



PHARMACEUTICAL 26 MM TWIN-SCREW EXTRUDER

**MODULAR 26 MM TWIN-SCREW EXTRUDER TYPE LTEP26-40 WITH SEGMENTED SCREWS
AND BARREL SCREW SPEEDS UP TO 800 RPM**



**AVAILABLE BOTH IN THE MANUAL
AS WELL AS A FULLY COMPUTERIZED VERSION
WITH LCD TOUCHSCREEN CONTROLS**

**BUILT TO GMP
STANDARDS
AND DESIGNED FOR
OPTIMUM COMPOUNDING
OF PHARMACEUTICAL
COMPOUNDS**

BUILT-IN FULL CONFORMITY TO ALL INTERNATIONAL SAFETY STANDARDS

MACHINE FEATURES

Our Pharmatech Co-Rotating Twin-Screw Extruders are made with a complete modular buildup of the clamshell barrel, where each barrel section has a length of 4D or 104 mm. The compounder is available in barrel lengths from 32 to 60 L/D and with a motor drive power of 15 KW.

This twin is designed to be used with Medical Polymers It is suitable for processing of minute polymer quantities for research applications, but it can also produce larger quantities having a maximum output of around 40 kg/hr. And with a minimum of around 1 kg/hr.

The Clam Shell Barrel is equipped with exchangeable barrel wear lining inserts for optimum economy and ease of replacement. The standard inserts are built to GMP standards in stainless steel with a focus on a clean and streamlined design which is through hardened to over 50-52 RC and which can withstand high processing temperatures of up to 300 °C. This unique barrel insert system was designed by us already back in the year 2000 and has been very well accepted by all our customers worldwide.

The screws are built up from single individual elements mounted on hexagonal hardened shafts. The screw configuration can easily be changed by removing and inserting the elements on the shaft. And with the many available screw element types, it allows for optimum flexibility to suit your specific compounding needs. Each individual kneading elements is also supplied in many angles to enable an almost unlimited variation in screw configuration. The screw components are made from GMP standard stainless steel which is through-hardened but made with a slightly softer hardness than the barrel to ensure optimum lifetime for both elements and barrel.



The whole clamshell barrel assembly is split in the center and can be easily swung open after loosening the barrel bolts. This gives easy access to the screws for cleaning or changing of screw elements and/or barrel inserts as well as to observe the melt and compounding characteristics of the medical polymer being processed.



For fast and easy cleaning, the screws can simply be pulled out from the front with the help of a quick clamp tool supplied with the machine.



Each barrel zone is equipped with both water cooling and electric cartridge heating. This allows for complete process control at each zone of the barrel and the water cooling coupled with the high wattage heating enables fast temperature changes of each zone when changing processing conditions from one compound to another. The water cooling is done from a multitude of channels inside each barrel module and regulated with individual solenoid valves from its designated temperature controller.

However, the infeed section of the barrel has only water cooling and no heating since this part must remain cooled at all time to allow for efficient feeding of the compound



The extruders are, as standard, equipped with a four-hole 3 mm diameter strand die with a very short distance from strand hole entry to screw tips for easily remove to cleaning. Other hole diameters on request. The die is of open swing type fastened with two bolts to the barrel, and it is equipped with a breaker plate.

**STRAND DIE
PLATE WITH
FOUR HOLES
THROUGHPUT**



A 0 to 150 bar melt pressure transducer with melt temperature sensing is mounted at the die end and connected to a pressure controller on the control screen.



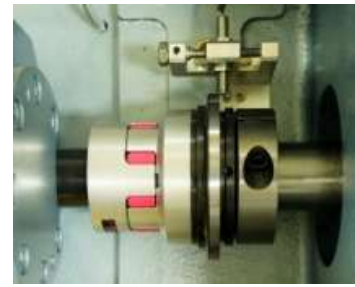
The whole Pharmatech Twin-Screw Extruder is covered with medical grade stainless steel and the body part can easily be removed by loosening quick locks as shown above. This will give very easy access to all inner parts of the twin-screw extruder.



The extruder is driven by a 15 kW Induction motor type which is coupled to a custom-built heavy-duty gearbox with splash oil lubrication system.



The coupling in between the gearbox and drive motor is equipped with a torque limiter which will instantly disengage the coupling in the event that the screws are overloaded. The torque limiter is also equipped with a sensor which will stop the motor and a warning lamp on the control panel will indicate that the screws have been overloaded.



The 32 to 60 L/D extruders are, as standard, supplied with an atmospheric venting zone on one of the barrel modules which can be converted to vacuum. The standard atmospheric vent opening can optionally be equipped with a vacuum housing made from GMP standard stainless steel with sight glass and vacuum manometer which in turn is connected to a vacuum pump and a large stainless steel filter to protect the pump.

SUMMARY OF STANDARD FEATURES: PHARMA 26 MM TWIN-SCREW EXTRUDER

- 26 mm co-rotating segmented screws where each segment can be placed anywhere on the hexagonal screw core shaft for optimum flexibility of screw configurations. The kneading elements are supplied as single sectors which can be placed against each other in various angles enabling numerous kneading and shearing functions.
- The clamshell barrel is available from 32 to 60 L/D, and each module has a length of 4D. Barrel with balanced hinged top part for easy opening and access to the screws.
- Screws can also easily be pulled out at the front without opening of the clamshell barrel.
- The modular Clam Shell Barrel is equipped with exchangeable barrel lining inserts made from a GMP standard stainless steel with a focus on a clean and streamlined design which have been through-hardened to over 50-52 Rockwell C. This special steel also allows for high-temperature extrusions of up to 300 °C
- The screw and kneading elements are made from GMP standard of tool steel with through hardening and with a surface hardness of slightly below the hardness of the barrel. Also, the hexagonal screw shafts are made of treated tool steel for optimum stiffness and high torque applications.
- Variable screw speeds with RPM from 0 to 800
- High torque drives with oversized gearbox for screw speeds up to 800 RPM and with a motor drive power of 15 KW.
- Highly efficient water cooling as well as electric heating of each barrel module for optimum control of the compounding temperature.
- Atmospheric venting zone. Optionally the vent can be equipped with vent housing and vacuum pump system with vacuum gauge and bypass valve.
- Practical four-hole strand die mounted on hinged support connected to the barrel with two bolts. Also equipped with easy removable breaker plate in extruder flange, enabling production with or without a screen pack.
- 150 bar pressure transducer at screw end, also equipped with a melt temperature sensor.
- Additionally, melt sensors are placed on every second module with temperature showing on the touch screen.
- Screws protected by a torque limiter mounted in between the motor and the gearbox.
- GMP standards streamlined design stainless steel with sub-cabinet containing all electric and electronic components in compartments completely separated from the vacuum pump assembly.
- Sub-cabinet for the twin-screw extruder, built of heavy-duty stainless steel with front doors. The sub-cabinet contains all the electric and electronic components for the extruder and hopper feeder including the inverters.
- Maximum processing temperature (standard) is 300 °C
- Max output as high as 40 kg/hr
- Continuous operation.

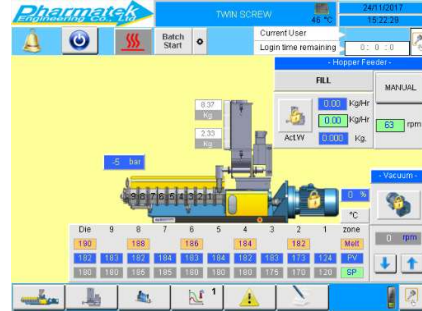
COMPUTERIZED CONTROL

The computerized control has full visualization of all extruder parameters on the touch screen and is also offered with connection to an external PC where all data and programs can be downloaded. The high capacity PLC is supplied by B&R with a screen size of 10.4 inches or Siemens with a screen size of 12 inches, and the software is custom made by them exclusively for Labtech's Twin-Screw Extruders.



CONTROLLING FUNCTIONS

- Temperature controls of each barrel zone, except in feed zone which has only water cooling. Thus a 40 L/D twin has nine electric heated and water-cooled zones plus a heating zone for die
- Motor speed with drive torque and RPM registration
- Pressure control of transducer at screw tip
- Vacuum for barrel venting
- Pelletizer speed control, also control of optional variable speed strand feeding device
- Downstream equipment such as belt conveyor etc.



TECHNICAL DATA FOR PHARMA 26 MM TWIN-SCREW EXTRUDER

DESCRIPTION	26 MM TWIN-SCREW EXTRUDER
	PHARMACEUTICAL
Available L/D Ratios	32 to 40 L/D
Screw Speed	0 to 800
Motor Power	15 kW
Maximum Extrusion Output Pressure	150 bar
Maximum Dynamic Thrust Bearing Load	45 kN
Maximum Torque at 600 RPM	2 x 90 Nm
Specific Torque	9.8 Nm/cm ³
Outer and Inner Screw Diameter Ratio (D/d)	1.63
Maximum Barrel Temperature (Standard)	300°C
Heating Power per Barrel Section (4 L/D)	2.0 kW
Minimum Water Pressure and Water Consumption	3 bar/20lt/min
Water Pump Power for optional Closed-Looped Cooling System	0.75 kW
Approximate Maximum Output (LDPE)	40 kg/hr
Minimum Batch Size (LDPE)	1,000 g
Resin Remaining on Screw (LDPE)	77 g
Net Weight	1,000 kg
Dimensions (Length x Height x Depth)	2.68 x 1.80 x 0.73 m