# InnovaTech MegaJacks

# **EQUIPMENT OPERATION & SAFETY**







Innovatech Manufacturing 4360 N WECCO Rd Cedar City, UT 84721 https://innova.tech MJ-2015

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# **Manual Version**

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# **Document Information**

This manual is intended as a basic source of information on the safe operation and maintenance of InnovaTech Manufacturing's MegaJacks. This manual provides general information as well as specific warnings, insgtructions, and information that anyone using the MegaJacks must read, understand, and follow.

This manual is not intended as an all-encompassing "rule-book" on operation safety Instead, InnovaTech Manufacturing presents this information as a reference and guide only. It is the purchaser's and operator's responsibility to identify specific safety hazards and determine proper procedures to prevent those hazards from inflicting injury. The business, contractor, and operator bear ultimate responsibility for following the warnings, instructions, and information contained in this manual as well as all applicable regulations, safety rules and state or federal law.

InnovaTech Manufacturing believes that safety is paramount in the operation of its equipment. A copy of this manual should be made available to all persons involved in building with the InnovaTech IMP System. InnovaTech Manufacturing grants you, the purchaser, the right to reproduce this manual for hat purpose. Copies of this manual are also available online at https://support.innova.tech.

All information in this manual is based on the latest product information at the time of publication. However, there may be design improvements from time to time so that photographs, text, and sketches within the body of this manual may not exactly match your equipment. InnovaTech Manufacturing's responsibility, financial or otherwise, for any consequences arising out of the use of this manual or its equipment is limited by our product warrantly. The information contained herin is subject to change, and revisions may be issued to advise of such changes. InnovaTech reserves the right to make product changes at any time without obligation.

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If you have any questions or concerns about the content of this service and maintenance guide or to request updated information, we want to hear from you.

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#### 1. Overview

#### 2. Introduction and Conformance

#### 3. Safety

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# 6. Configurations, Transport, and Storage

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# 1. Overview and Scope of Intended Application

InnovaTech Manufacturing has engineered the MegaJacks as part of its IMP system. The InnovaTech Panelization Scenario, utilizes an assembly line that constructs a wall in sections horizontally at ground level instead of vertically one panel at a time from high in the air. In order for the work to flow efficiently, two work areas are set up so that when one wall section is complete, another can immediately begin. Perlin Pockets on the Catwalk, the MegaJacks, and the Adustable Load Horse make it possible for perlins to be aligned between them. Insulated panels are bolted to the perlins. When a wall section is completed, the MegaJacks upon which it was built are hydraulically raised to a height that a telehandler can lift the wall section from off it. Aanother wall section begins at the adjacent work area while the completed wall section is raised and removed. Constructing the wall panels at ground level is more safe and efficient.

The MegaJacks run on hydraulics. Two hydraulic connections at one end of each MegaJack connect it to the hoses of the HPU. Controls on the HPU activate the hydraulic function of the MegaJacks. Each MegaJack sits on 8 leveling feet. The rubber bottomed leveling feet are to stabilize the megajacks on level ground.

# 2.1 Description

The structure of the MegaJacks consists of a BaseFrame, Single Scissor Arms, Double Scissor Arms, and a Top Beam. Pivot Bolts anchor the single scissor arms to the center of the base frame and the double scissor arms to the center of the top beam. The opposite ends of the scissor arms slide along runners from the ends of the Base Frame and Top Beam. Arow of perlin pockets run along the Top Beam. Hydraulic hoses from the HPU provide hydraulic pressure that raises the jacks to the required level. The MegaJacks can raise up to 15 ft. 5 in.







# 1.1 Nomenclature



- 1. Centering Guides (qty 4)
- 2. Single Sliding Arms (qty 2)
- 3. DoubleSliding Arms (qty 2)
- 4. Top Beam Scissor Pivots
- 5. Top Beam
- 6. Perlin Pockets (qty 6)
- 7. Lift Assist Cylinders (qty 2)
- 8. Base Frame

- 9. Hydraulic Lift Cylinders (4)
- 10. FunctionCenter
  - A. Hydraulic Connection Points
  - B. Base Frame Scissor Pivots
  - C. Hydraulic Manifold
- 11. Leveling Feet
- 12. HPU Hose Connectors (qty 2)





# **2. Specifications and Conformance**

# 2.1 Operating Characteristics and Limitations

Stability of the MegaJacks is dependent upon the proper function of the HPU and hydraulic hoses connecting the MegaJacks to the HPU.

# 2.2 Capacity

Length	57 ft
Width	84 in
Height (fully extended)	15 ft. 5 in
Height (fully lowered)	36 in
Weight	2132 lbs
Capacity (WLL)	

# 2.3 Conformance

- 29 CFR1926 OSHA Construction Industry Regulations and Standards, §1926.305 Jacks lever and ratchet, screw, and hydraulic.
- ASME B30.1-2009 Jacks, Industrial Rollers, Air Casters, and Hydraulic Gantries

# **Systems**

#### Hydraulic System

Source - HPU

Max Pressure ...... 3000 psi



#### Other

#### Sound Pressure Level

75dB (Other work processes in the area may be greater)

The MegaJacks are used in conjuction with the Catwalk, the Adjustable Load Horse, and the Gantry. The Wall Cart can be used to move wall sections out of the work zone for staging.



# 3. Safety

# 3.1 General

A daily routine and a consistent maintenance program, using the information provided in this Equipment Safety and Operation Manual, must be established and followed to ensure the equipment is safe to operate. Do not operate the the equipment until you have read this manual, have received approved training, and have practiced operation of the equipment under the supervision of an experienced and qualified operator. If there are any questions regarding safety, training, inspection, maintenance, application, and operation, please contact InnovaTech Manufacturing.

## **Safety Alerts**

Signal words, symbols, and colors alert the reader/ operator to safety items focusing on five degrees of hazard to life or property. The signal words are Danger, Warning, Caution, and Notice. These words are associated with the colors red, orange, yellow, and blue. Greater hazards will also be associated an equilateral triangle with an exclamation mark. Follow these alerts to avoid death, injury, and property damage.

Hazard Level	Signal Word	Signal Color	Signal Symbol	Signal Meaning	
Extreme	DANGER	RED		A DANGER	DANGER indicates a hazardous situation which, if not avoided, WILL result in death or serious injury.
High	WARNING	ORANGE			WARNING indicates a hazardous situation which, if not avoided, COULD result in death or serious injury.
Medium	CAUTION	YELLOW			CAUTION & alert symbol, indicates a hazard which, if not avoided, may result in moderate injury.
Low	CAUTION	YELLOW	no symbol	CAUTION	CAUTION (without a symbol) indicates a hazard or practice not related to personal injury.
NA	NOTICE	BLUE	no symbol	NOTICE	NOTICE indicates a hazardous situation which, if not avoided, will result in death or serious injury.







# 3.2 Pre-Task Safety

#### **Worksite Inspection**

The equipment operator must recognize that hazards exist and take steps to prevent them from becoming accidents by inspecting the work area before and during equipment use. Do not operate the equipment until a worksite inspection has been completed. Take safety measures to remedy or avoid all hazards in the work area before operating equipment.

Use of the equipment should be included in a pre-task safety analysis (PTSA). The following table suggests some of the considerations, hazards, and control methods for use of the equipment.

Pre-Task Safety	Analysis (	PTSA)	Considerations

Consideration	Hazard	Suggested Control Methods		
Planning	Variety	Ensure Site Specific Safety Plans (SSSP) and Job Hazard Analysis (JHA) are in place and include the equipment use as part of the plan.		
Wind	Wind,	Do not Extend MegaJacks In winds above MPH.		
Precipitation	Rain or Snow	Rain, snow or ice on a wall section adds considerable weight. Ensure weight capacities are not exceeded.		
Loading Jacks	Improper Loading	Wall Section must be centered between the two megajacks so it is not imbalanced.		
Access	Struck By	Keep area in front of MegaJacks clear for unloading access		
Surface	Uneven weight distribution	MegaJacks need to be set up on a smooth level surface.		
Emergency Response	Failure of Communication	Ensure proper communication means have been established both for operations and emergency use.		
Inspection and Maintenance	Equipment Malfunction	Ensure pre-operation inspection has been performed and any deficiencies have been remedied prior to operation; ensure equipment maintenance is current.		
Raising Wall Section	Pinch, Crush	Keep personel clear of wall section while MegaJacks are being raised.		
Clearance	Struck-By, Pinch, Crush	Ensure area under and in the direction of travel or movement is clear of people.		
Hand Tools	Struck-By	Ensure no tools are left on Wall Sections while it is being lifted and carried.		
Materials	Clutter, Trip, and Fall	Ensure supplies and materials are properly secured before movement of equipment.		



# 3.3 Addressing Hazards

Construction involves an environment in which many hazards exist. The responsibility of everyone on the job is to be aware of the hazards and either eliminate, mitigate, or control them.

If any devices are defective, lock the equipment out, and tag it "Out of Service," and remove it from service until repaired. For the safety of all personnel, do not disable, modify, or ignore any device.

#### **WARNING**

DAMAGE OR MALFUNCTION!

The potential for an accident increases when operating equipment that is damaged or malfunctioning. Death or severe injury could result from such accidents. Do not operate the <EQUIPMENT> if it is damaged or malfunctioning.

# **WARNING** SAFETY DEVICES! The potential for accident increases when safety devices do not function properly. Death or serious injury could result from such accidents. Do not alter, disable, or override any safety device.

Operators should be trained in the proper operation of the equipment.

# A. Operating Conditions

Be aware of conditions that affect the hydraulics of the MegaJacks. Adjust or stop operation according to the degree of hazard. Consider adverse weather conditions.

Do not operate the equipment during weather events with high risk such as snow, ice, lightning or thunder storms, or excessive wind.

Minimum Safe Approach				
Distance (MAD)				
Voltage Range (Phase to Phase)	Minimum Safe Approach Distance			
0-300∨	Avoid Contact			
Over 300V to 50 kV	10 feet			
Over 50 kV to 200 kV	15 feet			
Over 200 kV to 350 kV	20 feet			
Over 350 kV to 500 kV	25 feet			
Over 500 kV to 750 kV	35 feet			
Over 750 kV to 1000 kV	45 feet			

# K. High Voltage

Keep MegaJacks away from high voltage conductors especially when loading or unloading wall sections. MegaJacks are not electrically insulated. The operator must be aware that the MegaJacks extend to 16 feet. Additional clearance must be allowed for wall section to be unloaded. Follow safe Minimum Approach Distance (MAD).

Requirements of the MAD Table apply except where employer, local, or governmental regulations are more stringent.

If any part of the equipment contacts a high-voltage electrical conductor, the entire machine can become electrically charged. If that happens, do not touch machine. Such contact could result in death or serious injury. Warn ground personnel in the vicinity to stay away. Do not approach or leave the equipment until electricity has been turned off. Do not attempt to operate controls when any part of the equipment is in contact with a high-voltage electrical conductor or if there is immediate danger of such contact.



Safety

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#### SHOCK HAZARD!

equipment is not insulated and does not provide protection from contact or proximity to electrical current. Death or serious injury will result from contact with, or inadequate clearance from, an energized conductor. Regard all conductors as energized.

## P. Slopes and Stability

Ensure MegaJacks are set up on an even, flat and firm surface. Use the equipment on approved surfaces and slope. Maximum slope for the InnovaTech IMP Panelization work area set-up is 1%.

### Q. Noise

The MegaJacks themselves makes no noise. The diesel engine of the HPU operates below 75dB. Other work processes in the area may be greater. Use hearing protection. The combined noise rating generated at the work location has the potential of being over 85 dB.

# **R. Ventilation**

The HPU runs on diesel fuel. Use equipment in open areas. Operation of the equipment and the work being performed introduces exhaust fumes that could be hazardous.

### S. Crush/Pinch Points

The MegaJacks have multiple moving parts that lift large heavy loads high into the air. Keep clear of all moving parts and stay out from under the load while the MegaJacks are being raised. Never allow personnel to be on the MegaJacks while lifting or hauling.

#### **WARNING**

PINCH OR CRUSH HAZARD!

Do not place any part of the body near the scissor arms of the MegaJacks while a wall panel is being raised. Anything caught under or between the scissor arms will result in injury and/or damage.

# V. Hydraulics

This

Be aware of hydraulic injection hazards. The hydraulic system has hoses with hydraulic fluid under pressure. Hydraulic lines could develop high pressure leaks. Use a piece of cardboard or wood to search for leaks. Gloves are not adequate protection.



Hydraulic fluid escaping under pressure can have enough force to inject fluid into the flesh (even through a glove). Without immediate medical attention, hydraulic fluid injection could result in a serious infection or reaction. In case of hydraulic injection, seek medical attention at once.

# PPE

The PPE required in the vicinity of the MegaJacks is Hard hats and reflective vests. Additional PPE may be required by the specific job. Follow job site requirements.





# 5. Operation

# 5.1 General

The HPU and hydraulic hoses power the MegaJacks. Building a Wall Section on the MegaJacks requires workers to move all tools before a Wall Section is raised.

The operator is responsible for safe operation of the MegaJacks and must use techniques, operating procedures, work methods, and systems that are safe for the work situation. If any malfunction, hazard, or potentially unsafe condition relating to capacity, intended use, or safe operation is suspected, stop operation and seek assistance.

# 5.2 Walk Around Inspection

- 1. General Work Area Inspection: Look for "Do Not Operate" tags; Visually inspect hydraulic hoses and fittings for active leaks Where connections are leaking, connections must be tightened or replaced to eliminate leakage before the equipment may be operated. Where hoses have leaks they must be repaired before the equipment may be operated.
- 2. Frame: Ensure frame has no damage. Check for dents, damage, weld or parent metal cracks or other discrepancies. Check for broken, cracked, or loose parts. Check weld joints. Look for areas that might have stress. Look for loose bolts, nuts.
- **3. Hydraulic Pump Unit:** The HPU has a diesel fuel engine and a radiator. Ensure radiator has adequate water and the radiator cap is tightened. Ensure fuel levels are adequate and fuel tank cap is tightened.

4. **Fire Extinguisher:** Inspect fire extinguisher each shift.

#### **WARNING** STEAM AND HOT COOLANT! Do NOT open radiator when hot. Check coolant or add coolant when engine is cold to avoid scalding.

4. Hydraulic Oil: Visually check hydraulic oil level on sight glass. Keep hydraulic oil in operating

range on sight glass. Failure to do this could result in poor operation and possible damage to equipment. Check level with cold oil and systems shut down. Fill as needed. Check oil level with the MegaJacks all the way down. Checking the oil with MageJacks raised will result in a low reading because of the large amount of oil it takes to raise them.



- 5. Ensure the fire extinguisher is in operating pressure range and that inspection tags are up to date.
- 6. Manual: Make sure a copy of the Operator and Safety Manual is enclosed in the weather resistant storage container.

#### TO AVOID SCALDING.

7. Hydraulic Oil: Visually check hydraulic oil level on sight glass. Keep hydraulic oil in operating range on sight glass. Failure to do this could result in poor operation and possible damage to equipment. Check level with cold oil and systems shut down. Fill as needed.

**CAUTION** IMPORTANT! If the equipment does not operate safely, turn it off. Tag it "Out of Service." Do not operate the equipment until it is safe for operation.

### **Operating Controls**

Hydraulic hoses connect the MegaJacks to an HPU (Hydraulic Power Unit) Refer to the HPU manual for operating controls.

# 5.3 MegaJack Function

The MegaJacks have two functions. Their first function is to serve as part of the construction surface, and the second is to raise the wall section up to where



a telehandler can lift it off the MegaJacks. Preliminary tasks must be completed before the MegaJacks can perform their functions. Those tasks are:

- ensuring ground is level and firm
- setting up the IMP System

# Work Area Safety

Maintain safety by keeping people off the MegaJacks while they are functioning. Keep the area around the MegaJacks clear. Keep all personnel out from under a wall section while it is being raised Do not use the equipment for anything other than its intended purpose.

# 5.4 Set-up

The components of the MegaJacks trailer are heavy and require machinery to remove and arrange. They can be arranged according to the job specific wall plan.

- Unbolt the Megajacks, Catwalks, and Adjustable Load Horses off front and back bracketry and axle set.
- 2. Arrange them to the desired size of wall sections.
- Place the HPU and hydraulic hose reel where they can be conveniently and safely used to operate the MegaJacks.

# 5.5 Construction on the MegaJacks

The IMP system uses two identical work areas in which a wall plan is used to determine where to position a cat walk, 2 megajacks, and an adjustable load horse. To start construction:

- 1. Align perlins between perlin pockets on the Catwalk over its corresponding MegaJacks to the Adjustable Load Horse.
- 2. Bolt insulated panels to the perlins
- 3. Remove all building materials to the adjacent work zone.
- 4. Clear area in preparation for telehandler pickup.
- 5. Constructing another Wall Section can begin on the adjacent work area.

# 5.6 Operating the MegaJacks

- 1. Ensure all hydraulic hoses are properly connected.
- 2. Follow starting procedures of the HPU. If the hydraulics are cold, let the HPU run for a few minutes before enguaging hydraulics. Manually move the hydraulic valve on the HPU.
- 3. Raise the MegaJacks to the desired height for telehandler pickup.
- 4. Push the hydraulic valve the opposite direction to lower the megajacks

# 6. Configurations, Transport, and Storage

# 6.1 General

Preparing the equipment for use after being transported is setting up the Megajacks for operation. The process of preparing them for transport is the process that stows them.

In stow mode, the MegaJacks are their own transport trailer complete with an axle and a king pin. Two steel brackets are the front and the back of the trailer. The Catwalk is the side of the trailer. The MegaJacks are the floor and the load. Lifted into place by telehandler and bolted securely, a custom metal bar goes across the center top to ensure the load is well secured during transport.

If necessary, outrigger pads can be used to stabilize the MegaJack.



# 6.2 Reassembling the Transport Trailer

To reassemble MegaJacks Transport Trailor :

- 1. Position the axle set where the MegaJacks are set up.
- 2. Assemble the trailer with the front and back bracketry using the Catwalks for the sides and the megajacks for the load.
- 3. Bolt the custom metal bar over the top center of the load.
- 4. Assure all parts are secure and no bolts are loose.

# 8. Emergency Procedures

# 8.1 General

Every job site has inherent hazards. Planning is an important step of mitigating those hazards. Ensure site specific safety plan (SSP) and job hazard analysis (JHA) have been established. Include in the emergency planning, emergency contacts such as hospitals, EMS, job site emergency contacts and chain of command. Consider proximity of emergency response equipment such as first aid kits and fire extinguishers.

# 8.2 Emergency

Emergencies often arise from human error or equipment malfunction or a combination of both. If there is an emergency, consider the safety of workers before considering the value of equipment.

#### **Possible Malfunctions:**

Leaking or burst Hydraulic hoses would cause megajacks to fail and let a wall section down. Keep personnel and equipment out from under or around Wall Sections being raised by the MegaJacks.

The HPU is the controls for the MegaJacks. Ensure the HPU is at optimum functionality.



If an emergency situation involves a MegaJack, thoroughly inspect the equipment before returning equipment to service.

# 8.3 Incident Notification

InnovaTech Manufacturing should be notified immediately of any incident involving an InnovaTech product. Even if no injury or property damage is evident, InnovaTech should be contacted and provided with all necessary details.

# 7. Maintenance

# 7.1 Periodic Inspection

The equipment should be maintained in a safe operating condition to be in service on the job. It should be taken out of service, locked, and tagged "Out of Service" when damaged or weakened from any cause. It must not be used until repairs are completed.

Examine for possible defects

- Cracks or dents in main frame, scissor sliders, and runners
- Hydraulic cyliners
- · Damaged or missing pivot bolts and washers
- Damaged hydraulic connections

Each MegaJack shall be thoroughly inspected at times which depend upon the service conditions. Inspections shall be not less frequent than the following:

- For constant or intermittent use at one locality, once every 6 months
- Immediately before and immediately after a MegaJack has been subjected to abnormal load or shock.

# 7.2 Routine Maintenance

The Hydraulic Pump powering the MegaJacks requires hydraulic and engine maintencance. Refer to the HPU manual for maintenance specifications.

The MegaJacks are engineered with oil impregnated bushings so they do not need greased accept for the hydraulic cylinder pivcots.

Apply grease to the grease zerks on the hydraulic cylinders weekly.



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Failure to notify InnovaTech Manufacturing of an incident involving an InnovaTech product within 48 hours of such an occurrence may void any warranty on that machine.





# **Appendix : Decals and Labels**

The following chart will help to identify the decals and locations to ensure the equipment is properly marked. (page 1 of 4)

Decal and Label Chart				
Decal ID#	Qty	Decal Purpose	Decal Visual	Decal Application
OP09-R01	1	Name Logo	MEGAJACK 2015	Contraction (Contraction)
SM01-R01	1	Name Logo	MEGAJACK 2015	
SM02-R01	1	Operations Marker Pick Point		MEGAJACK 2015
SM03-R01	1	Safety Marker Shear Hazard Warning	WARNING SHEAR HAZARD SERJOUS RULHT could socur members of norming in between members of norming and statuters KEEP TOES CLEAR OF EDGE	
SM04-R01	1	Safety Marker Crush Hazard Warning		
SM05-R01	1	Safety Marker Hydraulic Injection Hazard Warning	WARNING     WARNING     WARTION MAZARD     DEATH or SERIOUS INJURY     coold result from contact with     pressented flux.     KEEP CLEAR of leaks.	







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