENSIONS	Width 280 mm – Height 365 mm – Depth. 440 mm The controller complies with the current EC standards. Optional wall hanging system



# TWIN

## CVI

## Single or two-spindle control

### TWINCVI CONTROL SYSTEM:

#### SINGLE OR TWO-SPINDLE

The TWINCVI controller allows the user to control 1 or 2 portable "ER" type and/or fixed "EM" type electric tools.

#### SYNCHRONOUS OR ASYNCHRONOUS

In asynchronous mode, the tools are completely independent of one another. One input/output connector (cycle start, cycle n°, ...) per spindle.

In synchronous mode, the tools are controlled in a same cycle but they may be programmed in a different way. A single input/output connector (cycle start, cycle n°, ...) for both tools. Besides, an external control allows the user to synchronise the operation of the tools of several controllers.

#### STRUCTURED LOGICAL PROGRAMMING

Cycles can be programmed either from the keypad/screen system or from the CVIPC software.

The PC software is offered in 2 versions:

- "CVIPC" for programming and storing the real-time tightening results of a single controller in "point-to-point" connection
- "CVIPC network" for programming and storing the real-time tightening results of 2 to 32 spindles.

#### VARIOUS TIGHTENING STRATEGIES:

Torque, Torque+Angle, Angle+Torque, Angle+Torque+Torque rate, Stall torque, Prevailing torque, Yield Point /Plastic Zone

#### AND LOOSENING STRATEGIES:

Torque, Torque+Angle, Angle+Torque

#### INTEGRATED STATISTICAL CALCULATION

on torque and angle results

#### ON-SCREEN HELP FOR MAINTENANCE

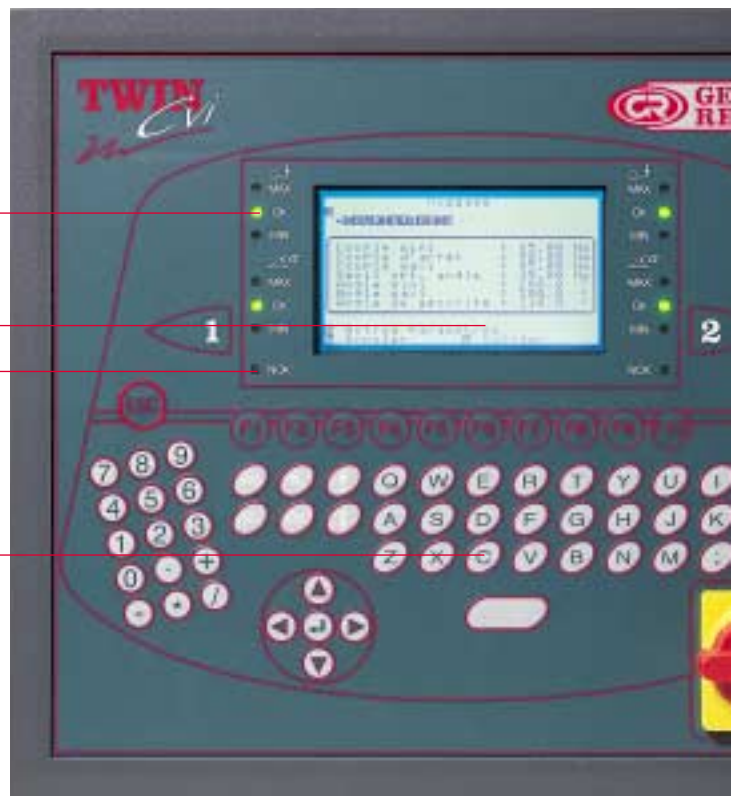
A FlashEeprom allows the user to upgrade the controller software without changing components. Various on-help screens are available to maintenance technicians at any time.

7 LEDs for the displaying of reports

Wide, graphical backlit LCD with "screen saver" mode

NOK

QWERTY keypad and function keys



- PC, PLC, REMOTE DISPLAY AND BAR CODE READER INTERFACE
- THE ISaGRAF WORKBENCH is integrated in the TWINCVI controller. It allows the user to control the input/output and peripherals according to customer's specifications.

#### TECHNICAL FEATURES:

Number of cycles	31 per channel
Number of phases	20 per cycle
Memory size	up to 16,000 tightening results according to the number of programmed cycles.
Mains supply	single-phase 115/230 V with automatic switching
Current consumption for 2 channels	16A in 115 V 8A in 230 V
DIMENSIONS	
Width	400 mm
Height	365 mm
Depth	440 mm
Weight	27 Kg
Optional wall hanging system.	

PERIPHERALS	CHANNEL 1	CHANNEL 2
NUMBER OF INPUT	13	13
NUMBER OF OUTPUT	16	16
EMERGENCY STOP	1	1
RSA LINK	9600 bauds - RS 232	
RS-B LINK	115 000 bauds - RS 232/485/20mA	
PRINTER	PARALLEL CENTRONIX	



# rol System



### TOOL FEATURES

- Reading the memory integrated in the tool: serial number, sensitivity, nominal load, date of the latest maintenance.



### CONTROL SCREENS

- Display of the torque and angle values, the mean and range of the last 5 tightening results and tolerances
- A comment is associated with the cycle n°

Serial port RS-B  
Input/Output  
Serial port RS-A  
Emergency Stop Connector



PC (serial port)  
Parallel printer  
Torque connector (EM tools)  
Motor connector (EM tools)  
Nutrunner connector (ER tools)

## How to order

	PART NUMBER
TWINCVI controller 115/230 V 1 channel	615 932 401 0
2 channels	615 932 451 0

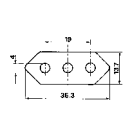
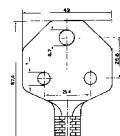
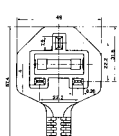
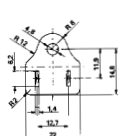
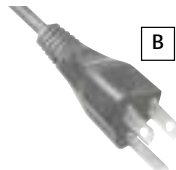
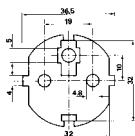
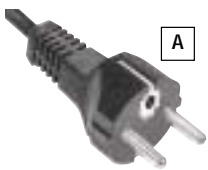
## START-UP KIT TO BE ORDERED WITH THE CONTROLLER

Including: Outlet + literature + P.C connector and software

Outlet	Literature	KIT
A	French	615 928 020 0
C	English	615 928 021 0
A	English	615 928 025 0
D	English	615 928 027 0
B	English	615 928 029 0
A	German	615 928 022 0
A	Spanish	615 928 023 0
E	Italian	615 928 024 0
A	Dutch	615 928 028 0
A	Portuguese	615 928 026 0

## OPTIONAL ACCESSORIES

	PART NUMBER
CVI.PC2000 software	615 927 512 0
CVINET.PC2000 software	615 927 513 0
PC cable 2 m	615 917 047 0
Printer cable 2 m	615 917 057 0
Wall hanging system	615 930 519 0
Power supply 400 Volts	615 932 460 0



# TWIN

*Zampini*

## SPC, Printouts and Maintenance

### INTEGRATED STATISTICAL CALCULATION

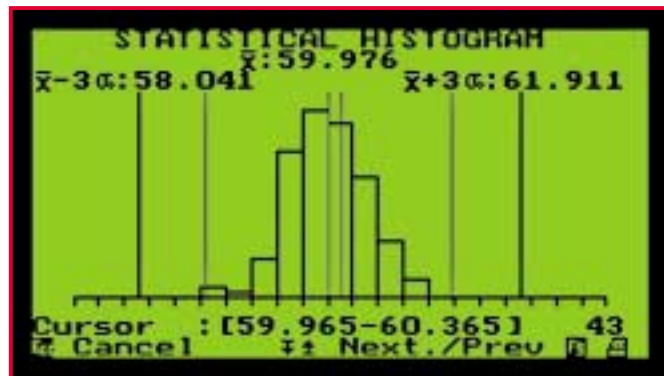
Calculation of CAM, CP, CPK, mean and range of the torque & angle results according to ISO or CNOMO standards.

#### Main features:

- filtering of data (date or value interval)
- selection of the interval of tolerances
- "distribution regular" test
- "law normal" test
- mean, standard deviation, CAM, CP, CPK
- editing of results, histogram
- editing of "control charts"



Statistical results



Histogram



"Mean, standard deviation" control chart

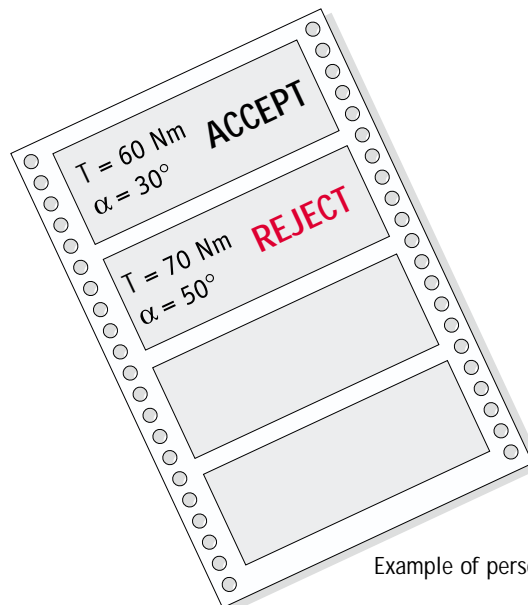
# nance

## PRINTOUT OF RESULTS

As a standard, a specific menu in the CVIPC software allows the user to create his own format of printouts. This format is particularly adapted to a label printer.

For example:

- a reject report will be printed in red
- an accept report will be printed in black
- automatic positioning on the next label



Example of personal format of printouts

EXAMPLE OF A STANDARD FORMAT:

Reading no	Sp	Cy	Ph	Date	Hour	Torque Nm	Angle dg	Torque rate Nm/dg	RE
1223	02	03	00	09/03/98	18:04:58	0030.2	0120.5	0.5680	A

## CALIBRATION AND MAINTENANCE

### MAINTENANCE HELP

at all levels: at the time of installation, during programming operations and when the controller is operating, trouble-shooting help screens are proposed to the user.

Input/output display to check the continuity of connections between the controller and the PLC.

### CALIBRATION AND MAINTENANCE

The controller and the tool are automatically calibrated by the system. A special cycle is used for the complete test of the torque and angle measuring line.

Two types of calibration are proposed:

- dynamic calibration
- static calibration

They allow the user to correct a possible drift of the torque transducer.

"Dynamic mode" calibration of the sensitivity of the torque transducer thanks to the COSMOS 5000 measuring unit.



# Integrated "ISaGRAF" Workbench

The ISaGRAF Workbench allows the user to add to the control systems of the CVI range the functionalities of a "mini-PLC" capable of controlling simple applications. An ISaGRAF standard program is integrated in each system to control the input/output and various peripherals.

The user can create or modify the existing program to adjust it to his application. The programs are developed and finalised on a PC with a multilingual WINDOWS environment.

The development of software programs with ISaGRAF includes 3 stages:

- writing the program using standardised languages (for example: SFC language)
- developing the application with the code generator and debugger
- downloading the program towards the application (the tightening controller).

#### PROGRAMMING LANGUAGES AVAILABLE:

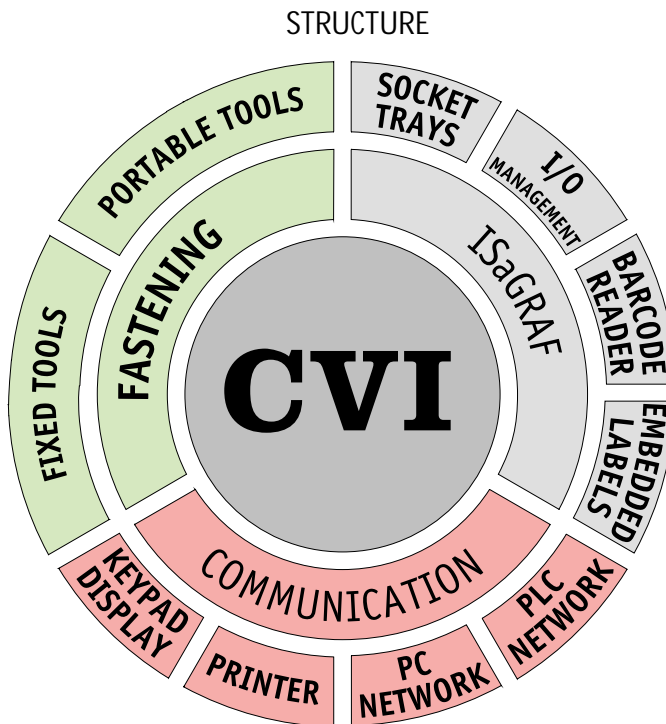
- SFC language
- LD language
- FDB function block chart
- "Pascal" type advanced language (ST)
- "Assembly" type first level language (IL)

#### TOOLS OF THE ISaGRAF SOFTWARE ENVIRONMENT:

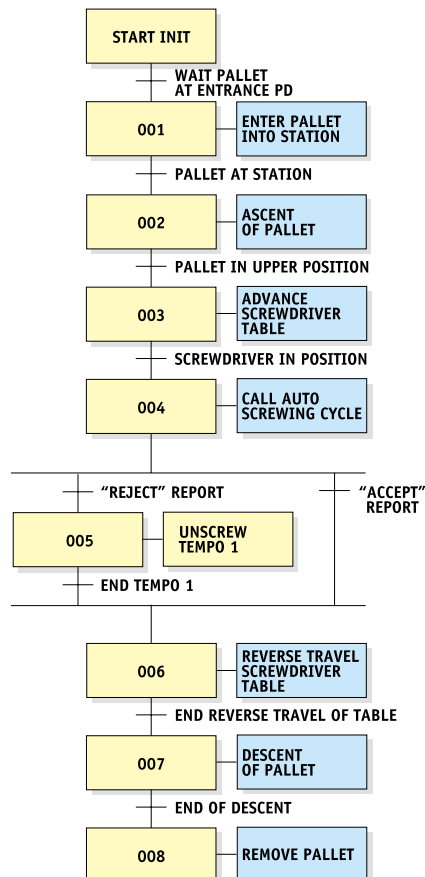
- editors to write the application
- a code generator
- a debugger

#### TYPES OF APPLICATIONS:

- controlling a socket tray (defining a cycle sequence with a visual display of the picking of a socket)
- stand-alone stations with control of station input, elevator, station output, flow, defects, etc...
- reading/writing embedded labels
- specific printers equipped with a bar code reader
- message control on remote displays or terminals

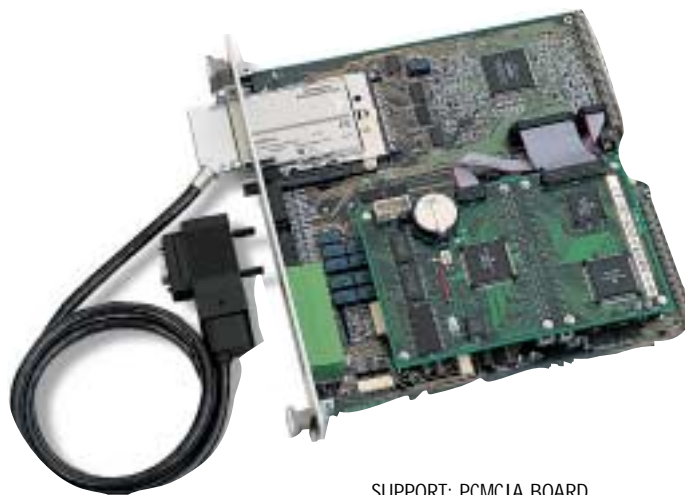


#### SAMPLE SFC PROGRAM



# Industrial networks

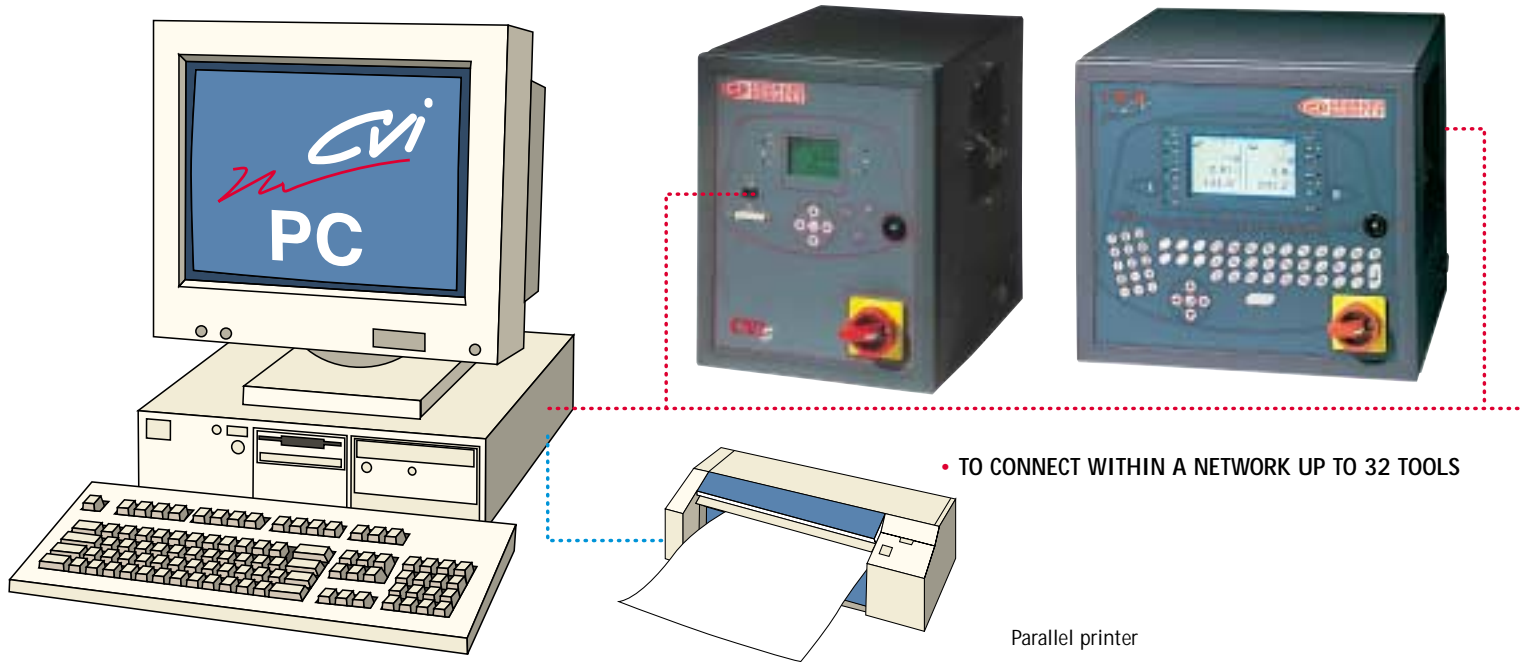
- PLC communication protocol: MODBUS and UniTelway  
Please consult us for the development of other networks, such as FIP, PROFIBUS, Interbus-S, Devicenet and Controlnet.



SUPPORT: PCMCIA BOARD



# CVI range and PC connection



• TO PROGRAM PARAMETERS OF SEVERAL CONTROLLERS OR RACKS IN REAL TIME WHILE MONITORING THE TOOLS

• CVI.PC2000 SOFTWARE IN WINDOWS

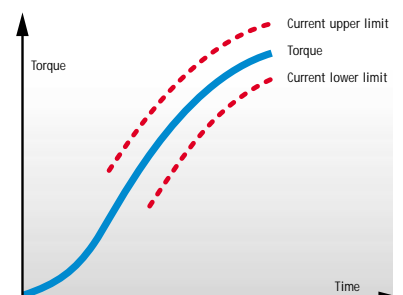
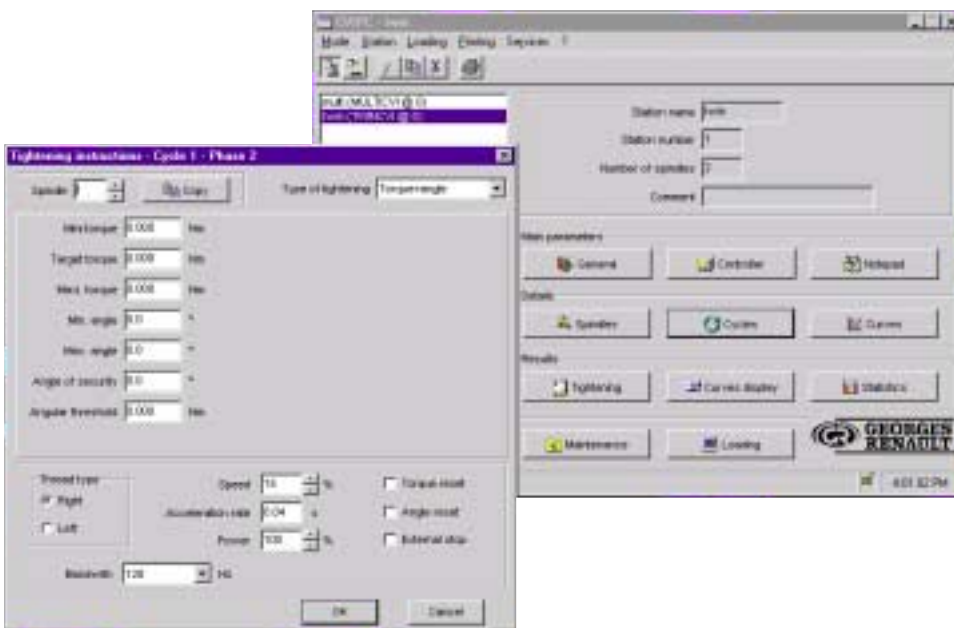
### TIGHTENING STRATEGIES:

- torque+angle
- angle+torque
- angle+torque+torque rate
- stall torque
- prevailing torque
- yield point
- torque+angle redundant fonctions (in option)

### Loosening on torque or angle

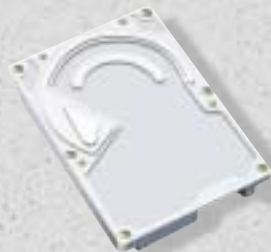
The motor current is constantly monitored during the final tightening phase.

With a constant torque, if the current reading is higher or lower than a programmed threshold value, an alarm will sound.





### OTHER MAJOR BENEFITS OF THE PC :



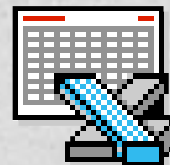
- to increase memory capacity to save up to 1,000,000 results (for 32 spindles) and 20 tightening curves



- to backup on floppy disk parameters and results to ensure the traceability of the applications



- to display and edit SPC on torque and angle results



- to transfer data to spreadsheet (results and curves)

# MODCVI, MULTICVI for multi

*Special machines upon request manufactured by our a*

## THE MODCVI IS THE RACKABLE OF THE TWINCVI

Although it has no keypad or display, it can perform all the functions of the TWINCVI, and is programmed with the CVIPC software which is also used to display the results.

The MODCVI is supplied in two configurations:

- "INTEGRATED" CONFIGURATION

The supplied modules are installed/wired in a cabinet, ready for use.

- COMPLETE CABINET CONFIGURATION

including transformer power supply, air-conditioning and full documentation of electrical drawings. The installation can be supplied complete in accordance to the customer's specifications.

## THE MULTICVI

is supplied in the same types of configuration as the MODCVI.

It is capable of controlling from 3 to 32 tools.

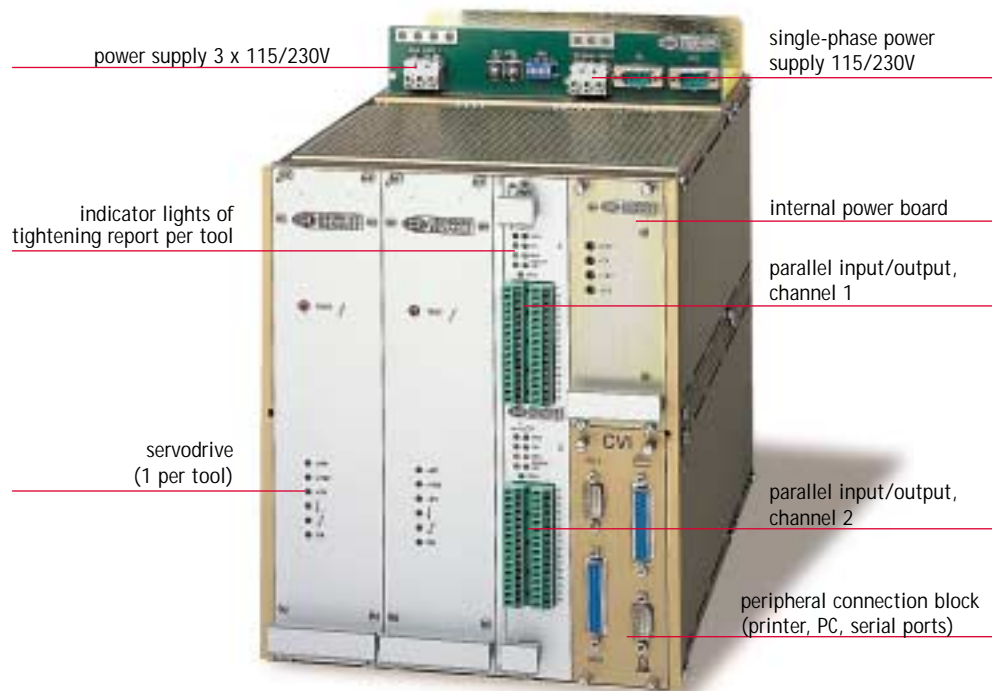
The MULTICVI consists of several MODCVIS - according to the number of connected tools - and a CPUCVI module to provide the interface between the station PLC and the control modules.

The CPUCVI is the system intelligence.

It fully controls the tightening sequence, centralises the controls and controls the MODCVI modules.

In the event of incorrect results, it authorizes cycle restarts.

## MODCVI MODULE



"Tightening wheel" assembly machine with 3 or 4 spindles changing (France)





# tispindle applications

application center. PLEASE ASK OUR DEPARTMENT.



Sample layout:  
26-spindle MULTICVI CABINET supplied in integrated version.

# « ER » Portable Electric Nutrunners



A



B



C

PHOTO NO.	MODEL	PART NUMBER	TORQUE RANGE		ROTATIONAL SPEED	REDUCTION GEAR	SENSITIVITY/ NOMINAL LOAD	SQUARE DRIVE	LENGTH	WEIGHT
			Nm	ft.lb						

## ANGLE-HEAD :

A	615 165 078 0	ERA20J	5	- 20 / 3.7 - 14.8	1140	15,15	1,0 / 20	3/8	447	2,0
A	615 165 079 0	ERA30J	5	- 30 / 3.7 - 22.1	880	19,69	1,5 / 30	3/8	447	2,0
A	615 165 080 0	ERA40J	8	- 40 / 6 - 29.5	690	24,94	1,6 / 40	3/8	458	2,1
A	615 165 081 0	ERA60J	15	- 60 / 11 - 44.2	440	39,41	1,8 / 60	3/8	469	2,2
A	615 165 082 0	ERA70J	15	- 70 / 11 - 51.6	530	27,20	1,2 / 70	1/2	552	3,5
A	615 165 083 0	ERA90J	20	- 90 / 14.7 - 66.3	420	34,13	1,6 / 90	1/2	552	3,5
A	615 165 084 0	ERA115J	25	- 115 / 18.4 - 84.8	290	49,65	1,4 / 115	1/2	552	3,5
A	615 165 085 0	ERA125J	30	- 125 / 22.1 - 92.1	280	50,57	1,2 / 125	1/2	554	3,6
A	615 165 086 0	ERA150J	35	- 150 / 25.8 - 110.6	230	62,30	1,4 / 150	1/2	554	3,6
A	615 165 012 0	ER180J	40	- 180 / 29.5 - 132.7	190	75,85	1,9 / 180	3/4	568	3,8
A	615 165 123 0	ERA200J*	60	- 200 / 44.2 - 147.5	170	82,94	1,4 / 200	3/4	604	3,9
A	615 165 070 0	ERA300-6J	100	- 300 / 73.7 - 221	190	45,00	1,2 / 300	3/4	702	8,0
A	615 165 071 0	ERA400-6J	100	- 400 / 73.7 - 294.8	150	58,78	1,6 / 400	3/4	702	8,0

## IN-LINE :

B	615 165 060 0	ERD5J	1	- 6 / 0.7 - 4.4	1590	10,89	1 / 10	hex 1/4	-	1,3
B	615 165 072 0	ERD20J	3	- 20 / 2.2 - 14.7	1200	14,44	1,3 / 20	hex 1/4	-	1,8
B	615 165 073 0	ERD30J	5	- 30 / 3.7 - 22.1	850	20,25	1,3 / 30	3/8	-	1,8
B	615 165 074 0	ERD50J	20	- 50 / 14.7 - 36.8	790	18,06	1,3 / 50	3/8	-	2,8
B	615 165 075 0	ERD70J	20	- 70 / 14.7 - 51.6	500	28,44	1,8 / 70	1/2	-	2,8
B	615 165 062 0	ERD120J	30	- 120 / 22.1 - 88.4	310	46,66	1,4 / 120	1/2	-	3,3

## PISTOL GRIP :

C	615 165 061 0	ERP5J	0,5	- 6 / 0.4 - 4.4	1590	10,89	1 / 10	hex 1/4	-	1,2
C	615 165 002 0	ER20PJ	2	- 20 / 1.5 - 14.7	1010	17,10	1,3 / 20	hex 1/4	-	1,8
C	615 165 005 0	ER30PJ	4	- 30 / 2.9 - 22.1	680	25,50	1,3 / 30	3/8	-	1,8

\* Available from the end of 2000

Note : the suffix J indicates a model with built-in torque transducer. To order a model without transducer, please consult.

**DATA SHEETS ON REQUEST**

## GEARED OFFSET HEADS

The geared offset heads are used in special applications such as hydraulic connection. They can replace the socket on the nutrunner angle head and provide a connection for a ring spanner. The controller has a special function to allow the user to re-index the geared offset head to the open position after tightening.

## CABLES AND CABLE EXTENSIONS

	LENGTH in m	PART NUMBER
Nutrunner cable	5	615 917 072 0
Nutrunner cable	10	615 917 074 0
Nutrunner cable	15	615 917 075 0
Extension cable	10	615 917 084 0
Extension cable	15	615 917 085 0
Extension cable	20	615 917 086 0
Extension cable	25	615 917 087 0
Extension cable	30	615 917 088 0
Adaptateur ER pour MODCVI		615 917 151 0

ACCESSORIES	PART NUMBER
Fixed suspension bail	615 571 050 0
Suspension bail on a swivel	615 396 041 0
Suspension bail on a swivel for:	
ERD5/20/30J	615 396 121 0
ERA20/30/40/60J	615 396 121 0
ERD50/70/120J	615 396 122 0
ERA70/90/115/150/200J	615 396 122 0
Reaction bar ring for:	
ERA70/90/115/150J	615 396 227 0
ERA200J	615 396 230 0
ER/180J	615 396 043 0

## SOCKET TRAYS

Socket trays can automatically select a cycle on picking of the appropriate socket. The corresponding light comes on to indicate the selected cycle.

	PART NUMBER
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

## BALANCERS

CAPACITY	LENGTH	WEIGHT	PART NUMBER	
Mini	Maxi	m	kg	
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

*Other on request*

## INDICATOR BOX

	PART NUMBER
Indicator box	615 936 001 0



Nutrunner model with 20 mm telescoping.  
Please consult us for detailed specifications.

# Fixed "EM" and "EML" series Electric Tools



PHOTO NO.	PART NUMBER	MODEL	TORQUE RANGE		ROTATIONAL SPEED	SENSITIVITY/ NOMINAL LOAD	MIN. DIST. BETWEEN CENTERS	SQUARE DRIVE	LENGTH	STROKE	WEIGHT
			Nm	ft.lb							

## STRAIGHT

A	615 165 013 0	EM35-10J	1 - 8 / 0.7 - 5.9	1590	1,9 / 8	43,2	3/8	-	50	1,7
A	615 165 014 0	EM35-20J	4 - 15 / 2.9 - 11	1590	1,4 / 25	43,2	3/8	-	50	2,0
A	615 165 015 0	EM38-10J	9 - 30 / 6.6 - 22.1	990	1,4 / 50	43,2	3/8	-	50	2,0
A	615 165 016 0	EM38-20J	10 - 45 / 7.4 - 33.2	840	1,4 / 50	43,2	3/8	-	50	2,0
A	615 165 017 0	EM51-10J	20 - 70 / 14.7 - 51.6	500	1,4 / 100	51,2	1/2	-	50	2,9
A	615 165 018 0	EM51-20J	30 - 135 / 22.1 - 99.5	310	1,6 / 150	51,2	1/2	-	50	3,5
A	615 165 019 0	EM60-10J	20 - 95 / 14.7 - 70	710	1,4 / 150	60,2	1/2	-	50	4,8
A	615 165 020 0	EM60-20J	50 - 175 / 36.8 - 129	390	1,4 / 300	60,2	3/4	-	50	4,8
A	615 165 021 0	EM60-30J	70 - 250 / 51.6 - 184.2	230	1,4 / 300	60,2	3/4	-	50	5,2
A	615 165 022 0	EM80-10J	80 - 300 / 59 - 221	220	1,4 / 500	80,2	3/4	-	60	9,8
A	615 165 023 0	EM80-20J	120 - 450 / 88.4 - 331.6	150	1,4 / 500	80,2	3/4	-	60	9,8
A	615 165 024 0	EM80-30J	180 - 650 / 132.6 - 479	100	1,4 / 1000	80,2	1	-	60	9,8
A	615 165 025 0	EM80-40J	220 - 800 / 162.1 - 590	70	1,4 / 1000	80,2	1	-	60	9,8
A	615 165 026 0	EM106-10J	430 - 1500 / 317 - 1105	40	1,4 / 2500	106,2	1	-	60	15,0
A	615 165 027 0	EM106-20J	540 - 1900 / 398 - 1400	30	1,4 / 2500	106,2	1	-	60	15,0

## ANGLE

B	615 165 063 0	EML38-20J	10 - 45 / 7.4 - 33.2	840	1,4 / 50	43,2	3/8	140,5	50	3,0
B	615 165 064 0	EML51-20J	30 - 135 / 22.1 - 99.5	310	1,6 / 150	51,2	1/2	166	50	4,0
B	615 165 065 0	EML60-20J	50 - 175 / 36.9 - 129	370	1,4 / 300	60,2	3/4	178	50	6,0
B	615 165 066 0	EML60-30J	70 - 250 / 51.6 - 184.2	240	1,4 / 300	60,2	3/4	178	50	6,0
B	615 165 067 0	EML80-40J	220 - 800 / 162.1 - 590	70	1,5 / 1000	80,2	1	241	60	11,0

Note: the suffix J indicates a model with built-in torque transducer.

**DATA SHEETS ON REQUEST**

# ols - Range & Applications

## Performances of fixed electric tools series "EM" and "EML"

Straight		Rotational speed r.p.m.
EM60-20J		390
EM60-10J		710
EM51-20J		310
EM51-10J		500
EM38-20J		840
EM38-10J		990
EM35-20J		1590
EM35-10J		1590
Torque in Nm	0 25 50 75 100 125 150 175 200	

Straight		Rotational speed r.p.m.
EM106-20J		30
EM106-10J		40
EM80-40J		70
EM80-30J		100
EM80-20J		150
EM80-10J		220
EM60-30J		230
Torque in Nm	0 200 400 600 800 1000 1200 1400 1600 1800 2000	

Angle		Rotational speed r.p.m.
EML80-40J		70
EML60-30J		240
EML60-20J		370
EML51-20J		310
EML38-20J		840
Torque in Nm	0 100 200 300 400 500 600 700 800 900 1000	



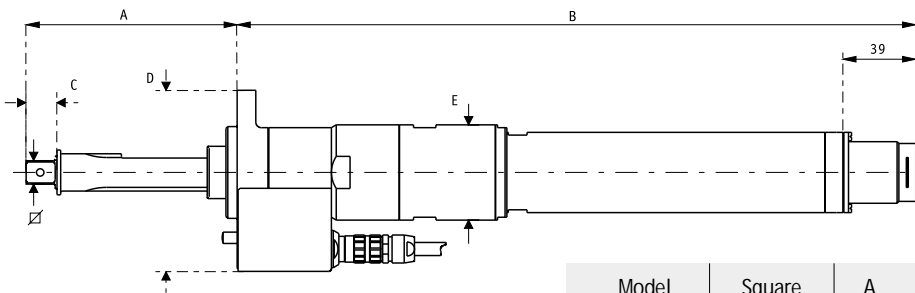
### TECHNICAL FEATURES:

- Static torque transducer integrated in the tool as close as possible to the socket
- Reduced distance between centres maximises the available space
- Output shaft is integrated into the gear case
- Sound pressure lower than 70 dBA
- Vibrations < 2,5 m/s<sup>2</sup>

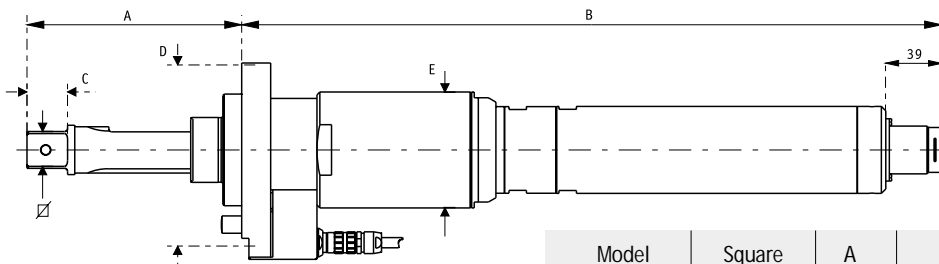
**Note:** Rotational speeds of all Georges Renault electric tools are given individually for the controller with a power supply of 230 Volts. For controllers powered 115 Volts, a decrease of 15% may be expected.

Injector assembly machine  
(Great-Britain)

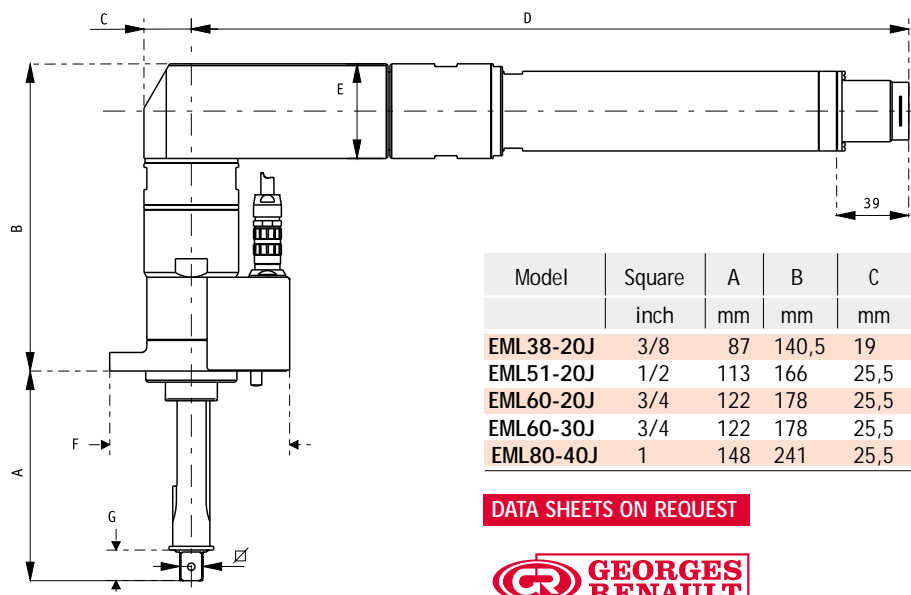
# Fixed "EM" and "EML" series electric tools - Dimensions



Model	Square	A	B	C	D	E
	inch	mm	mm	mm	mm	mm
EM35-10J	3/8	87	274	11	89	35
EM35-20J	3/8	87	299	11	89	35
EM38-10J	3/8	87	345	11	83	38
EM38-20J	3/8	87	345	11	83	38
EM51-10J	1/2	113	364	15,5	97	51
EM51-20J	1/2	113	391	15,5	97	51
EM60-10J	1/2	113	421	15,5	97	60
EM60-20J	3/4	121,5	421	23	97	60
EM60-30J	3/4	121,5	457	23	97	60



Model	Square	A	B	C	D	E
	inch	mm	mm	mm	mm	mm
EM80-10J	3/4	140	484	23	135	80
EM80-20J	3/4	140	484	23	135	80
EM80-30J	1	140	484	28	135	80
EM80-40J	1	140	484	28	135	80
EM106-10J	1	148	554	28	135	106
EM106-20J	1	148	554	28	135	106

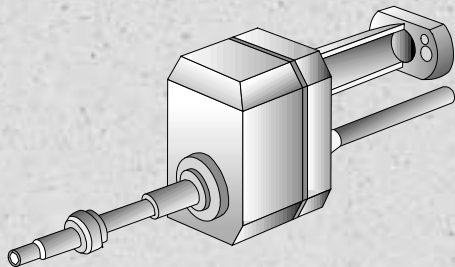


Model	Square	A	B	C	D	E	F	G
	inch	mm	mm	mm	mm	mm	mm	mm
EML38-20J	3/8	87	140,5	19	349	40	83	11
EML51-20J	1/2	113	166	25,5	387	51	97	15,5
EML60-20J	3/4	122	178	25,5	427	51	97	23
EML60-30J	3/4	122	178	25,5	427	51	97	23
EML80-40J	1	148	241	25,5	427	51	135,5	28

DATA SHEETS ON REQUEST



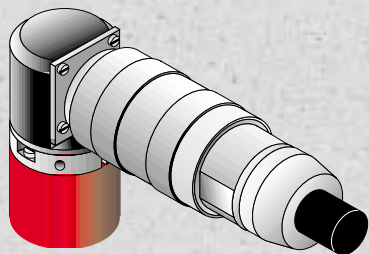
# Special applications, Cables & Accessories



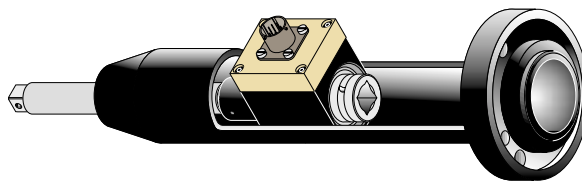
SPECIAL "HOLD AND DRIVE"  
SYSTEM FOR FIXED TOOLS.



OFFSET GEAR TO REDUCE THE DISTANCE  
OF THE SOCKETS



90° "EM" MOTOR ADAPTOR  
PART NO 615 396 118 0

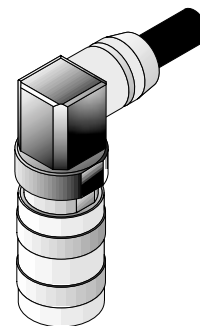


TRANSDUCER-HOLDER FROM EM TOOL PART NO

With 3/8" square drive 615 396 119 0  
With 1/2" square drive 615 396 120 0

## 90° CABLE CONNECTOR

STANDARD LENGTH	PART NO	
	TWINCVI	MODCVI
5 m	615 917 132 0	615 917 142 0
10 m	615 917 134 0	615 917 144 0
15 m	615 917 135 0	615 917 145 0
20 m	615 917 136 0	615 917 146 0
25 m	615 917 137 0	615 917 147 0
30 m	615 917 138 0	615 917 148 0
35 m	615 917 139 0	615 917 149 0



STANDARD LENGTH	PART NO	
	TWINCVI	MODCVI

## Motor cable for EM tools

0,7 m	615 917 091 0	
5 m	615 917 092 0	615 917 112 0
10 m	615 917 094 0	615 917 114 0
15 m	615 917 095 0	615 917 115 0
20 m	615 917 096 0	615 917 116 0
25 m	615 917 097 0	615 917 117 0
30 m	615 917 098 0	615 917 118 0
35 m	615 917 099 0	615 917 119 0

## Motor extension cable for EM tools

5 m	615 917 162 0	615 917 182 0
10 m	615 917 164 0	615 917 184 0
15 m	615 917 165 0	615 917 185 0
20 m	615 917 166 0	615 917 186 0
25 m	615 917 167 0	615 917 187 0
30 m	615 917 168 0	615 917 188 0
35 m	615 917 169 0	615 917 189 0



## Torque cable for EM tools

1,5 m	615 917 010 0	
5 m	615 917 102 0	615 917 122 0
10 m	615 917 104 0	615 917 124 0
15 m	615 917 105 0	615 917 125 0
20 m	615 917 106 0	615 917 126 0
25 m	615 917 107 0	615 917 127 0
30 m	615 917 108 0	615 917 128 0
35 m	615 917 109 0	615 917 129 0



## Torque extension cable for EM tools

5 m	615 917 172 0	615 917 192 0
10 m	615 917 174 0	615 917 194 0
15 m	615 917 175 0	615 917 195 0
20 m	615 917 176 0	615 917 196 0
25 m	615 917 177 0	615 917 197 0
30 m	615 917 178 0	615 917 198 0
35 m	615 917 179 0	615 917 199 0