SHRINKFIT DEVICES



EASYSHRINK[®] 15 OPERATING INSTRUCTIONS



Dear Customer,

We thank you for having purchased an Easyshrink[®] 15 shrinking device.

This induction shrinking device will offer you a lot of advantages:

- automatic* or programming heating cycles
- optimised cycles to shrink-grip and shrink-release tools
- localized and homogeneous heating of the clamping area
- minimal energy consumption
- fast cooling of the tool and the toolholder
- clamping of carbide, HSS and steel tool shanks

These operating instructions will give you all necessary information to use this device in the best way.

Should you need further clarifications, our sales-team stays at your full disposal.

Your Partner,

Seco Tools AB.

*Designed for Seco's toolholders, to be validated for other brands.

Provisions of warranty

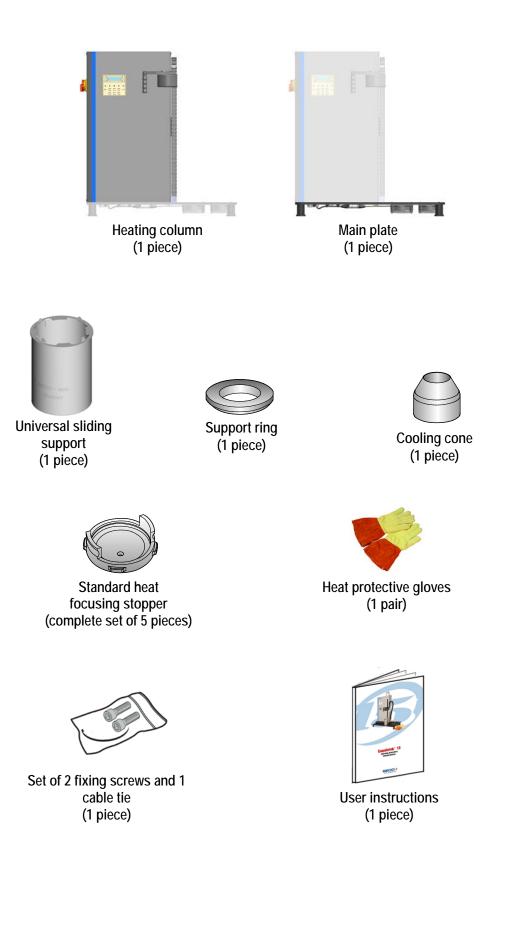
This warranty covers the material defects. Any defect that occurs due to mishandling that is not mentioned in this Operating instructions manual, or due to an improper maintenance, etc. is not covered. Seco's sole liability is limited to repairing or replacing the product. Any liability for indirect or consequential loss or damage of any kind incurred or suffered by the customer due to a defect of the product is excluded.

If your product proves to be defective, although it has been used properly (in accordance with this written Operating instructions manual), during a period of 24 months from the date of invoicing, this product will be repaired or replaced (at Seco's option), free of charge.

TABLE OF CONTENT

DE	LIVERY	CONTENT	4
1.	INTR	ODUCTION	5
	1.1.	SHRINKING PRINCIPLE	
	1.2.	SHRINKING WITH INDUCTION	
2.	RECE	PTION OF YOUR DEVICE	6
	2.1.	TAKING DELIVERY	
	2.2.	ACCESSORIES, SPARE PARTS AND OPTIONS	
	2.2.1.	5 11	
	2.2.2. 2.2.3.		
	2.2.4.	0	
	2.2.5.	Depth comparator	6
	2.2.6.		
	2.2.7. 2.2.8.		
	2.3.	DIMENSIONS (WHEN MOUNTED)	
	2.4.	LOCALISATION OF THE DEVICE	8
	2.5.		
_	2.6.	POWER SUPPLY	
3.	EASY	SHRINK [®] 15 DEVICE: GENERAL DESCRIPTION	
	3.1.	OVERVIEW	
	3.2.	KEYPAD AND DISPLAY PRESENTATION	
4.	USIN	G THE DEVICE	13
	4.1.	PUTTING THE DEVICE UNDER TENSION	
	4.2.		
	4.3.	SHRINKING PROCEDURE Description of the different heating modes	
	4.3.2.		14
	4.3.3.	Using programmable modes PRG1 and PRG2	14
	4.3.4.		16
	4.3.5. 4.3.6.		
	4.4.	SHRINKING A TOOL INTO A TOOLHOLDER	
	4.5.	SHRINK RELEASE PROCEDURE	
	4.6.	SHRINKING OF TOOLS WITH LARGER FRONT THAN SHANK	
	4.6.1. 4.6.2.		
	4.6.3	51 5	20
5.	coo	LING	
	5.1.1.		
	5.1.2		
6.	SAFE	TY PRECAUTIONS	
7.		DMMENDATIONS FOR USE AND MAINTENANCE	
8.		TY FUNCTIONS OF THE EASYSHRINK [®] 15	
9.	APPE	NDICES	
	9.1.	TECHNICAL FEATURES	
	9.2. 9.3.	ELECTRICAL SKETCH	
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DELIVERY CONTENT



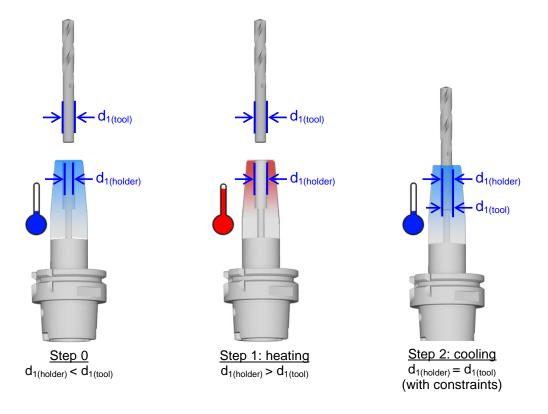
1. INTRODUCTION

1.1. Shrinking principle

The Shrinkfit holder's inside diameter is designed to be slightly smaller than the shank diameter of the cutting tool (step 0).

Using an heating system, the toolholder's inside bore of the Shrinkfit holder is heated and expands. The tool shank can then be slipped easily into it (step 1).

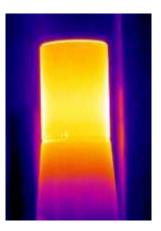
As the holder cools down, the resulting thermal contraction exerts a tremendous, uniform pressure around the entire surface of the tool shank (step 2).



1.2. Shrinking with induction

Induction heating allows clamping tools in a few seconds. The coil offers high performance as the energy is sprayed very rapidly and remains concentrated on the clamping area. Therefore, there is less energy remaining in the holder and the cooling time is decreased.

As a result, HSS tools can be shrinked and unshrinked with same thermal expansion coefficients as the steel used for the holders.



2. RECEPTION OF YOUR DEVICE

2.1. Taking delivery

The device you have received has been controlled and tested in our plant according to ISO9001 specifications. If the equipment has been stored or transported under unacceptable conditions, the equipment may be permanently damaged. In this case the manufacturer will exclude all warranty claims and obligations.

2.2. Accessories, spare parts and options

This paragraph shows the most common accessories for this device. Please refer to the latest Machining Navigator 'Tooling Systems' or latest Update for further information.

2.2.1. Universal sliding support



Designed for easy and safe displacement of the toolhoder from the shrinking slot to the cooling slots of the device. Part N° ZFAR08T

2.2.2. Support ring



Once set on the universal sliding support, the support ring allows a direct holder positioning. Available for all types of toolholders (SA30 to SA50, HSK25 to HSK100, Seco-Capto C3 to C8). Part N° ZFAR07xx

2.2.3. Air cooling cone



Once set on the universal sliding support, the air cooling cone focuses the air stream against the holder front end for cooling. Part N° ZFAR03C

2.2.4. Heat focusing stopper





<u>Standard</u> <u>stopper</u>

```
<u>Split</u>
stopper
```

For positioning of the inductor housing. Part N° Standard stoppers: ZFAT08Cxx Part N° Split heat focusing stoppers: ZFCE252x Part N° Locking ring for split heat focusing stoppers: ZFCM08IN000

2.2.5. Depth comparator



User friendly measuring accessory to set the position of the stop end screw (for DIN type holders), for reliable Shrinkfit depth. The distance between the stop end screw's front and the holder's front face is directly readable on the comparator. Part N° Z847031

2.2.6. Depth rulers for Shrinkfit depth setting



Second 2

A depth ruler is an economic alternative to the depth comparator, enabling easy setting of the stop rods on Packs Easyshrink[®] 20 according to a required Shrinkfit depth. The distance between stop rod's front and holder's face is directly readable on the ruler.

Depth ruler size 1 (Ø 2,5 mm) for Shrinkfit holders dia. 3 to 5 mm, depth capacity 10 to 35 mm: Part No. ZFCM07IN282.

Depth ruler size 2 (Ø 5 mm) for Shrinkfi t holders dia. 6 to 32 mm, depth capacity 20 to 75 mm: Part No.ZFCM07IN254.

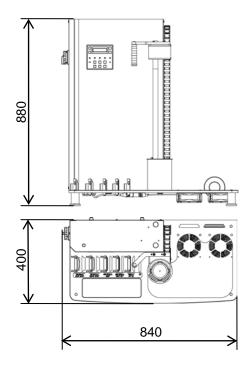
2.2.7. Protecting gloves

Direct skin contact with hot toolholders will cause severe injuries. The use of appropriate protecting gloves is mandatory to warranty the security of your operators. Conform to norm EN407 and EN388. Part N° ZFAG01

2.2.8. Complementary cooling devices

Complementary water cooling devices are available for faster cooling of the toolholders. Please refer to the Machining Navigator 'Tooling Systems'.

2.3. Dimensions (when mounted)

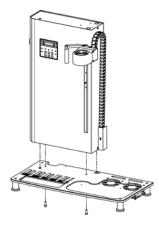




2.4. Localisation of the device

The Easyshrink® device is a table device, to be localized in a dry and clean working place, on a stable and rigid surface.

2.5. Mounting



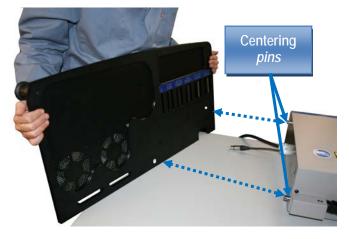
A bag with two fixing screws and one cable tie is delivered on the main plate of the device. Make sure you save these parts that are required to mount the device.





1) Lay the column on a table.

2) Present the main plate against the column and fit the centering pins in the slots of the main plate.



3) Fix the column on the main plate, using the two fixing screws.



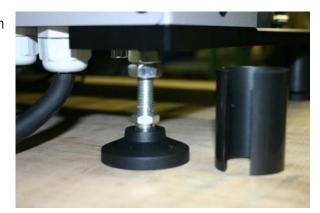
4) Plug the fans' power supply wire in.

Che

5) Use the provided cable tie to fix the fans' power supply wire on the main plate.



6) The main plate's feet (on the back, left corner) can be set in height to warranty the stability of the device.



2.6. Power supply

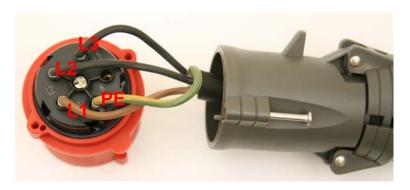
The Easyshrink[®] device is meant to be supplied with power according to these specifications:

AC 3x400V + PE/ 16A/ 50-60 Hz.

A 3,5 meter cable is supplied.



Please install the appropriate male and female plugs to connect the device to your electrical network and make sure the proper tension is delivered between each pin.



Name of the pin	Designation of the pin	Colour of the wire
L1	Phase L1	brown
L2	Phase L2	black or grey
L3	Phase L3	black
PE	Ground	green & yellow

Measure between the	
pins	Tension in V
$PE \rightarrow L1$	230
$PE \rightarrow L2$	230
$PE \rightarrow L3$	230
$L1 \rightarrow L2$	400
$L1 \rightarrow L3$	400
$L2 \rightarrow L3$	400



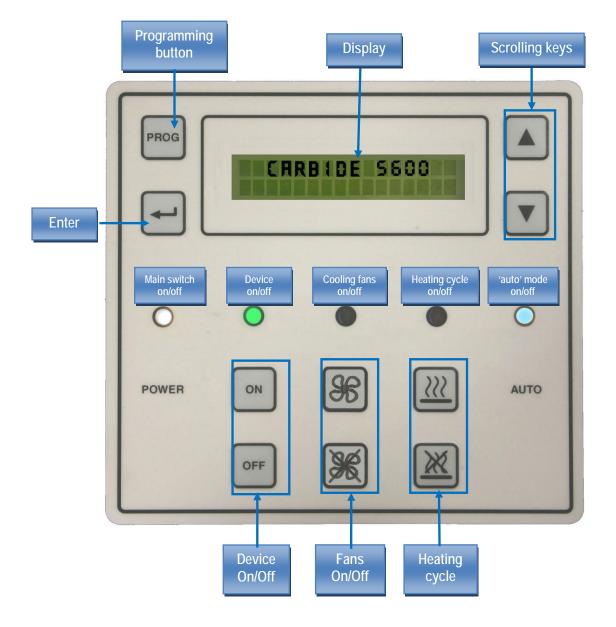
Note: A transformer for USA or Canadian voltages is available as an optional accessory. Please contact your Seco representative.

3. EASYSHRINK[®] 15 DEVICE: GENERAL DESCRIPTION

3.1. Overview



3.2. Keypad and display presentation



4. USING THE DEVICE

4.1. Putting the device under tension

Switch on the main interrupter of the device.

On the keypad, the white LED will go on. Display shows: POWER OFF.

4.2. Turning on the device

Switch on the module by pressing key

Select the required mode on the control panel according to the Shrinkfit holder front end type (see § 4.3.) and press key

Device is ready for a shrink grip or release heating cycle. Switch off the control panel by pressing key .

4.3. Shrinking procedure

Wearing supplied protective gloves is imperative while handling the device and Shrinkfit holders/tools.

4.3.1. Description of the different heating modes

AUTOMATIC MODES: User selects the required automatic mode on the control panel, no need to select the diameter. CARBIDE 5800: optimised shrink grip & release of carbide and heavy metal tools in type 5800 holders CARBIDE 5801: optimised shrink grip & release of carbide and heavy metal tools in type 5801 holders CARBIDE 5603: optimised shrink grip & release of carbide and heavy metal tools in type 5603/5803 holders CARBIDE 5600: optimised shrink grip & release of carbide and heavy metal tools in type 5603/5803 holders CARBIDE 5600: optimised shrink grip & release of carbide and heavy metal tools in type 5600 holders STEEL 5600: shrink grip & release of HSS and steel tools in type 5600, 5801, 5603/5803 holders.



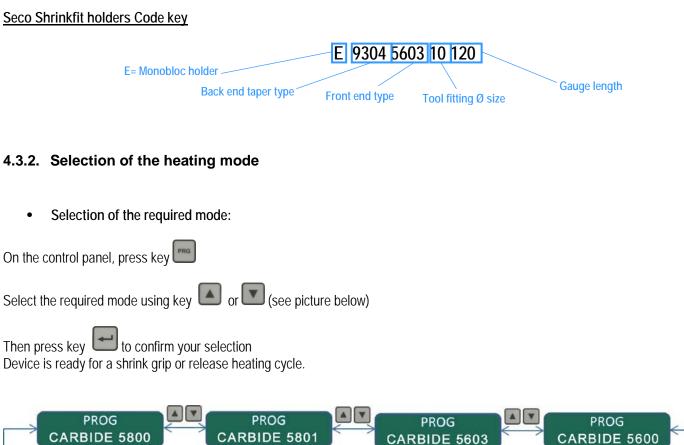


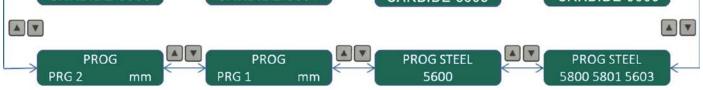




PROGRAMMABLE MODES: User programms the suitable cycle, in one of the 50 files of modes PRG1 and PRG2, using the control panel. Mode PRG1: possibility to programm up to 25 customised heating cycles

Mode PRG2: possibility to programm up to 25 customised heating cycles





4.3.3. Using programmable modes PRG1 and PRG2

• Heating time modification



In order to prevent misuse of these modes, the modification of the heating times is secured and an access code is required.

By security measure, heating times of PRG 1 and PRG 2 are preset to 0 second. The access code and the procedure to modify the heating times are given on request and after complete information about the risks.

Any change of the preset time must be made carefully, toolholder overheating makes it unusable. In case of modification without our agreement, Seco Tools AB. cannot be held as responsible for any damage. • Selection of the unit mm, inch, or mm and inch with mode PRG 1 or PRG 2:

On the control panel, select mode PRG 1 or PRG 2 (see § above)

Press two times key

Choose between mm, inch, or mm and inch using key or ress two times key to confirm and come back to working mode.

5

• Diameter scrolling according to the selected unit.

Scrollin	g in mm														
Ø(mm)	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20	Ø 25	Ø 32	Ø X 1	Ø X 2
Scrolling in inch															
Ø (inch)				Ø 1/4"	Ø 3/8"		Ø 1/2"		Ø 5/8"	Ø 3/4"	Ø 7/8"	Ø 1"	Ø 1"1/4	Ø X 1"	Ø X 2"
Scrolling in mm and inch															
Ø	Ø 3	Ø 4	Ø 5	Ø 6	Ø 1/4"	Ø 8	Ø 3/8"	Ø 10	Ø 12	Ø 1/2"	Ø 14	Ø 16	Ø 5/8"	Ø 18	Ø 3/4"
(mm + inch)	Ø 20	Ø 7/8"	Ø 25	Ø 1"	Ø 32	Ø 1"1/4	Ø X 1	Ø X 2	Ø X 1"	Ø X 2"					

Note: Diameters X1, X2, X1" and X2" are used for special diameter of tools, they can be programmed for specific applications.

4.3.4. Preparation before shrinking cycle

1) Position the universal sliding support on the heating station.

2) Install on it the support ring that corresponds to the Shrinkfit toolholder's taper. Please refer to the latest Machining Navigator 'Tooling Systems' or to the Machining Navigator 'Update' to select the appropriate support ring.



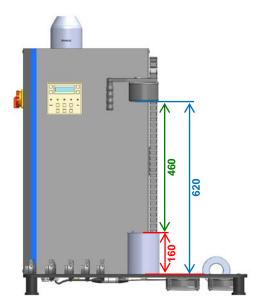
3) Choose the adapted heat focusing stopper that corresponds to the tool shank diameter.

Note: 5 heat focusing stoppers are supplied with each device, capacities: Ø 3-6, Ø 8-14, Ø 16-18, Ø 20-25, Ø 32 mm.

4) Install it into the location diameter in the inductor housing. Turn it around to lock it on the inductor housing.

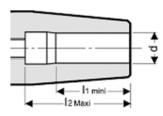


4.3.5. Minimal and maximal shrinkfit assembly's height



Minimum height between inductor and flange location	160 mm
Maximum height between inductor and main plate	620 mm
Maximum 'A length' of the assembly 'holder+tool'	460 mm

4.3.6. Shrinking depths to be respected

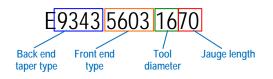


In order to guarantee torque transmission and to increase service life of the tool, recommended values for shrinking depth must be respected.

Find the minimum shrinking depth from the chart below (also on the device).

Example for a Seco toolholder type 5603

The diameter d and the jauge length are indicated on the toolholder:



The shrinking depth (depending on the position of the stop end screw) must be set minimum to ${\sf I}_{3}.$

In this case, the chart indicates $I_3=39$ mm.

Immédiatement remonter l'inducteur après chaque cycle de chauffe.

Immediately move up the inductor after each heating cycle.

Sofort die Spule nach dem Heizzyklus nach oben fahren.

	m	mm		inch			
Profondeur de frettage	d	I ₃	d	I ₃			
minimale	3	13	1/8"	1/2"			
Minimum Shrinking depth	4	15	-				
Minimale	5	18	3/16"	3/4"			
Schrumpftiefe	6	26	1/4"	7/8"			
	8	30	5/16"	1"3/16			
	10	32	3/8"	1"1/4			
	12	34	1/2"	1"3/8			
	14	34	· · · · · · · · · · · · · · · · · · ·				
	16	39	5/8"	1"1/2			
	18	39	3/4"	1"5/8			
	20	42	7/8"	1"5/8			
	25	47	1"	1"7/8			
	32	52	1"1/4	2"			

4.4. Shrinking a tool into a toolholder



Wearing supplied protective gloves is imperative while handling the device and Shrinkfit holders/tools.



Note: recommended cylindrical tool shank tolerance is h5 or h6 (maximum h5 for Ø 3 to 5 mm, maximum h6 for Ø 6 to 32 mm).

1) Move the inductor housing downwards, until the heat focusing stopper enters in contact with the top of the toolholder.



18

4.5.

Note : standby mode cannot be interrupted.

until end of the standby time.

deterioration).

Shrink release procedure

Shrinkfit holders/tools.

Wearing supplied protective gloves is imperative while handling the device and

Note: on completion of the heating cycle, it is imperative to immediately remove the inductor housing from the tool in order to avoid heat spreading into the inductor housing (risk of

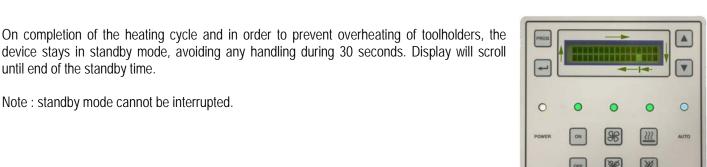
Preparation for shrink-release is the same as for shrink-fit. Introduction of the tool is replaced by its ejection.

3) Start the heating cycle by pressing key . Display is flashing during the heating cycle.

The heating stops automatically at the end of the preset time or by pressing the key . The cooling fans are automatically triggered during 15 minutes (see § 5.).

4) Fit manually the tool in the bore. The tool will be skrink-fitted within 3 to 5 seconds

2) Select the appropriate heating mode (see § 4.3.2 for details).











4.6. Shrinking of tools with larger front than shank

4.6.1. Clearance between tool head and toolholder front face

Note: For tools with larger front end than shank, split heat focusing stoppers covering tool shank diameter Ø 3-32 are available as accessories, capacities : Ø 3-6, Ø 8-14, Ø 16-18, Ø 20-25, Ø 32 mm.

Shrinkfit holders/tools.

To successfully shrink/release special tools, it is necessary to observe the following conditions:

Maximal diameter of the cutter D is 3 x d

Tool shank d Ø

(mm)Dimension E (mm)

Tool shank dØ

 \emptyset **D** maximum = \emptyset 63 mm (maximum bore \emptyset of induction unit).

3

6

- A dimension = 70 mm minimum (due to the inductor housing dimension). _
- E dimension changes depending on tool shank diameter **d**: see chart below.

4

6,5

16

7

18

6

7,5

20

8

7

25

10

8.5

32

12

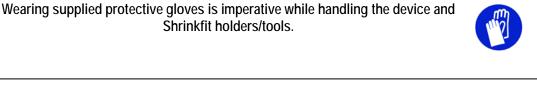
9,5

(mm)			10	20	20	02	
Dimension E (mm)) 11	8,5	9	7	7	6,5	

4.6.2. Shrinking procedure for tools with larger front than shank

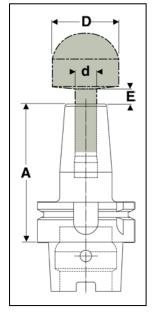
Assemble the two split heat focusing stoppers that correspond to the tool shank Ø and install them into the location diameter in the inductor housing.

Fit the lock ring in place to retain the split heat focusing stopper in the inductor housing. Start the heating cycle as for a standard tool (see § 4.3.4.).









After shrinking, remove the lock ring and move the inductor housing downwards, exposing the split heat focusing stopper. Remove the split heat focusing stoppers (caution: they may be hot).

Move the inductor housing upwards to allow the toolholder to be removed.

Note: Overall height of the inductor housing limits « A » dimension to 70 minimum. Any less than this and it will not be possible to lower the inductor housing sufficiently to gain access to the split heat focusing stopper assembly.

4.6.3. Shrink-releasing procedure for tools with larger front than shank

1) Move the inductor housing below the front face of the toolholder and fit the appropriate split heat focusing stopper assembly around the shank of the cutting tool.

2) Move the inductor housing upwards so that the split heat focusing stoppers seat in the inductor housing location diameter.

3) Fit the locking ring.

4) Start the heating cycle as for a standard tool (see § 4.3.4.).

5) On completion of the heating cycle move the inductor housing upwards in order to extract the tool from the toolholder.

After the end of the heating cycle, move the universal sliding support along with the hot toolholder on a cooling slot and cover it with an air cooling cone or use a complementary cooling device.

20





5. COOLING

The Easyshrink[®] 15 is featured with two cooling slots equipped with fans. Complementary cooling modules are available. Please refer to Machining Navigator 'Tooling Systems'.

5.1.1. Piloting the cooling fans



The cooling fans can be manually turned on and off from the command keypad:

- Press 🛞 to turn the fans on,
- Press 💹 to turn the fans off.

Note: when turned on manually, the fans automatically turn off after 2 hours if no shrinking cycle has been launched.

Alternatively, the cooling fans are automatically triggered at the end of each heating cycles and will stop after 15 minutes, if no new heating cycle has been launched. Note: during this 15 minutes, the cooling fans cannot be turned off using the button **Sec.**

5.1.2. Cooling time modification

In order to prevent misuse of this option, the modification of the cooling times is secured and an access code is required. The access code is given on request and after complete information about the risks.

Any change of the preset time must be made carefully.

In case of modification without our agreement, Seco Tools AB. cannot be held as responsible for any damage.

Once you have been provided with the code by your Seco representative, follow this procedure:

- 1) Press key
- 2) Using keys 🔺 and 🔽, select 'PROG COOLING TIME'.
- 3) Press key

4) Select the first number of the access code by using the arrows \frown and \bigtriangledown .

5) Press key 📰 to confirm the first number.

Repeat steps 4 and 5 for the three other digits of the code. If the code is erroneous, you exit from programming. Start the procedure from scratch.

If the code is correct: the digital displays shows 'COOLING TIME TPS: 15 MIN'.

- 6) Modify the cooling time by using the arrows on the keypad 🔺 and 🔽.
- 7) Press key 📰 to return to previous menu.
- 8) Press again key 🖃 to get out from programming.

6. SAFETY PRECAUTIONS

- This shrinking device is only intended for professional use.
- Take care to use the correct power supply : the Easyshrink[®] 15 device must be connected on AC 3x400V + PE/ 16A/ 50-60 Hz. Power supply for the optional cooling modules is : 1x230V + PE/16A/50-60Hz. Use optional transformers to accommodate shop electric service from 190 to 510V 3X in USA or CSA for Canadian voltage. Both transformers output 1x230V+PE/16A/50-60Hz for support modules.
- By nature on, the Shrinkfit holder becomes very hot. Touching this spot may cause serious burns. Always use gloves when handling shrink fit holders.
- Individuals who carry medical implants are banned from using or working with this device. The carriers of a pacemaker
 must refer to the specific note of the pacemaker established on the basis of: NF EN 60601-1-2 (september 2007).
- Repairs on the Shrinking devices must be made only by skilled operators. Please contact your local Seco representative.
- Only trained and authorized persons are allowed to work on the shrinking devices.
- The optional cooling modules are not switched off by the Easyshrink[®] 15's main interrupter (red power switch). Before any handling, it's necessary to switch off the power supply using each module's interrupter.

7. RECOMMENDATIONS FOR USE AND MAINTENANCE

- Always make sure the holder is cooled down before shrink-fit, or shrink-release.
- The holder and the tool must be clean, free from grease and dry before being fitted into the device.
- Before starting the shrinking process, please always check if :
 - o the power supply is sufficient
 - o the length has been correctly setted, with the correct stop rod
 - o the correct diameter is selected (mode PRG 1 or PRG 2)
 - o the correct heat focusing stopper has been setted
 - o the tool shank is within tolerance h5-h6
 - o the tool shank is not damaged
- Keep the device and its environment clean, to insure a long service life.
- The device can only be used for the purposes defined in this operating book. Seco Tools AB. cannot be held as responsible for casualties caused for any other use.
- Maintenance is limited on a regular cleaning of the device and accessories with adapted products.

8. SAFETY FUNCTIONS OF THE EASYSHRINK[®] 15

- The inductor is equipped with a probe to avoid overheating of the holders.
- To increase service life of the holders, the electronic of the device has been programmed to allow only one main heating process, afterwards it automatically cuts off.

9. APPENDICES

9.1. Technical features

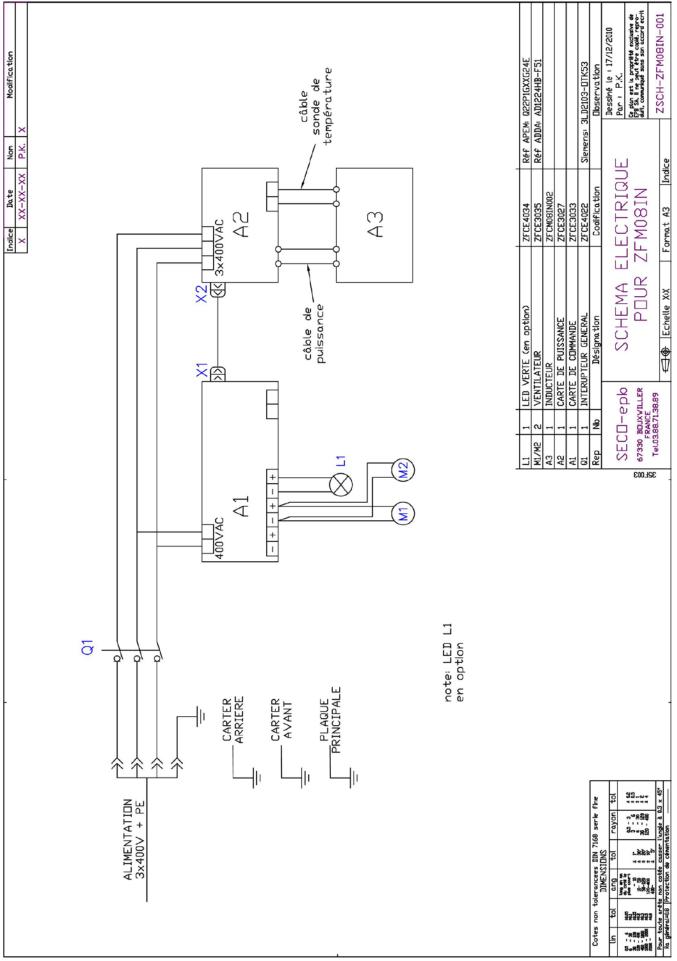
Voltage Intensity	3 x 400 V (+/-10%) + PE 16A
Frequency	50-60Hz
Dimensions L x H x D	840 x 880 x 400 mm
Weight	50 Kg

	Temperature	Air humidity	Air pressure ⁽³⁾
Usage	10 to 40°C	10 to 90% ⁽¹⁾	800 to 1013 hPa
Storage	-20 to 55°C	30 to 95%	800 to 1013 hPa
Transportation	-20 to 70°C	30 to 95% ⁽²⁾	800 to 1013 hPa

⁽¹⁾ Prevent condensation and frost

⁽²⁾ Air humidity when the temperature of the device slowly increases to 40° or quickly passes from -20 to +30°C ⁽³⁾ At max. 2000m above the sea level

9.2. Electrical sketch



9.3. CE compliance certificate

SECO Seco-EPB F-67330 Bouxwiller Tel: +33 (0)3.88.71.38.89	DECLARATION CE DE CONFORMITE aux dispositions des directives : - 2004/108/CE "Compatibilité Electromagnétique" - 2006/95/CE "Directive Basse Tension" - 2013/35/UE "Directive Champs Electromagnétiques"
Nous dé	éclarons que le produit :
	EASYSHRINK 15 Banc vertical automatique de frettage/défrettage par chauffage à induction pour porte-outils à fretter Référence: ZFM08IN
• 2 • 2	forme aux exigences essentielles des directives : 2004/108/CE, 2006/95/CE, 2013/35/UE.
sur la ba	ase des référentiels suivants :

- NF EN 61000-6-2 (janvier 2006)
- NF EN 61000-6-4 (mars 2007) A1 (mai 2011)
- NF EN 60204-1 (septembre 2006) A1 (mai 2009)
- NF EN 50392 (mai 2012)

Bouxwiller, lundi 02 décembre 2013

Monsieur Jean-Emile PFALZGRAF Président Directeur Général de la société EPB F-67330 BOUXWILLER

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