SPECIALTY EQUIPMENT®

LIQUID FILLING & CONVEYOR SYSTEMS

Liquid Filling Applications

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Specialty Equipment Fabrication Co.
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Liquid Filling Applications

Contents

Palletized Drum Fillers

Stand Alone Units

Drum Filler with Splash Shield
(Photo 1013) This stand-alone palletized drum filler has an optional stainless horizontal shield over the top of the drums to protect the operator from splash-back.

Twin-Lance Filler
(Photo 1024) This twin lance drum and tote filler has a stainless lance for non-corrosives and a Kynar lance for acids. Extended lances allow bottom filling for tall containers, 5 to 550 gallon size from 20” to 80” tall. The see-through windshield is optional

Low Profile Filler
(Photo 1012) Ceiling height restrictions required this low profile filler for 55 gallon drums. This is a top-fill machine. The drop-down handle was custom made for the operator

Stand Alone Drum Filler
(Photo 1056) The standard model DF-5540 drum and tote filler uses a hydraulic cylinder to raise and lower the lance and boom to accommodate 5 gallon to 550 gallon containers.

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Drum & Tote Filling Systems

Straight-Line System
(Photo1007) This straight-line system accumulates three pallets before the filler, one at the fill station, one at the bung station and two full loads after bunging. This model DF-5540 sub-surface filler handles 5 to 550 gallon containers, 20” to 80” tall. This system includes a type X purge and a lance rack.

In-Line System
(Photo 1067) This model DF-5540 drum and tote filling system is a top and sub-surface filler to handle 5 to 550 gallon containers, 20” to 80” tall. The machine requires only 2 CFM of air and typically fills a 55 gallon drum, with water, in 42 seconds. An optional bung and capping station is included.

U-Line Filling System
(Photo1041) This U-Line layout accumulates loads before and after the filler. Since the pallets run the wrong-way, two-strand chain conveyors are used on the infeed and three-strand chains on the discharge lines. Diamond tread plates between chains are for walking across the conveyor. The filling lance is Kynar and the platform is fiberglass for acid wash down. A bung and capping station is included.

In & Out Filling Station
(Photo1030) The conveyor on the filler scale and the staging conveyor before the filler are both reversing units. A load dropped off will convey into the filling station then reverse, making the drop point the pickup point as well.

Drum, Pail & Tote Fillers

Dual Lance System
(Photo 1065) This system has twin plastic lances for corrosive chemicals and accommodates 55 to 550 gallon containers. It includes a pivoting de-bung station before and a bung and capping station after the filler.

Drum & Pail Filler
(Photo 1004) This palletized filling system has two lances for filling pails, drums and totes. A hydraulic cylinder raises and lowers the boom and lance carriage to accommodate 5 to 550 gallon containers.

Filling Tall Totes
(Photo 1031) This drum and IBC filler has an extra-long Kynar lance to descend within a half inch of the bottom of every container, to speed up the filling cycle and control liquid foaming.

U-Line Filling System
(Photo 1016) A U-Line configuration helps with space constraints. The system fills 15 to 550 gallon containers. The infeed and discharge conveyors are gravity with air escapements. Powered conveyors are used on the fill line.

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Box, Bin & Tote Fillers

All-Stainless Drum & Bin Filler
(Photo 1052) This drum and bin filler has stainless construction for wash-down, food grade requirements. A splash shield is mounted over the drums and the platform is fiberglass.

Food Grade Tote Filler
(Photo 1053) This tote and drum filler is built for food grade requirements. The machine will accommodate containers from 20” to 80” tall.

Bag-in-a Bin Filler
(Photo 1029) We are filling a plastic bag within a collapsible bin. A spreader bar with a cam lock clamp is placed across the width to lock the throat of the bag while filling, creating a seal to prevent contamination. The lance sprays like a shower allowing the bag to unwrinkled as it fills

Bag-in-a Box Fillers
(Photos 1028 & 1054) The filler on the left is a sub-surface machine. The filler on the right is a top-fill, all-stainless steel components above the fill line and includes a plastic splash shield. Each machine is filling a plastic bag with a 2" throat set in a corrugated box. Each lance sprays like a shower to allow the bag to unwrinkled while filling.

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Single Drum Fillers

Filler for Flammables
(Photo 1113) This stand-alone, top-fill machine, model DF-5511, has a type X purged panel to handle flammable chemicals. The filler requires 2 CFM of air to operate.

Standard Drum & Pail Filler
(Photo 1104) Model DF-5510 is a top and sub-surface drum and pail filler. An air cylinder raises and lowers the lance. The filler requires 2 CFM of air to operate and fills a 55 gallon drum with water in 42 seconds.

Electric, XP Filler
(Photo 1123) An electric powered, XP filler for customers without compressed air. Components: a 3/4 HP XP inverter duty motor with torque limiter, NTEP approved scale and weight meter, and a nitrogen purged panel

Dual-Lance Filler
(Photo 1117) This twin lance, top-fill machine uses a Kynar lance for corrosives and a 316L stainless lance for other chemicals.

Epoxy Coated Filler
(Photo 1128) This top-fill machine has all-stainless components mounted on a white epoxy coated frame for a wash-down application.

Single Drum Fillers

Stainless Drum Filling System
(Photo 1130) An all-stainless steel food grade filler with a sanitary lance and ball valves. The stainless conveyors have wash-down duty motors and the rollers have splash guards to prevent contamination.

Drum & Pail Filler
(Photo 1102) This is the standard, Model DF-5510, semi-automatic, top and sub-surface drum and pail filler. Typically, it will fill 5 to 55 gallon containers. The conveyor is built to adapt to various size containers.

Blending Drum Filler
(Photo 1112) This top-fill machine with twin input filling lines flowing through a single lance is for a blending operation. The operator selects a line to input liquid to programmed weights.

Multi-Head Drum Filler
(Photo 1114) This one-of-a-kind drum filling application is a four-lance, top-fill system for 55 gallon drums. One of the lances is 316L stainless, the other three are Kynar.

Quad Fillers

Automatic Four Drum Filler
(Photo 1304) Used mainly for filling viscous products, this machine automatically fills four drums in sequence using electric, heat-jacketed lances to keep the liquid hot and flowing. Upon pallet arrival, the fill cycle starts. After four drums are filled, the pallet is automatically discharged.

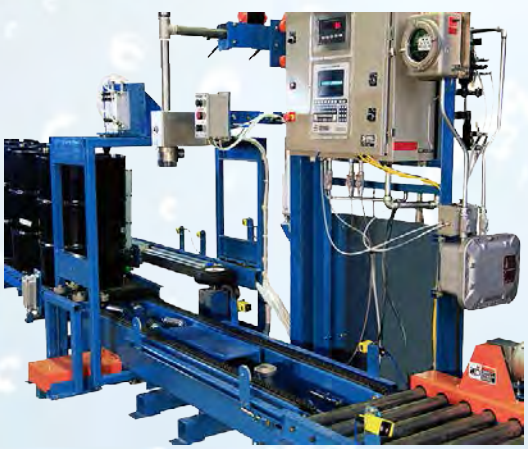
Quad Filler
(Photo 1302) This model DF-5541-4L will fill four drums sequentially, ideally suited for slow-filling of highly viscous liquids. Once the button is pushed, the filler allows the operator to perform other functions while four drums are filled automatically in sequence.

Filling Drums & IBC's
(Photo 1307) This system fills four drums as well as a 220 gallon IBC with a quick change-over. Accessories include; grounding clamps, a tote change-over lance, Type X nitrogen purge, and a pneumatic goop blow-out feature through the end of each lance.

L-Line System
(Photo 1311) This system was installed in a corner of the building for filling thick grease-like products into 55 gallon drums. The two-hour fill cycle allowed the operator ample time for other duties.

Automatic Drum Fillers

Automatic Drum Orienting Filler
(Photo 1218) This model ADO-5510 drum filler is designed to fill 55 gallon containers with bung plugs removed. The system starts with a drum escapement then an indexer to position a drum at the rotator. (See photo 1214 below). A chain conveyor moves the drums from station to station. A raise/lower scale lifts the drum then signals the fill cycle to begin. The full drum conveys to the bung station then through a wig-wag diverter that sends drums left then right, automatically into accumulation.



Automatic Drum Filler
(Photo 1217) This is another ADO-5510 filler, but with more bells and whistles, like explosion proof controls, a nitrogen purged panel, air-operated buttons and a special fiber optic sensor at the rotator to locate the bung opening. This view shows the weigh plate at the filling station. The plate sits on a load cell and is lifted when the drum arrives. The two-strand chain conveyor has a center drive and carries each drum from the rotator to the filler to the bung station.

Drum Rotator Station
(Photo 1214) Every automatic drum filler uses an empty drum rotator to orient the bung opening. An air-operated drum escapement releases an empty drum then a flip-down air operated rake pulls each drum into the rotator. The chain conveyor moves the drum through the stations. The drum is raised by a cradle of skewed rollers then captured between a tire and pivoting wheels moved in and out by an air cylinder under the machine. The drum is then lowered and conveyed directly under the filling station lance.

Fume Booth Fillers

Fume Booth & Capping Station
(Photo 1528) This drum filler within a stainless steel fume booth includes; Lexan walls, two pneumatic sliding doors, and an XP light above the filling station. The capping station includes; a raise/lower stainless fume collecting hood and an air-coiled tool balancer.

Hot, Viscous & Toxic Liquids
(Photo 1505) This booth is for filling liquids at 275 degrees into 20-gallon drums. Features include: electric heat jacketed lance to keep liquids hot and flowing, air-operated hood lowered over the drum, pull-out overflow pan, pneumatic sliding doors, powered conveyors, thermal operator gloves, and four windows.

See-Through Fume Booth (Photos 1520 &1521) Both these photos are of the same machine, a semi-automatic drum and IBC filling system within a fume booth. The load is placed on the conveyor which automatically starts after the fork truck moves away. The guillotine door opens to convey the load in and out. The operator finds the bung opening then starts the fill cycle. Two sets of rubber gloves are provided for the difference in height between the drums and IBC. The clear, see-through walls all around are made of Lexan.

Fume Booth Fillers

All-Stainless Fume Booth Filler
(Photos1525 & 1527) This system fills corrosive liquids into drums and totes. Everything is made of stainless steel. The infeed and discharge points have air-operated guillotine doors. The first station is for de-bunging and nitrogen purging of containers. The second station is for drum and tote filling. The see-through panels are Lexan. The pivoting panel with a bellows, (photo right) has rubber gloves to allow the operator to lean-in to place bungs onto containers after they are filled.

All-Stainless Filling & Cooling Booths
(Photos 1511 & 1512) This all-316 stainless drum filler in a fume booth is for filling liquids at 300 degrees into 55 gallon drums. Both operators are at the filling station. The station to the right of each operator is a cooling booth, separated by an internal, pneumatic sliding door. Features include; electric heat jacketed lance, overflow pan, three air-operated sliding doors, powered conveyors, thermal operator gloves, and five windows.

Pail Fillers

Semi-Automatic Pail Filler
(Photo 1406) This basic top or sub-surface pail filler operates on 2 CFM air pressure. It uses level gravity conveyors where the operator pulls or pushes containers in and out of the filling station.

Automatic Pail Filler
(Photo 1405) This top and sub-surface filler was adapted to run automatically, for open-top containers, by adding a photo eye to recognize the pail at the fill station. Powered conveyors move the containers from filling to lidding.

Top Filler
(Photo 1437) This dual lance top-fill machine fills non-foaming liquids into both pails simultaneously, at ten pails per minute

Twin Lance Filler
(Photo 1410) This filler is made from two machines built on a common frame, each with its own scale and weight meter

Twin Filler
(Photo 1407) This is both a top and sub-surface filling machine with dual lances to fill one pail at a time or both pails at the same time. The filling rate is eight pails per minute

Pail Fillers

All-Stainless Sanitary System
(Photo 1425) A pail filling system for food products. Air cylinders are used for pail escapements, a plastic belt conveyor indexes the pails, and an air operated lid press is used after the filler. All the equipment is food grade, stainless steel construction.

Standard Pail Filler
(Photo 1403) This model PF-510 top and sub-surface pail filler is designed to fill 4 to 7 gallon containers. It uses 3/4" to 1.9" lances. A plastic belt conveyor is on the scale and another after the fill station for lid and labeling.

XP Twin Head System
(Photo 1416) This sub-surface, twin head pail filler will fill two, 4 to 7 gallon pails simultaneously. The operator moves two containers under the lances then presses the buttons. Each container has its own scale to assure accuracy. This system is rated for class 1, division 2.

Stainless Pail Filler
(Photo 1423) This semi-automatic pail filler was designed for filling food products. The filler, scale, conveyor, stand, and control panel are all made from stainless steel.

Mobile Fillers

Mobile Pail Filler
(Photo 1432) This standard, model MPF-510, mobile filler is ruggedly built with casters and foot locks. It includes a power cord and plug to fill 4 to 7 gallon containers. A horizontal bar in back is used to push it from station to station.

Stainless Filler
(Photo 1424) This all-stainless steel pail filler is built for a food application. It has a panel rated class 1, div. 1, for alcohol based liquids. This machine will fill 4 to 7 gallon containers.

Mobile Pail Filler
(Photo 1433) This mobile filler has an infeed and discharge gravity conveyor built-in. Like most mobiles, it is designed for batch operations

Mobile Filler
(Photo 1428) This mobile filler has three gravity conveyors built-in. A special air operated metal lug crimper is added to close 5 gallon metal pails.

Mobile Pail Filler
(Photo 1434) This roll-in and roll-out mobile pail filler is rated for a class 1, division 1 operation. The infeed and discharge conveyors are fixed at each filling station.

Portable Fillers

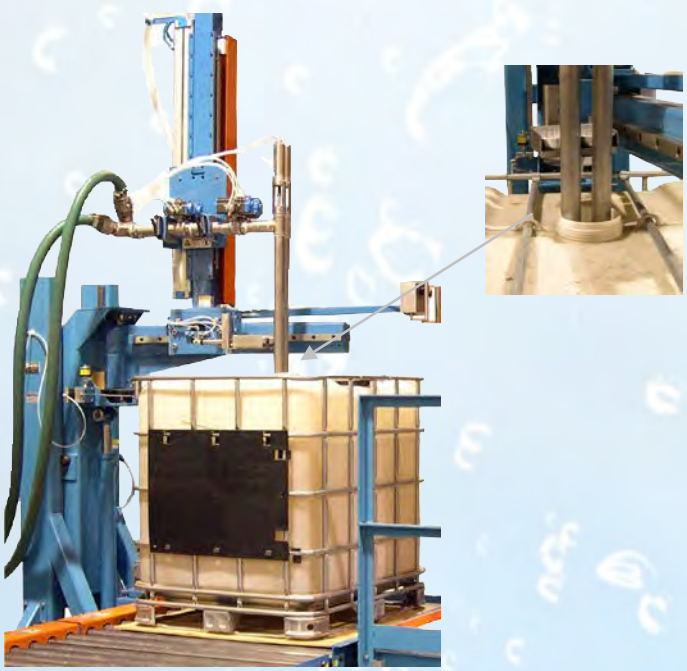
Portable Drum & Tote Filler
(Photos 1085 & 1086) Here's a one-of-a-kind portable drum and tote filler with all the bells and whistles, including; top or sub-surface filling, a telescoping tower for filling 5 to 550 gallon containers, explosion proof controls, a 10,000 lb. capacity platform scale, an air-operated fume collection bellows, manual grounding clamps, six adjustable foot pads, two flip-up outriggers for stabilization, and fork-truck cut-outs on the sides and the front.

Portable Fume Booth Drum Filler
(Photo 1502) Forks enter the runners to pick-up this filler which includes; a stainless fume booth, Plexiglas windows, a glove box with rubber gloves, a Type X purge, reversing conveyors, and a pneumatic sliding door.

Portable Filler & Lid Press
(Photo 1422) Portable fillers are made for fork truck movement. This system includes; a pneumatic lid press. The frames are epoxy coated for corrosive chemicals. The photo shows a flush adapter in operation.

One-of-a-Kind Fillers

Filling Hot, Viscous Liquids into Boxes
(Photos 1515 & 1516) This special system is filling hot, sticky liquids into poly-lined boxes. The 4" diameter lance, ball valve and manifold are all electric heat-jacketed with a thermal blanket to keep the viscous liquid thin and constantly flowing. The operator is safe outside the protective splash booth. Tree lights monitor the filler entry and exit points. At the end of the lance is a special air-knife that blasts compressed air to blow away the sticky residue streamers.



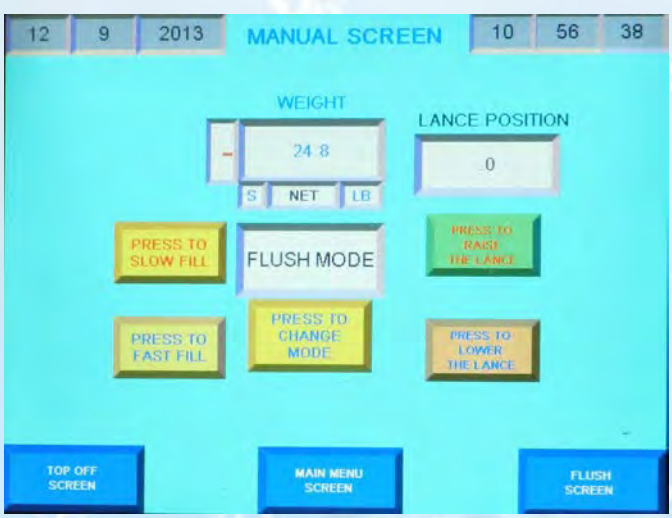
Dual-Lance Blending Filler
(Photos 1081 & 1082) We modified this machine to use twin lances for a blending operation. After the first lance fills to the designated weight the second lance then does the same, completing the blending operation.

Hot Liquid Drum Filler
(Photo 1137) This stripped-down drum filler is used in a slow operation with hot, viscous liquids. An air operated full drum safety cover is lowered onto the drum before the fill cycle begins, to protect the operator from any splash-back.

Filler Controls

Standard Control Panel
(Photos 1701 & 1702) The standard, NEMA 4 control panel comes complete with an Allen Bradley PLC with DC inputs and relay outputs. It is also Ethernet capable. The 10" color touch screen is also from Allen Bradley. In addition to all Allen Bradley components, the panel includes; an NTEP approved weight meter, a power distribution block, step-down transformer, fused disconnect, troubleshooting prompts, 250 product menu, E-stop button, and 120 VAC step down and 24 volt DC power supply. All wires are numbered and tagged at each end. The pneumatic panel is mounted below it.

Type X Control Panel (Photo 1703) This is a NEMA 4X, nitrogen purged control panel rated for class 1, division 1. It has an Allen Bradley PLC controller and all Allen Bradley components. The system pneumatics are also included in this panel.



Operator Touch Screen
(Photo 1715) This is a standard touch screen that comes with all drum, pail and IBC fillers. It is an Allen Bradley, 10" panel view 800 multi-colored touch screen. This unit controls the entire filling operation. It can provide multiple languages as well as English and metric measurements and handles all electrical classifications.

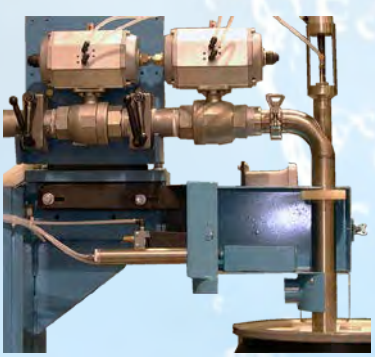
Lances & Valves

Standard Lance
(Photo 1603) This is the standard 316, stainless steel, 1.9" OD x 40" long filling lance. A 3/8" rod inside raises and lowers the foot valve by the air cylinder above. Chevron packing seals prevent back flow

Plastic Lance
(Photo 1606) This is a Kynar lance with two Kynar valves, used with highly corrosive liquids where stainless is not sufficient. PVC or Teflon lances can also be provided.

Sanitary Lance
(Photo 1608) A sanitary lance with Tri-Clover couplings, seals and O-rings, all 316L stainless steel with quick disassembly for cleaning in food grade applications

Foot Valve
(Photo 1602) The end of the lance has a 316 stainless steel machined spool with a glass-filled Teflon seal. An air cylinder raises and lowers an internal push rod to open and close the spool (foot) valve.



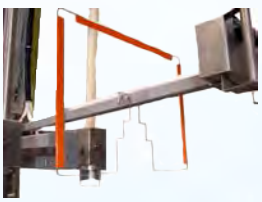
Manifold & Drip Pan
(Photo 1656) All fillers include two stainless ball valves with air actuators. Valves fluctuate for slow and fast speeds. The opened fume box shows an air operated shuttling drip pan, a Teflon wiper ring and the clear plastic fume collecting tube over the bung opening.

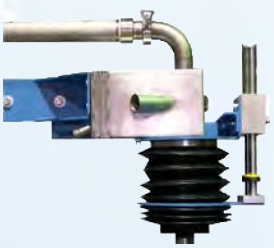
Food Grade Lance Assembly
(Photo 1621) This is a typical sanitary infeed manifold and lance assembly with 316L stainless steel components, including two infeed ball valves with air actuators, sanitary seals, quick disconnects, and Tri-Clover clamps

Filler Options

Sampling Valve
(Photos 1630 & 1631) The operator can open a valve during the drum filling cycle and extract a sample for testing. The computer adjusts the filling weight accordingly. The sampling valve is built into the lance at the factory.

Safety Windshield
(Photos 1645 & 1646) These two safety windshields, one Lexan and the other Plexiglas, are mounted behind the operator's handle on the palletized drum and tote filler. Each shield is designed to protect the operator from fumes and liquid splash-back.





Retractable Fume Skirt
(Photo 1530) This device is used to recover 99% of fumes and prevent splash-back. A Teflon bellows is raised and lowered by an air cylinder, making a positive bung seal. Fumes draw out through the side exhaust.

Pivoting (CIP) Flush Adapter
(Photo 1640) A pivoting arm mounted to the vertical frame moves 90 degrees to bring the flush adapter under the lance. The adapter rotates 360 degrees. The lance is lowered into the adapter where a pair of draw latches locks it in place. Flush time can be set for 1 to 999 seconds, or up to 999 minutes.

Lance Rack
(Photo 1658) A lance rack allows for draining and storing of filling lances. It can be mounted on the conveyor or the plant floor. Lance racks can be built for up to ten lances and can be made mobile.

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More Options

Bung & Capping Station
(Photo 1663) While standing on the platform, this cantilevered bung and capping station allows the operator to maneuver the balancing tools to place a bung and cap on a full drum while another drum is being filled.

Bung & Capping Tools
(Photos1668 & 1412) An air operated bung tool is hanging alongside a pneumatic capping tool. The air operated metal lug crimping tool on the right is mounted on a monorail for closing metal pail lids.

Unique No-Foam Package
(Photo 1627) This recirculating system was created to add to the filler machine when filling high-foam liquids. It reduces foaming by as much as 50%, making it possible to double production rates. The package includes; a special lance and ball valves for the filler, a special pump, flow meter, couplings, hoses and fittings, and programming with NEMA 4 controls.

Data Print-Out
(Photo 1725) Filling data can be printed out at the fill station if needed. Printed data includes:

- Up to 250 product codes
- Operator & product names
- Container count
- Number of containers filled
- Time & date of operation
- Gross, net & tare weights
- Sub-total & gross total weights
- Average container weights
- Number of partial filled drums

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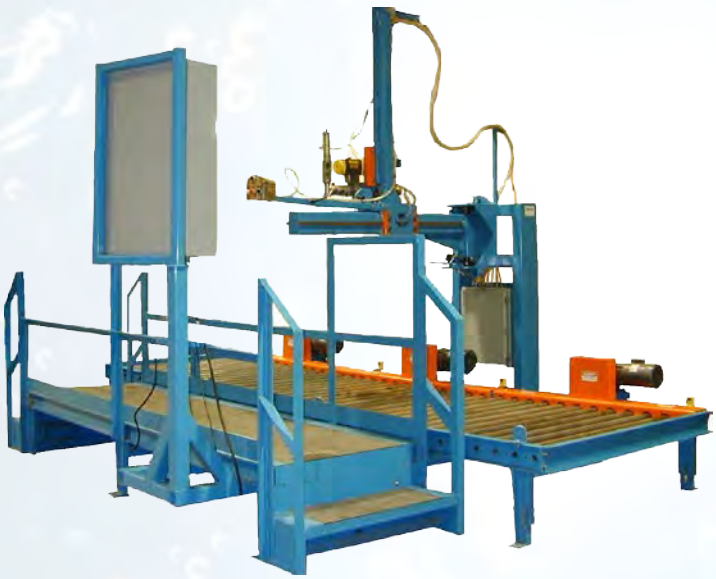
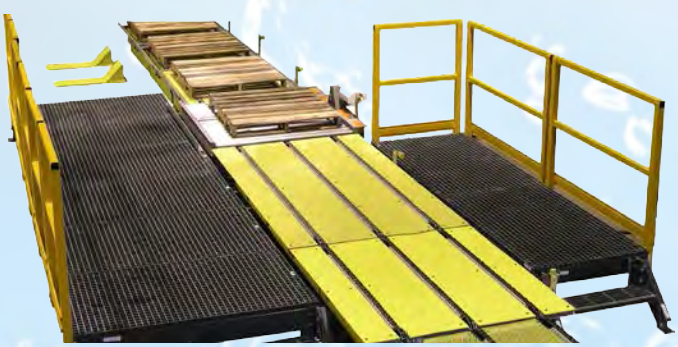
More Options



Operator Platform
(Photo 1690) This is a typical 4' wide x 15' long filling operator platform. It has two-way access, a pivoting panel mount, full length toe guards, handrails, and galvanized deck grating. It is long enough for the operator to remove bungs at one end, while a drum is being filled, and replace bungs at the other end, also while a drum or tote is being filled.

Coating Options
(Photo 1047) This system has been epoxy coated to a color of the customer's choice. Entire filling systems, or just certain components, can be coated in any color of choice, Other finishes for components or entire systems include; industrial grade epoxy, food grade epoxy, flame coated paint, powder coated paint, or galvanized. Stainless steel systems are also available.



Fiberglass Platform
(Photo 1691) The left side shows a typical 5' wide x 18' long operator platform made from fiberglass. It uses bar grating, has with three-way access, full length toe guards, full length handrails, and adjustable height supports. This is made for a constant wash-down operation. The diamond tread plates between the strands of chains are for walking across the conveyor to the second platform which is provided for the operator after crossing over. Fork truck stop plates are in the foreground.

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