

**SOLO 2P**

**Green Ring  
Instruction Book**

Easy-to-use front and back spotfacing tool, without anti-rotation device.

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All Heule tool systems are protected by international patents.

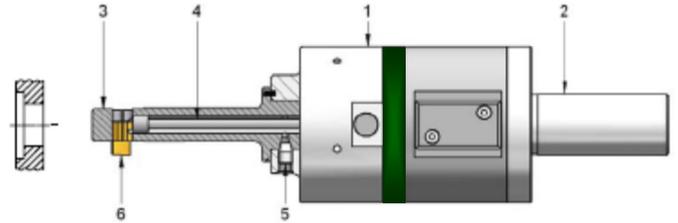
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SOLO-IB 2012

**Tool Description**



Position	Description
1	Tool Head
2	Shank
3	Blade Housing
4	Blade Control
5	Clamping Screw (3x)
6	Blade

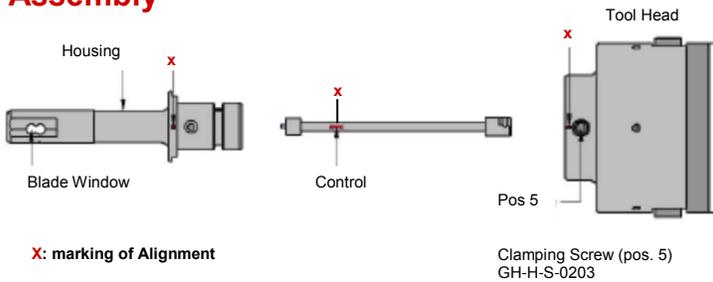
As a worldwide leader in tool development, HEULE introduces the SOLO tool, an easy-to-use front and back spotfacing and formsinking tool. The SOLO tool functions reliably without an anti-rotation device, change of spindle direction, coolant pressure or contact mechanism.

The SOLO tool is immediately ready for operation on any machine (CNC, transfer, multi-spindle or conventional machine).

The sealed system guarantees a high process reliability. The completely closed tool design (control unit) prevents any coolant contamination. In addition, the pin driven cutting blade, which moves in and out radially, prevents chips from jamming the system.

The new tool design of the SOLO simple and user-friendly. The ratio of price/performance and the minimum required maintenance allows HEULE's SOLO tool for successful application in medium to large volume production.

**Assembly**



X: marking of Alignment

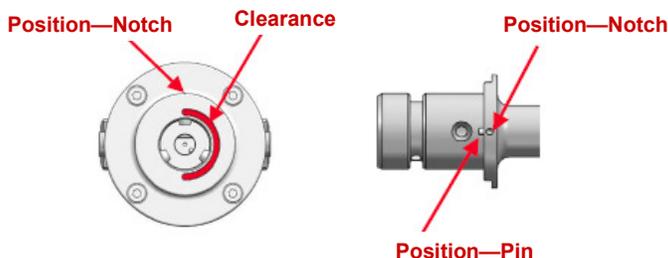
**Assembly**

1. Line up Alignment marks (x); Press Control with slight force into the tool head (catch) until the control engages.

**Attention:**

Position Notch (X) on the Tool Head and Housing must correspond.

2. Mount blade housing on the tool head making sure the position pin is over the clearance slot. Then Line up the position notch, tighten clamping screws (Pos. 5) firmly using M3 Hex Wrench.
3. To eliminate run out error, tighten clamping screws (pos 5) in sequential order 1, 2, 3. Recommended torque 1.4 Nm.

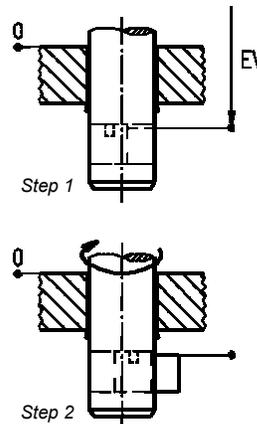
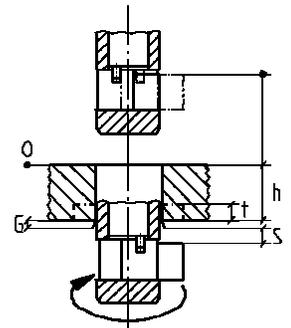


**Programming**

**Attention**

Pay attention to minimum speed rate of your tool head  $n =$  over 2000rev./min. (Green ring) The Blade will move in sooner than the tool rated but cutting should only be made at or below rated speed.

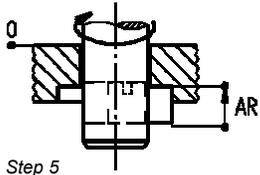
H = Work Piece Height  
T = Countersink depth  
G = Burr Height  
S = Clearance



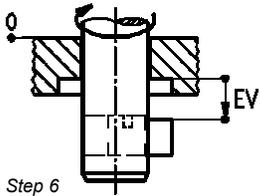
**Programming Steps**

1. With spindle rotation above 2000RPM; pass through the work piece (blade is retracted) **EV = Fwd Feed**.
2. Slow spindle 1500RPM or slower in normal clockwise rotation (blade will extend within rated Head Speed i.e. 1-700RPM).
3. Dwell a minimum 1 second to allow insert to fully extend.
4. Turn Coolant on at this point.

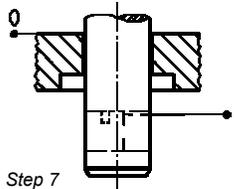
## Programming (continued)



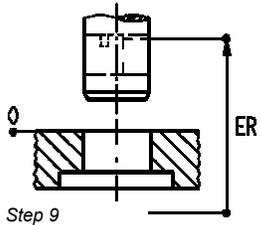
Step 5



Step 6



Step 7



Step 9

5. Back Feed and Machine your work piece (dwell if necessary).  
**AR = Working Feed**
6. Travel out of work piece.  
**EV = Forward Feed**
7. Spindle speed rate: above 2000 RPM. (blade will retract).
8. Dwell min. 1-2secs.
9. With spindle above 2000 RPM retract the tool from the work piece (blade is retracted; speed rate is above 2000 RPM).  
**ER = Rapid Back Feed**

### Attention

The blade will activate below the rated tool head speed; i.e. using a SOLO tool head (minimum 2000 RPM) the cutting blade will move in or in approximately at 1600 RPM depending several variables.

### IMPORTANT

**Do not run dry! Coolant to blade must be adequate.**

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## Function

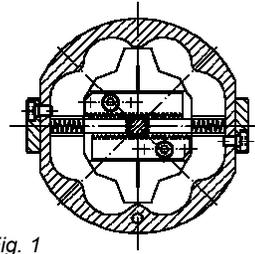


Fig. 1

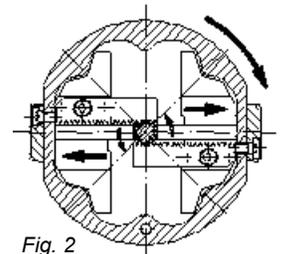


Fig. 2

Two centrifugal weights are installed in a control unit closed against dirt. With an activation speed rate of 2000 U/min. the weights start moving outwards (Fig. 2).

The weights moving outwards are turning a gearwheel via two toothed racks. This gearwheel drives the blade in or out by means of a blade control.

A spring pushes the centrifugal weights back to the center when the spindle stops (Fig. 1).

The light weight oil in the control unit serves as corrosion prevention of the control mechanism.

### Attention

The Control Unit should only be opened through authorized personnel. Please pay attention to minimum speed rate / activation speed rate!!

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## Spindle below 1500 RPM: Blades will extend

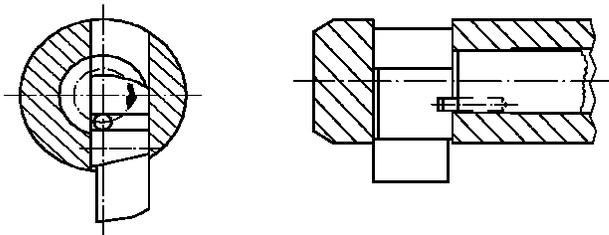


Fig. 3

## Spindle above 2000 RPM rotation: Blades will retract

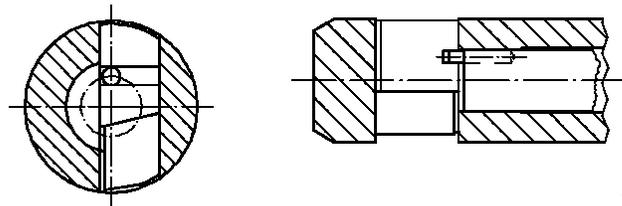


Fig. 4

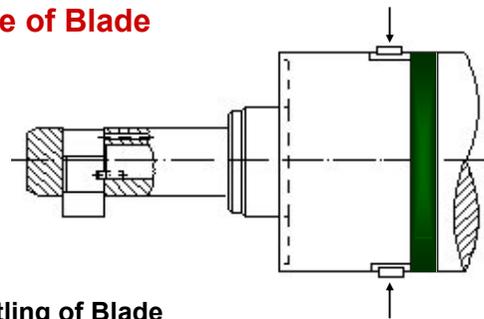
## Explanation

A small blade control pin fixed eccentrically on the front side of the blade control engages into a small groove at the blade (Fig. 3). By turning the blade control, the blade is driven outwards or inwards by means of the blade control pin (Fig. 4).

The cutting forces are taken by the blade housing; not by the blade control pin.

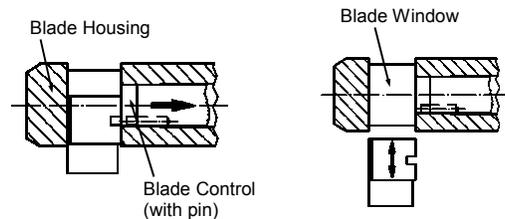
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## Change of Blade



### Dismantling of Blade

By pressing the compression buttons at the tool head the blade control and the blade control pin are pulled back. The blade is released and can be pushed out. Keep the compression buttons pressed until the blade is completely removed.



### Insertion of blade:

By pressing on the compression buttons at the tool head the blade control with blade control pin is pulled back. Keep the compression buttons pressed until the blade is inserted.

1. Insert blade in blade flush with blade window. Compression buttons can be released.
2. Shift blade into the blade window so that the blade control pin engages into the blade again - a distinct click can be heard.

**Attention: CHECK BLADE FUCTION (see page 11)**

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## Changing of Blade Control and Blade Housing

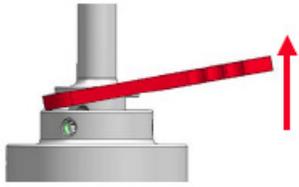


Fig. 5

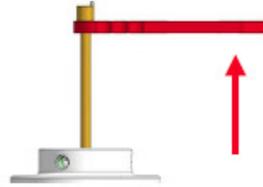


Fig. 6

### Dismantling

1. Loosen the 3 clamping screws (Pos. 5) at the tool head with M3 Hex wrench.
2. Pull the blade housing forward, away from the tool head using the smaller end of the SOLO Disassembly KEY (fig. 5).
3. Then pull blade control forwards away from the tool head. DO NOT TWIST or use Vise Grips that would bend or damage Control.

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## Information

Material	Speed Surface footage are recommendations only. Remember you must run the minimum of your rate Tool Head (reduce for interrupted cuts).	Feed (ipr) Based on bore Ød : Counterbore ØD ratio Rt=ØD/Ød	
		Rt<1.6	Rt>1.6
Aluminum	600 - 800	.004-.008	.0020-.0030
Stainless Steel	140-300	.003-.005	.0008-.0015
Titanium	60-180	.001-.003	.0008-.0015
Inconel	40-90	.001-.002	.0007-.0012
Cast Iron	260-400	.004-.007	.0010-.0025
Carbon Steel	210 - 350	.003-.006	.0010-.0020

Coolant Through available for most applications on request.  
Recommended Pressure 100-200psi.

### Customer Information:

Part \_\_\_\_\_ OP \_\_\_\_\_

TOOL HEAD No. \_\_\_\_\_

HOUSING No. \_\_\_\_\_

CONTROL No. \_\_\_\_\_

BLADE No. \_\_\_\_\_

*Attention: Items above require up to 5-8 weeks for Manufacturing*

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## Checking Tool Function/Blade



To CHECK the Tool Function (extension and retraction of the blade) insert the SOLO Key and turn clockwise. The Blade should move out. After the Blade function test, re-position the Housing until the position pin hits the end stop. The Housing position mark must line up with the notch mark on the Tool Head.

### IMPORTANT

All turns with the SOLO Key must be done slowly by Hand to detect any interference with the blade. **DO NOT USE FORCE.**

Operation checks and tool cleaning is advisable if the tool has not been used for a period of time. It is recommended to completely remove the Housing, Control, blade while cleaning and then perform a Tool Function Test.

### Attention

It is important to remove the SOLO Key before operation and tighten all clamping screws to avoid damage and/or injury.

## DO NOT OPEN TOOL HEAD; WARRANTY IS VOID IF OPENED

 **WARNING:** Grinding may produce hazardous dust. To avoid adverse effects, use adequate ventilation and read MSDS. Cutting tools may break during use. To avoid injury, use proper safety precautions and protective equipment.

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## Solo Tooling Guarantee

The nature of back counterboring tends to be an unstable and difficult operation due to the large chip force and small pilot hole to counterbore size. Heule tools have proven to be the strongest automatic back boring tool on the market able to cut the most difficult materials and counterbore geometry. Our tool's cut on center and are design to use the maximum pilot size allowed; this helps guarantee stability even in deep hole applications.

HEULE's new SOLO back counterboring tool consists of two major assemblies:

1. **Standard TOOL HEAD** with 1" Weldon shank
2. **Custom Components** — Cutting BLADE (or Cartridge with indexable insert), Blade HOUSING and Blade CONTROL.

### 1. TOOL HEAD

The first item is the tool head, which is sealed from the outside atmosphere to avoid coolant contamination. The tool head has two weight elements that move inside the tool head radially as the spindle speeds reaches the rated head speed (i.e. 1900 RPM for the SOLO1900 (Black Ring); 1000 RPM for the SOLO1000 (RED RING); 2000 RPM for SOLO S2 (GREEN RING))

This tool head is of standard design and is the base element for all applications with bore diameter's 8 to 35mm.

Each head comes with a 6 month, 100% customer guaranteed that gives our end-users the option to return for full credit or replace the tool head if it does not function properly **at no charge**. If technical changes occur within the warranty period upgrades are possible at no charge. This guarantee does not cover damaged heads due to impact or returned items that cannot be re-conditioned.

### 2. SPECIAL COMPONENTS

All special components are manufactured to user's requirements and are non-returnable. Item's quoted per the desired back bore application are Design & Build items to suit the needs of our customers. Whereas, Heule will always manufacture the strongest tool possible and stand behind this quality of our product, we cannot guarantee tooling capabilities due to the nature of each unique application. All modifications of specific Alterations to improve tooling performance are the responsibility of the end user.

Approval Prints will be supplied to the end user within one week of the order. Technical changes are not possible after completion of Approval Prints due to manufacturing detailing.

This instruction book is only for reference. All terms of sales, purchase order contracts and other warranty statements supersedes this informational booklet.

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