

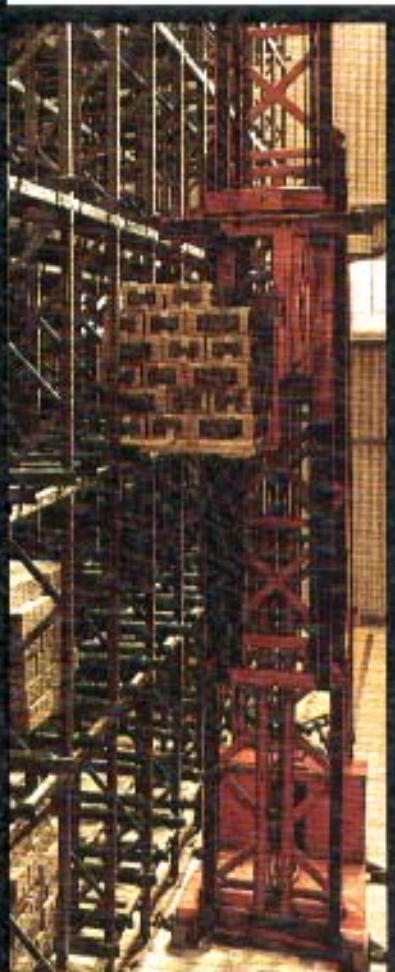
PALLETFLO

LIVE STORAGE OF INVENTORY
ON COMMERCIAL PALLET

GROCERIES AUSTRALIA



COFFEE SO. AFRICA



TEXTILES USA



ENGINES USA



CHEMICALS FRANCE

THE ONLY GRAVITY SYSTEM THAT
WORKS WITH COMMERCIAL PALLETS
CONTROLS CONTINUOUSLY
HANDLES MIXED LOADS
NEEDS NO BRAKES

 **KORNYLAK CORPORATION**

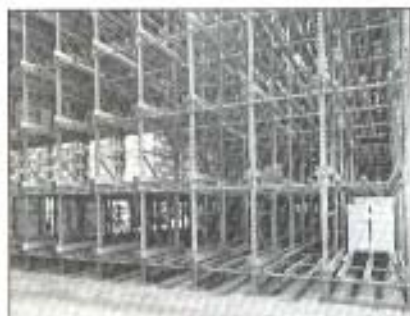
LIVE STORAGE SYSTEMS

Inventory is stored on wheels in a rack which can be as long, wide and high as needed. Loading is from the rear and unloading is from the front. As a load is removed, the row of loads behind it automatically move forward. Methods for loading and unloading include manual, fork truck, and automatic or man-ride stackers, with computer control of inventory records and system operation.

Palletflo was the pioneer in pallet live storage. Thousands of installations serve industry throughout the world. Its success is based on the ability to handle almost any pallet and the smooth speed control resulting from the Hysteresis control built into every wheel. Palletflo adds economy because there is no need for power, braking devices, special pallets, and rehandling of loads and pallets when transferring from receiving pallets to special pallet to shipping pallet. Its simplicity and versatility make it easy to apply - whether the need is for a single lane to accumulate the output of a palletizer or a complete high rise warehouse. In the years since it gave industry its original break-thru into pallet live storage, Palletflo has proven its versatility - handling loads of pallets and skids of almost all types in as-is working condition, loads ranging from an empty pallet to 14,000 lb. of air cargo, in runs over 100 feet, at temperatures ranging from -40°F to $+130^{\circ}\text{F}$. A few of these interesting installations are illustrated.



World's largest textile item order picking system combines Palletflo, Cartonflo and stackers in an integrated 3 floor level system. 1 million items in live storage permit rapid response to orders.



Palletflo at a French pharmaceutical firm.



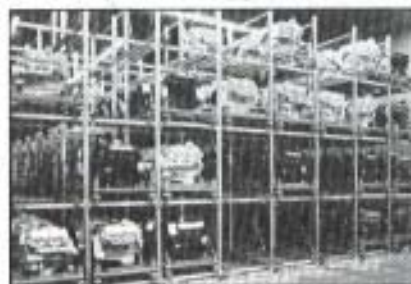
Order picker fills orders directly from palletized cartons with front opening flaps.



Last in - first out feature on top shelf allows access to shipping supplies from rear of a Palletflo order picking rack.



25,000 precooked meals stored in freezer Palletflo at Australian hospital.



Live storage of diesel and gas engines on Palletflo. Heavy loads move more slowly under hysteresis control - an added safety feature.



Order picking from Palletflo on both sides of conveyor on ground floor and second and third level mezzanines above. Conveyors move picked orders to shipping. Palletflos are loaded by stacker.



Live storage of cores ups productivity in automotive foundry.



Picking face of a piano storage Palletflo.



14,000 lb air cargo load rolls at controlled speed on Palletflo line. Aluminum pallet is gently supported on elastomeric Palletflo wheels with no indentation or scratching.



Palletflo easily handles a mix of light and heavy loads, making it ideal for receiving incoming shipments or marshalling shipments at a truck dock.



Turntable and Palletflo gravity conveyor serve an elevator in France.



Order picking direct from pallets. Palletflo racks return empty pallets to rear for truck pick up. Replenishment of rack is also at rear for picker's safety and undisturbed productivity. Picker places carton on Armorbelt⁺ conveyor with very little effort. Rack in background is Cartonflo⁺ containing slow movers.



When an empty pallet returns to the rear of a Palletflo order picking rack, it is easily removed by the same truck which replenishes the rack. This entirely eliminates manual handling of heavy pallets in the Palletflo system.



High cube live storage possibilities of Palletflo are dramatized in this installation photo.



Special Palletflo rails handle molded plastic containers.



Two-level order picking from Palletflo for a restaurant chain. The third tier is last-in first out with access to the pallets of flat cartons from rear of rack.



Shipboard Palletflo Pushline systems move loads without use of fork trucks. Here a 4000 lb. ammunition pallet is loaded into an elevator.



Palletflo in-process storage of parts boosts productivity and simplifies inventory control.

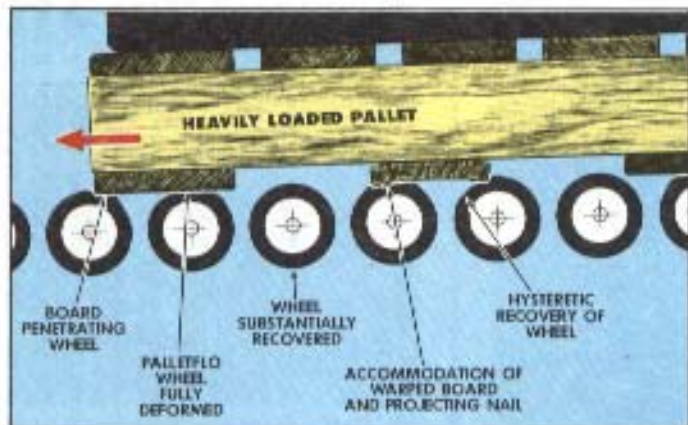


PALLETFLO SPEED CONTROLLING RAILS

Palletflo performance is built into each wheel. Controlled uniform speed is achieved as a result of two major features of the Palletflo wheel - the resilient tread and its elastomeric hysteresis.

RESILIENT TREAD

The OD of the wheel is resilient to conform to irregularities in the pallet bottom surface. These irregularities, including board thickness variations, warped split board, or loose boards and projecting nails and knots prevent pallets from rolling on standard wheel or roller conveyors.



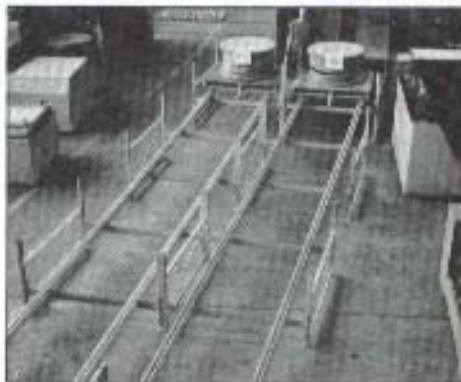
The tread of Palletflo wheels is resilient allowing the irregularity to ride through the wheel instead of having to climb over it. The result is a lower running slope and greater regularity in speed.

ELASTOMERIC HYSTERESIS

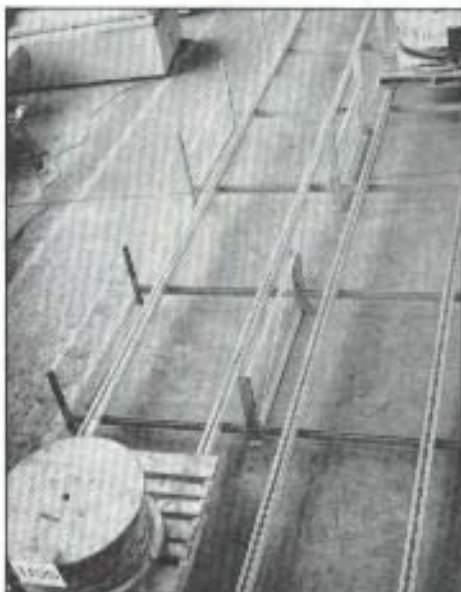
The palletflo wheel tread is made of an elastomer with high hysteresis properties. Thus, as a load rolls down the rail slope, **each wheel** in the rail **absorbs kinetic energy** from the pallet and keeps the pallet moving at a safe controlled speed. Since this hysteresis property works only when the pallet is in motion, it does not hinder the immediate movement of the pallets in a storage lane when the first pallet is removed from the rack.

PALLETFLO

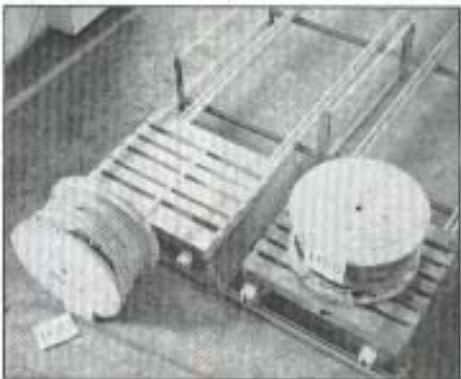
A PALLETFLO VERSES NON PALLETFLO DEMONSTRATION



Identical loads, pallets, wheel and tire dimensions, wheel spacing and rail slope. Tires on right (Palletflo) have high hysteresis, tires on left do not.



Hysteresis controlled pallet on right travels at steady 11 ft./min. Uncontrolled load on left reaches speed of 240 ft./min.



Pallet on Palletflo comes to a gentle stop. Uncontrolled load tumbled off pallet.

-how it works

TESTS DEMONSTRATE SAFE, CONTROLLED SPEED, GENTLE STOP WITH ANY LOAD

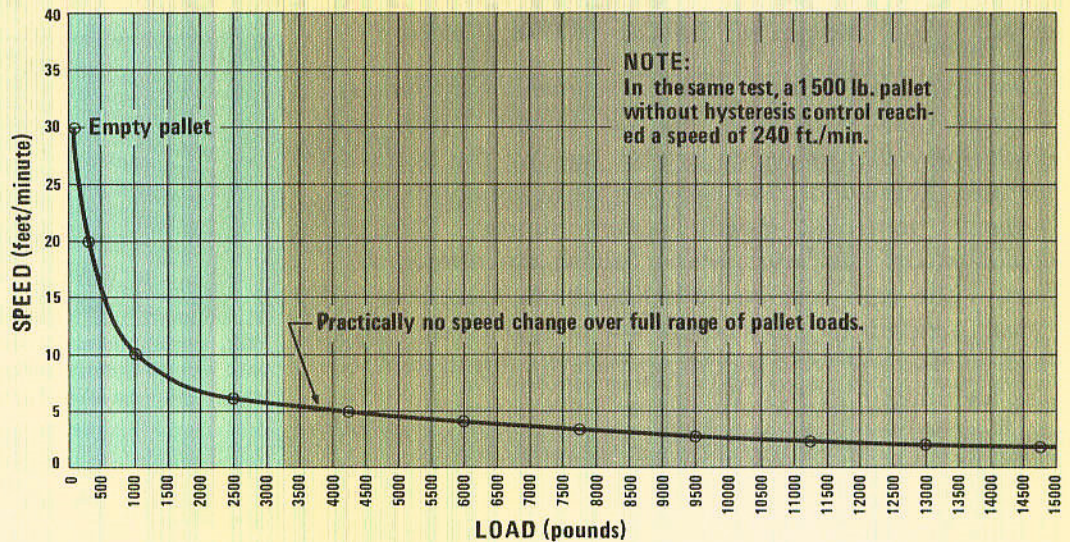
TYPICAL SPEED TEST OF STANDARD WOOD PALLETS WITH LOADS TO 3,000 LBS.

This portion charts tests run to determine effect of load on pallet speed using a 48" x 40" reversible slatted wooden pallet with 32" of bottom board in direction of flow; bottom boards crosswise on conveyor; running in 40" direction; on two standard RP-210-1-1/2 Load Rails with 7/16" slope per foot.

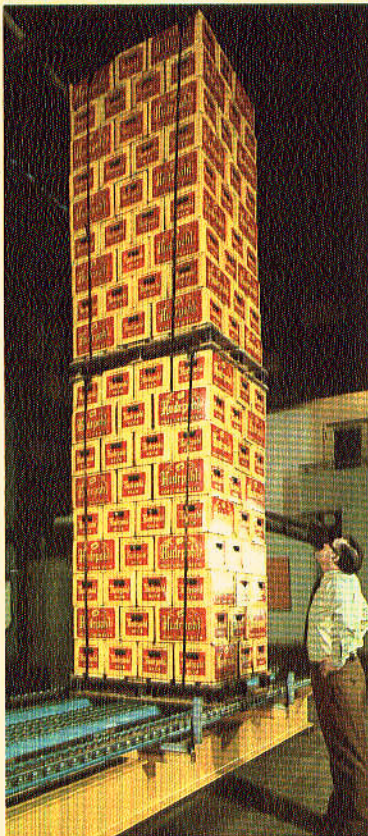
TYPICAL SPEED TEST OF AIR CARGO PALLET WITH LOADS TO 14,000 LBS.

This portion charts tests run to determine effect of load on pallet speed using an 88" x 125" Brooks and Perkins air cargo pallet with solid bottom; running in 125" direction; on four standard RP-210-2-1/2 Load Rails with 7/16" slope per foot.

BOTH TESTS RUN AT 65°F.



If your pallet and load are not directly comparable to those charted above, we recommend that you send some of your pallets and your load specifications to our Hamilton, Ohio plant for testing. You are welcome to witness the tests.



Assistance in planning a Palletflo installation at a European brewery resulted from this successful test using a 17 ft. high x 6400 lb. stack of bottle beer. The new installation permitted one tier operation and large unit load handling.



Cases of soft drink tested on Palletflo to confirm that the loosely stacked loads would roll smoothly at a controlled speed.



One of the many corporate groups who have visited Kornylak to observe their Palletflo test. In this case an automotive company and its consultants observe a 6000 lb. skid load on Rim Runner Palletflo.



30' long test chamber with -40°F to 100°F temperature control and speed recorder for full scale testing of customer pallets and loads. Test engineer holds chart record of pallet speed at various rail slopes.

KORNYLAK WILL TEST YOUR PRODUCT ON PALLETFLO

Many Palletflo customers, when planning large or unusual systems, have found it helpful and reassuring to first see their pallet and load tested on Palletflo. These tests duplicate the special conditions involved and provide data for the system designers.

In the past, tests have proven Palletflo's capability at extreme temperatures, with very heavy loads, with unusual pallets, with loose and unstable loads, with mixes of various loads and with "handle with care" items such as computers, pianos and glass tubing.

You are invited to request such tests, free of charge and scheduled for your convenience at Kornylak's lab. In the event you are unable to witness the test, a report will be furnished. Where needed, this report can be supplemented by photos, a chart recording of speed and a video tape of the test run.

PALLETFLO a versatile

SPECIAL VERSIONS OF PALLETFLO

Rim Runner

Some items are not suitable for conveying on wheels. Formed steel skids have narrow runners, pails and drums have chimes which project beyond the bottom surface. These and other problem items are conveyed at hysteresis controlled speeds on Rim Runner. They are conveyed on steel rolls which furnish the needed support. The rolls rest on Palletflo wheels to obtain the "give" needed to compensate for irregularities in the load surface and for the smooth Palletflo speed control. Ask for Bulletin 272.



Pails, drums and metal skids with narrow bottom surfaces move easily on Rim Runner.



Rolls rest on Palletflo wheels which impart hysteresis control and irregularity compensation.

Palletizer Accumulator Kit

It is easy to increase productivity of your palletizing operation. A Palletflo Accumulator at the discharge of the palletizer holds pallet loads in line for convenient pickup by fork truck. Thus the palletizer does not stop for a fork truck to remove the stacked pallet and the fork truck driver never has to wait for the palletizer to complete a load. Pallet Accumulator's gentle control protects the load against shifting or spills, even when the load is loosely stacked. The Accumulator kit consists of 10' Palletflo rails and supports. Ask for Bulletin 232.



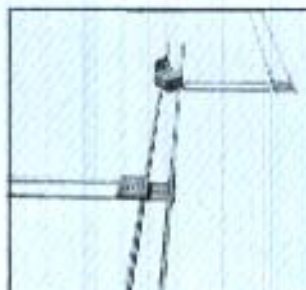
Pallets accumulate gently on Palletflo rails as they leave the palletizer. Accumulator can be 2 to 5 pallets long.



Fork truck drivers never wait for a pallet and palletizer never stops for truck pickup.

Push Lines Systems

Palletflo Push-line rails mount directly to the floor. Standard switches, transfers, turntables, stops, gates and elevator or vertical conveyor locks permit manual horizontal movement of pallet loads in a variety of single or multiple floor operations. When used in production areas, efficiency is improved by the freedom from fork truck schedule. Push-line is particularly useful in explosion proof or congested areas which fork trucks are a hazard. Ask for Bulletin 225.



This system of standard components ties work stations with a vertical conveyor and elevator.



Ammunition container is pushed into a Navy elevator equipped with standard rail latches.

Order Picker With Empty Pallet Return

Order Picker Palletflo is the ideal rack for fast moving items. It is easily combined with Cartonflo racks and conveyors for rapid, flow line order filling directly into waiting trucks. The Empty Pallet Return eliminates all manual handling of heavy pallets. Order pickers are isolated from replenishment activity. The narrow aisle reduces manual effort. Walking and searching is minimized. This development, pioneered by Kornylak in 1959, is the versatile manual order picking system which permits you to delay picking until the truck arrives and save the warehouse floor space normally reserved to store prepicked orders.



Fast movers picked directly from pallets on Palletflo. Note narrow aisle, Armorbelt conveyor and Cartonflo rack at right for slow movers.



When pallet is empty, easy lever operation returns it to rear of rack for fork truck pickup. Pallet No. 2 is held back during this operation.

and proven system

PALLETFLO HAS SERVED THE FOLLOWING INDUSTRY LEADERS. . . .

Abex • Air Force • Airstream • Amana Refrigeration • American Standard • Armour • Baldwin Piano • Becton—Dickinson • Bendix • Bissel • Black & Decker • Block Drugs • Borden's • Borg Warner • Breakstone • Bristol Laboratories • Burger Brewing • Burlington Industries • Carrier • Campbell Soups • Caterpillar Tractor • Celanese Chemical • Chase Brass • Chase Bag • Chemtrol Adhesive • Chrysler • Colonial Baking • Colonial Stores • Clark Equipment • Continental Can • Continental Coffee • Continental Motors • Corning Glass • Crown Drug • Curless Candies • Dana • Davol • John Deere Tractor • Delco • Detroit Diesel • Diamond Shamrock • Diebold • A.B. Dick • Donnelley Printing • Dow Chemical • Douglas Aircraft • Dr. Pepper • Du Pont • Elastic Stop Nut • Elliot Business Machines • Fisher Body • Fisher Price Toys • Fisher Scientific • Flintkote • Ford • Friden • Frigidaire • Frisch's • General Electric • General Services Admin. • General Tire & Rubber • Giant Stores • Glidden—Durkee • Globe Valve • B.F. Goodrich • Gould • Green Giant • G.T.E. • Guide Lamp • Harbison—Walker • Hollywood Brands • Hoover • Hormel • I.B.M. • Ideal Toy • Ingersoll—Rand • In—Sink—Erator • International Harvester • ITT Royal Electric • ITEK • S.C. Johnson • Kimball Piano • Kohler General • Kwik Set • La Choy Foods • Lansdowne Steel & Iron • Thomas J. Lipton Co. • Litton UHS • M & M Candies • Mack Trucks • Mallenckrodt • Marlite • McGraw Hill • Merck, Sharpe & Dome • Minnesota Mining & Mfg. • Mobil Oil • Monsanto Company • Moore Business Forms • Morgan Adhesive • Phillip Morris • Mother's Cake & Cookie • National Starch & Chemical • New Departure • North American Rockwell • Packard Electric • Pakistan Airlines • Pennsalt Chemicals • J.C. Penny • Phelps—Dodge • Pillsbury • Polaroid • Polytherm Plastics • Proctor & Gamble • Port of N.Y. Authority • Quaker Oats • Rainbo Baking • Ralston Purina • Rand McNally • Reese Candy • Rohm Haas • Rubber Maid • Safeway • Seafest • Sheller Globe • Sky Chefs • Smithcraft • Square D • Standard Brands • Stouffer Chemical • St. Regis Paper • Stucco Stone • Swift • Technicolor • Tennessee Eastman • Thermo King • Toni Trailmobile • U.S. Borax • U.S. Gypsum • U.S. Navy • Vick • Western Electric • Westinghouse • Whirlpool • Wiedemann Brewing • F.W. Woolworth • Xerox • Zayre

THEY CHOSE PALLETFLO BECAUSE IT-

- Needs no special pallets or slave pallets.
- Handles almost every type of commercial pallet.
- Handles them with bottom boards either across or parallel.
- Controls speed by hysteresis.
- Controls continuously. Every wheel acts as a retarder.

HERE'S WHAT SOME OF THEM HAVE SAID:

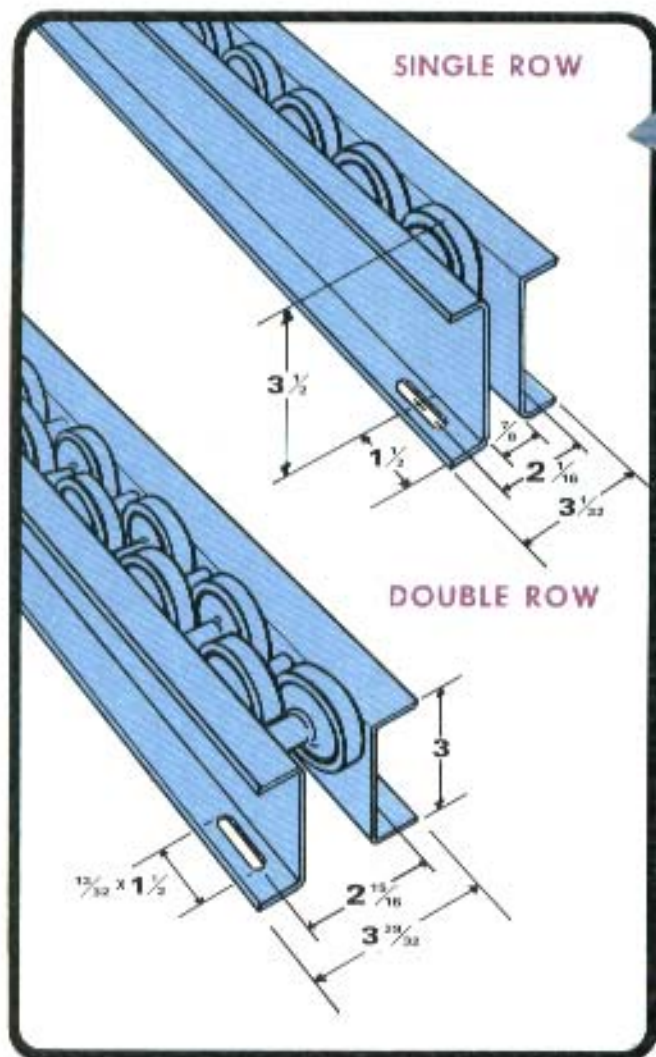
	<i>"The only system on the market that works."</i>	FOUNDRY
	<i>"Best system in the market."</i>	ELECTRONIC EQUIPMENT
	<i>"Great. Just bought more."</i>	SURGICAL EQUIPMENT
	<i>"I will be happy to discuss your system with other potential customers as it is fantastic how Palletflo works."</i>	BEVERAGE BOTTLER
	<i>"The best in the industry, — Even controlled flow, — No brakes to maintain, — Design and sales personnel most helpful."</i>	BAKER
	<i>"Love that wheel."</i>	GROCERY DISTRIBUTOR
	<i>"You got the answer to full control."</i>	VEHICLE MANUFACTURER
	<i>"Working fine — I can't believe it."</i>	FOOD
	<i>"We're sorry we didn't use Palletflo in our other installation."</i>	COMPUTERS
	<i>"Really absorbs speed."</i>	BREAKFAST FOODS
	<i>"Did the job. Easy installation, maintenance."</i>	PRODUCE PACKERS
	<i>"Satisfied — did just what it's suppose to do."</i>	PLASTIC TRAYS & CONTAINERS
	<i>"The installation has improved my departments efficiency."</i>	BEARINGS
	<i>"Ease in installation — also initial price."</i>	AIR CONDITIONERS
	<i>"Equipment good, concept good."</i>	COFFEE

- Heavy loads run slower than light loads.
- Needs no brakes or devices. Eliminates adjustment and mechanism maintenance.
- No power, no sophisticated controls.
- Simplicity permits your own mechanics to install.
- Easy to move, enlarge, reduce.

Let this record of finest performance, lowest cost, rapid easy installation and simple operation and maintenance be your guide in the selection of your live storage systems.

PALLETFLO

rails and wheels



2 Rail Weights

- STANDARD** — for total loads of up to 4100 lb on 2 rails with a 5' span
- HEAVY** — for loads up to 6200 lb*

3 Wheel Styles

- A** general warehousing
temperature range 50 to 90°F
- C** cold room
temperature range 25 to 40°F
- F** freezer
temperature range 20 to 0°F

Two single row rails usually suffice for most common wood pallets. Double row rails are used for pallets whose cross-wise bottom boards are not wide enough (less than 4 1/2"). The 1 1/2" spacing is sometimes needed to keep wheel loading within the design recommendation of 80 lb./wheel. This is often the case when the pallet boards are few or narrow. A simplified formula for determining maximum wheel spacing in a 2 rail system is

$$\text{Spacing (inches)} = \frac{\text{Total board width}}{\text{Load (lb.)}} \times 160$$

Spacing should not exceed 5" without testing. Three rail systems which are sometimes used for sagging pallets or to reduce wheel loading require special consideration and it is best to consult the factory. For total assurance, Kornylak offers to test your pallet and load at its facility without charge.

* MAXIMUM ALLOWABLE LOAD PER PALLET ON 2 RAILS BASED ON 80 lb LIMIT PER WHEEL

SUM BOTTOM BOARD WIDTHS	WHEEL SPACING					
	1-1/2"	2-1/2"	3"	3-3/4"	4-1/2"	5"
10"	960 lb	640 lb	480 lb			
15"	1600 lb	960 lb	800 lb	640 lb		
20"	2080 lb	1280 lb	1040 lb	800 lb	640 lb	
25"	2560 lb	1600 lb	1280 lb	1040 lb	880 lb	800 lb
30"	3200 lb	1920 lb	1600 lb	1280 lb	1040 lb	960 lb
35"	3680 lb	2240 lb	1840 lb	1440 lb	1200 lb	1120 lb
40"	4160 lb	2560 lb	2080 lb	1680 lb	1360 lb	1280 lb
45"	4800 lb	2880 lb	2400 lb	1920 lb	1600 lb	1440 lb
48"	5120 lb	3040 lb	2560 lb	2000 lb	1680 lb	1520 lb

Note— for style F wheels divide above loads by 2

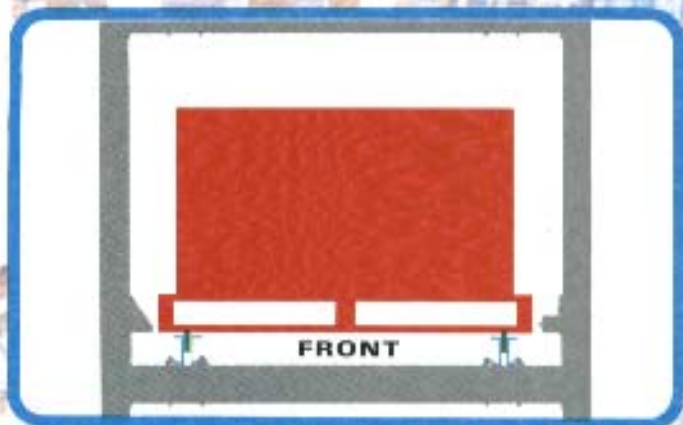
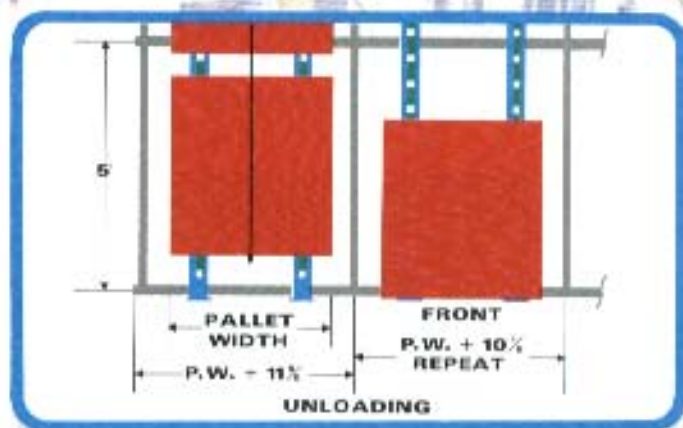
* For heavier loads use more than 2 rails.

When Planning, Specifying and Ordering Your Palletflo System

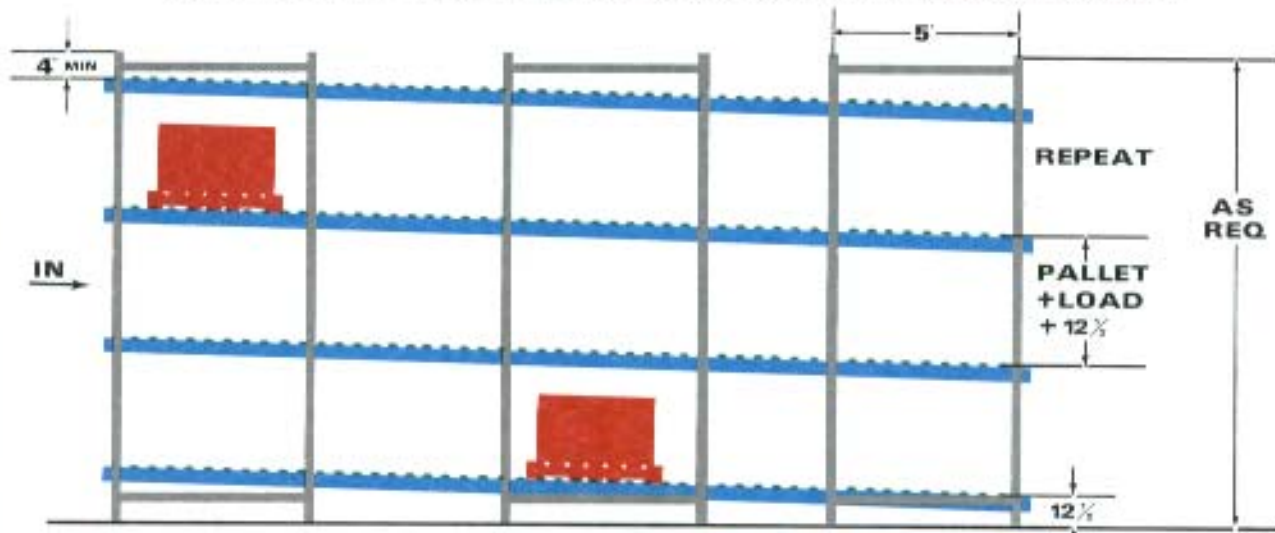
From the very earliest stage of planning your live storage system, Kornylak offers help in a variety of forms - advice, comparisons of storage forms, case histories, system layouts and actual tests. Tests run at Kornylak's facility are useful not only to demonstrate performance of special pallets or loads in a specific environment but also to determine the lowest cost rail capable of meeting all conditions. Such tests may be witnessed, but should it be inconvenient for you to visit, a report, photos, recorder charts or video tapes can be mailed to you for review.

Helpful data to speed up the advice process includes **pallet description** - bottom board sizes, orientation and spacing; **load description** - weight, stability, height, overhang; **environment** - temperature range, moisture, dust; **space** - area, height, obstructions such as columns, ducts, pipes, exits; **storage capacity desired** - number of loads, bays wide, tiers high and length of lane and proposed method of replenishing and load removal.

Early consultation adds to the quality of your final installation.



CONSULT OUR PLANT IF THESE DIMENSIONS DO NOT SUIT YOUR APPLICATION



**the only gravity
system that works
with standard pallets**



All these pallets have
been successfully run
on Palletflo

Kornylak's patented Hysteresis Palletflo is the only gravity conveying and storage system that works with practically all commonly used commercial grade wooden pallets ("AA" Grade and better), with special pallets like those shown on these pages - and many more. In fact, Hysteresis Palletflo works with wooden pallets that have bottom deckboards crosswise to the direction of flow or with surface irregularities ranging up to 3/16".

A Hysteresis Palletflo live storage system saves you money in many ways. It eliminates the cost of captive or special pallets, of transferring the load from a captive to a shipping pallet and the subsequent cost of recycling the captive pallet. Hysteresis Palletflo handles a wide range of mixed loads safely and economically without the usual mechanisms that require regular maintenance and occupy valuable storage space.



MANUAL ORDER PICKER

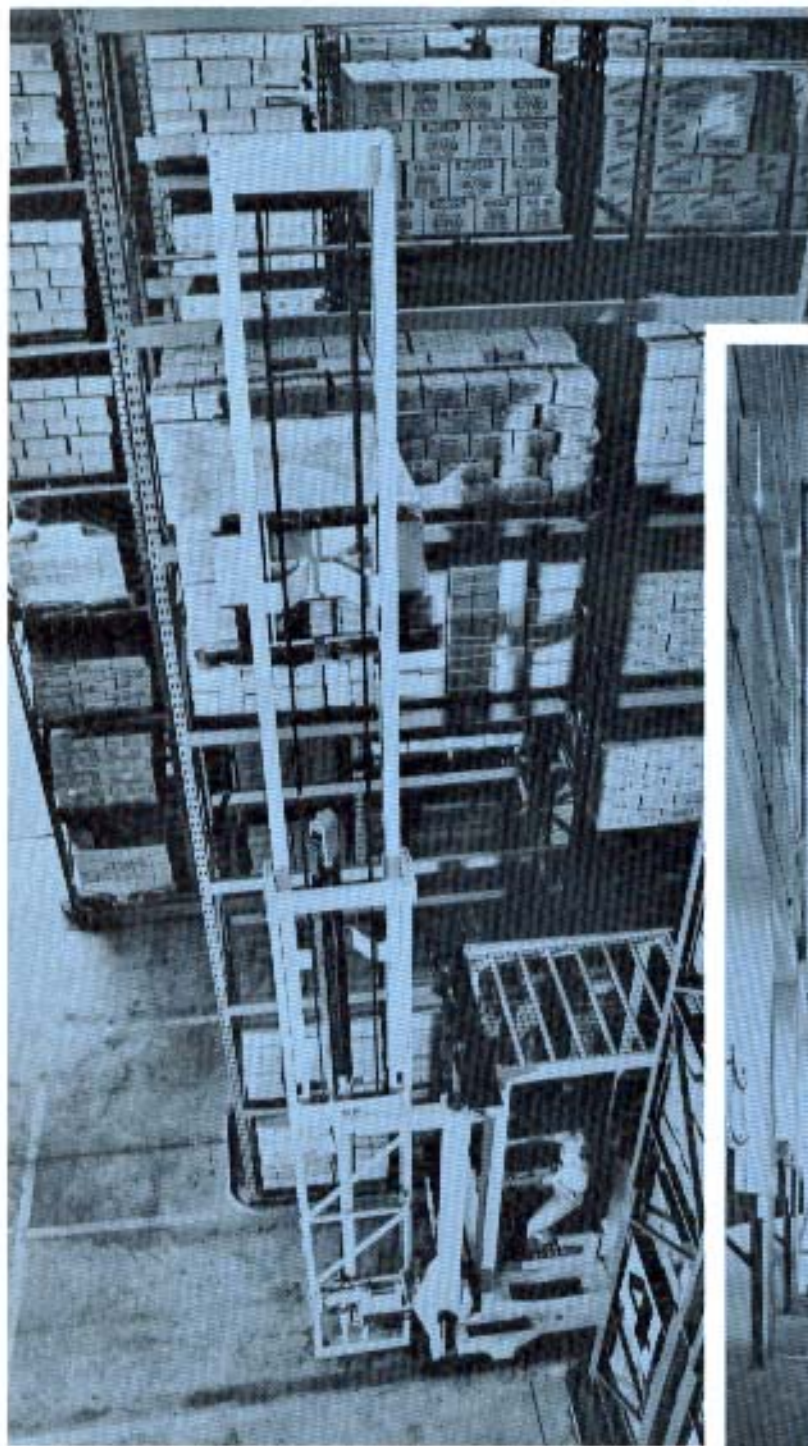
Narrow aisle permits picker to reach racks on both sides. Cartons are dropped on conveyor for immediate delivery into waiting truck via telescopic conveyor. Minimum effort, maximum speed and accuracy.



FORK TRUCK PICKING

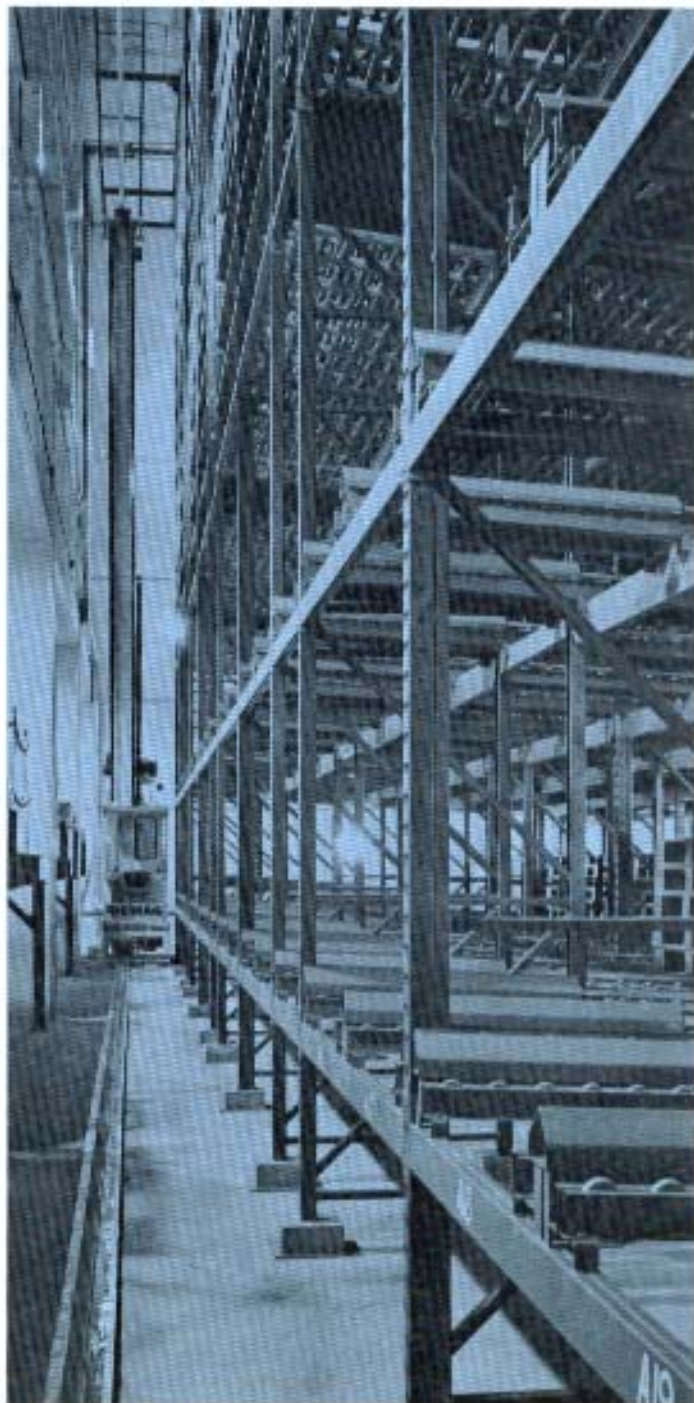
Full pallet loads are picked by fork truck which delivers them directly to the shipping dock or to point of use. Recommended for racks up to approximately 20' to top pallet and where aisle space of up to 10' is available.

full range of capability



FIXED PATH STACKER

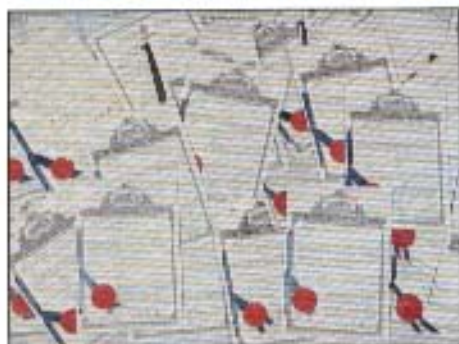
Below, unlimited rack heights and narrow aisles are possible. Stackers are guided at both top and bottom. Styles include manual control at floor level, manual control on picking platform and remote control. The remote controlled styles have options such as push button, card reader dispatch and computer based inventory records.



FREE RANGING STACKERS

Above, picked loads can be delivered directly to destination. Aisles can be as narrow as for a fixed path stacker. Lifts to 38'. Choice of stationary or picking level cab. 180° mast rotation. Mast stabilizers midway or at top to limit sway. Any number of trucks can operate simultaneously throughout system.

THE KORNYLAK CORPORATION



INNOVATIVE SERVICE

As new problems arise, new solutions are needed. Kornylak has been successful in solving many of these problems for industry during the past 40 years. Over 100 patents issued and pending cover important innovations. Every effort is made, when working on a project, to incorporate the technology needed for a successful system. This is your assurance that equipment purchased from Kornylak will be reasonably priced, will perform as expected, and will have the reliability needed for a long, low-maintenance life.



MANAGED FOR SERVICE

Four members of top management are engineering or physics graduates. Their philosophy is accomplishment oriented. All have had extensive experience in every phase of the company and are well aware of the importance of service. Quality, economy and timely delivery are therefore important concerns of every employee. This approach to good customer service is practiced in the proposal, manufacturing and after-sales stages. The computer room illustrated above is one of the many management tools used by Kornylak to improve service.



EQUIPPED TO SERVE

A large, spacious plant equipped with heavy handling facilities, interior rail sidings, and a broad range of machine tools and processing equipment are the front line of Kornylak service. Full-scale tests of purchased equipment can be made to assure customer satisfaction before shipment. Rail shipment permits large units to be shipped fully assembled. The skilled work force which operates this large facility is accomplishment oriented. Their cooperative record reflect a sincere interest in service and product quality.

RELATED EQUIPMENT catalogues on request



ARMORBELT



CARTONFLO



MINI-WHEEL



MONOFLO



BULK HANDLING



TRANSWHEEL



VERTIFLO



ZIPFLO



KARRY-ALL



STRAD-O-LIFT

KORNYLAK CORPORATION
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