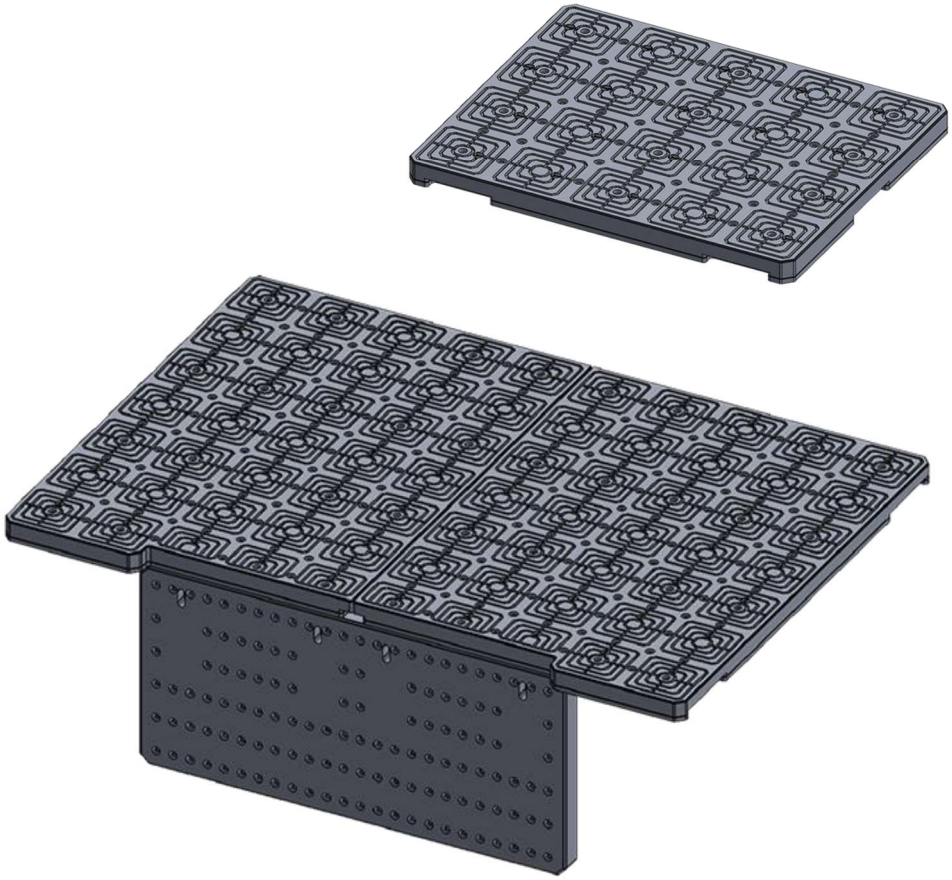
VACUUM FIXTURE PLATE

For Datron High-Speed Machining Centers

User Manual



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Vacuum Fixture Plate Overview

The DEVELOP Vacuum Fixture Plate is the core of the DEVELOP Workholding system. The DEVELOP Vacuum Fixture Plate maintains a vacuum fixturing pattern on an 85mm square distribution grid while incorporating precision locating bores and a conical locating feature on a standard 100mm grid. These combined features allow your team to design and utilize flexible fixturing commonly found with a fixture plate while maintaining the vacuum surface.

Included Hardware

Vacuum Fixture Plate for Datron M8Cube/M10Pro/MXCube

A. 1 (2) - Vacuum Table Assembly
B. 17 (34) - M6x35 Stainless Steel Low Profile Socket Head Cap Screws
C. 39 (78) - Vacuum Seals
D. 1 (2) - Annular Foam Gasket
E. 4 (8) - Stainless Steel Conical Locators
F. 1 – Tube of Anti-seize Thread Lubricant
G. 1 – DEVELOP Vacuum Tool*

(*) - Quantity included when ordering a full table set.

* The files for 3D printing additional Vacuum Tools can be supplied if yours becomes damaged or lost.

Vacuum Fixture Plate for Datron Neo

A. 1 - Vacuum Table Assembly
B. 12 - M6x30 Stainless Steel Low Profile Socket Head Cap Screws
C. 20 – Vacuum Seals
D. 2 - Annular Foam Gasket
E. 4 - Stainless Steel Conical Locators
F. 1 – Tube of Anti-Seize Thread Lubricant
G. 1 – DEVELOP Vacuum Tool*

* The files for 3D printing additional Vacuum Tools can be supplied if yours becomes damaged or lost.

600x500 Fixture Plates for Datron M8Cube/M10Pro/MXCube

H. 2 - Vacuum Table Assembly
I. 30 - M6x35 Stainless Steel Low Profile Socket Head Cap Screws
J. 68 - Vacuum Seals
K. 2 - Annular Foam Gasket
L. 8 - Stainless Steel Conical Locators
M. 1 – Tube of Anti-seize Thread Lubricant
N. 1 – DEVELOP Vacuum Tool*

* The files for 3D printing additional Vacuum Tools can be supplied if yours becomes damaged or lost.

1. Installation

1.1 Preparation

Before installing the DEVELOP Vacuum Table some preparation must be done. Ensure the following have been completed before placing the Vacuum Table in the machine.

1. The table must be cleared of all fixtures and the locating conicals thoroughly cleaned.
2. Remove the thread-protecting set screws.
3. Remove the cover plates from the vacuum ports.
4. Place the annular foam gasket into the circular groove on the bottom of the vacuum plate. The gasket is made of chemical resistant EVA foam and machine to be a tight fit into the circular groove. The ring is chamfered on one side to aid installation.
5. Check that all the vacuum seals are in the top surface of the plate. The seals fit snugly into the drafted bores on the top surface of the plate. Turning the seals requires a broad flat object such as a 6”/150mm steel rule.

1.2 Notes on Placement and Fastening

M8Cube/M10Pro/MXCube Users

- Due to the size of the Vacuum Table, we recommend a two-man lift when placing the Vacuum Table in the machine.
- When fastening the Vacuum Table using the included M6x30 low profile cap screws it is recommended to torque the cap screws to 9Nm.
- Anti-seize is recommended to prevent thread galling between the stainless conical locators and the stainless low-profile screws.
- After the table has been fastened in place the Vacuum Table must be faced to match your machine. This process is detailed on page 4.

Neo Users

- When fastening the Vacuum Table using the included M6x30 low profile cap screws it is recommended to torque the cap screws to 9Nm, fastening from the inside out to prevent bowing of the plate.
- Anti-seize is recommended to prevent thread galling between the stainless conical locators and the stainless low-profile screws.
- After the table has been fastened in place the Vacuum Table must be faced to match your machine. This process is detailed on page 4.

600mm Plate Users

- If you have ordered the Medium Access Kit and choose to use the 600mm x 500mm Vacuum Fixture Plates, then you as the user assume the responsibility to install the conical locators into the corresponding locations in the Vacuum Fixture Plate assembly.
- The 600x500 vacuum plate requires two (2) conical locators to be installed into the bottom of the plate in a mirrored fashion.

- The two plates will arrive identical, with open spots for four (4) conical locators. Each plate must have two (2) locators installed into two pockets on one side of the plate, resulting in a left and a right plate.
- Loctite 603 bearing retaining compound is recommended
- An illustrated version of these instructions is present in the Vertical Workholding Plate Manual.

2 In Situ Facing

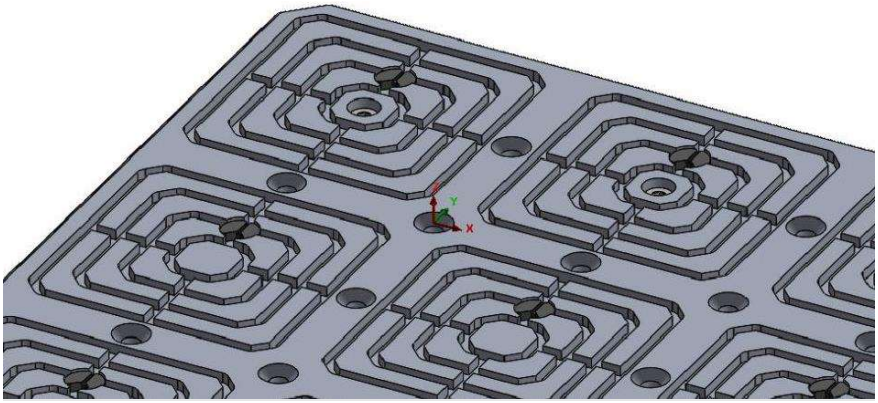
2.1 Why Facing is Needed

It is necessary to face the top of the Vacuum Table to match the working surface to your machine's level and to eliminate the tolerances used during manufacturing. During manufacturing, we control the parallelism tolerance of the upper plate to within .1MM or .003937 inches. This tolerance is chosen knowing that the Vacuum Table's working surface must be machined in situ to provide a perfect match to your machine's level. The parallelism tolerance of the lower plate has no impact on the conical locator's Z position so we do not provide tolerances for its parallelism. The tolerance of the upper plate is allowed for in the chamfers, bores, and vacuum grids on the working surface of the plate.

2.2 Process for Facing

Our recommended process for facing your Vacuum Table is identical across all Datron machines.

1. In your CAD/CAM program of choice import the .step file we provide on the product page for your Vacuum Table.
2. Set the X&Y Origin of the WCS to the locating bore position indicated in the image below, with the Z Origin set at the top surface of the Vacuum Table.



3. Program a facing pass .05MM below the top surface of the Vacuum Table. For this operation, we recommend Datron stepped-single flute tools with a stepover of 60%-70% of the tool diameter. Note that if your program extends too far past the plate in any dimension it may cause your machine to overtravel.
4. Fasten one of the included conicals into the locator that corresponds to your WCS and probe it for X&Y location and the top surface of the Vacuum Table for Z.
5. Before executing your program it is important to turn on the vacuum pump and ensure that a good seal is being created by the vacuum seals. The pump should remain on during the facing process.
6. Execute your program, watching for the entire working surface of the Vacuum Table to clean up. Alter your program to machine deeper in .01MM increments until the entire working surface of the Vacuum Table has been machined.
7. Once the entire working surface of the Vacuum Table has been machined you can disable the vacuum pump and begin using your Develop Vacuum Fixture System. The table can now be removed if necessary and relocated repeatedly, without the need for refacing.

8. To ensure the safe and proper operation of your machine we recommend that a protected zone at the surface of the vacuum table be set within Datron NEXT. This can be done as described in the NEXT operators manual.