

THE DACAPO COMPANY

Dacapo DB2801 Truck Tyre Building Station



The building station [Dacapo E model illustrated]

The Dacapo truck tyre builder is a stand-alone building station which can be interfaced to any extruder unit.

Building station

The building station consists of a front end for mounting of the tyre, the stitcher unit, the control cabinet and the operator work station. A roller die with variable speed motor and drive is required to interface the builder to an extruder.

Options, vision system, ribbon break sensor.

Operation

The PC is the operators interface to the builder. The PC is used to create building programs, to select which building program to use and to store statistical and measurement data.

- *A building program is created using a graphical picture of the tyre. Building program data is entered to a table. A practically unlimited number of building programs can be stored.*
- *The operator changes to a new tyre size by selecting the adherent building program from a list. Extruder temperatures, extruder speed, tread profile etc are automatically set for the new building program without any other intervention from the operator. To change the building program takes from 5 seconds to 30 seconds, depending if the camera has to be repositioned or not.*
- *After finishing the building of a tyre, the PC stores all measured data about the casing and tyre as well as other process parameters. This data can be retrieved by tyre, by building program or by batch.*

The control system continuously supervises the building process through several sensors and measurement devices to eliminate any errors in the built result:

- *The extruder temperature. The compound should be extruded under optimal conditions.*
- *The strip width. A line camera at the roller die measures the strip width. The measurement is used by the control system to correct the width by adjusting the speed of the roller die.*
- *Rubber temperature. A temperature sensor at the roller die measures the temperature of the extruded rubber strip.*
- *Tyre measurement.[optional] A vision camera system above the tyre measures the casing and the built tyre. The measurements are used to prevent any out-of-size casing from being built and to correct the building program for minor size variations*
- *Several builders could be networked together or to a server. A common database for building programs and process data could then be used.*

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DB2801 Truck tyre builder features

Optional builder equipment

- ✓ Camera system to measure and control the casing and tyre profile.
- ✓ Roller die to interface with any extruder
- ✓ Ribbon break sensor

Optional extruder unit equipment

- ✓ New Troester 120mm / 150 mm pin extruder. With A/C motor and drive
- ✓ Integral 4 zone temperature control system.
- ✓ Water chiller.
- ✓ Roller-die with A/C motor and drive to produce a very uniform rubber strip.
- ✓ Temperature sensor to measure the extruded strip temperature.

Process control using optional camera system

- ✓ The buffed casing is measured and checked to be within the set tolerances before being built.
- ✓ The building program is adjusted for size variations within set tolerances of the casing
- ✓ The built tyre is measured and checked to be within the set tolerances.

Alarms - prevent from building a tyre

- ✓ The casing measurements are outside the set tolerances
- ✓ The extruder temperatures are outside the set tolerances

Warnings - continue the building process

- ✓ Extruder load warning limit
- ✓ Extruder temperatures
- ✓ Extruded rubber temperature

Alarms - stop the building process

- ✓ Extruder high load
- ✓ Broken strip

Data storing

Per building program or size

- ✓ Number of checked casings
- ✓ Number of built tyres
- ✓ Average building time
- ✓ Total rubber consumption

Per batch

- ✓ Operator
- ✓ Batch start time
- ✓ Batch stop time
- ✓ Number of checked casings
- ✓ Number of built tyres
- ✓ Average building time
- ✓ Total rubber consumption

Per operator

- ✓ Operator log-in time
- ✓ Operator log-out time
- ✓ Number of checked casings
- ✓ Number of built tyres
- ✓ Average building time
- ✓ Total rubber consumption

Per tyre

- ✓ Building program / size
- ✓ Tyre ID
- ✓ Date / time
- ✓ Operator
- ✓ Rubber compound name
- ✓ Rubber compound batch
- ✓ Rubber compound lot
- ✓ Rubber used weight
- ✓ Building time
- ✓ Extruder mean load
- ✓ Extruder speed
- ✓ Strip mean / max / min stretch
- ✓ Extruder mean temperatures
- ✓ Extruded mean / max / min strip temperature
- ✓ Casing measurements
- ✓ Built tyre measurement

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Physical dimensions, building station

Weight Approximately 1500 kg
Size (L x D x H, mm) 2340 x 1050 x 2000 (height = 2500 mm with camera arm)

Utility requirements

Air 7-10 bar, @ 60CFM [10 Atms @ 28 litres/sec] clean dry air
Power supply 3x380 – 500 VAC + PE, 25amps, 50/60Hz

Tyre size capacity

Maximum tread diameter 1473 mm [58"]
Bead width 125 mm - 560 mm [5" – 22"] with standard hub assembly
Bead diameter 13" - 38" with standard hub assembly
Standard hub = 13" – 38" [330 – 965mm]
Small hub [optional] = 10" – 20" [254 – 508mm]
Mounting rims are available for above ranges.
Maximum tyre and rim weight = 450lbs [205kgs]

CE regulations and standards

Machine safety regulations EN292-1 and EN292-1 following the provision of directive 89/392/EEC with amendments

EMC regulations following the provisions of directive 89/336/EEC

Electrical equipment of machines EN 60-201-1 following the provisions of directive 73/23/EEC

Spare parts and service.

The builder is designed using only well know high quality components. Spare parts are available Worldwide from the suppliers as well as through Dacapo LTD.

PLC system	Modicon	from	Schneider automation
Motor drives	Altivar	from	Telemecanique
Vision system	Visionscape	from	RVSI Acuity
Gear boxes	Various models	from	Benzler
Pneumatics		from	Rexroth-Mecman

Note: all specifications are approximate and are subject to change.

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