

DUNNER
SWISS TOOLING PRODUCER

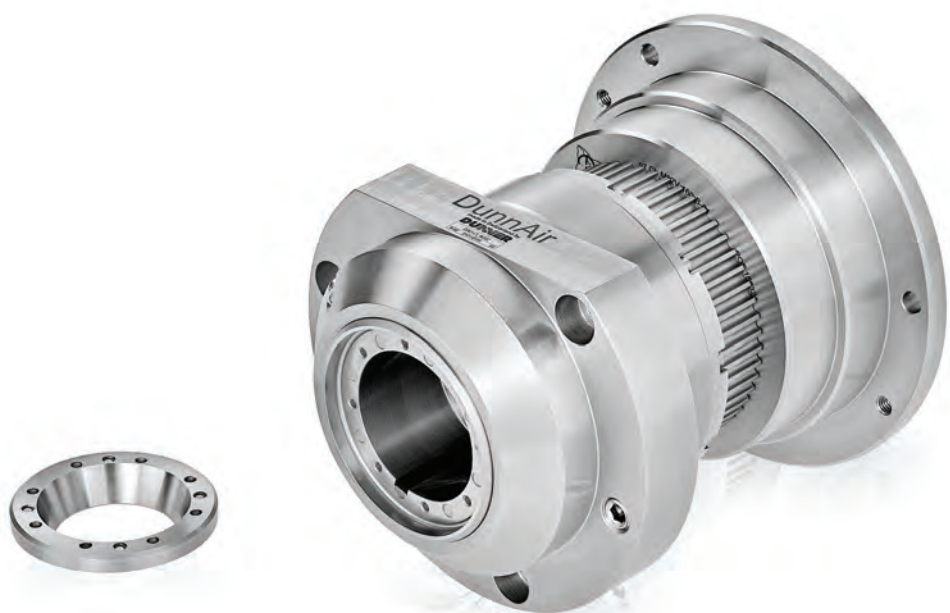


DunnAir[®]

The CNC-programmable guide bush system

DunnAir[®]™

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What is DunnAir ?

Overview

DunnAir is a CNC-actuated guide bushing system for Swiss automatic lathes. However, DunnAir is not just a CNC-actuated system; it is also designed to continuously guide the material, even when size variations occur.

This system allows the use of a new range of materials on Swiss automatic lathes, like extruded plastics, metals and profiles, welded tubes, cold drawn metals and many more.

It also makes setting up automatic lathes easier and more reliable. It is no longer necessary to adjust the guide bush with a particular touch, but simply to follow a pre-established and documented internal procedure. This means you'll be much less dependent on your employees' know-how to guarantee production quality.

As Swiss automatic lathes increasingly integrate diverse machining capabilities, the DunnAir system strongly reduces the vibration encountered with usual guide bush.

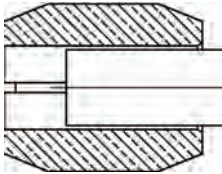
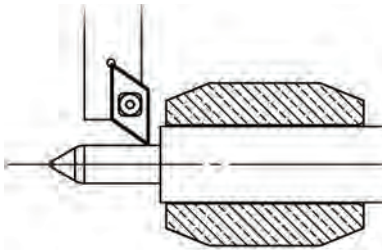
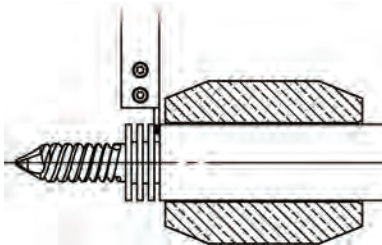
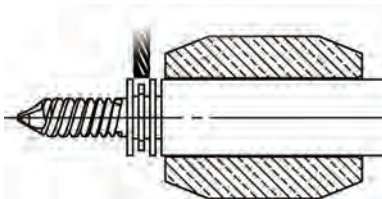
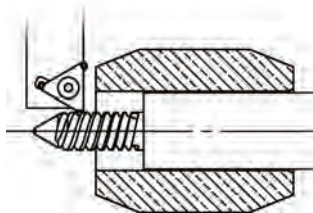
This significantly increases the lifetime of the tools, the achievable feed rates, and the overall production quality.



DunnAir on STAR SX38.
Material : tooling steel Ø22mm, tolerance h9 cold drawn.
Machining : one cutting pass with 2 simultaneous tools on Ø16mm.
Goal : Finished Ø16x120mm with cylindricity less than 15 microns.
Result with base guide bushing system : Parts cylindricity = 30 to 50microns
Result with DunnAir guide bushing system : Parts cylindricity 5 to 10 microns

Functions

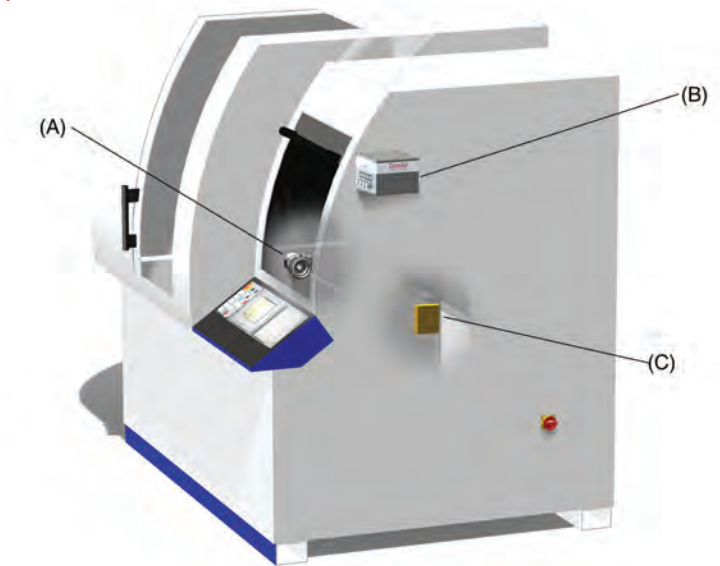
During machining, you can call up the following functions using M codes:

Function	Description	Illustration
Opening	The opening provides a gap of minimum 0.1mm between the guide bush and the material. This space makes it easy to load and unload the material.	
Guiding 1	The guiding pressure is usually set to provide stability with a smooth displacement of the material. It is ideal for finishing and machining small details.	
Guiding 2	The second guide pressure can be adjusted to exert greater pressure on the material. This pressure ensures greater stability and absorbs more vibrations. It is ideal for rough machining, grooving or any operation that generates radial forces.	
Clamping	Clamping turns your guide bush into a collet in a second. Your material is completely stable and opens up new possibilities, such as refeeding the main spindle (for very long workpieces), milling, cross-drilling or any operation that requires a completely stable Z position.	
Locked on the diameter	Locking the guide bush is a combination of 2 pressures that offers you the possibility to disable the usual self-adjusting. This function is very useful when you need to move backwards with your machined material in the guide bush and don't want to open it. The decision to use this function instead of opening is motivated by the need to maintain contact with the reference surface.	

Components of the sytem

Several components are required to integrate the DunnAir system into the machine.

DUNNER SA collaborates closely with local technicians and machine vendors to ensure seamless and user-friendly integrations.

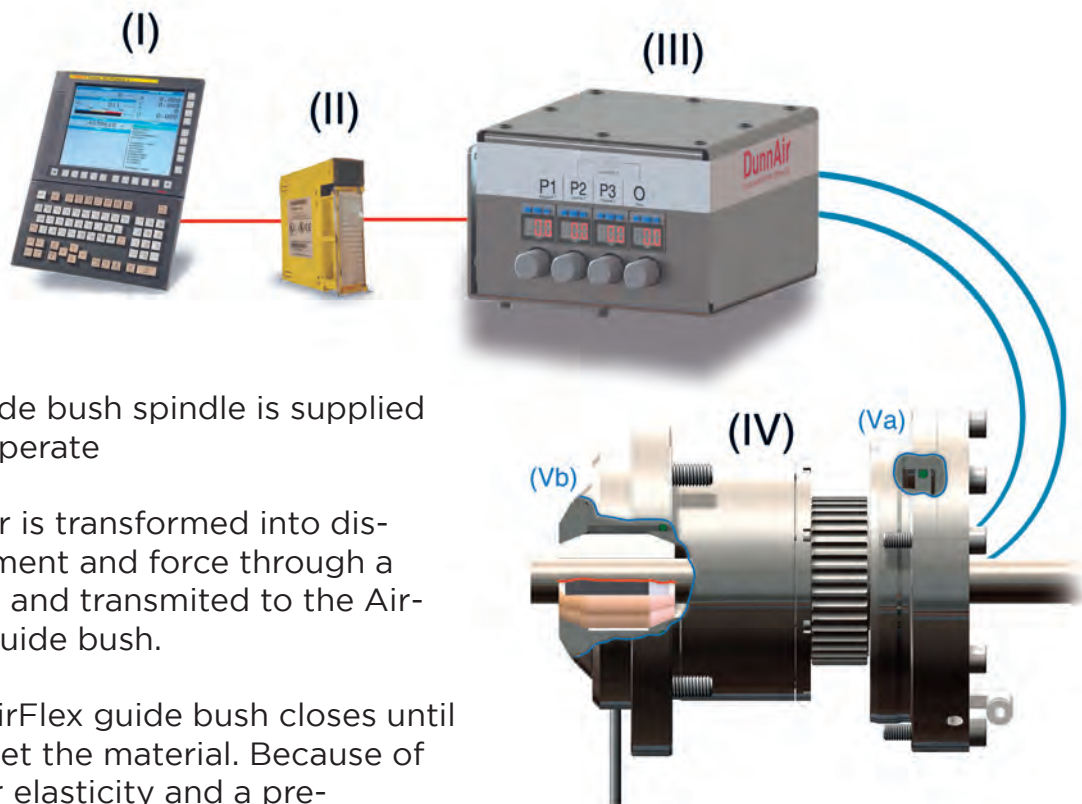


Group	Description	Illustration
A	DunnAir Unit - The base guide bush spindle	
A	AirFlex guide bush - The wearing part of the system, adapted to the material you are machining. For more information about this product, download the dedicated catalog online or ask for it to our sales team : sales@dunner.ch .	
A	Accessories - Due to the various needs and machining conditions, accessories could be added, like reduction kit, high pressure protection kit,... This allows you to optimize costs and improve your experience with the DunnAir system.	
B	Digital Air Controller - This box allows you to set a specific air pressure for each function. Then it convert the electric signal to the required air pressure.	
C	Hardware/software adaptation - This component is closely linked to the brand and type of machine. In most cases, an additional output module or PLC is installed in the machine cabinet. Modifications to the PMC-CNC are carried out by a qualified technician or by the machine's dealer, in accordance with the DUNNER standard.	

Operating principle :

The operating principle of the DunnAir system is very simple :

- I. With the machine numerical command, the operator (MDI mode) or the running program (automatic mode) send a M code corresponding to the desired function.
- II. The hardware/software adaptation sends electrical pulses as programmed into the machine's PMC-CNC.
- III. The Digital Air Controller activates the called function with the set air pressure and supplies air to the DunnAir guide bush spindle.

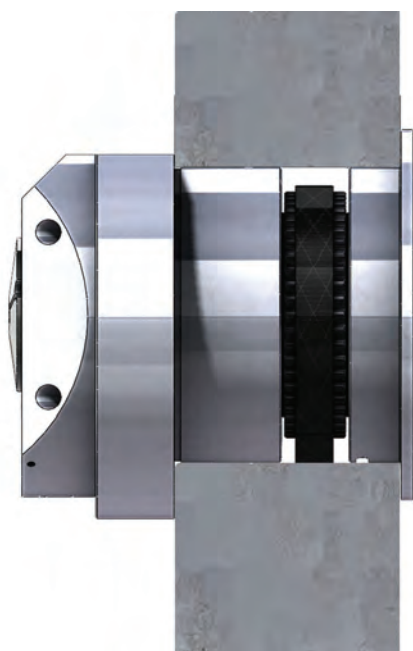


- IV. DunnAir guide bush spindle is supplied with air to operate
 - Va. The air is transformed into displacement and force through a piston and transmitted to the Air-Flex guide bush.
 - Vb. The AirFlex guide bush closes until he meet the material. Because of the air elasticity and a precise pressure regulation, all material variation are compensated. Thanks to the double tapered Air Flex, material is always centered to perform precise machining.

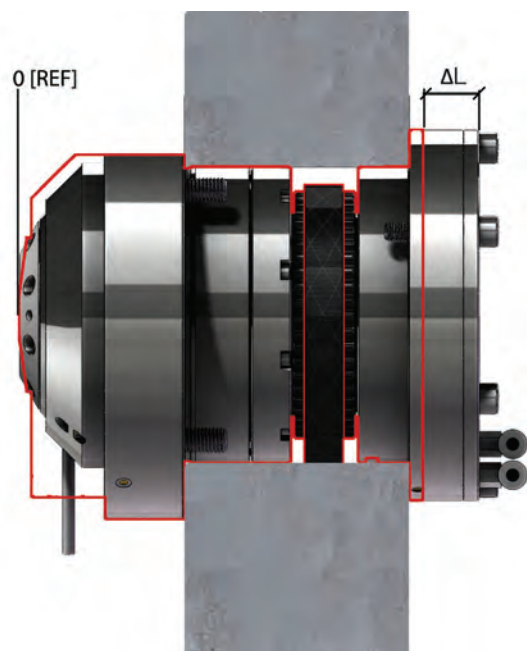
DunnAir Unit

General characteristics

DunnAir is designed to replace the original guide bushing spindle supplied by the machine manufacturer. This replacement offers greater flexibility, consistency, ease of use, and a better return on investment.



Machine manufacturer
guide bushing spindle



DunnAir guide bushing
spindle

When replaced, the DunnAir guide bushing spindle fits the same space (in red) and has the same reference (0[REF]). In most cases, a difference of length (ΔL) due to the space required by the pneumatic system causes a small loss on the Z axis.

Pay attention that the guide bushing spindle is dedicated for a specific machine type and a model or a range of models.

CITIZEN compatible DunnAir Unit

CITIZEN machine type	Article code for compatible DunnAir Unit	Type of Air-Flex guide bush used by the Unit	Standard maximum Ø trough DunnAir Unit
A20 gen. 3	DAU-CI_A320	C33	25 mm
A32 gen. 1	DAU-CI_A132	C42	32 mm
A32 gen. 2	DAU-CI_M432	C42	32 mm
C32 gen. 1	DAU-CI_M332	C42	32 mm
D25 gen. 1	DAU-CI_D125	C33	25 mm
	DAU-CI_D132	C42	32 mm
L12 gen. 1	DAU-CI_L112	C22	13 mm
L12 gen. 2	DAU-CI_L212	C22	13 mm
L20 gen. 1	DAU-CI_L120	C33	25 mm
L20 gen. 2	DAU-CI_A320	C33	25 mm
L32 gen. 1	DAU-CI_L238	C48 / C42 ⁱ	38 mm
L32 gen. 2	DAU-CI_L238	C48 / C42 ⁱ	38 mm
M16 gen. 3	DAU-CI_M416	C28	16 mm
M16 gen. 4	DAU-CI_M416	C28	16 mm
M32 gen. 3	DAU-CI_M332	C42	32 mm
M32 gen. 4	DAU-CI_M432	C42	32 mm
M32 gen. 5	DAU-CI_M538	C48 / C42 ⁱ	38 mm

ⁱ = requires additional reduction kit (see page 13).

STAR compatible DunnAir Unit

STAR machine type	Article code for compatible DunnAir Unit	Type of Air-Flex guide bush used by the Unit	Standard maximum Ø trough DunnAir Unit
SB-16	DAU-STSB16	C28	16 mm
SB-20R	DAU-STSB20R &	C33	25 mm
ECAS-20	DAU-STSR20R	C33	25 mm
SR-20J	DAU-STSR20J	C33	25 mm
SR-20JII	DAU-STSR20J2	C33	25 mm
SR-20R	DAU-STSR20R	C33	25 mm
SR-20RII	DAU-STSR20R	C33	25 mm
SR-20RIII	DAU-STSR20J	C33	25 mm
SR-20RIV	DAU-STSW20	C33	25 mm
SR-32J	DAU-STSR32J	C42	32 mm
SR-32JII	DAU-STSR32J2 &	C48	38 mm
SR-38	DAU-STSR38	C51 / C48 ⁱ / C42 ⁱ	42 mm
ST-20	DAU-STST20	C33	25 mm
ST-38	DAU-STST38 &	C51 / C48 ⁱ / C42 ⁱ	42 mm
SW-20	DAU-STSW20	C33	25 mm
SX-38	DAU-STSX38	C51 / C48 ⁱ / C42 ⁱ	42 mm

& = Production made on request.
ⁱ = requires additional reduction kit (see page 13).

Tornos compatible DunnAir Unit

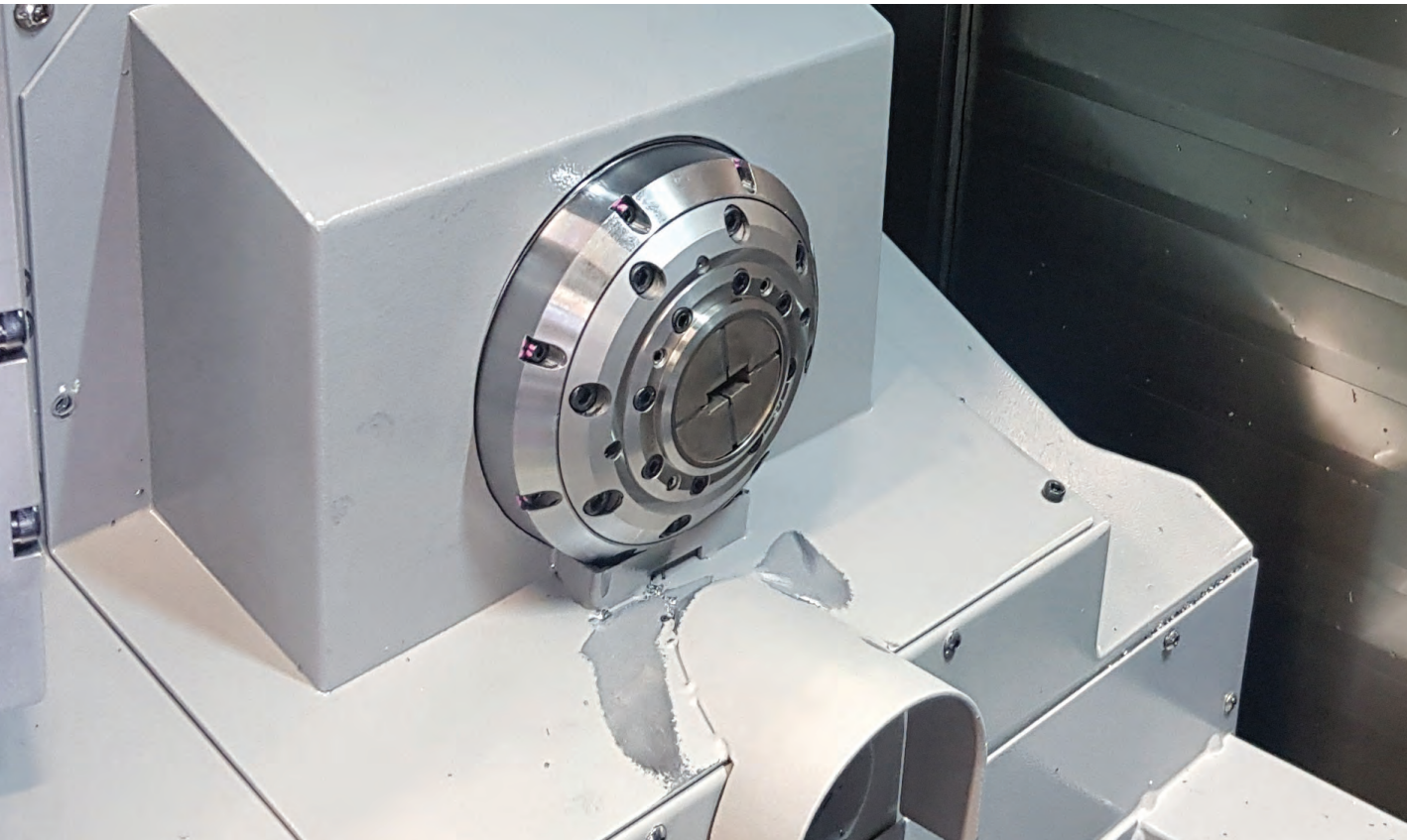
TORNOS machine type	Article code for compatible DunnAir Unit	Type of Air-Flex guide bush used by the Unit	Standard maximum Ø trough DunnAir Unit
Deco 10	DAU-TODE10 &	C22	13 mm
Deco 13	DAU-TODE13	C28	16 mm
Deco 20	DAU-TODE20	C33	25 mm
Deco 26	DAU-TODE20	C33	25 mm
	DAU-TODE32	C42	32 mm
EvoDeco 10	DAU-TODE10	C22	13 mm
EvoDeco 16	DAU-TODE13	C28	16 mm
EvoDeco 20	DAU-TODE20	C33	25 mm
EvoDeco 32	DAU-TODE32	C42	32 mm
Sigma 20	DAU-TODE20	C33	25 mm
Sigma 26	DAU-TODE20	C33	25 mm
	DAU-TODE32	C42	32 mm
Sigma 32	DAU-TODE32	C42	32 mm
Swiss ST26	DAU-TODE20	C33	25 mm
	DAU-TODE32	C42	32 mm

& = Production made on request.

TSUGAMI DunnAir Unit conversion kit

Tsugami machines mainly use direct-drive guide bush spindles (with integrated motor). Because of this specificity, DUNNER offers to convert the manufacturer’s guide bush spindle into a DunnAir Unit.
Due to the specific design of this product, the “Locked on the diameter” function is not available.
We also recommend using our conversion kit on a machine with a ratio of minimum 75% milling and maximum 25% turning (with preferably low RPM), to avoid excessive wear on certain components.

TSUGAMI machine type	Article code for compatible DunnAir Unit	Type of Air-Flex guide bush used by the Unit	Standard maximum Ø trough DunnAir Unit
HS38	DAU-TSHS38	C48	36 mm
SS38	DAU-TSHS38	C48	36 mm



TSUGAMI HS38 after conversion into DunnAir Unit

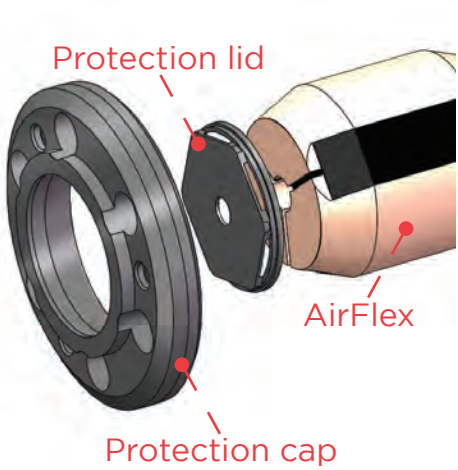
DunnAir Unit accessories

Accessories helps you to customize the DunnAir Unit to fit you needs.

Protection Kit

Protective kits are designed to limit rubber wear caused by the flow of high-pressure coolant. To prevent this wear, the steel cover protects the front face of the AirFlex guide bush. The cover will wear in place of the AirFlex. The cover must be ordered with the same diameter as the AirFlex guide bush. To fit the cover, simply open the front cap and place it between the cap and the AirFlex.

AirFlex Type	Article code for protection cap	Article code for protection lid	Standard range for the lid hole Ø
C22	DAU-PKC22-C	DAU-PKC22-D	2 - 13mm
C28	DAU-PKC28-C	DAU-PKC28-D	2 - 16mm
C33	DAU-PKC33-C	DAU-PKC33-D	2 - 25mm
C42	DAU-PKC42-C	DAU-PKC42-D ^R	3 - 32mm
C48	DAU-PKC48-C	DAU-PKC48-D ^R	3 - 38mm
C51	DAU-PKC51-C	DAU-PKC51-D ^R	3 - 42mm

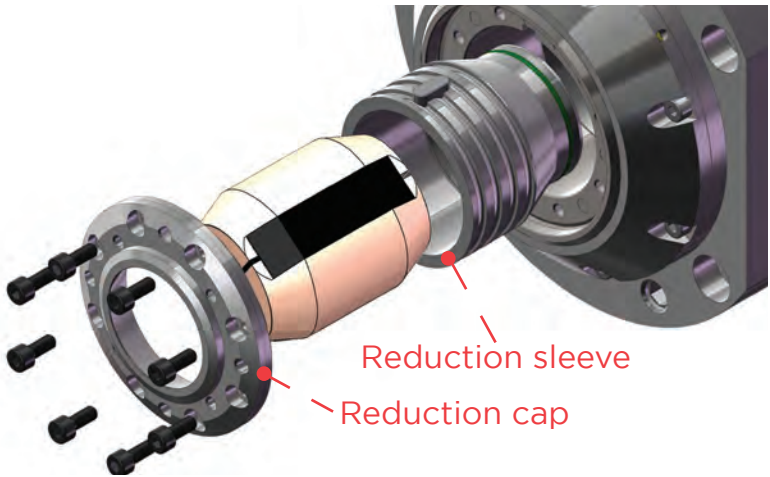


R = Available in reinforced version.

Reduction Kit

Reduction kits make it possible to use a smaller AirFlex guide bush than originally intended. The use of this accessory may reduce accuracy, but offers great flexibility and cost savings.

Base type	Reduced to type	Article code for Reduction Kit
C48	C42	DAU-RKC48C42
C51	C48	DAU-RKC51C48



Reduction and Protection kit

This accessory combines the two advantages mentioned above.

Base type	Reduced to type	Article code for DunnAir protec-tion lid	Article code for DunnAir protec-tion lid	Standard range for the lid hole Ø
C48	C42	DAU-RKC48C42	DAU-PKC42-D ^R	3 - 32mm
C51	C48	DAU-RKC51C48	DAU-PKC48-D ^R	3 - 38mm
C51	C42	DAU-RKC51C42	DAU-PKC42-D ^R	3 - 32mm

R = Available in reinforced version.

Digital Air Controller

General characteristics

The Digital Air Controller offers a user-friendly interface to immediately display the current active function (which turns from red to green when active) and the set pressure. The case is made of stainless steel and designed to fit any machine. It takes up very little space. In the event of a problem, the unit can be replaced in 5 to 10 minutes without any advanced technical knowledge.









Suitable for machine type	Article code	Maximum input pressure	Dimensions (LxDxH)
ALL	DAC-01	8 bars	180x180x120 mm

Hardware/software adaptation

General characteristics

For successful integration on the machine, particularly in the case of retrofitting, the hardware interface is crucial. DUNNER offers the option of purchasing the hardware required for perfect integration. Software modifications (PMC-CNC) are carried out on-site if installation is performed by a certified partner, or remotely in advance to ensure rapid installation.

In order to provide you with the right hardware, the technical and sales teams of DUNNER and its certified partners will help you determine what is required for your machine. Before you buy, don't hesitate to take advantage of our free support service to ensure your satisfaction.

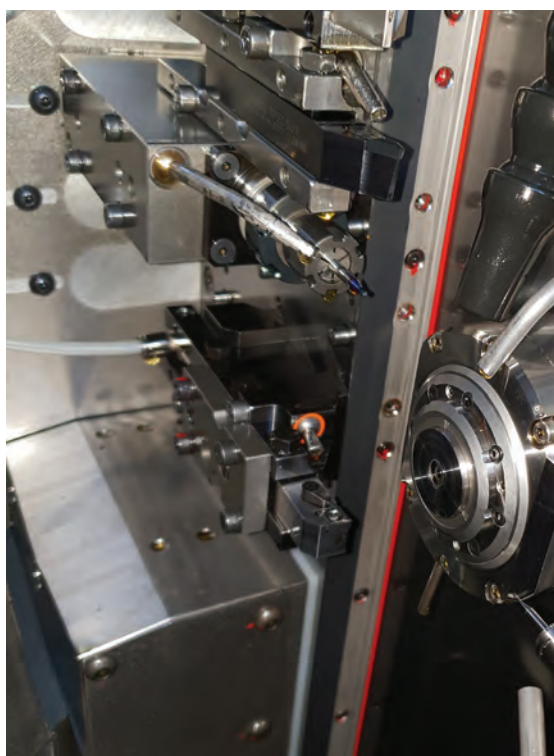
Machine brand	PLC type	Article code for Harware/software adaptation	Connection interface	Illustration
CITIZEN	Mitsubishi or Fanuc	DAS-CI	Additional PLC output M60 to M65 or CN6 connector ^D	
		DAS-ST	FANUC I/O Link	
STAR	Fanuc	DAS-ST_I	FANUC I/O Link i	
		DAS-TO_A	FANUC BASE ABUxxx	
TORNOS	Fanuc	DAS-TO_B	FANUC I/O Link	
		DAS-TO_I	FANUC I/O Link i	

^D = On request, the CN6 port replicator (art. DAS-CI_CN6DUP) is available if other equipment already use this output interface.

Installation and training service

As a complete solution provider, DUNNER also offers the necessary installation, commissioning and training services for your DunnAir system.

We offer these services through trained, local partners. If no one is available in your area, we'll send an experienced technician directly from our headquarters in Switzerland.



It goes without saying that if you have a trusted partnership with your machine supplier, we will, wherever possible, offer them the opportunity to qualify to provide you with the support you expect.



Even after a number of years, if you'd like to train your operators or new staff so that you always get the best out of your investment, we can organize on-site training courses.

In all cases, we'll be happy to provide you with the support you need.



Why choosing DunnAir ?

Solve your problems

The DunnAir System solves these issues for you :

- DunnAir is CNC-controlled, allowing you to select the position directly in your programs based on the machining operation—delivering unmatched flexibility!
- No more downtime caused by stock diameter variations—DunnAir automatically adapts, ensuring greater reliability!
- When replacing the guide bush, the operator works exclusively from the machining area. The worn guide bush is simply swapped for a new one, allowing the machine to resume production immediately, with no additional adjustments or the need for a highly skilled technician.

Ensure your quality and reliability

The DunnAir System improves your production quality through the following points :

- No more undesired play between the material and the guide bush, so you reach your goals easier and safer.
- Because DunnAir is set through pressure gauge with digital screen, the adjustment process can be checked and logged in internal documentation.
- Customer testimonials report a significant improvement in machine capability (e.g. CITIZEN M16, 4th generation, with original guide bush system $C_p = 1.34$, with DunnAir System $C_p = 3.40$).

You will also benefit of a better reliability through the wear part optimisation. You can use the same bushing on different brands of machine as long as it's the same AirFlex type.

Get new opportunities

The DunnAir System opens to your workshop a full new range of material you will be able to machine on your automatic lathe :

- Welded tube
- Cold-drawn bar stock
- Extruded materials like plastics, aluminium, stainless steel,...
- All materials up to tolerances H11

Take advantage of your return on investment

The DunnAir system offers substantial returns on investment, delivering significant benefits to your production process :

- Reduced setup times, minimizing delays.
- Less machine downtime, boosting productivity.
- Fewer out-of-tolerance parts rejected, ensuring higher quality
- Longer tool life, reducing replacement costs.
- Lower raw material costs enabled by a wider range of material options.

These features work together to help you achieve maximum ROI. Our customers consistently report payback periods of just 3 to 20 months, even after accounting for maintenance and consumable costs like AirFlex guide bushes.

Personal notes

Can't find what you're looking for?
We manufacture thousands of customized guide
bushes, collets and other tools every year, so don't
hesitate to contact us!





Your local agent :

V2502017