

INSTRUCTIONS

FORM B-13-D-1

OPERATION OF STANDARD NIAGARA CONTROLS FOR PRESS BRAKE HI-LO DRIVES

This discussion of control functions applies only to the standard Niagara Controls for Press Brake Hi-Lo Drives. This control is designed and built in accordance with Niagara's interpretation of the Electrical Section of OSHA, Section 1910.217, as published in the Federal Register applicable at the time of manufacture and American National Standards Institute Incorporated B11.3-1973. If controls other than these have been supplied, refer to the control manufacturer's instructions. NOTE: This control has terminals for interfacing guards.

MASTER STOP BUTTON

Maintained type of button that stops power to the main motor and deactivates the clutch control at any point in the stroke. Pull to reset before operating the motor and clutch.

MAIN MOTOR STOP BUTTON

Stops power to the main motor.

MAIN MOTOR "FORWARD-REVERSE" SELECTOR SWITCH

For selection of forward or reverse direction.

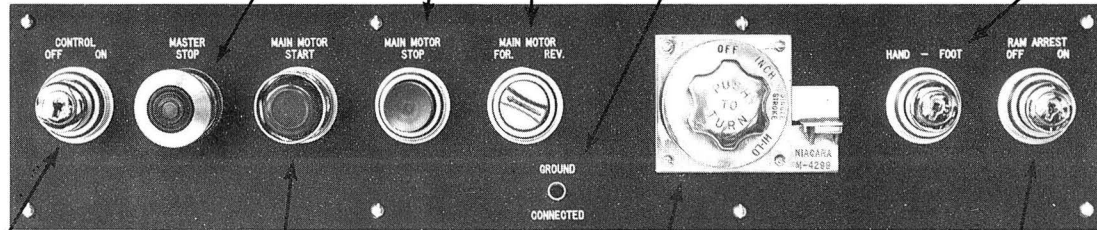
"HAND-FOOT" SELECTOR SWITCH

"HAND" position - for use of palm buttons in the "SINGLE STROKE" mode.

"FOOT" position - for use of the foot switch in the "HI-LO" mode or the "RAM ARREST" mode.

GROUND CONNECTED INDICATOR LIGHT

Indicated secondary side of 115 volt transformer is grounded. The press brake should not be operated when this light is off.



MASTER OPERATOR'S STATION

Figure 1

CONTROL POWER "OFF-ON" SELECTOR SWITCH

"OFF" position - all functions are locked out of operation. The motor cannot be started and the clutch cannot be engaged.

"ON" position - all functions are operative. Modes may be selected on the PRESS BRAKE STROKING SELECTOR SWITCH.

MAIN MOTOR START BUTTON (Illuminated Button)

The main motor will start and continue to run when the PRESS BRAKE STROKING SELECTOR SWITCH is in the "INCH", "SINGLE STROKE" or "HI-LO".

PRESS BRAKE STROKING SELECTOR SWITCH

One of the following modes can be selected and locked: "OFF", "INCH", "SINGLE STROKE" or "HI-LO".

RAM ARREST "OFF-ON" SELECTOR SWITCH

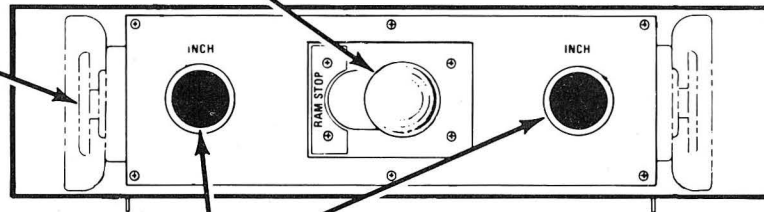
Automatically stops ram engaging the work. The FOOTSWITCH must be released and reactivated to complete cycle.

PALM BUTTONS

When both are concurrently depressed, the ram will complete one cycle with the PRESS BRAKE STROKING SELECTOR SWITCH in the "SINGLE STROKE" mode. The ram will stop when either PALM BUTTON is released during approximate first 180° of stroke. Both PALM BUTTONS must be released before cycle can be restarted.

RAM STOP BUTTON

Stops ram motion, must be reset for further operation—motor continues to operate. Operates in both HAND and FOOT settings.

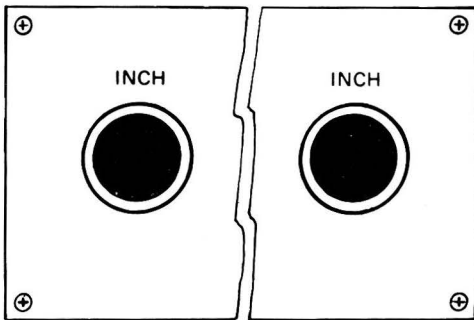


TWO HAND INCH

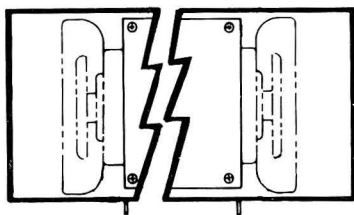
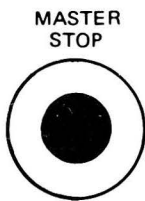
Operative in "INCH" mode only. Both buttons must be depressed concurrently.

OPERATOR STATION (Pedestal)

NIAGARA MACHINE & TOOL WORKS • P.O. BOX 475, BUFFALO, N. Y. 14240



**TWO HAND INCH ARRANGEMENT
(LOCATED ON PEDESTAL)**



**PALM BUTTONS
(LOCATED ON PEDESTAL)**

BEFORE OPERATING THIS PRESS BRAKE, PRESS BRAKE OPERATORS AND DIE SETTERS SHOULD READ AND UNDERSTAND THE PRESS BRAKE SAFETY MANUAL WITH PARTICULAR ATTENTION TO "A SPECIAL NOTE TO OPERATORS AND DIE SETTERS".

Make sure the PRESS BRAKE STROKING SELECTOR SWITCH and the CONTROL POWER SELECTOR SWITCH are in the "OFF" position and the MAIN DISCONNECT SWITCH is "ON". The GROUND CONNECTED INDICATOR LIGHT should be "ON". If not, proceed no further as this is an indication of an unsafe condition, i.e. the ground wire on the secondary side of the 115 volt transformer is not connected or a fuse is blown.

INCHING (Lo Speed Only)

With the main motor running or coasting, the clutch will engage as long as the TWO HAND INCH ARRANGEMENT is activated while the PRESS BRAKE STROKING SELECTOR SWITCH is in the "INCH" mode. Releasing either control will disengage the clutch and apply the brake. If the clutch does not engage check to see that the CLUTCH STOP BUTTON and/or the MASTER STOP BUTTON have been reset.

NOTE: When the press brake has been "INCHED" to the top of stroke in the *reverse* direction it is necessary to depress and reset the MASTER STOP BUTTON before the main motor can be started in any other operating mode.

DIE SETTING PROCEDURE

For die setting and die removal see "Die Setting Procedure" in the Press Brake Safety Manual.

OPERATING PRESS BRAKE IN "SINGLE STROKE" MODE (Hi Speed Only)

1. Check lubrication.
2. If dies are in the press brake, the POINT-OF-OPERATION GUARDS must be in position and properly adjusted and the shutheight properly set.
3. The clutch and counterbalance (when applicable) air pressure settings must be correct. See data plates.
4. Place the MAIN DISCONNECT SWITCH in "ON" position.
5. Turn the PRESS BRAKE STROKING SELECTOR SWITCH to the "SINGLE STROKE" position.
6. Turn the CONTROL POWER SELECTOR SWITCH to the "ON" position.
7. Turn the MAIN MOTOR "FORWARD-REVERSE" SELECTOR SWITCH to the "FORWARD" position.
8. Depress the MAIN MOTOR START BUTTON; allow the motor to come up to speed. If the motor does not start, check to see that the MASTER STOP BUTTON has been reset by pulling it out and that the clutch and counterbalance (when applicable) pressure switches are satisfied (sufficient air according to the data plate provided). Repeat step 8.
9. Depress concurrently and hold both the PALM BUTTONS until stroke is completed. If the clutch does not engage check to see that the CLUTCH STOP BUTTON has been reset. Release of either PALM BUTTON before approximately 180° of stroke will disengage the clutch and apply the brake.

NOTE: If while operating in the "SINGLE STROKE" mode the press brake stops and will not make another stroke, the brake monitor function has sensed a top stop overrun in excess of the preset value and prevents further SINGLE STROKE operation. To verify that this is the condition causing the stop, bring the press brake to the top of stroke in the forward direction following the INCHING instructions. Reset the operating mode for "SINGLE STROKE" and make a stroke. If the press brake will not then make a successive stroke, the press brake should be checked by maintenance personnel. Areas which

WARNING

TO PREVENT SERIOUS BODILY INJURY

NEVER PLACE ANY PART OF YOUR BODY UNDER THE RAM OR WITHIN THE DIE AREA UNLESS POWER IS OFF, FLYWHEEL IS STOPPED AND THE RAM IS BLOCKED UP

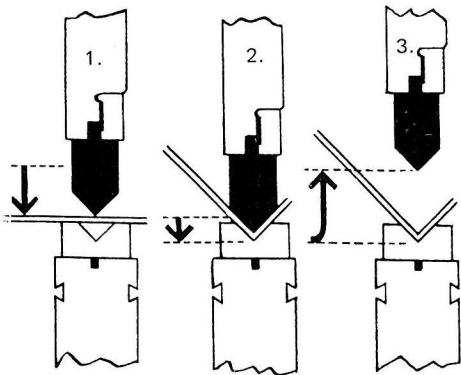
NEVER OPERATE, INSTALL DIES OR MAINTAIN THIS PRESS BRAKE WITHOUT PROPER INSTRUCTION AND WITHOUT FIRST READING AND UNDERSTANDING THE OPERATORS OR PRESS BRAKE MANUAL

IT IS THE EMPLOYER'S RESPONSIBILITY TO IMPLEMENT THE ABOVE AND ALSO TO PROVIDE PROPER DIES, GUARDS, DEVICES OR MEANS THAT MAY BE NECESSARY OR REQUIRED FOR ANY PARTICULAR USE, OPERATION, SET-UP OR SERVICE.

DO NOT REMOVE THIS SIGN FROM THIS PRESS BRAKE

OPERATING IN "HI-LO" MODE

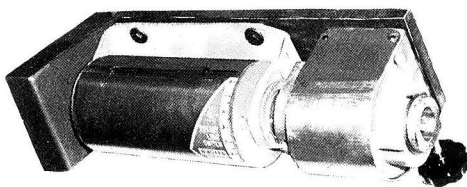
1. RAM APPROACHES WORK AT HI SPEED.
2. GOES THROUGH WORK AT LO SPEED.
3. AUTOMATICALLY RETURNS TO TOP OF STROKE AT HI SPEED.



OPERATING IN "RAM ARREST" MODE

1. RAM STOPS AUTOMATICALLY BEFORE IT ENGAGES WORK.
2. GOES THROUGH WORK AT LO SPEED.
3. AUTOMATICALLY RETURNS TO TOP OF STROKE AT HI SPEED.

Figure 3



ADJUSTABLE LIMIT SWITCH
FOR SETTING SPEED CHANGE & STOPPING POINT OF RAM.

Figure 4

should be checked include excessive clutch air pressure, brake wear and counterbalance air pressure (if applicable). After the condition causing the overrun has been corrected, operate the press brake in the prescribed manner.

OPERATING PRESS BRAKE IN "HI-LO" MODE

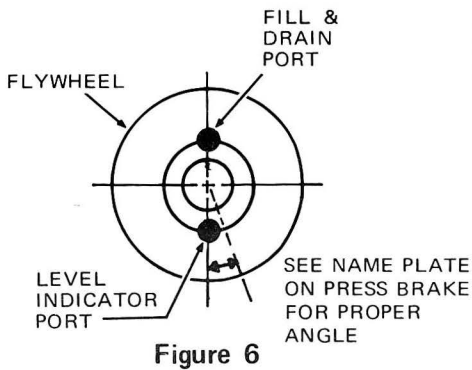
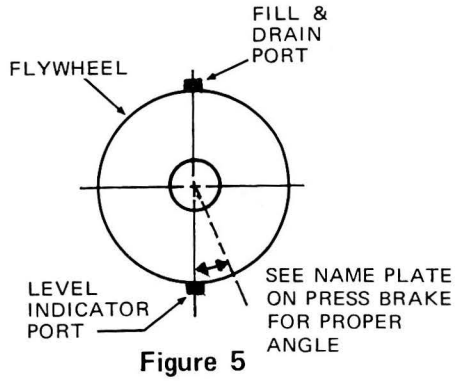
1. Check lubrication
2. If dies are in the press brake, POINT-OF-OPERATION GUARDS must be in position and properly adjusted and shutheight properly set.
3. The clutch and counterbalance (when applicable) air pressure settings must be correct. See data plates.
4. Set adjustable limit switch to change speed just above work (Fig. 4).
5. Place the MAIN DISCONNECT SWITCH in "ON" position.
6. Turn the PRESS BRAKE STROKING SELECTOR SWITCH to the "HI-LO" position and RAM ARREST "OFF-ON" SELECTOR SWITCH to the "OFF" position (Fig. 4).
7. Turn the CONTROL POWER SELECTOR SWITCH to the "ON" position.
8. Turn the MAIN MOTOR "FORWARD-REVERSE" SELECTOR SWITCH to the "FORWARD" position.
9. Depress the MAIN MOTOR START BUTTON; allow the motor to come up to speed. If the motor does not start, check to see that the MASTER STOP BUTTON has been reset by pulling it out and that the clutch and counterbalance (when applicable) pressure switches are satisfied (sufficient air according to the data plate provided). Repeat step 9.
10. Depress the FOOTSWITCH. The ram will approach work at Hi speed, go through work at Lo speed and automatically return to top of stroke at Hi speed. (See top of Fig. 3).

CAUTION: Hand holding of the part is permitted only when the operator's hands are at a safe distance from the point-of-operation.

OPERATING PRESS BRAKE IN "RAM ARREST" MODE

1. Check lubrication.
2. If dies are in the press brake, POINT-OF-OPERATION GUARDS must be in position and properly adjusted and shutheight properly set.
3. The clutch and counterbalance (when applicable) air pressure settings must be correct. See data plates.
4. Set adjustable limit switch to stop ram just above work (Fig. 4).
5. Place the MAIN DISCONNECT SWITCH in "ON" position.
6. Turn the PRESS BRAKE STROKING SELECTOR SWITCH to the "HI-LO" position.
7. Turn the RAM ARREST "OFF-ON" SELECTOR SWITCH to the "ON" position.
8. Turn the CONTROL POWER SELECTOR SWITCH to the "ON" position.
9. Turn the MAIN MOTOR "FORWARD-REVERSE" SELECTOR SWITCH to the "FORWARD" position.
10. Depress the MAIN MOTOR START BUTTON; allow the motor to come up to speed. If the motor does not start, check to see that the MASTER STOP BUTTON has been reset by pulling it out and that the clutch and counterbalance (when applicable) pressure switches are satisfied (sufficient air according to the data plate provided). Repeat step 8.
11. Depress the FOOTSWITCH. The ram will approach work at Hi speed and stop before engaging work. Releasing and reactivating the FOOTSWITCH will operate the ram through work at Lo speed and automatically return to top of stroke at Hi speed. (See bottom of Fig. 3).

NOTE: If RAM ARREST is operated to stop at or near bottom of stroke and will not restart after actuating the FOOTSWITCH, change to the "INCH" mode and return the ram to top of stroke. Reset the RAM ARREST position higher up on stroke.



HI-LO DRIVE LUBRICATION

Check the oil level every month. Change the oil every 2000 hours or once every year depending on usage. The method for checking and changing oil is shown in figure 5 or figure 6, depending on the unit supplied with your press brake.

NOTE: Replacement units are shipped without oil. Be sure the oil is added before operating.

MODEL	PINTS	LUBRICANT
IB-25	2	Mobilgear No. 630
IB-36		
IB-60		

HI-LO DRIVE REPAIR

Do not attempt repairs on the Hi-Lo Drive unit. The reduction unit is an integral part of the flywheel. After removing the flywheel carefully remove the Hi-Lo Drive unit and return to the factory for repairs. Never force or hammer the reduction unit when removing or installing.

PARTS LIST - IB-36 & IB-65

REACTION BRAKE

1. Shaft
2. Bearing
3. Retaining Ring
4. Bearing
5. Retaining Ring
6. "O" Ring
7. Piston
8. Cylinder Back Plate
9. Spring
10. Screw
11. Cylinder
12. Washer
13. Spring
14. "O" Ring (lg.)
15. "O" Ring (sm.)
16. Brake Disc Assembly
17. Actuator
18. Flywheel
19. "O" Ring
20. Back Plate
21. Bearing
22. Hub
23. Clutch Disc Assembly
24. Screw
25. Washer
26. Spring
27. Screw
28. Shrink Disc
(See Form A-36)

