



## Spec Sheet XRD 34

# New sample stages for the D8 ADVANCE Upgrade your capabilities

The D8 ADVANCE can be equipped with a wide variety of sample stages and sample holders (see also spec sheet XRD 18). Whether the sample is inorganic or organic, available in small or large quantities, bulk or powder ... this wide variety of sample stages and sample holders guarantees that any type of sample can be mounted and measured with the optimal instrument configuration.

In order to further extend the analytical capabilities of the D8 ADVANCE for polycrystalline thin film and bulk applications, two new sample stages have been developed: the **compact XYZ sample stage** and the **compact Eulerian cradle**.

These new sample stages can be mounted to any vertical D8 ADVANCE diffractometer. Both are fully integrated into the DIFFRAC<sup>plus</sup> measurement software. Hence, any motorized axis is software-controlled and can be used for positioning and scanning. The compact Eulerian cradle requires a measurement circle of at least 500 mm.

In line with all other D8 ADVANCE sample stages, the compact XYZ stage and compact Eulerian cradle are also equipped with a bayonet fixture that allows for fast and alignment-free switching between sample stages for D8 ADVANCE Series 2.



Fig. 1: D8 ADVANCE multi-purpose sample stages

The **compact XYZ stage** enables a motorized and software-controlled translation along X, Y and Z directions. Although the stage has been designed for the flexible handling of bulky samples, by default any standard powder sample holder can be mounted as well. The large support plane contains threads for fixing additional sample holders, resulting in an unrivalled flexibility.

A vacuum chuck or Zeta/Xi tilt stage, if required with a knife edge collimator, can be mounted directly to the stage for thin film analysis by means of Grazing Incidence Diffraction (GID) or X-Ray Reflectometry (XRR).

A capillary spinner can also be mounted directly to the XYZ platform for transmission measurements on low-absorption materials. This is typically done with a Göbel mirror or Johansson monochromator as the primary optic. Since this capillary spinner includes a low angle aperture and beam stop, the same set-up is ideal for Small Angle X-ray Scattering (SAXS) measurements as well.

The D8 ADVANCE configuration with **XYZ stage** can be supplemented with a double laser assembly that is mounted onto the diffractometer tracks, and is useful for microdiffraction applications and sample mapping.

The **compact Eulerian cradle** integrates motorized phi and chi rotations, as well as a z translation into one compact sample stage. With its large chi-range and unlimited phi-range, the compact cradle is the ideal sample stage for measuring texture. Residual stress measurements can be made in both omega- and psi-mode (iso-inclination and side-inclination respectively). Obviously, any standard powder sample can be mounted to the cradle. Optionally, an X-Y stage is available for positioning thin films and wafers. For highly accurate sample positioning, the double laser assembly can be mounted onto the diffractometer tracks.

Table 1. Technical specifications

Sample stage	Compact XYZ stage	Compact Eulerian cradle
X-range	25 mm <sup>1)</sup>	12 mm <sup>2) 3)</sup>
Y-range	25 mm <sup>1)</sup>	12 mm <sup>2) 3)</sup>
Z-range	25 mm <sup>1)</sup>	2 mm <sup>2)</sup>
Chi-range	-	From -5° to 95° <sup>1)</sup>
Phi-range	-	Unlimited <sup>1)</sup>
Load capacity	1 kg	250 g
Max. sample dimensions	Ø 150 mm, height 79 mm	Ø 70 mm, height 25 mm

Compatible to D8 Series 1 and Series 2; an upgrade to the current version of DIFFRAC<sup>plus</sup> may be required.  
<sup>1)</sup> motorized and software-controlled; <sup>2)</sup> manual; <sup>3)</sup> optional

### Order Numbers

A100B127 compact XYZ stage <sup>4)</sup>  
 A19D60 compact Eulerian cradle <sup>5)</sup>

<sup>4)</sup> three free ports of the 4-axis motor driver board required

<sup>5)</sup> two free ports of the 4-axis motor driver board required

Optional accessories for the **compact XYZ sample stage**:

- 3" or 5" vacuum chuck (C79298A3181-D5 and -D6 respectively)
- 6" laminar chuck (A100B136)
- Zeta/Xi tilt stage (A100B121)
- Capillary stage (A100B38)
- Goniometer head (A100B128)
- Double laser assembly for positioning (A100D17)
- Dial indicator for height adjustment (A100B99)

Optional accessories for the **compact Eulerian cradle**:

- Manual X-Y stage (A19B48)
- Dial indicator for height positioning (A100B99)
- Double laser assembly for positioning (A100D17)

All configurations and specifications are subject to change without notice. Order No. DOC-S88-EXS034.  
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