



QUOTATION

TO:

PROPOSAL NO.

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PRODO-PAK CORPORATION

**MODEL 4S 3P 320
VERTICAL, FORM, FILL
& SEAL MACHINE**

PREPARED FOR:



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SCOPE OF WORK

PRODO-PAK® will provide a completely automatic machine to package **semi-viscous lotions gels** in four sided seal pouches. The **semi-viscous products** will have viscosities of **1,000 to 5,000 centipoise**. The temperature of the product at the time of filling is expected to range from 60 to 70 degrees Fahrenheit. It is anticipated that only one product will be dispensed at any time.

Special Positive displacement servo controlled metering piston pumps and 316 stainless steel fill nozzles will be used to dispense the **viscous products**. The fill tubes may be equipped with positive shut off and anti-tailing mechanisms. Product contact parts are 316 series stainless steel or other FDA approved materials.

The fill volumes and pouch sizes have been specified as follows:

Fill Volume – 1.0 to 3.0 ml

Pouch width – 1.5 inches 38 mm (estimated to be confirmed)

Pouch length – 3.0 inches 76 mm (estimated to be confirmed)

Pouch style – four sides sealed

Seal width vertical – 0.25 inches (or to specifications)

Seal width horizontal top – 0.375 inches (or to specifications)

Seal width horizontal bottom – 0.375 inch (or to specifications)

Note: The pouch length adjustments are made through the HMI.

Size parts will be required for the different

pouch width dimensions. A variety of seal widths and

seal patterns are available at no additional cost.

It is anticipated that the pouch will have seals of equal width on the sides or verticals and equal but different widths on the horizontal or top and bottom seals. The seal widths can be different for the verticals and horizontal seals as required.



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The seals will have straight line or cross pitch serration's. The length (machine direction dimension) of the pouch can be increased or decreased with appropriate program changes controlling the horizontal or cross seal dies. These changes or adjustments do not require additional tooling. Changes in the width (across machine direction) of the pouch would require size parts.

A **PRODO-PAK® Model 4S 3P 320** in a Three across or three up configuration, will form the three pouches utilizing a set of rotary seal dies. The three pouches across the machine direction will be filled simultaneously.

Production rates are estimated at 50 to 60 cycles per minute. At three across this equates to 150 to 180 pouches per minute. Actual production rates will be determined by how accurately and cleanly the liquid can be dispensed and are product dependent. Different products and different fill volumes may require additional sets of filling size parts.

A variety of films including co-extrusions and laminates can be sealed on the machine. **PRODO-PAK®** will assist with the evaluation and testing of different film materials, but assumes no responsibility for package integrity as it relates to these materials. The film structure will influence the rate at which it can be sealed to form pouches. It is anticipated that one web of pre-printed material will be used and it will be split into two equal widths. Finished packages will have registered printing on both the front and back panels.

The machine will be designed for use in a sanitary environment. It will be capable of withstanding a wipe down with mild detergents and sanitizing agents. The machine is also available with an optional stainless steel construction. Additional design considerations include, easy machine adjustments and change over.



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Machine design will include guards and covers for all "pinch points".
Electronic safety interlocks will prevent the machine from operating with hinged doors open or hinged covers removed. Please note that guards attached with fasteners will not include safety interlocks and the machine must not be operated when they are removed.



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One (1): **Model 4S 3P 320 MF**

Automatic Form/Fill/Seal Machine standard equipped as follows:

Frame Assembly: Heavy duty welded square tubular steel and steel plate with angular support members. Frame is primed and painted with a “steel-ite” type Stainless steel paint (RAL 9006). The sealing tools mounting plates are anodized aluminum jig plate. All access covers or guards are stainless steel and Lexan. All surfaces are polished and all welds ground. **The frame has four special ball and socket type leveling pads, non-metallic, non-abrasive, non-slip contact surfaces.**

Mill Roll Stand: **One (1) mill roll stands for the material web, Each complete** with brakes and tension compensators to control the web unwind. A slitter and “V” frame assembly with idler rollers will separate the web into two equal widths and direct the web tracking through the rotary dies. This assembly is required to produce pouches with registered printing on the front and back panels of each pouch. The standard maximum roll diameter is twelve (12.0”) inches. Includes 3.0 inch core chucks with spring loaded locking blades on a 1.25 inch diameter shaft. .

Drives: Allen Bradley or Bosch low inertia Brushless servo motors. 230 volt multi turn high resolution encoder. One (1) each for the vertical seal dies, one (1) for the horizontal seal dies, one (1) rotary cut off knife.

Additional servo motors may be required for the Product metering, special tear notch assemblies, draw rollers and other optional equipment.



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Registration:

One (1) photo electric solid state color mark scanner with registration unit wired directly to the servo amplifier to identify preprinted contrast marks on the material web. In combination with the center split side web unwind, this assembly will produce pouches with the print registered on both the front and back panels of each pouch.

Vertical Rotary Seal Die Assembly:

One (1) pair of rotary vertical seal dies, serrated, complete with heaters and thermocouple to Produce four (4) vertical seals for three pouches. The seal area will consist of thirteen 0.50 inch machined rings on 1.5 inch or 38 mm centers and will determine the pouch width.

The dies will have cross line serration's to produce seals with a diamond pattern. These seals will be slit in the center to produce individual vertical seal widths of 0.25 inches The speed of the rotation of the dies is adjustable and set to maximize the production rate and is used as a reference for the other machine functions. Other seal widths and seal patterns are available.

Other pouch widths would require additional sets of vertical seal dies. Different seal patterns and widths are also available.



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Heat Controls and Pressure Cartridge heaters are used for both sets of rotary Sealing dies. Temperature regulation is with the Bosch/Allen Bradley through the **Eaton/Allen Bradley Panel View HMI.** Each seal die (front and back) will have and individually adjustable temperature regulation. The seal pressure is pneumatically controlled and each set of dies can be regulated or adjusted on each side.

Draw Roller: One set of four draw roller assemblies complete with backups to maintain web tension and material web alignment. The speed of the rollers is independently controlled and adjusted.

Product Dispensing: Fill tubes: Three (3) 316 stainless steel product feed tubes, one tube per pouch. The fill tubes will be approximately 0.3125 inches in diameter and may have pneumatically operated positive shut-off stems. The fill tubes are mounted on a stainless steel alignment bracket and positioned on the proper centers conforming to the pouch width. Additional sets of fill tubes may be required for the different products or different fill volumes.

Metering Pumps: Viscous products will require a special positive displacement metering filler complete, there will be three pistons, three stainless steel product cylinders special rotary valves.



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Piston stroke and fill volume adjustments are with a servo motor. The fill weight adjustments are made with digital panel mounted selectors. In addition to stroke length, the timing and piston acceleration and deceleration are also adjustable. **One set of engineered size parts for a volume range of approximately 1.0 to 3.0 ml**

Other fill volumes may require additional sets of size parts. **The metering pump selected will be determined after Testing of the actual product(s) to be dispensed.**

Stainless (316) steel product supply hopper
With an interior polished to #4 sanitary finish.
Approximately capacity is 20-gallon. Hopper is machine mounted with a removable cover. A level probe(s) or ultrasonic sensor to control fill level is fitted in the hopper cover. Rigid stainless steel pipe with sanitary quick disconnects are used in connecting the hopper to the rotary valve of the metering pump.

Horizontal Sealing Dies:

One (1) pair of four (4) land Horizontal rotary serrated seal dies, complete with cartridge heaters and thermocouples. This style die will produce pouches with straight seals. The seal width of the die is **0.75 inches**. A rotary knife will separate the pouches with the top seal having a dimension of 0.375 inches at the widest section and the bottom seal width of 0.375 inches. The seal dies will have a cross lined serration's to produce seals with a diamond pattern. The speed of the dies is servo controlled and is adjusted to conform to the pouch length.



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Slitter:

Slitter assembly consisting of three (3) individual rotary knives with mounting hardware to separate the four lanes of pouches. The style of the rotary blades can be changed to produce perforations in place of complete cuts.

Cutting Assembly:

Rotary or Orbital cut off knife to separate the rows of pouches. The knife will cut the sealed material web that separates the rows of filled pouches. This unit is servo-driven and controlled for proper adjustment and timing. It consist of a single knife blade and a single back up. The speed of the rotation of the knife is adjustable. The outside corners of each pouch will be square.

Electrical Controls:

Steel controls steel enclosure with a Thru The Door Main disconnect. Bosch/Allen Bradley Programmable Logic Controller, Bosch/Allen Bradley servo drives, DIN mount circuit breakers, MCS-C solid state relays and contactors, terminal blocks screw type with fuse blocks, terminal strips, selector switches, wire harnesses, motor starters. **An Eaton/ Allen Bradley Panel View HMI is included. Remote access communication Protocol is included.**

Pneumatic Control:

SMC or FESTO series manifold, 24 volt single solenoids, 90 degree gauges, with cables, fittings, tubing, etc.



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AIR REQUIREMENTS

15 CFM @ 85 to 100 PSI (must be clean dry air).

ELECTRICAL REQUIREMENTS

440 VOLT, A.C., 3 Phase, 60 Cycles, 15 Amps

MACHINE DIMENSIONS AND WEIGHT (estimated)

Width: plus rewind stands

Length: inches

Height: inches without the product dispensing system

Weight: pounds (kg)