SOUTHWORTH

VERTICAL CONVEYORS

An Economical Approach to the Efficient Use of Vertical Space

Southworth Vertical Reciprocating Conveyors are ideal for moving materials to and from mezzanines, lofts, basements, and upper floors. They can also provide multi-level automated material flow capability when fitted with carrier-mounted conveyors. Because they require no pits or penthouses, vertical conveyors can be installed without costly building modifications.

Exclusive Quality features of Southworth Vertical Conveyers

Posi-Stop -
Southworth's exclusive carrier brake is set in bearing supports to prevent freezing or sticking and to assure instant response.

Replaceable, Non-metallic Wear Rings -
Extends cylinder life by eliminating metal-to-metal contact between rod stabilizing rings and cylinder walls.

Safety Stops Prevent Overtravel -
Solid welded stops in mast assembly provide positive control even in the event of limit switch malfunction.

Extra-Rigid Truss Design Masts -
Angled cross members increase strength, minimize twisting and deflection for a more solid platform.

Replaceable Guide Wheels -
No torching or cutting; can be replaced in minutes with ordinary hand tools.

Factory Tested -
All internal wiring factory installed and the completed lift is weight tested. Full Southworth 1-Year Warranty.

Easy Cylinder and Seal Replacements -
The rod can be removed without destruction of the cylinder.

Hard Chromed Rods -
Provide smoother action, reduced seal wear, and extends life.

Options and Accessory Equipment

RAM Stop Assembly With Pressure Switch - For positive platform stability while loading/unloading at the upper landing.

Stabilization Chains - For use with oversize width platforms. Stabilizes platform while loading/unloading.

Non-Standard Splice Heights - To ease handling and installation in tight spots.

Larger Size Power Units - For faster speeds.
Single-Phase Power Units - 1 1/2 HP, 115/230/1/60 primary voltage where three-phase power is not available.

Diamond Carrier Plate - Non-skid working surface.

Landing Enclosures, Safety Screens, And Interlocks - Electromechanical interlocks and screens as required by ANSI B20.1.

Mini Mast - For sites with limited floor space to allow for maximum platform.

Carrier/Carriage Safety Lights And Alarms - For an added measure of safety.

Carrier-Mounted Safety Rails - Either pipe rails or snap chains; pipe rails are permanently attached or removable; snap chains should be used on sides requiring access.

Carrier-Mounted Side Panel - 6' high and full width of platform as standard.

Loading Ramps - Custom fabricated in grades to meet customer requirements.

Modified Designs - In addition to the options shown, Southworth can modify designs or add additional options to meet specific, unique application requirements.

Field Supervision of Installation - Factory trained representatives available nationwide.

Southworth Specification Considerations

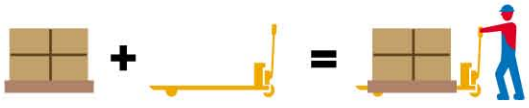
Use the worksheet below to determine the exact specification requirements for your application.

Machine Requirements

1. Capacity

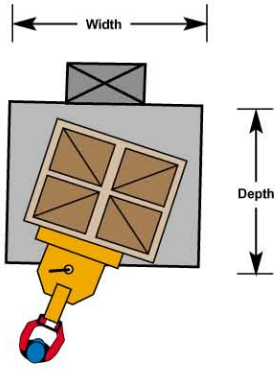
Determine capacity desired based on heaviest load, plus load handling equipment.

- ❑ 1,000 lbs.
- ❑ 2,000 lbs.
- ❑ 3,000 lbs.
- ❑ 4,000 lbs.



2. Platform Size

Determine size based on maximum load dimensions. Allow for foreseeable future load requirements and for maneuvering space.

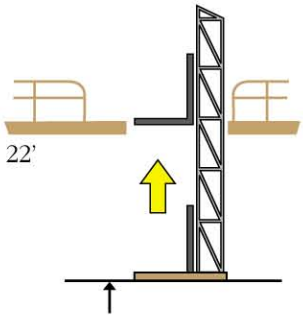


Platform Depth	Platform Width
❑ 36”	❑ 36”
❑ 42”	❑ 42”
❑ 48”	❑ 48”
❑ 54”	❑ 54”
❑ 60”	❑ 60”
❑ 72”	❑ 72”

3. Vertical Travel

This is the floor to floor distance. (Add 6” safety cushion).

- ❑ 6’ ❑ 10’ ❑ 14’ ❑ 18’ ❑ 22’
- ❑ 7’ ❑ 11’ ❑ 15’ ❑ 19’
- ❑ 8’ ❑ 12’ ❑ 16’ ❑ 20’
- ❑ 9’ ❑ 13’ ❑ 17’ ❑ 21’



4. Speed/Power

STANDARD LIFT SPEED (fpm)				
CAP.	1000	2000	3000	4000
3 PHASE	21	21	21	15
1 PHASE	13	13	13	9

5. Estimated Annual Cycles

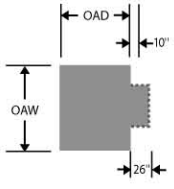
Cycles per hour x hours per day x days per week x weeks per year, where one cycle is full up and full down.

____ hours x ____ days x ____ weeks per year = _____

Facilities Requirements

6. Floor Space

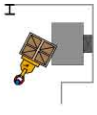
Allow for footprint based on platform size, mast and enclosures at all levels. Note that enclosures should be positioned approximately 3” from platform.



Add maneuvering space needed for lift or access for loading/unloading equipment; also clearance for swing gate(s).

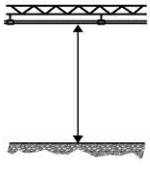
OAW + 6” _____

OAD + Mast + 6” _____



7. Clearance Height

Measure from floor to maximum unobstructed height available. Be sure to consider beams, piping, wireways, and other obstructions.

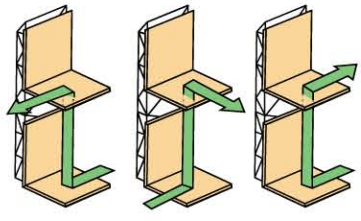


_____ ft.

8. Traffic Pattern

Determine best and most efficient loading and unloading traffic pattern.

Traffic Pattern _____

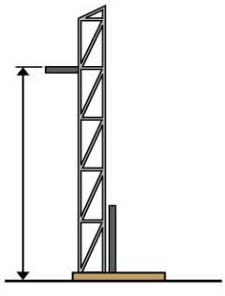


“Z” “90°” “C”

9. Machine Tie-Off

Mast must be tied off at least once near top. Enter height of highest tie-off point.

_____ ft.



10. Loading Method*

- ❑ Forktruck
- ❑ Electric Walkie
- ❑ Hand Pallet Jack
- ❑ Other _____

Machine Requirements		Facility Requirements	
1. Capacity	_____ lbs.	6. Floor Space	____ OAW ____ OAD
2. Platform Size	_____ " Depth _____ " Width	7. Clearance Height	____ ft.
3. Vertical Travel	_____ ' (including 6" cushion)	8. Traffic Pattern	____
4. Speed/Power	_____ 3 phase _____ 1 phase	9. Machine Tie-Off	____ ft.
5. Annual Cycles	_____ per year	10. Loading Method	_____

* NOTE: Alignment of platform at the upper landing may change slightly when load is added due to compression of hydraulic fluid, etc. Please indicate method of loading and unloading at the upper landing, i.e., fork truck, pallet jack, conveyor, etc., and consult factory for information on alignment variation under load.

General Specifications for Hydraulic Vertical Conveyors

Frame - Lower base to be constructed of fully electrically welded structural steel of substantial dimension to accommodate rated capacity with a minimum 3:1 safety factor. Base legs to be of capped structural steel tubing having minimum of one-quarter inch (1/4") wall thickness, with four (4) anchor plates for lagging to floor. Upright channels to be of minimum four inch (4") channel (7.25#) welded to angled cross members to form a truss to increase strength and to resist frame twisting. All corners are to be rounded to eliminate sharp edges. Upper frame to match lower frame, having bolted splice point to allow proper alignment and smooth travel of carrier. Two (2) fixed maximum overtravel platform stops to prevent carriage overtravel.

Carrier - Construction of fully electrically welded structural steel of substantial dimension to accommodate rated load. Frame to be one-quarter inch (1/4") wall steel tubing and reinforced with steel cross members. Carrier material of smooth (or diamond) hot rolled steel plate. Seventy-two inch (72") high back plate of minimum ten (10) gauge smooth hot rolled steel electrically welded to three inch (3") channel frame. Four (4) side deflection rollers (sealed bearing mounted), one on each outside corner of back plate, to resist platform tilting, should load be off center. Carrier to travel on four (4) tapered guide wheels machined for smooth travel within mast channels. Each roller to have two (2) replaceable bearings and mounted on smooth machined steel axles.

Posi-Stop Carrier Brake - Two (2) complete assemblies, each consisting of heat-treated, hardened steel cams mounted on lubricated-for-life bearings to prevent freezing. Cams are actuated via torsion springs to prevent carrier free fall should chain slacken or break.

Electro/Hydraulic Power Unit - Standard 3.2 HP power unit features 3450 rpm intermittent-duty TENV motor directly coupled to a hydraulic gear pump. Pump has integral check valve, relief valve, and 110 volt lowering solenoid with manual emergency lowering valve built in. Pump relieves back to tank and not within pump cavity. Motor/pump combination is neatly mounted on a 5-, 10-, or 15-gallon oversize reservoir with removable suction line filter. Entire power unit is prewired and can be bolted within the mast structure or can be removed and used as an external power unit mounted to suit. Hydraulic oil is supplied and shipped loose in special containers.

Standard 5.0 HP power unit is similar to above but features a 1750 rpm continuous duty TEFC motor, coupling with guard, and hydraulic gear pump. All else is the same as above, except the check valve, relief valve, lowering solenoid, and emergency lowering valve are separate items not built into the pump.

Hydraulic Cylinder - Exclusive Southworth single-acting design. Casing of DOM tubing, inner rod of hard chrome-plated steel, with adequately spaced rod stabilizing rings and nonmetallic wear ring. Gland coupling shall have bleed port allowing expulsion of air from cylinder and shall be machined to accommodate gland nut. Gland nut to be easily removed for maintenance of packing. Gland nut shall have external threads with internal sealing and wiping rings. Design of cylinder shall allow easy removal of rod by removal of gland nut, without damage to cylinder. Chain anchor bolts shall have two (2) lock nuts and a lock pin. Chain pressure shall be balanced with separate chain rollers having two (2) sealed bearings each by means of an equalizing head plate. Roller chain shall have a minimum safety factor of four to one (4:1). Adjustable flow control at base of cylinder to facilitate control of lowering speed. Velocity fuses included.

Standard Electrical/Control Specifications - Primary voltage: 208/230/460/575/3/60 (specify)
Control Voltage: 24/1/60

Motor starter/transformer combination in NEMA 1 enclosure is included and is part of the removable power unit assembly. All wiring is done to NEC standards. Other controls such as gate status switches, interlocks, etc. are not included as standard, but are available as options.

Electrical/Control Features - Standard controls are NEMA 12 three-position, minimum-maintained contact (automatic) call/send push buttons with red mushroom emergency stop palm button. Push buttons shipped loose for mounting by others. Mounting must not be within reach of person on platform per ANSI B20.1.

Main control panel in a NEMA 1 enclosure includes motor starter, control transformer, relay logic, heaters, terminal strip and fuse block, all factory wired in accordance with NEC.

Upper and lower travel limit switches are mounted on mast with adjustable strikers in unistrut for a wide range of adjustment. Limit switches will be wired to junction box on frame which will then be wired in conduit to main junction box at base of lift.

Options - The following addresses only the most popular options. Other customization can be included. Consult the factory with your requirements.

Mechanical Options - Ram Stop Assembly with Pressure Switch, and adjustable structure that allows ram to dead-head against it at the proper level and system pressure is maintained. This option is the best choice if elevation drop due to hydraulic compression is more than desired.

Safety Features - Three (3) maximum travel safety stops to limit carrier travel. Two (2) lubricated, spring-loaded Posi-Stop carrier brake devices. Rounded corners.

Overload safety relief valves. Adjustable down-speed control. Check valve. Chain adjusters with lock pins.

Factory Tested - Each hydraulic model to be fully factory tested under design load. Each unit to have a complete detailed installation, operation, and parts manual furnished.

Gates, Interlocks, and Enclosures - ASME/ANSI B20.1 requires 96" high enclosures at each floor level with the exception of the top floor or landing which in some cases may be permissible to use 42" high handrails as a portion of the guarding.

Enclosures may be fabricated from woven wire, expanded metal, sheet metal, studded wall (wood) or cement block. Wire or metal mesh must have openings small enough to reject a 2" ball. All enclosures must be able to withstand 200 lbs. of force in any direction.

Swing gates may be reduced in height to 84" to allow support between the adjacent enclosure panels or wall.

All gates must be equipped with an electro-mechanical interlock. The locking component of the interlock system must be designed to lock the gate in the closed position whenever the carrier is <u>not</u> present. A gate status component is intended to prevent the operation of the vertical conveyor unless all gates are closed.

Southworth Vertical Conveyors comply with the latest edition of ASME B20.1 - The Safety Standard for Conveyors and Related Equipment.

AMHI IMPS E.A.S.E. MHEDA

SOUTHWORTH

Southworth Products Corp
P.O. Box 1380 Portland ME, 04104-1380
TEL: 800-743-1000 FAX: (207) 797-4734
www.southworthproducts.com

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