



**Reliability and accuracy:
real innovation knows
no obstacles.**

Air angle nutrunners

- with 90° angle head
- with 30° angle head
- with flat head drive

- Torque range: from 0,8 to 60 Nm
- Automatic shut-off

Fiam®

PEOPLE AND SOLUTIONS

Air angle nutrunners

Tightening in presence of limited space and where access is difficult. Also with high torques.

Particularly suitable for motorvehicle industry and household appliances, angle nutrunners are indispensable when space is limited and where access is difficult, such as up against walls, close to metal sections and profiled beams, etc.

Main features are:

- **robust angle heads to guarantee long lifetime**
- **high torque accuracy**
- **great attention to ergonomics**





A6RSA1

AD9RA1



AG40RA



15C...90



15C...30



Air angle nutrunners

With the AF nutrunners all points that need tightening are within easy reach

These air nutrunners with a flat head drive are the most effective tool for solving all assembly situations where it's difficult to reach the point to tighten and where objects would get in the way of ordinary angle nutrunners.

More specifically, **the AF air angle nutrunners** are extremely useful where there are pressurised circuits, that is to say **components with pipes containing fluids fitted with nuts that need tightening** (as could be gas ramps in hobs, refrigerator compressor pipes, car braking system pipes, boiler pipes, coffee machine pipes and so on).

The **special heads** that adapt to numerous assembly situations render this system optimum: with their radial opening it is, in fact, possible to put the pipe inside the hex. drive making it so much easier to reach the nut. Moreover, the latest generation of design specifications guarantee **extreme reliability and maximum life** for these brand tools.





Robust angle heads to guarantee reliability and long lifetime.



DISCOVER HOW IT WORKS !



Radial opening ideal to reach the nut.



Be demanding

Reliability

Long lifetime of the components thanks to careful design and to quality of the productive process which results in less maintenance and repair costs

The **torque control system** with instant automatic air shut-off **improves the quality of the tightening process**, and consequently that of the **finished product**

High performance motor: **optimising performance even when supply pressures are low**

Robust control top, obtained by mechanic working, guarantees high resistance to hits and long lifetime

High tightening precision: CM/CMK values are extremely high; therefore they can be used where **great tightening accuracy is required** also with high torques, particularly in the motorvehicle fields

The **angle heads** are **extremely compact** to tighten where access is difficult. They are designed and built with **innovative materials** to ensure high wear resistance (and therefore they need less maintenance) and **high tightening precision**

The grease supplied for **lubricating** of the AF heads, a Fiam special and exclusive, guarantees **continuous performance of the nutrunner in terms of torque and life** under all conditions of use

Don't be satisfied with the maximum

Productivity

Considerable increase of the efficiency of the tightening cycle thanks to innovative systems

The torque control system **reduces the need to perform quality controls at the end of assembly**

The high performance of the air motor and the kinematic chain supply **optimum tightening speeds, reducing the time/cycle**

The cycle end acoustic signal emitted by the tightening torque control system advises the operator of the end of tightening: so he can **pass on to the next tightening cycle more rapidly**

An excellent ratio **between speed and expressed torque** guarantees an accurate precision

It's even more practical, quicker and safer to adjust the clutch thanks to the new **rotating cursor**

For 40A...AF..., models, the **start lever operates both the tightening and the realignment of the end gear** thanks to its double work stroke: by **activating** the lever from the rest position **to the first step**, the end gear is realigned, instead by **activating completely** the lever the nutrunner starts functioning and the end gear starts to rotate

For 40A...AF..., models with the through gear **untightening** can be done turning the tool by 180°

Thanks to Fiam's great flexibility in proposing **customised solutions**, any production situation can be tightened, even the most complex

Cm= indicator of the machine (nutrunner) repeatability during operation

CmK= indicator of the machine (nutrunner) accuracy during operation

When the indicator refers to a nutrunner, the repeatability represents the nutrunner capability to generate the same torque value in every cycle, while the accuracy represents the nutrunner capability to respect the pre-set torque value.

Perfection is
in your hands

Ergonomics

Optimization of the tool performances in regard to ergonomics and operator safety

All nutrunners, except for A...R models, have a **rotating cursor** for the adjustment of the clutch, practical, easy and safe

The **long ergonomic start lever** permits a more comfortable and easy grip to guarantee the operator's comfort

The torque control system reduces the reaction to the operator's hand. Thanks to the careful study of the internal gears, **the vibration levels are below 2,5 m/s²**

The **antislip varnishing**, which is a feature of the start lever, makes it more comfortable and longer lasting

The reduced thickness of the head makes tightening easier also in small spaces



The head with blind gear makes it easier to bring the nut near the joint



Effective built-in silencing system: these nutrunners are extremely noiseless and are equipped with a controlled spread of the exhaust air

These nutrunners are particularly **versatile and handy** thanks to the ideal **weight to power ratio**

The Fiam nutrunners are **among the most compact tools on the market** thanks to the very good **dimensions ratio** (length/diameter/head dimension)

To make the tightening job even easier and **eliminate stress on the operator's arm**, special accessories are recommended: they permit higher use agility and flexibility and wide rotations of the tool around its axis (see Accessories available upon request)



Rotating cursor for the adjustment of the clutch

Naturally
innovative

Ecology

Innovative systems designed paying even more attention with respect to environment and of its safeguard

All the components are **easy to dispose of** because they are built **using recyclable materials**; therefore they do not represent any danger for environmental pollution

The technological design of the air motor, besides **reducing the consumption of compressed air** permits to improve the performances also at low air feed pressure

All Fiam products are supplied with **eco-friendly packaging**

The **head construction materials** ensure a long life resulting in a reduction in maintenance costs and in component replacement



Ergonomic start lever

Type of nutrunner		Grip	Tightening torque on soft joint		Idle speed	Starting system	Reversibility	Weight	Air consumption	Accessories	Noise level*	Vibrations		
Model	Code		min./max.	min./max.									Nm	in lb
15C2A30	112533942	30°	0,8 ÷ 2	708 ÷ 177	2000			0,70	1,54	4,0	<input type="checkbox"/> M 1/4"	73	<2,5	
15C3A30	112533943	30°	0,8 ÷ 3	708 ÷ 26.55	1400			0,70	1,54	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C4A30	112533944	30°	0,8 ÷ 4	708 ÷ 35.4	950			0,70	1,54	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C5A30	112533945	30°	0,8 ÷ 5	708 ÷ 44.25	650			0,70	1,54	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C2A90	112593942	90°	0,8 ÷ 2	708 ÷ 177	2000			0,70	1,54	4,0	<input type="checkbox"/> M 1/4"	73	<2,5	
15C3A90	112593943	90°	0,8 ÷ 3	708 ÷ 26.55	1400			0,70	1,54	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C4A90	112593944	90°	0,8 ÷ 4	708 ÷ 35.4	950			0,70	1,54	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C5A90	112593945	90°	0,8 ÷ 5	708 ÷ 44.25	650			0,70	1,54	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
AD6RA1	114893986	90°	2,5 ÷ 6	22.125 ÷ 53.1	1150			1,200	2.64	10	<input type="checkbox"/> M 3/8"	77	<2,5	
AD9RA1	114893989	90°	2,5 ÷ 9	22.125 ÷ 79.65	900			1,200	2.64	10	<input type="checkbox"/> M 3/8"	77	<2,5	
AD14RA1	114893994	90°	3 ÷ 14	26.55 ÷ 123.9	600			1,400	3.08	10	<input type="checkbox"/> M 3/8"	77	<2,5	
AD26RA1	114893996	90°	11,5 ÷ 26	101.775 ÷ 230.1	350			1,450	3.19	10	<input type="checkbox"/> M 3/8"	77	<2,5	
AG40RA	114893975	90°	18 ÷ 40	159.3 ÷ 354	400			2,050	4.51	13	<input type="checkbox"/> M 3/8"	80	<2,5	
AG60RA	114893980	90°	29 ÷ 60	256.65 ÷ 531	300			2,300	5.06	13	<input type="checkbox"/> M 1/2"	80	<2,5	
A6RSA1	114893924	FLAT-CLOSE HEAD	3,5 ÷ 11,5	30.975 ÷ 101.775	600			1,700	3.74	9	<input type="checkbox"/> F 1/4"	82	<2,5	
A10RYA	116300012	FLAT-CLOSE HEAD	12 ÷ 33	106.2 ÷ 292.05	250			2,750	6.05	9	<input type="checkbox"/> F 14 mm	82	<2,5	

Legend



Reversibility: all models are suitable for tightening and untightening operations. The **A10RYA model** is reversed by using either the bottom hexagonal drive (right-hand rotation) or top hexagonal drive left-hand rotation).



Lever start

- The figures shown are measured at a pressure of 6,3 bar (ISO 2787) the recommended operating pressure.
- Tightening torque values have been measured in accordance with ISO 5393 standard.
- Noise level has been measured in accordance with ISO 3744 and ISO 15744 standards.
- * Additional factor: 3 dBA spread in method and production (ISO 15744).
- Vibrations level have been measured in accordance with ISO 28927 - 2 standards.
- Accessory drive: male square drive (ISO 1174).
- The code number must be used when ordering.

The data given in the table are indicative and can be changed without prior notice. The torque values are purely indicative and may be influenced by the softness of the type of joint, by the type and length of the screw, by the pressure and quantity of air supply, and by the type of accessory used. The values indicated for noise and vibration levels were obtained in the laboratory, performing tests that comply with the standards stated, but alone are not sufficient for calculating risks. Values measured in the single work places may be higher than those stated. The values of actual exposure and consequent risks are specific and depend on the operator's method of work, the type of work piece and the work place, as well as the operator's time of exposure and his physical conditions. Fiam cannot be held responsible for any consequences deriving from the use of the information in the table when evaluating risks in the work place over which Fiam has no control. For all further details, please apply to the **Fiam Technical Consultancy Service**.

Models available upon request

- **Models with only right or left hand**
- **Models with quick change chuck**
- **Models with low speeds** for critical tightenings (e.g. with stainless steel)
- **Models A6RSA1 and A10RYA with hexagonal head different to the standard** (for A6RSA1 max hex. 7 mm, for A10RYA max hex. 15 mm): to order add the size of the hexagonal required after the code (A6RSA1 → A6RSA1/7; A10RYA → A10RYA/13). The non-standard hexagonal heads are normally used without accessories
- **Models with female hexagonal drive for inserts (BITS)** (except AD6RA1, AD9RA1, AG40RA and AG60RA); when ordering, add BITS at the end of the code (e.g. 15C2A... → 15C2A...-BITS)
- **Models with poka yoke system for screws counting:** to avoid any screw omission, to accelerate the production cycles and ensure control on the assembled product. See page 15 of this catalogue

TUBENUTS MODELS WITH IN LINE OPEN OFFSET

Type of nutrunner		Grip	Tightening torque on soft joint		Idle speed	Starting system	Reversibility	Weight		Air consumption	Accessories	Noise level*	Vibrations
Model	Code		Type	min. Nm				max. in lb	kg				
26A8AF8B	114807330	FLAT	3 ÷ 8	26.5 ÷ 70.8	500	→	↺	1,50	3,30	9	F 8	75	<2,5
40A17AF11B	114807160	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 11	75	<2,5
40A17AF12B	114899930	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 12	75	<2,5
40A17AF13B	114899931	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 13	75	<2,5
40A17AF14B	114807188	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 15	75	<2,5
40A17AF15B	114899932	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 14	75	<2,5
40A17AF15T	114807149	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 15	75	<2,5
40A17AF16B	114807179	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 15	75	<2,5
40A17AF17B 7,5	114807162	FLAT	7 ÷ 17	61.9 ÷ 150.4	300	→	↺	1,90	4,10	9	F 16	75	<2,5
40A20AF14B	114899934	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 17	75	<2,5
40A20AF15B	114899933	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 14	75	<2,5
40A20AF16B	114899935	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5
40A20AF19B 7,5	114807493	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5
40A20AF12B	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5
40A20AF13B	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 12	75	<2,5
40A20AF17B...	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 13	75	<2,5
40A20AF18B...	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5
40A20AF20B...	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5
40A20AF21B...	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5
40A20AF22B....	upon request	FLAT	7 ÷ 20	61.9 ÷ 177	240	→	↺	1,90	4,10	10	F 15	75	<2,5

How to choose 40A...AF... models

40 = Nutrunner power (400 watt) • A = Angle nutrunner • 17 = Maximum torque expressed • A = Air shut-off • F = Flat (flat head drive)
 • 12 = Hexagonal drive used • B/T = Type of end gear (Blind or Through - E.g.: B = Models with Trough end gear (T version instead of B) (i.e. 40A17AF12B → 40A17AF12T) • 7,5 = Extended hexagon size, the size can be from 7.5 mm to "n", depending on the need.



Blind gear:
 this gear has a "ridge" on which the nut to tighten sits, making tightening easier



Through gear:
 this gear has a hex. drive that covers the nut completely; with this gear untightening can also be done turning the tool by 180°

Legend

Reversibility: all models are suitable for tightening and untightening operations
40A...AF... models: reversing to direction of rotation is used to realign the end gear at the end of the tightening operation

Lever start

To guarantee maximum nutrunner performances over time the head has to be greased, equivalent to three injections with the grease gun supplied, every 3.000 cycles

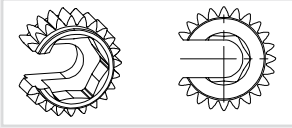
- The figures shown are measured at a pressure of 6,3 bar (ISO 2787) the recommended operating pressure.
- Tightening torque values have been measured in accordance with ISO 5393 standard.
- Noise level has been measured in accordance with ISO 3744 and ISO 15744 standards.
- * Additional factor: 3 dBA spread in method and production (ISO 15744).
- Vibrations level have been measured in accordance with ISO 28927 - 2 standars.
- The code number must be used when ordering.

The data given in the table are indicative and can be changed without prior notice. The torque values are purely indicative and may be influenced by the softness of the type of joint, by the type and length of the screw, by the pressure and quantity of air supply, and by the type of accessory used. The values indicated for noise and vibration levels were obtained in the laboratory, performing tests that comply with the standards stated, but alone are not sufficient for calculating risks. Values measured in the single work places may be higher than those stated. The values of actual exposure and consequent risks are specific and depend on the operator's method of work, the type of work piece and the work place, as well as the operator's time of exposure and his physical conditions. Fiam cannot be held responsible for any consequences deriving from the use of the information in the table when evaluating risks in the work place over which Fiam has no control. For all further details, please apply to the Fiam Technical Consultancy Service.

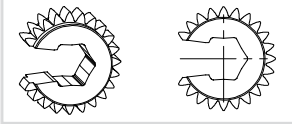
STANDARD CONFIGURATIONS

END GEAR FOR HEX FROM 8 TO 15 mm

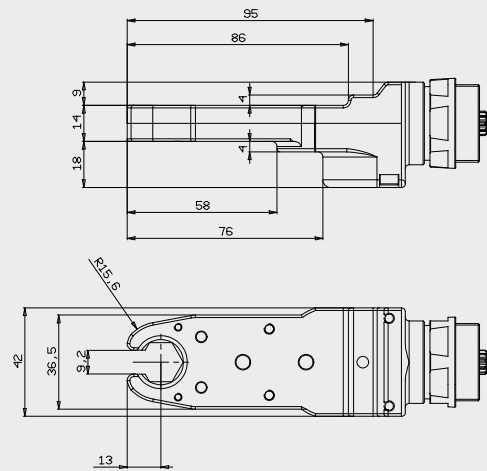
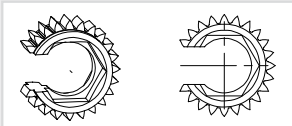
- Blind hexagon



- Through hexagon for end gears until 14 mm

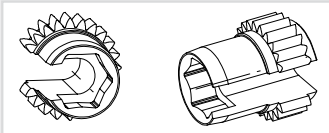


- Reinforced hexagon for end gears from 15 mm

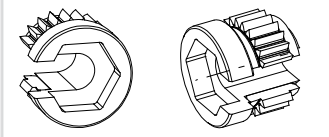


EXTENDED END GEAR FOR HEX FROM 16 TO 22 mm

- Blind hexagon

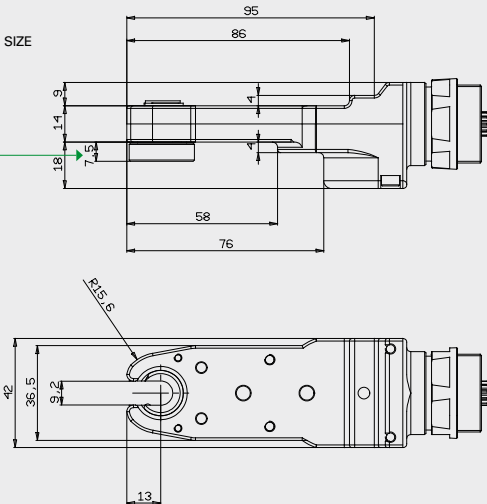


- Through hexagon



EXTENDED HEXAGON SIZE

- * Size (mm) from 7.5 mm to "n," depending on the need



9 mm: maximum pipe diameter the head can hold. Different diameters upon request.

The size of the extended hexagon (*), can be:
 - 0 to 30 mm for use of hexagons up to 15 mm max
 - 7.5 to 30 mm for use of hexagons greater than 15 mm

CONFIGURATIONS AVAILABLE UPON REQUEST

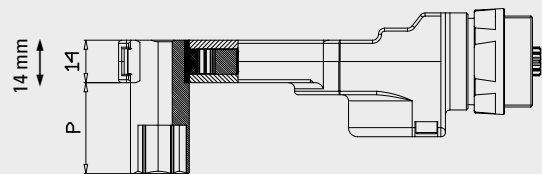
END GEAR WITH EXTENDED HEXAGON

P = upon request

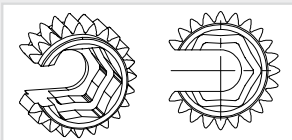


With different size and geometry hexagon
 Fox example: for 8 mm hex end gear
 and P= 15 mm:

40A17AF8B → 40A17AF8B 15

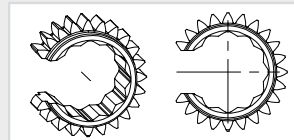


END GEAR WITH DOUBLE BLIND HEXAGON



e.g. for hex:
 internal 12 and 15 external (mm)
 internal 13 and 15 external (mm)
 internal 13 and 16 external (mm)
 Etc.

END GEAR WITH DIFFERENT IMPRINT AND GEOMETRIES



Poligonal, square, oval,
 etc.

Other Technical features for all models

Models	Air inlet	Recommended hose bore
15C...	1/4" gas	Ø 5 mm
AD...RA1, A6RSA1, A10RYA, 40A...AF...	1/4" gas	Ø 8 mm
AG40RA, AG60RA	1/4" gas	Ø 10 mm

Standard equipment (supplied with the tool)

- Clutch adjustment key
- Grease gun (only for 40A...AF... models)
- Specific grease (50 gr. tube) code 699051018 (only for 40A...AF... models)
- Hanging ring
- Use and maintenance manual
- Eco-friendly packaging

Accessories available on request

- **Bits, sockets**, manual and magnetic adaptors for inserts, exhaust air conveyors, balancers and other accessories. See the "Fiam Accessories" catalogues n. 77 and 78.

- **Swivelling bail ring for models AD, AG:** practical accessory designed to keep the tool always in a horizontal position, perfectly balanced and swivelling allowing a considerable reduction in fatigue during tightening operations.

	Code	For models
Swivelling bail	681011060	AD...
Swivelling bail	681011055	AG...



Assembly sequence

- **Specific grease for 40A...AF models:** a Fiam special and exclusive, it guarantees continuous performance of the nutrunners in terms of torque and life under all conditions of use

	Code	For models
Specific grease (500 gr)	699051018	40A...AF...

- **BC 25 and BC 40 cartesian arms complete with omnidirectional coupling** for more ergonomic tightening operations with 40A...AF angle nutrunners. This agile and flexible device allows **besides extension** over its entire height, **the rotational extent of the arm on the abscissa allows up to 180°** permitting a **wide operating area**. The special omnidirectional coupling allows **the tool to be rotated freely** around its axis while **also allowing its horizontal axis** to move by +/- 15°.

Model	Codice	Max torque		Min. working radius (B)		Min. working radius (A)		Max. top diameter	Max load	Weight
		Nm	in lb	mm	mm	mm	kg			
BC25	692031024	25	221.2	770	175	32-50	2	9,5		
BC40	upon request	40	354	770	120	32-50	3	17,5		
BC40/7	upon request	40	354	770	120	32-50	7	17,5		
BC40/11	upon request	40	354	770	120	32-50	11	17,5		

These cartesian arms are equipped with balancer, adapter and with a **comfortable handgrip to hold the tool with left and right hands**.



These mechanical devices:

- eliminate the reaction on wrist-hand-shoulder system of the operator;
- eliminate the force required to support the tool;
- eliminate the vibrations, allow the maintenance of a good wrist position;
- permit to change the hold using both hands.



Accessories available upon request

BT-MG MAGNESIUM TELESCOPIC ARMS



This solution for ergonomic workplace eliminate torque reaction on operator's wrist. They guarantee reliability and long life span thanks to accurate manufacturing process and innovative, high quality materials used.

- Thanks to the telescopic elements (3 for all models and 2 for BT-MG 10...) and different reachable lengths, they adapt themselves to working areas according to productive needs
- Double final junction allows maximum freedom of action, great handiness, **even when tightening with the tool bent**
- To be used with any type of tools
- Laboratory tests have demonstrated that Fiam BT **arms bear 30%** higher torque generated by the tool in respect to **competitors arms**
- They can be **easily installed** on existing workplaces on ceiling or wall using a simple plate with reduced dimensions

Model	Code	Max torque		Max work range (mm)	Min work range (mm)	Ø max tool (mm)
		(Nm)	in lb			
BT-MG 10 800	692071420	10	88.50	625	455	26.5-50
BT-MG 10 1000	692071421	10	88.50	825	655	26.5-50
BT-MG 15 800	692071409	15	132.70	860	505	26.5-50
BT-MG 15 1000	692071401	15	132.70	1070	575	26.5-50
BT-MG 15 1500	692071404	15	132.70	1580	745	26.5-50
BT-MG 40 800	692071410	40	354	860	505	26.5-50
BT-MG 40 1000	692071402	40	354	1070	575	26.5-50
BT-MG 40 1500	692071405	40	354	1580	745	26.5-50
BT-MG 40 2000	692071407	40	354	2120	925	26.5-50
BT-MG 70 800	692071411	70	619.50	860	505	26.5-50
BT-MG 70 1000	692071403	70	619.50	1070	575	26.5-50
BT-MG 70 1500	692071406	70	619.50	1580	745	26.5-50
BT-MG 70 2000	692071408	70	619.50	2120	925	26.5-50

CARTESIAN ARMS



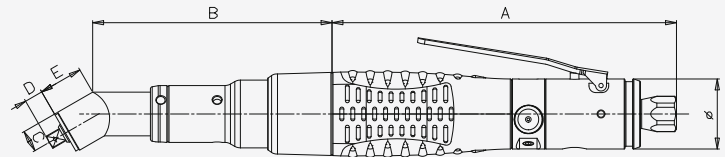
Solution for ergonomic workplace to be used with every type of tool with diameter up to 50 mm and weight up to 11 Kg. Equipped with universal clamp and made of hardened chrome steel, they are extremely solid and steady. Their movements running on ball recirculating runners guarantee smoothness, handiness and accuracy. They permit to work by tilting the tool axis, favour tool return to its initial position, ease tool position adjustment in continuous mode: this is made without disassembling components, by loosening and re-tightening screws in the new position.

Model	Code	Max torque		Max working radius (B)	Min working radius (A)	Max tool diameter	Max load	Weight
		Nm	in lb	mm	mm	mm	kg	kg
Cartesian Arms BC12	692031020	12	106.20	775	180	32-50	1	8,5
Cartesian Arms BC25	692031021	25	221.25	770	175	32-50	2	9,5
Cartesian Arms BC40	692031022	40	354	770	120	32-50	3	17,5
Cartesian Arms BC40/7	692031023	40	354	770	120	32-50	7	17,5
Cartesian Arms BC40/11	692031025	40	354	770	120	32-50	11	17,5

Overall dimensions (in mm)

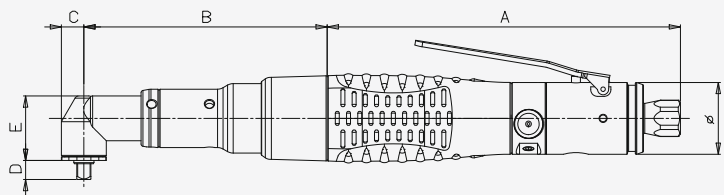
15C...A30 MODELS

Models	A	B	C	D	E	Ø
15C...A30	157	109	10	8,5	20	32



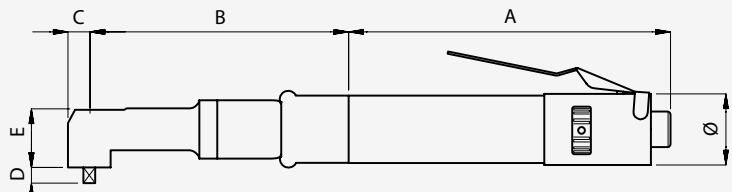
15C...A90 MODELS

Models	A	B	C	D	E	Ø
15C...A90	157	109	10	8,5	29	32



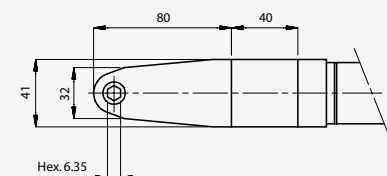
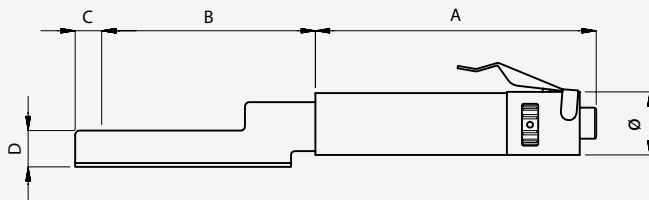
AD.../AG... MODELS

Models	A	B	C	D	E	Ø
AD6RA1	195	97	12,5	12	30	40
AD9RA1	195	97	12,5	12	30	40
AD14RA1	195	125	14	12	34,5	40
AD26RA1	180	137	14	12	34,5	40
AG40RA	240	163	16	12	40	40
AG60RA	240	178	20	16,5	45,5	40



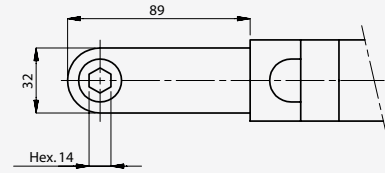
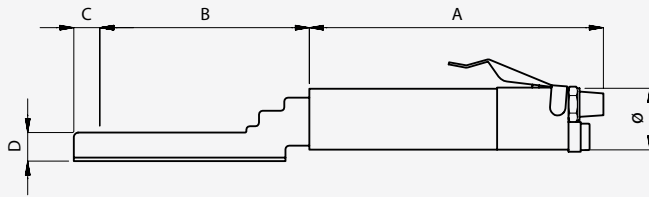
A6RSA1 MODELS

Models	A	B	C	D	Ø
A6RSA1	295	108	12	18	40



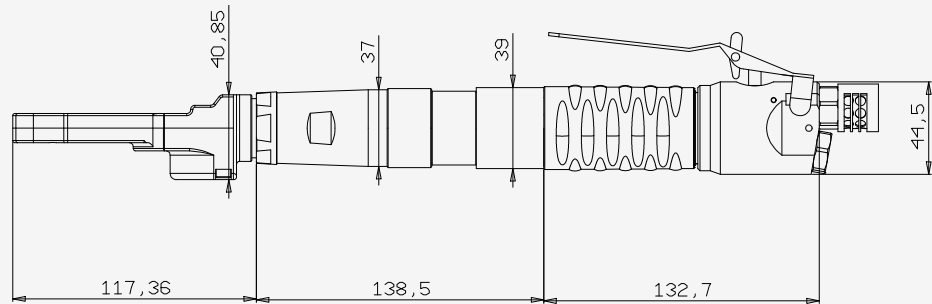
Overall dimensions (in mm)

A10RYA MODELS

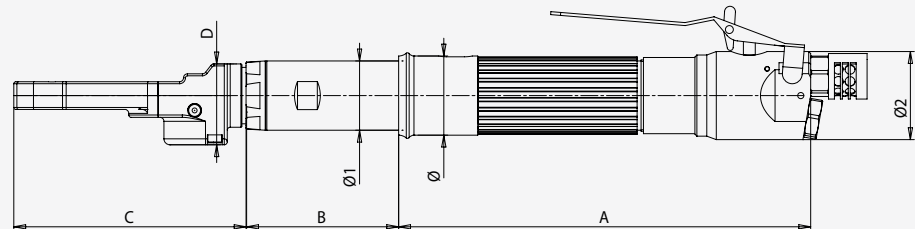


Models	A	B	C	D	Ø
A10RYA	370	134	16	18	46

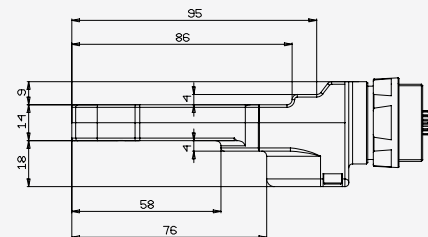
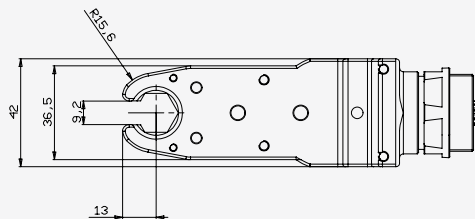
26A8AF8B MODELS



40A... AF... MODELS



Standard head:
 maximum pipe diameter
 the head can hold is 9 mm
 (for different diameters
 please contact the Fiam
 Technical Consultancy
 Service)



Models	A	B	C	D	Ø	Ø1	Ø2
40A9AF..B	195	77	117	41	40	35	44,5
40A17-20AF..B	213	77	117	41	40	35	44,5

Air angle nutrunners + screws counting

0% error, 100% accuracy.

Did you lose any screws? The **'screws count'** function will help you: therefore in case of high production rate, you won't risk any omission. Moreover, the feed-back signal and the end one to pass to next piece **accelerate the production cycles and ensure control on the assembled products.** So dead times will decrease and quality will increase.

The solution includes:

- Lever **AIR ANGLE NUTRUNNERS** equipped with **pneumatic pick-up signal (ported)**
- **COMPUTERIZED MONITORING UNIT TOM** (Tightening Operation Monitor): it allows the **monitoring of the tightening cycle through the double-signal pressure** coming from the screwdrivers, subsequently converted into electric signal.



A proved system against pressure changes.

The use of two pneumatic signals (tool start and clutch operated) guarantees the system functioning **regardless of the pressure changes, critical point in many production lines.**

A considerable advantage in respect to other poka-yoke systems, which are more difficult to programme and use a single signal: which are considerably affected by pressure fluctuations.

Tightening Operation Monitor

Model	Description	Code	Dimensions (mm)	Electric feed
TOM	Monitoring unit	685001062	width 208 x depth 128 x height 42	24V, 110/230V, 50/60 Hz

Standard equipment

- Feeder • Feed cable • Use and maintenance manual • Eco-friendly packaging

TOM Tightening Operation Monitor is also available in the configuration BOX TOM, that includes: **TOM unit and all its accessories already wired in a single box.**

This **“Plug and Play” solution is easy to introduce into assembly lines and extremely practical** since you just need to connect the air line and the power supply to start production immediately.

Model	Description	Code	Dimensions (mm)	Electric feed
BOX TOM	Monitoring unit	685001086	h 265 mm (without tower-light) x depth 165 x width 300	24V, 110/230V, 50/60 Hz

Standard equipment

BOX TOM includes:

- TOM monitoring unit • Tool locking/unlocking device • Cable to connect TOM with locking/unlocking device • Transducer • Tower light • Feeder • Feed cable • Use and maintenance manual • Eco-friendly packaging



MODEL “STOP BY TIME” AVAILABLE UPON REQUEST - Code 685001087

Used when it is necessary to **tighten** threaded elements controlling shut-off by **depth rather than torque** through the control of tightening time.

It allows the tightening of the threaded elements with a tolerance of 360° compared to target depth.

It is to order with the tool locking unit to activate the arrest “to time” of the screwdriver together to cables and Cables multi-dock (see pag. 11). When the time set by the operator is reached, the tools stops for a programmable time. There will be an OK signal (and not an error that requires a RESET as the standard version does). You can set up to 8 different times, one for each program available.

Model	Code
TOM “STOP BY TIME”	685001087
TOM BOX “STOP BY TIME”	685001089

Transducer for TOM

TOM needs to be purchased along with Fiam transducer, one for each tool (except when TOM is connected to EasyDriver CA).

Completely designed and manufactured by Fiam, it is a single box that receives two pneumatic signals (input) through two hoses of different colors: black for starting signal and green for torque signal; equipped with led indicator and unique electric connecting cable (output) to carry the electrical signal to the TOM unit. Reduced dimensions and weight, easier to calibrate.



Model	Code
Transducer for TOM	687041041

What is it necessary to choose?



Features

20 INPUTS	<ul style="list-style-type: none"> • 8 for programmes selection, 6 for remote functioning: switching off, program activation, tool stop, tool loosening, program reset <p>Availables with contacts 24V/GND (both pull-up and pull-down) for a great compatibility with the bench buttons (i.e: reset, block, unblocking etc.) and to be interface with the PLC of the client</p>
24 OUTPUTS	<ul style="list-style-type: none"> • For results, active program, screwdriver status and possible electro-valve activation, auxiliary output, signal waste piece, in cycle signal (to check the beginning and the end of tightening cycle, useful i.e. set/unset the pieces jigs)
AUTOMATIC CHECK OF TIGHTENING TIME	<ul style="list-style-type: none"> • Which can be adjusted by setting the cycle time thus discriminating the different KO results
SINGLE PROGRAM 99 tightenings	<ul style="list-style-type: none"> • Tightening with min/max time equal for all screws • Screws count • 3 different acoustic signals: tightening end, single program end, error
SEQUENCE PROGRAM 99 tightenings x 8	<ul style="list-style-type: none"> • More single programmes (up to 8) in sequence • 4 different acoustic signals: tightening end, single tightening end, sequence (OK/NOK) • It can be selected from PC • For each tightening sequence it is possible to program the maximum number of tightening attempts fro NOK screws
RS 232 SERIAL PORT	<ul style="list-style-type: none"> • To print the following results in sequence: Date / hour - Number active output - Result – Tightening Time – Screw number - Program number - Sequence
PASSWORD	<ul style="list-style-type: none"> • Two modalities: one does not allow the operator changing menu's parameters; the other, in addition to former's possibilities, in case of error and consequent unit stop, allows the line manager to reactivate the process by means of a password or key (optional)
TIME	<ul style="list-style-type: none"> • It can be activated without buffer-battery to be replaced
MEMORY	<ul style="list-style-type: none"> • Parameters for statistics (they can printed through RS232): OK piece - NOK Screws - Pressed resets (NOK pieces) - Number of screws counted by TOM (data not resettable) – It stores data related to last 6,000,000 screws
LEVER RELEASED CONTROL	<ul style="list-style-type: none"> • In production processes where the operators tighten so fast that release the lever before the clutch shuts-off
REMOTE FUNTIONING	<ul style="list-style-type: none"> • From external PLC (or sensor) it is possible to stop the tool with the dedicated locking/unlocking unit. For instance, when we work with jigs, the tool is activated only when parts are correctly positioned
MASKED TIME	<ul style="list-style-type: none"> • This feature disable any controls for a set time during which TOM does not detect possible incorrect operations by the worker (for instance "unintentional starts" with push-to-start screwdrivers)
RELEASE TIME	<ul style="list-style-type: none"> • This function allows to better identify the OK tightenings, even if the lever is released in a very short time after the clutch shut-off (for example, if the operator is particularly fast to tighten and release the lever)
RUNCYCLE	<ul style="list-style-type: none"> • For pallet lines where, for instance, jigs locking device needs to be activated and then release the jig when the piece is assembled. Replaces some activities that are normally controlled by a PLC

Models available upon request

- **Multi-dock connector:** connecting up to 8 tools (each tool has a dedicated program) that can operate individually depending on TOM programming. Code 685001065
- **Tool locking/unlocking device:** it permits to TOM unit to enable/disable connected tool. For 26C models: code 685001069
- **Cables**
Code 685001071: to connect TOM with locking/unlocking device when a single screwdriver is used.
Code 685001072: to connect multi-dock connector with locking/unlocking device when several screwdrivers are used
- **Tower-light:** It allows immediate, visual display of the tightening outcome. Code 687041018
- **Connecting hoses** (air and signals) for use of the transducer for TOM. A very compact solution, completely spiral shape, which maintains a tidy work area for the operator. The hoses are 2.5 M long (measured with stretched hose and including 35 mm useful linear hose for connections)
Spiral multi-hose for TOM D12 code 693011027
Spiral multi-hose for TOM D10 code 693011026
- **Cover:** It prevents intentional or unintentional contacts and damages to TOM unit. It prevents modifications / tampering by unauthorized personnel. Code 687041043
- For further information see cat. 99 - TOM Monitoring Unit.

Advantages of the TOM unit vs a PLC

	TOM	PLC
LAY OUT	Compact unit compared to the PLC	To provide the same features, the PLC must be integrated with other devices (additional modules which are bigger)
	Robust: the cover is made of sheet metal 1 mm thick	The PLCs are made of plastic and must be further protected by an additional electric panel
	It doesn't require switchboard and wiring for installation	The PLC provides an electric panel instead
	Possibility to position it directly on the production line to be used by the operator to read	The PLC needs a operator panel and/or external buttons
CHEAPNESS	Integrated and easy user interface	It is necessary an operator panel to connect and adequately program
	TOM is a complete system equipped with 16 IN and 24 OUT, RS232 for data and watch	To have all these functions, it is necessary to add expansions
	Complete firmware compatible with all screwdrivers , with all setting times and calibrations and many other functions	It is required a complete programming according to the different screwdrivers to connect
	Firmware already tested by Fiam and ready to use	A program developed by the customer, in addition to costs for software development and time (often some months), requires a time for verification and resolution of the programming errors
USE	Rapid start up: a few seconds to start	Long cycle of start; the PLC always require more time to start
	Rapid visualisation of the remaining screws thanks to additional display	For the PLC, it is required an additional monitor positioned close to the user
	Fast calculation: instantaneous response to events (both screwdriver and inputs / outputs). Very rapid reading: even in the case of 1 tightening with very high cadences, counts are not lost	Slower times of answer in case of tightenings with high work rate
	Easily interfaced to signal and transmit the data with all PLC	The PLC to communicate with other devices must have additional interfaces



TOM connected with the plant's system



Process under control and print of tightening results

Air angle nutrunners with pneumatic pick-up signal

Type of screwdriver / nutrunner		Grip	Tightening torque on soft joint		Idle speed	Starting system	Reversibility	Weight	Dimensions (mm)	Air consumption	Accessories	Noise level*	Vibrations		
Model	Code		Type	min.										max.	min.
15C2A30 - 2CS	112509903		0,8 ÷ 2,0	7,08 ÷ 17,7	2000			0,70	1,54	see on page 12	4	<input type="checkbox"/> M 1/4"	73	<2,5	
15C3A30 - 2CS	112509904		0,8 ÷ 3,0	7,08 ÷ 26,55	1400			0,70	1,54	see on page 12	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C4A30 - 2CS	112509905		0,8 ÷ 4,0	7,08 ÷ 35,4	950			0,70	1,54	see on page 12	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C5A30 - 2CS	112509906		0,8 ÷ 5,0	7,08 ÷ 44,25	650			0,70	1,54	see on page 12	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C2A90 - 2CS	112509907		0,8 ÷ 2,0	7,08 ÷ 17,7	2000			0,70	1,54	see on page 12	4	<input type="checkbox"/> M 1/4"	73	<2,5	
15C3A90 - 2CS	112509908		0,8 ÷ 3,0	7,08 ÷ 26,55	1400			0,70	1,54	see on page 12	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C4A90 - 2CS	112509909		0,8 ÷ 4,0	7,08 ÷ 35,4	950			0,70	1,54	see on page 12	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
15C5A90 - 2CS	112509910		0,8 ÷ 5,0	7,08 ÷ 44,25	650			0,70	1,54	see on page 12	5,5	<input type="checkbox"/> M 1/4"	73	<2,5	
AD6RA1-2CS	114893986		2,5 ÷ 6	22.13÷53.1	1150			1,20	2,64	see on page 12	10	<input type="checkbox"/> M 3/8"	73	<2,5	
AD9RA1-2CS	114893989		2,5 ÷ 9	22.13÷79.65	900			1,20	2,64	see on page 12	10	<input type="checkbox"/> M 3/8"	73	<2,5	
AD14RA1-2CS	114807129		3 ÷ 14	26.55÷123.9	600			1,40	3,08	see on page 12	10	<input type="checkbox"/> M 3/8"	73	<2,5	
AD26RA1-2CS	114807086		11,5 ÷ 26	101.78÷230.1	350			1,45	3,19	see on page 12	10	<input type="checkbox"/> M 3/8"	73	<2,5	
AG40RA-2CS	114893975		18 ÷ 40	159.3÷354	400			2,05	4,51	see on page 12	13	<input type="checkbox"/> M 3/8"	73	<2,5	
AG60RA-2CS	114893980		29 ÷ 60	256.65÷531	300			2,30	5,06	see on page 12	13	<input type="checkbox"/> M 3/8"	73	<2,5	

Legend

15 = Power of the motor in Watt/10 • C = Screwdriver/Nutrunner • 2 = Maximum tightening torque in Nm • A = Air shut-off system • 30 = Head at 30° • 90 = Head at 90° • 2CS = Double-signal pressure

Legend

Reversibility: all models are suitable for tightening and untightening operations

Lever start

- The figures shown are measured at a pressure of 6,3 bar (ISO 2787) the recommended operating pressure.
- Tightening torque values have been measured in accordance with ISO 5393 standard.
- Noise level has been measured in accordance with ISO 3744 and ISO 15744 standards.
- * Additional factor: 3 dBA spread in method and production (ISO 15744).
- Vibrations level have been measured in accordance with ISO 28927-2 standard.
- Accessory drive: male square drive (ISO 1174).
- The code number must be used when ordering.

The data given in the table are indicative and can be changed without prior notice. The torque values are purely indicative and may be influenced by the softness of the type of joint, by the type and length of the screw, by the pressure and quantity of air supply, and by the type of accessory used. The values indicated for noise and vibration levels were obtained in the laboratory, performing tests that comply with the standards stated, but alone are not sufficient for calculating risks. Values measured in the single work places may be higher than those stated. The values of actual exposure and consequent risks are specific and depend on the operator's method of work, the type of work piece and the work place, as well as the operator's time of exposure and his physical conditions. Fiam cannot be held responsible for any consequences deriving from the use of the information in the table when evaluating risks in the work place over which Fiam has no control. For all further details, please apply to the **Fiam Technical Consultancy Service**.

Standard equipment (supplied with the tool)

- Clutch adjustment key
- Hanging ring
- Use and maintenance manual.
- Eco-friendly packaging.

Accessories available upon request

- Bits, sockets, etc., balancers, exhaust silencers and other compressed air system accessories (see Accessories catalogue)

Accessories available upon request

MULTI-DOCK CONNECTOR



Connecting up to 8 tools (each tool has a dedicated program) that can operate individually depending on TOM programming. There are 2 LEDs for each screwdriver: one indicates the enabled screwdriver (to be used) and one indicates the tool is working.

Geared for additional feeding in case of need (feeder upon request).

Supplied with adapter for connection with TOM and 2 connecting cables.

Model	Code
Multi-dock connector	685001065

TOOL LOCKING/UNLOCKING DEVICE



It permits to TOM unit to enable/disable connected tool. Including status led. Extremely silent and equipped with device to convey the exhaust away from the working area. To be used with specific connecting cables (see below).

Model	Code
Unit for 15C/26C (including couplings for 10 mm Ø hose bore)	685001069
Unit for AD/AG/IHE/CY (including couplings for 12 mm Ø hose bore)	685001070

CABLES



Model	Specific	Code
Cable TOM / stop unit	To connect TOM with locking/unlocking device when a single screwdriver is used	685001071
Cable multi-dock connector / locking/unlocking device	To connect multi-dock connector with locking/unlocking device when several screwdrivers are used	685001072

TOWER-LIGHT



3 colour tower-light to be connected to TOM through supplied cable. It allows immediate, visual display of the tightening outcome.

Model	Code
3 colours tower-light	687041018

COVER



Covering device for the upper part of TOM unit, compact and easy to install. It hides any anti aesthetic wiring. It prevents intentional or unintentional contacts and damages to TOM unit. It prevents modifications / tampering by unauthorized personnel. It protects the electrical contacts from any traction thanks to the presence of 3 cable glands.

Model	Code
Cover	687041043

CONNECTING HOSES (AIR AND SIGNALS)



New exclusive air hoses, designed by Fiam. They provide specific features for use of the new transducer for TOM (cod. 687041041). The two hoses for the pneumatic signal pick-up are fixed to air supply hose, while the transducer can be placed at the opposite end of the hose rather than on the tool. A very compact solution, completely spiral shape, which maintains a tidy work area for the operator. The hoses are 2.5 M long (measured with stretched hose and including 35 mm useful linear hose for connections); this dimension is the one that guarantees the transducer perfect efficiency. For different lengths, we recommend the connections to linear hoses.

Model	Code	L mt	Ø spiral mm	Ø ext x int mm	2 hoses for pneumatic spiral Ø ext x int mm
Spiral multi-hose for TOM D12	693011027	2,5	80	9x12	2,5x4
Spiral multi-hose for TOM D10	693011026	2,5	80	7,5x10	2,5x4

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