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Large Pipe Handler

Operating Instructions

1. PRODUCT DESCRIPTION

The Large Pipe Handler is designed to attach to a 5 -11 ton excavator, depending on which size P.E. pipe you are inserting into the host pipe. It can also maneuver pipe around the site where the entire operation is controlled from the excavator cab to reduce manual handling.

This model handles pipe diameters from 6" to 36", and depending on the size, the pipe will determine the size excavator required.

Table 1—Large Pipe Handler Specifications

SPECIFICATION				
Model	**355**	**500**	**630**	**900**
Minimum Pipe Diameter	5—8 ton	8 ton	8 ton	8—11ton
Pipe Diameter	6"-12"	12"-20"	20"-24"	30"-36"
Typical pushing speed	30' per minute	30' per minute	30' per minute	30' per minute
Typical length pushed	500-1500 ft.	500-1500 ft.	500-1500 ft.	500-1500 ft.
DIMENSIONS & WEIGHTS				
Length	28"	28"	28"	28"
Max width with shells extended	28"	34"	41"	53.5"
Max height with larges shells	31.5"	36.5"	40.5"	83.5"
Weight	750 lbs.	838 lbs.	970 lbs.	1080 lbs.

PUSHING CAPACITIES— Pushing forces experienced onsite will vary, depending on the make and model of excavator used. The pushing force is related to the arm tear—out force which is the maximum force achievable from the excavator where the pipe is inserted by pulling the pipe towards the excavator rather than away. It is still possible to push pipe in by pushing away from the excavator however pushing forces will be smaller.

1.1 LARGE PIPE HANDLER HIGHLIGHTS

Table 2—Large Pipe Handler Key Points

Pipe Handler connects to the excavator's digging arm.	Load or unload from storage stacks or trucks.
Pushes speeds up to 30 feet per minute.	Adapter shells for smaller diameter pipes
Push lengths in excess of 1500 feet can be achieved.	Simple to use.
Machines powered from the third service off-take hydraulic power source on excavators	Designed for use in pipe-laying environment
The Pipe Handler does not require any anchoring—soft ground conditions no longer an issue, and anchoring pins are not needed	Can push or pull the pipe

2. SAFETY AND PRECAUTIONS

3. 1. The following P.P.E. must be worn at all times:

a) Safety goggles
b) Hard hat
c) High visibility jacket
d) Gloves
e) Steel toe cap footwear

3.2. Large Pipe Handler

3.3. All excavation work shall be carried out in accordance with T/PR/SW/1 – Work Procedure for Excavations or equivalent, and all other related codes of practice.

3.4. Ensure there is a designated operator to control all operations of the excavator.

3.5. Ensure that the attachment and detachment of the Large Pipe Handler to and from the excavator is taking place within the cordoned off area.

3.6. Ensure that all the pipe handling, maneuvering and pipe insertion activities using the excavator are taking place within the cordoned off area.

3.7. Ensure the movement of the excavator's arm is contained within the cordoned-off area.

3.8 The driver shall operate the excavator and Large Pipe Handler from the cab at all times.

3.9 Check that the Safe Working Load of the excavator is not exceeded by the combined weight of the Large Pipe Handler and the P.E. pipe being handled.

3.10 Check there are no overhead lines in close proximity to the lifting position.

3.11 Check that all of the fittings and attachments required to correctly attach the Large Pipe Handler to the excavator are available.

3.12 Only lift P.E. pipe and do not attempt to lift anything else for example curb stones, as this will damage the Large Pipe Handler and may exceed the Safe Working Load of the excavator.

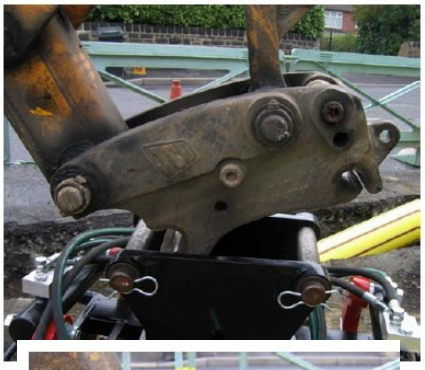
Table 3—Excavators Required

SIZE OF EXCAVATION REQUIRED				
	Minimum total length (m.)			
P.E. Diameter	Up to 3' of cover	3' to 6' of cover	6' to 10' of cover	Width (in)
4"	5	6	7	30"
6"-8"	6	7.5	8.5	32"
10"	7	9	10	36"
12"-14"	8	10	12	48"
16"	9	12	13.5	50"
20"	10.5	13.5	15.5	50"
24"-36"	14	17.5	19.5	67"

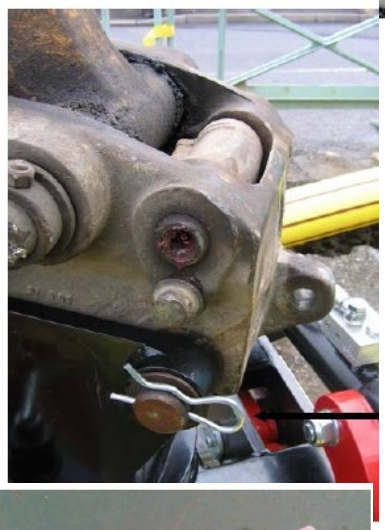
4. Fitting Pipe Handler to Excavator: Unload the P.H. onto stable horizontal ground within the cordoned-off are. Position the excavator so that the arm can be lowered on to the P.H. Unlock the horizontal swivel so help line up the P.H. with the arm of the excavator.

Locate the excavator in the desired position for pipe pushing and lower the stabilizers and if possible arrange the stack of P.E. pipes so that they can be picked up and loaded into the Butt Fusion M/C using the Pipe Handler in a stationary position with its stabilizers down.

The P.H. can be fitted to the excavator using either Quick Hitch or Standard Bucket Pins. If using a quick hitch, then all safety devices, pins, locks etc. must be fitted and **checked by the machine operator before using the handler.**



4.1. Installation of Control Equipment: Safety locking pin in placed when quick hitch has been attached. **This must be locked in before any lifting of the P.H. is carried out.** *Please note that if your chosen excavator is fitting with dual flow hydraulics then the electrical system below is not required. Simply plug the hoses running from the pipe handler directly into the quick release coupling on the excavator boom and ensure the tap for dual flow is switched on.*



In order for single flow hydraulic excavators to operate the P.H. an electrical system is required which is as follows:

Solenoid Control Valve (S.C.V.) which directs the oil flow so that the hydraulic rams on the P.H. will operate correctly.

Switch Control Box (S.C.B.) remotely controls the Solenoid Control Valve from the cab of the excavator and is operated by the driver.

The Solenoid Control Valve is plugged into the return line on the excavator boom, usually an inch flat-face coupling (most hydraulic breakers use but check this if first time fit)

The supply line should be a 3/4 inch flat-face coupling, which is on the end of the flexible hydraulic hose (check this is first time fit).

Other side of excavator boom

Alternative location of the off-take valves:

The control cable from the S.C.V. should be routed down the excavator arm, following the breaker hose route if possible. Ensure enough slack is in the cable to allow the arm to move without cutting or stretching the cable. Secure with nylon ties to the rubber hoses rather than the steel line will help prevent heat transfer damage to the loom.

Excess control cable should be at the cab end of the boom, and neatly secured to avoid a trip hazard with the switchbox comfortably placed for the operator to control.

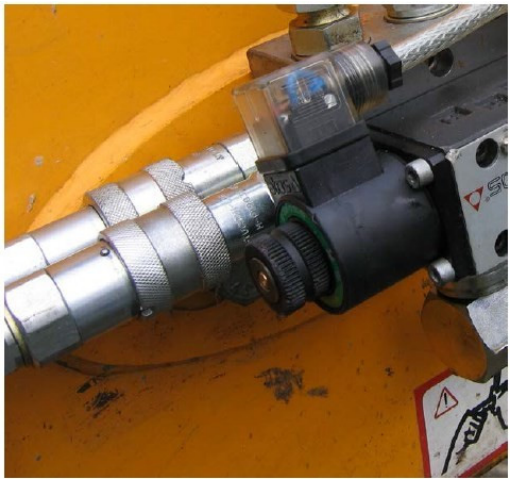
The unit is powered up by inserting the power jack plug into the vehicle cigar lighter or aux power jack, the plug is converted by removing the red plastic shroud on the end.

An electrical operation check can be made by operating the S.C.B. when plugged in and checking the solenoid valve pack, each solenoid is equipped with an L.E.D. which lights when the corresponding switch is pressed; this will verify that the electrical circuit is ready to operate.

The final connection to be made is the 3/8 inch flat-face hose connections from the P.H. to the S.C.V. There are males and female and should be pushed together and the locking collars rotated to prevent accidental disconnections.

The 3/8 inch hoses are sufficiently long to allow the excavator to use its extended boom function if needed, however when using a short or standard length boom then they should be coiled and secured wit a nylon tie to prevent entanglement.

The installation should now be checked slowly for full un-restricted movement over the full operating range of the excavator arm, any cable or hose fouling should be rectified before deployment.



4.2 Operating the Pipe Handler: In brief—The P.H. hydraulics are powered by the breaker service on the boom, to operate the handler press the direction button on the S.C.V. and then depress the foot– pedal.

This caused the oil to flow around the P.H. ram circuit and open/close the grab arms as required.

Once the P.H. has fully grabbed the pipe, then the pushbuttor and foot pedal can be released as the P.H. has been fitted with pilot valves, which maintains the clamping force. The operator can then concentrate solely on maneuvering the pipe. To realize, operate the S.C.B. and then the foot pedal.

BEFORE ATTEMTING TO INSERT PE PIPE ENSURE THE SWIVEL LOCKING PIN IS RASIED ALLOWING THE HANDLER TO MOVE FREELY AROUND THE PIPE.

1. To open the grab arms press OPEN button on the S.C.B. and press down on the breaker foot pedal.
2. This will fully extend the grab arms
3. The foot pedal and OPEN button can now be released
4. Maneuver the P.H. around the P.E. stick/string at a location that will give the safest most effective stroke.
5. To clamp around the P.E., again press the CLOSE/GRIP button until the grab arms have wrapped around the P.E.
6. As the P.H. is pulled back towards the excavator, it will be necessary to employ a similar technique to that of grading in order to keep the pipe and P.H. in line and prevent any undue stress on either the P.H. or pipestring.
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8. When excavator arm has completed a full stroke and the P.E. has been inserted in may be under degree of spring-back load, allow the arm to relax a small amount before opening the P.H. jaws, this will prevent a sudden release of pipe loading and possible skin damage.
9. Repeat procedures 1-8 to begin the next stoke and continue inserting pipe.

5. Operating the Pipe Hander:

If at any time the P.E. needs to be pulled back (obstacle, site requirements) the operation is exactly the same only the excavator arm is either extending away from the host pipe while gripping the P.E. or the excavator can be repositioned in the opposite direction and the P.E. pulled out away from the host pipe.

The P.H. is equipped with a lockable swivel between the arm and the handler chassis; this is normally left un-locked for pipe insertion to allow the P.H. to conform to slight misalignment of the P.E. without placing undue strain on either the P.H. or P.E.

6. Transporting the Pipe Handler:

It is possible to transport the pipe handler to and from site attached to the digging arm. When driving with the handler it should be locked down with the swivel pin and positioned long ways in the opposite manner to the pushing position. This will keep the rams free from damage.

7. Transporting sticks of pipe:

It is possible to transport sticks of pipe from a stack on site to a position of insertion ready for welding. Once a stick of pipe has been selected it can be brought tight alongside the excavator to reduce the length and width of the operation. Once in position the swivel pin should be locked down to eliminate the risk of the pipe swinging out.

8. Changing Shells: Once P.H. is fully attached to the arm of the excavator lift the P.H. up off the ground. Shells can now be fitted or removed with the P.H. at a good working height.

9. General Maintenance: The handler has been designed to be relatively free of maintenance, simple checks on the tightness of the arm pivot bolts and swivel pin bolts being all that is required in a normal day to day operation.

Service and Maintenance: Before a push the following servicing should be done.

ROUTINE MAINTENANCE
Clean down the machine and check all moving parts for wear and tear
Check all hydraulic joints and couplers for leeks
Check all hydraulic hoses are in good condition
Check the following bolts are tool tight: - 24 x M16 bolts attaching swivel yoke to main body. 8 x M12 bots securing arms to main body.
Check the following bolts are hand tight: 4 x M24 bolts securing hydraulic rams to arms. 8 x M12 bolts securing aluminum shells to arms.
The three type of bolts used on the Pipe Handler are M12 and M16 cap heads and M24 hexagon bolts.