WEBB-STILES

POWER and FREE
ENGINEERED CONVEYOR SYSTEMS

MANUFACTURERS OF ENGINEERED CONVEYOR SYSTEMS
THE MANY WAYS YOU CAN UTILIZE WEBB

Power & Free conveyors are one of the most versatile and productive conveyor systems available. With continuing advances in controls and automation this proven conveyor system gives today's engineers unlimited tools for just-in-time, flexible manufacturing and other advanced manufacturing methods.

Power & Free is similar to an overhead trolley conveyor, able to move all types of loads over great distances at all elevations along complex paths. What makes Power & Free unique is its ability to separate the carrier trolley (free line) from the power chain. This ability allows for the carrier trolley to be stopped, switched or diverted to other paths that can be powered or non-powered.

The carrier trolley's ability to accumulate with one another in an accumulation mode anywhere within the system provides positive control of the carriers at all times and allows for an unlimited variety of functions to be performed. Processing, assembly, machining, painting, inspection, load/unload and shipping are but a few of the duties that can be performed all at the same time within the system. The illustration shows a few ideas.

Webb-Stiles designed controls through the use of programmable controllers make it possible to dispatch or divert carriers to any predetermined schedule. This is useful when product mix calls for different steps for randomly conveyed parts and assemblies. Its perfect for JIT and flexible manufacturing systems.

Power & Free can interface with today's robots, process equipment, and other systems offering greater productivity, flexibility and control.

Through computers and readers, data gathering, status of work in progress and record keeping enable engineering and production management tools to address productivity.

Webb-Stiles Power & Free Conveyor Systems

The Webb-Stiles Company engineers, manufactures and installs Power & Free conveyor systems on a turn-key basis. The specifications shown will give you basic information in choosing a proper sized system and other engineering data and system operation. Should you need more detailed data, request our design guide or consult with our sales engineers.

ENGINEERING/CONTROLS

With total in-house engineering capabilities, Webb-Stiles offers absolute design control and central decision making. Our mechanical engineers design your system and equipment to meet your needs. Our control engineers accurately design your control system through the use of electronics, pneumatics and hydraulics.

FABRICATION AND MANUFACTURING

At Webb-Stiles our two completely equipped plants enable us to handle all fabrication work in-house. Our craftsmen build your conveyor equipment using methods and techniques refined through thirty-seven years of practical experience.

INSTALLATION AND START-UP

Field installations are handled by one of our senior superintendents. He is responsible for handling a crew of skilled craftsmen familiar with the various trades of the industry. Our engineers travel to many installations to direct the commissioning of sophisticated equipment and systems.
Webb-Stiles Power and Free systems can be engineered to perform numerous tasks within plants with the capability to isolate local production yet integrate your material handling system. Power and Free performs most functions of other types of conveyors within one integrated system. The examples in the illustration are but a sampling of Power and Free’s versatility.

1. Multiple entry points and load stations to handle a mix of carriers, parts and loads.
2. Automatic or manual routing to various sections of system for flexible manufacturing.
3. Vertical declines can be utilized for dip tanks, load/unload and assembly areas.
4. Carrier spacing and speeds can be adjusted for pass through ovens, paint booths, automatic process equipment and assembly areas by changing to another drive chain. Rotators, turntables and reciprocating devices can be designed into Power & Free.
5. Vertical drops for lowering loads into tanks, machines or loading/unloading stations.
6. Return loops for slower or faster speeds, back tracking of carriers.
7. Tolerances can be built into the system to allow for robot interface, auto pick/place machines.
8. Carrier accumulation for assembly, work in progress, cooling between batches, and shifts.
9. Vertical inclines to overhead storage, free space and clearing paths and obstructions.
10. Storage areas can be powered and nonpowered gravity or walking beam. Diagonal banking and other space saving techniques can be utilized.
11. Inspection, assembly, loading and cooling/drying areas can be nonpowered.
12. Loads can be stopped, located and clamped into machines or devices.
13. Systems such as weighing, banding and turnover stations can be incorporated.
14. Loads of all various types can be handled from delicate to ponderous.
15. Multiple unloading, final delivery and shipping to more than one location.
16. All type of carrier identification readers for control and routing to various destinations. Bar codes, chips, mechanical, magnetic and others offer positive carrier identification and control.
17. Programmable controllers and computers to control loads throughout the system.
18. Webb-Stiles engineers can make all this and more happen to give you today’s modern productive plant.
Webb-Stiles Power and Free Carriers

Our free carriers feature the same machined single piece body castings for leading, intermediate and trailing trolleys. The illustration shows the basic components used and their bullet-proof design and operation. Trolleys run inside two channels positioned toe to toe and held in place by steel plate yokes. Carriers can accept a variety of trolley wheels and guide wheels to fit your requirements.

Front Accumulating Trolley is used for powering the carrier assembly through the power chain pusher dog and used as a load carrier. A retractable dog engages and disengages from the power chain dog.

Intermediate Trolley is used for distributing heavy loads or for an articulating carrier for long or bulky loads to accommodate turns and inclines, etc.

Rear Trolley features a beaver tail which actuates the front trolley accumulating paddle for automatic disengagement during accumulation. Optional secondary push-thru dog for making transfers.

1. Retractable pusher dog
2. Hold back dog
3. Single piece axle
4. Precision steel ball bearing wheels
5. Anti-backup device on 4" trolley
6. Trolley body, single piece casting
7. Center guide wheel
8. Accumulating cam arm, single piece
9. Secondary push-thru
10. Beaver tail, single piece casting
11. Load pin
12. Thrust bearing
13. Lock nut
14. Load bar

Webb-Stiles Accumulating

At manual or automatic stops a retractable tool steel bar stop on the top of the free rail causes the front trolley carrier pusher dog cam to ramp under the stop disengaging the pusher dog from the power chain dog and to stop against the carrier hold back dog. When the stop is retracted, the carrier pusher dog returns to its upper position to engage the power chain dog.

The cam arm of the front trolley is lifted when it comes in contact with the beaver tail of a stopped carrier in front of it. When the cam arm is lifted, the trolley's retractable pusher dog disengages from the power chain dog. When the front carrier moves away, the cam arm drops and the retractable pusher dog re-engages the power chain dog.

Webb-Stiles Carrier Transfers

Webb-Stiles power chain and switch transfers are effected by means of a simple cam mounted on the free rail. This controls the secondary push-thru dogs on the trailing trolley for engagement and disengagement with the power chain dogs. When a carrier enters a power line change or switch zone, the rail cam raises the push-thru dog engaging a power chain dog pushing the carrier assembly through the line or switch till the front trolley engages the new power line.
Webb-Stiles rugged carrier stops feature rolling tool steel blade stops operated manually or by pneumatic cylinders.

The stop, when closed, allows the retractable front trolley pusher dog to ramp under the stop blade, disengaging the chain pusher dog and stopping the carrier with the trolley hold back dog.

Webb-Stiles stops can be operated manually, by carrier signals or programs.

**Webb-Stiles Power and Free Merge and Exit Switches**

All Webb-Stiles merge and exit switches have common dimensions within a system.

On merge switches two lines are fed into one line. The switch is activated by the front carrier trolley and does not require an activator.

Exit switches are one line feeding into two lines. Exit switches feature pneumatic cylinders directly linked to the switch blade for positive trouble-free operation and maintenance.

Switch transfers are accomplished by use of simple cams mounted on the free rail that control the rear trolley secondary push-thru dogs for engagement and disengagement with the power chain dogs. This system delivers smooth and positive switching under full power at all times without the need for auxiliary push-across devices.

**Webb-Stiles Power and Free Track, Chain and Load Specifications**

Capacities listed are per trolley based on full ball complement steel bearings and with adequate safety factors. Loadings are limited by free track ratings, rather than trolley or trolley wheels. For increased load capacities and trolley speeds that are factors, consult with Webb-Stiles.

**Webb-Stiles Carrier Banking Centers**

**Webb-Stiles Track, Vertical Dips and Roller Turns**

All Webb-Stiles track, dips and turns are jig welded for accurate alignment. On vertical dips, the power track is closer to the free rail (tight track) and generally has guides for the power chain dogs.

Roller turns are available in 30 degree, 45 degree, 60 degree, 90 degree and 120 degree with standard radius. Roller turn brackets are an integral part of the roller turn. Standard fall ball, sealed for life and graphite alloy rollers are available.

**OVER & UNDER STRAIGHT TRACK SECTIONS**

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<th>SYSTEM SIZE</th>
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*Minimum dimension of "D" is generally not greater than 1.5 x radius of RF turn. Load clearances on horizontal turns and vertical inclines are also determining factors when designing a system.

**NOTE: Dimensions F is 1-1/8 or 1.1-1/8 or E-F**

"C" and "D" is a function of turn radius. Maximum dimension of "C" and "D" is generally 1.5 x radius of RF turn.
Webb-Stiles Power and Free Control Systems

High quality controls engineering is at the heart of a Power and Free system enabling it to perform a tremendous amount of functions all within one system with the ability to change many functions through software programming.

Webb-Stiles' experienced electrical engineers work closely with you to design and build simple or extremely complex controls to meet the system's needs. Our control systems are generally based on programmable logic controllers and have the ability to interface with local or central computers.

Typical Webb-Stiles Power and Free Conveyor Systems

This unique Power and Free system is used to manufacture special rubber gloves. The system is subject to extreme heat and chemicals in the process. The long length of the loads allowed for very few turns in the system. Webb-Stiles solved the problem by horizontally switching and reciprocating the carriers for placing in process enclosures.

Spreader boxes have been painted and are being conveyed up and through a drying oven. The oven is elevated to conserve floor space. After exiting the oven the boxes are switched to non-powered lines for installation of spreader mechanisms and controls.

Robot painters are often interfaced with a Power and Free system. Since minimal obstruction is caused by the conveyor, robots have total freedom of movement across top, front, sides and bottom of the loads.

This large heavy-duty vertical drop is used to unload truck frames after painting and drying operations on the power and free conveyor. An identical drop is at the other end of the process that loads the frames onto the system.

This 4 x 6 x 4 power & free cooling conveyor handles large hot forged crankshafts. The carriers are automatically loaded and unloaded from special swiveling carriers. Power & Free lends itself well to all types of interfacing automation.

Webb-Stiles designed and built control systems to operate the power and free conveyor through its many functions. Programmable logic controllers signal the inputs and outputs through mechanical or microprocessor based components whether electronic, pneumatic or hydraulic. It's possible to accurately dispatch parts and materials through a system's different processes.
This Webb-Stiles 4" x 4" power and free system transports sand cores in a foundry. The Webb-Stiles built carriers are built to handle different sized core parts. This shows carriers accumulated at a stop just prior to a vertical incline.

Webb-Stiles "Trolley-mation" is our ability to automatically interface with our conveyor system to perform tasks like loading/unloading, positioning, lifting and lowering and other functions. The photo shows a device that transfers car bodies from a continuously moving floor conveyor to a power and free conveyor.

This picture shows carriers that are diagonally banked to save space within a system. Biased banking is also used in process ovens, etc. allowing more parts that are long in length to fit into a smaller space.

Webb-Stiles can custom engineer drives to meet your specifications or critical needs. The caterpillar drive above is an in-line drive and features an Eaton Dynamatic drive. Webb-Stiles multi-drive systems have proven very successful using our vast load sharing technical expertise.

This 45 degree vertical incline transports drums to the second floor conveyor level. It shows a loaded carrier on the incline. Note the conveyor guarding and structural work.

Second level carrier and drum storage area has five lanes. Carriers are automatically entered and released from the storage area from a central station. RF readers track each drum and carrier throughout the system.

A 3" x 3" power and free system being installed at ceiling level in a new plant. Webb-Stiles installs systems all over the country with our field superintendents directing the work. On sophisticated systems, our engineers help direct start-up and commissioning of the system.
Webb-Stiles, a whole world of conveyor equipment

OVERHEAD TROLLEY
A complete line of industry standard 3", 4" and 6" overhead trolley systems, components and accessories. Large inventory of components available immediately under our Read-Ship program.

ALL TYPES OF CONVEYORS
We engineer and manufacture a complete line of gravity, chain driven, belt driven and inlenshaft roller conveyors. Also belt, chain, slat and fixture. Request our Design Guide.

POWER & FREE CONVEYORS

CUSTOM CONVEYORS
Webb-Stiles specializes in all kinds of custom conveyors and material handling equipment. Our reputation for rugged, heavy-duty equipment assuages you of defect free, dependable and trouble-free operation.

THE WEBB-STILES COMPANY
The Webb-Stiles Company was founded in 1956 and specializes in custom built conveyor equipment and systems. The company has grown and expanded over the past 50 years culminating with our main plant and corporate headquarters in Valley City, Ohio, south of Cleveland, and our Southern division in Gadsden, Alabama.

We maintain engineering staffs at both locations with many years of conveyor experience in the mechanical, structural and electrical disciplines. The two plants consist of over 300,000 square feet of engineering and manufacturing enabling Webb-Stiles to handle all its design and fabrication work in-house.

Webb-Stiles can also turn-key the largest of conveyor systems with our installation capabilities and field crews. Webb-Stiles manufactures a complete line of tow line conveyors, live roller, chain and slat conveyors, which complement our product lineup. Contact us for more information or assistance on your needs. Webb-Stiles maintains sales engineers at our Valley City and Gadsden facilities with a sales office in Atlanta.

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Call or write for Catalog 105, our exclusive Equipment and Design Guide with over 200 pages of ideas, conveyor engineering and components. Also available on a CD.