Cole-Parmer®

XP-400 X-Press®

Hydraulic Pellet Press for Spectroscopy Applications

Operation Manual

For 115V (04577-46) and 230V (04577-47)

For Product Information

1300-87043-1M, REV 3

SPEX SamplePrep is now part of Cole-Parmer®.
The Cole-Parmer® XP-400 X-Press was formerly known as SPEX 3636 X-Press.

Over the years, we've acquired many high-quality and reputable brands. After many years of continual growth, we realize our brands are all as brilliant as each other. Rather than have a portfolio of complementary brands, we felt consolidating them under one world-class brand name enabled us to offer a single and significant brand experience. Through one brand we can speak in one voice through our team of experts who provide support in product selection, usage and troubleshooting to empower laboratories to run efficiently throughout the world.

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One World-Class Brand Name!

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1.0 INTRODUCTION

The XP-400 X-Press is an automated laboratory press intended for pressing sample pellets for spectroscopy. The press is programmable, so that repetitive pellet preparations may be carried out with a minimum of operator workload and a maximum of uniformity. The X-Press can also be operated manually.

This manual provides basic operating and maintenance procedures for the XP-400 X-Press and is intended to be as comprehensive as possible. However, in the event that further technical or application information is needed, please contact Cole-Parmer.

2.0 SPECIFICATIONS

Type of Press:	Automated, hydraulic
Force:	0 - 35 tons ram pressure
Dwell Time:	0 - 10 minutes
Release Time:	15 seconds - 10 minutes
Platen Movement:	1 inch (25 mm)
Platen Size:	3.25 inches (8 cm) diameter
Daylight:	2.0 - 6.0 inches (5 - 15 cm)
Screw Adjustment:	3.5 inches (9 cm)
Dimensions	20.0 in. (50.8 cm) high x 13.0 in. (33.0 cm) wide x 22.5 in. (57.2 cm) deep
Power:	800 VA, 1/3 HP motor 115 V/60 Hz or 230 V/50 Hz
Weight:	Approximately 145 lbs.

NOTE: PLEASE DO NOT OPERATE THE X-PRESS UNTL YOU HAVE READ THESE INSTRUCTIONS AND ARE FAMILIAR WITH ITS CONTROLS.

3.0 UNPACKING

At the factory, the X-Press is adjusted and tested for proper operation, and carefully packaged for shipping. Upon receipt, carefully inspect the exterior of the packing crate. If there is any visible damage, notify Cole-Parmer and file a claim with the carrier immediately.

To unpack the X-Press, first remove the screws securing the crate lid; then remove the lid and set it aside. Remove loose items from the crate. Loosen and remove the ten wing nuts on the lower edge of the crate and lift the crate sleeve off of the base. Remove the protective plastic cover from the press. Remove the four 9/16 inch nuts and washers from the bottom of the crate. Grasp the X-Press on both sides, using proper lifting techniques, and place it on a sturdy laboratory bench. (This is a 2-person job.) Gently tilt the X-Press to the side just enough to remove the four nuts (Do not lay press on its side) and remove the hexagonal shipping feet from the bottom of the press. Return the press to its upright position.

CAUTION*: *The X-Press weighs about 160 pounds. Be sure to have adequate personnel and/or lifting equipment on hand when moving the unit.

Check that the following accessory items have also been packed with the X-Press:

- Power cable
- Two replacement fuses
- Hand-wheel handle
- Test cylinder (Located in press chamber)

4.0 PRESS LAYOUT

Figures 1 - 3 show the basic layout of the X-Press. The front view (Figure 1) shows the location of the touch screen and START and STOP buttons, which are used to operate the press. A loaded sample die is placed in the sample compartment on top of the platen and secured in place by the adjustment screw, using the hand-wheel. A solid aluminum test cylinder is provided as a "dummy" sample for testing. The manual pressure relief valve on the right side of the press is used to release the hydraulic system pressure in an emergency or for system maintenance; it is closed during normal press operations. This view also shows the side access panel, which can be removed to fill the oil reservoir or check the oil level.

In Figure 2 the side access panel has been removed, exposing the oil fill plug and port. This view also shows the rear of the press and the locations of the power switch, power cord receptacle, and the fuse compartment.

Figure 3 shows the locations of the screws that attach the rear cover and side fill strip to the base of the press.

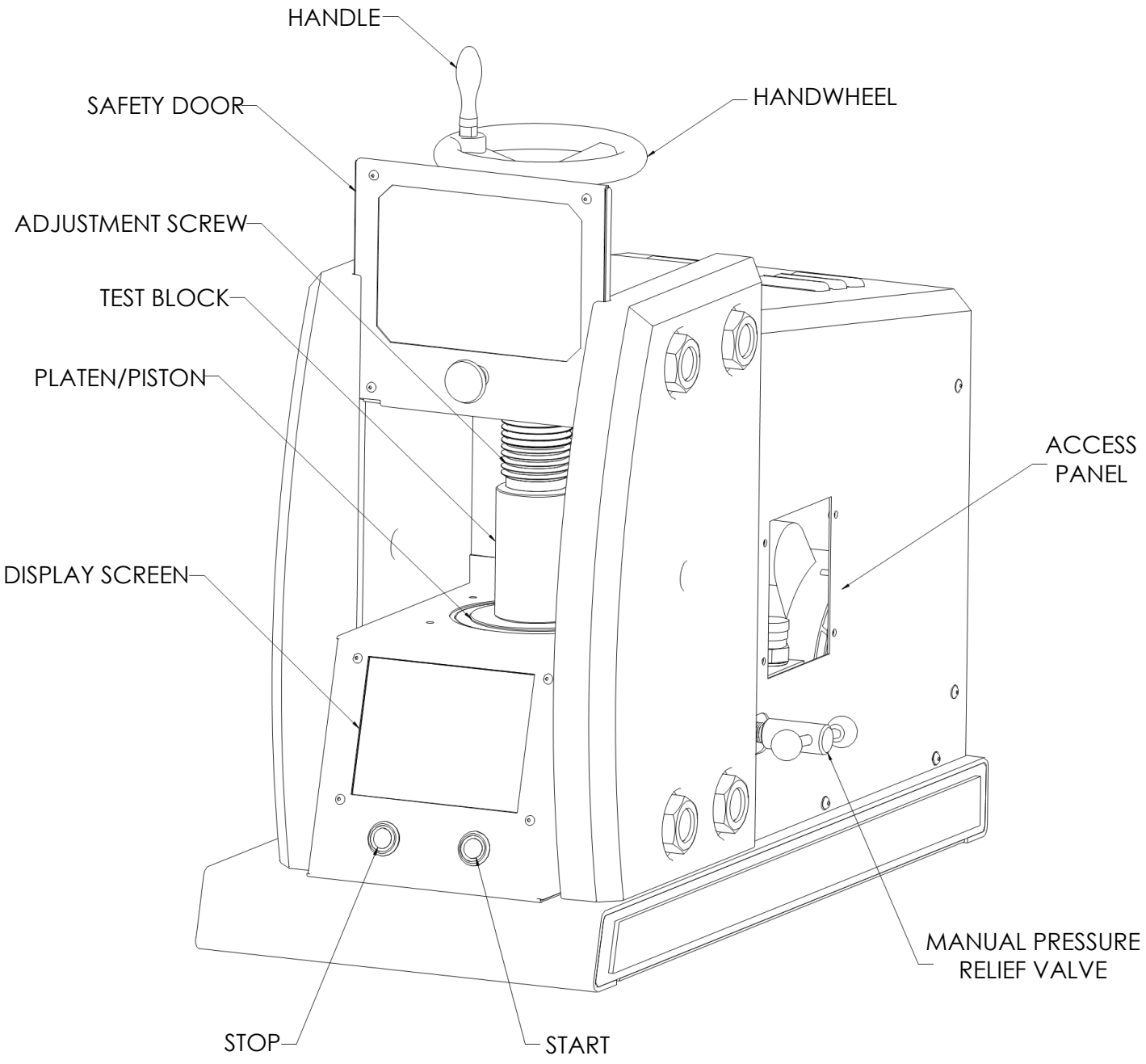


Figure 1 – Front View, XP-400 Automated X-Press

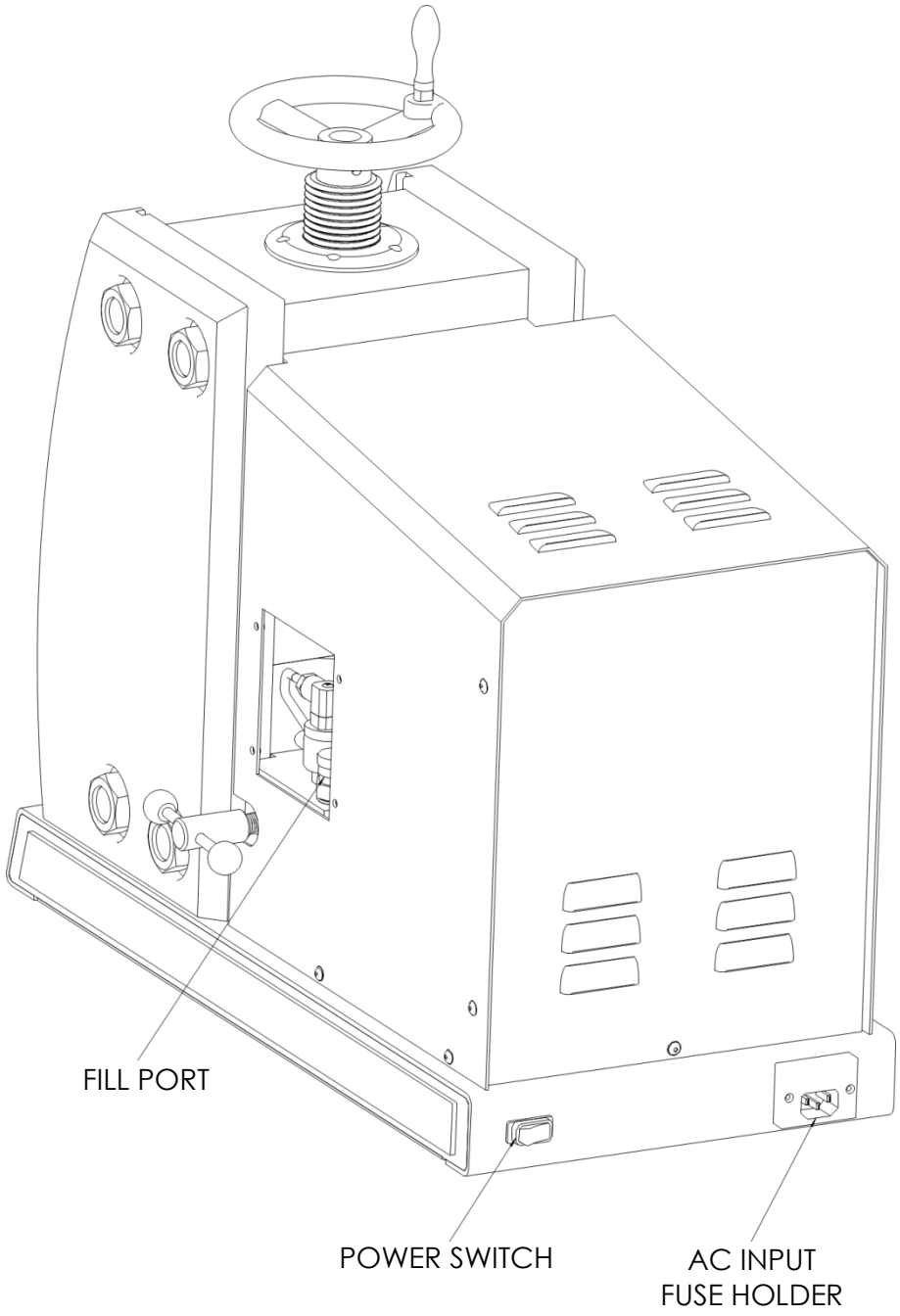


Figure 2 - Rear View, XP-400 Automated X-Press
(Side Access Panel Removed)

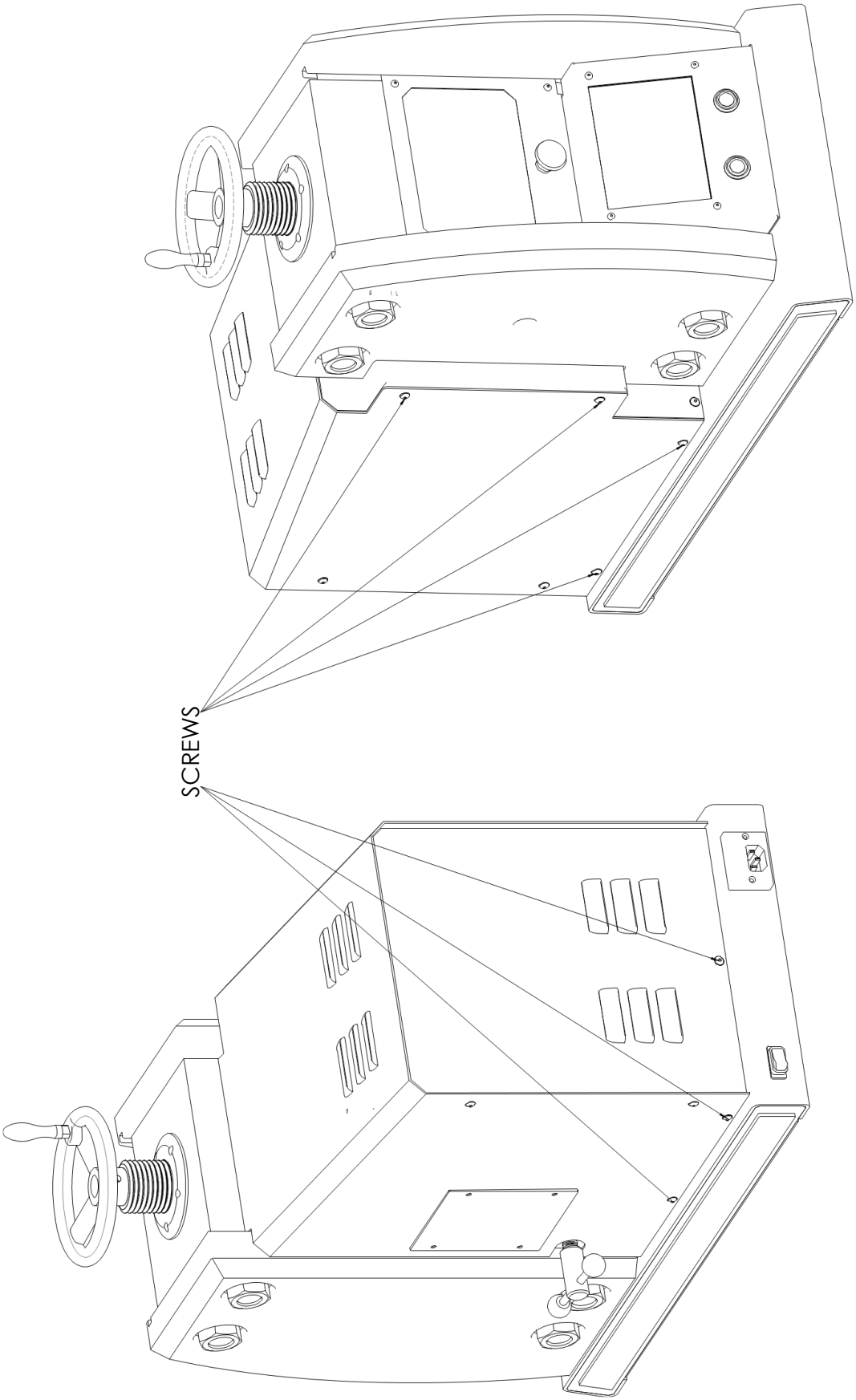


Figure 3 – Rear View, XP-400
Automated X-Press
(Location of Housing Screws)

5.0 SETTING UP

Before operating the XP-400 X-Press, the unit must be properly set up and prepared. Follow these steps to ensure that the press is ready for use. The XP-400 X-Press is prefilled with oil at the factory prior to shipping. There is no need to drain oil and refill.

1. Raise the sample chamber door and give it a slight push to hold it in the open position. Remove the test cylinder (wrapped for shipping).

2. Plug the power cord into the receptacle next to the fuse compartment, and then into a grounded wall outlet.

WARNING: ***Avoid contact with the exposed electrical components of the press. They involve hazardous voltages! Do not activate the power switch until it is necessary to do so.***

3. Attach the handle to the hand-wheel on the top of the unit by screwing it into the threaded hole. Tighten it using a 5/16 inch or adjustable wrench on the flats at the base of the handle. The handle should rotate freely as the hand-wheel is turned.

6.0 DISPLAY SCREEN AND CONTROLS

The touch screen on front of the XP-400 X-Press is used to program the press. Upon start-up, the Cole-Parmer and XP-400 X-Press logos will appear on the display screen, and the START and STOP buttons will flash. After a few seconds, INITIALIZING… will briefly be displayed at the bottom of the screen, indicating that initialization is in progress. When STANDBY is displayed at the bottom, the press is ready for operation, as shown in Figure 4.

***NOTE*: The bottom of the screen will display the current mode of the program.**

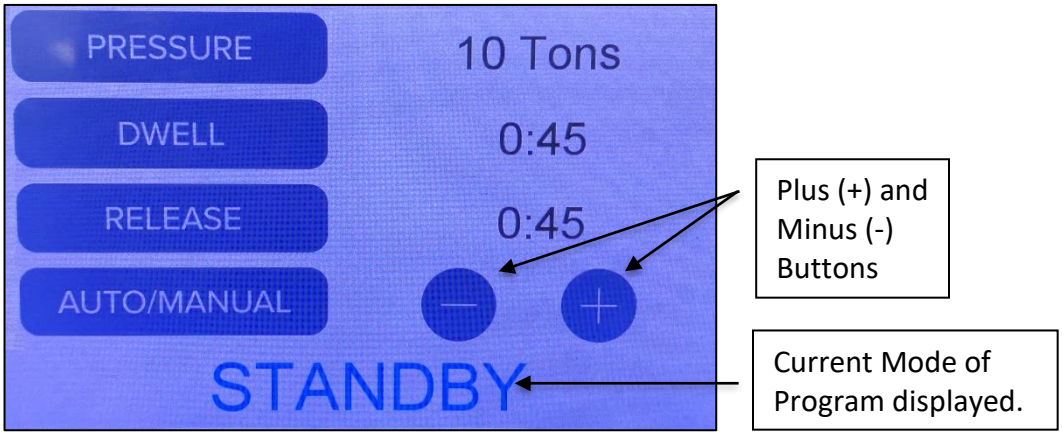


Figure 4 – X-Press Control Panel

The display screen shows the following buttons:

PRESSURE displays the piston force, from 0 to 35 tons, with a resolution of one ton. During a run, the pressure will increase from zero to the set tonnage and will gradually fall to zero as pressure is released at the end of a run. A minimum pressure of 10 tons is recommended.

DWELL shows the time for which the maximum pressure will be maintained at the top of the cycle and is adjustable in increments of 15 seconds. During a run, "DWELL" will be displayed at bottom of the screen and the dwell time will count down in 1 second increments. The minimum dwell time is 0 and the maximum is 10 minutes.

RELEASE indicates the time during which the system pressure will be bled to zero during an automatic cycle. The word "RELEASE" will be displayed at bottom of the screen and will count down in 1 second increments during a run. Release is adjustable in 15 second increments. The minimum release time is 15 seconds and the maximum is 10 minutes.

The plus (+) and minus (-) buttons are used to increase or decrease the settings shown in the PRESSURE, DWELL, and RELEASE fields. First press the button (e.g. Pressure) to activate field then use plus (+) and minus (-) buttons to enter desired settings. (Figure 4)

STANDBY indicates that the press is in automatic mode. To operate in manual mode, touch the AUTO/MANUAL button. MANUAL will be displayed at the bottom of the screen.

6.0 DISPLAY SCREEN AND CONTROLS (Cont'd)

MANUAL is used when the operator prefers to run the press manually rather than automatically. When operating in manual mode, all other fields are inactive and cannot be adjusted. To switch from manual to automatic mode, touch the AUTO/MANUAL field. STANDBY will be displayed at the bottom of screen.

NOTE: When an error occurs, the field background changes to red and an error message is displayed. (see Section 10.0 Error Messages)

The current program step is displayed at the bottom of the screen during operation in automatic mode. In manual mode, "MANUAL DWELL" and "MANUAL RELEASE" is displayed at bottom of screen.

PUMP DOWN appears at the bottom on screen (at the end of a cycle) in automatic mode while the platen is pumped down.

START and STOP buttons are located below the touch screen. Pressing the green START button will start the operation of the X-Press. The pressure will be automatically released at the end of a run. However, a run can be interrupted by pressing the red STOP button. This will stop the operation, release the pressure, and reset the timer. During a run the green START button will flash continuously. At the end of a run, the unit will "beep", both the START and STOP buttons will flash. If an error occurs, the STOP button will flash and the "error message" will display at the bottom of the screen.

7.0 OPERATION

Before operating the XP-400 X-Press, make sure it is plugged in and switched on. The power cord inlet is located at the rear of the press on the lower left. The off/on switch is a standard rocker switch with the symbols 0 (for OFF) and | (for ON) and is located at the rear of the press on the lower right.

If the unit does not activate, check to see that it is properly plugged in. If it is, check the fuses at the rear of the unit (see Section 8.6).

Upon start-up, the main control screen is displayed. When the message changes to STANDBY, the press is ready for operation.

7.1 Performing a Test Run

The XP-400 X-Press can be tested using the default settings as soon as the setup procedure (Section 5.0) has been performed.

The factory-programmed setting stored in memory will come up on the display screen:

PRESSURE:	20 Tons
DWELL:	0:30 Min
RELEASE:	0:30 Min

Pressure is given in tons and the dwell and release times are shown in minute:second format. For example, 0:30 represents thirty seconds.

Raise the sample chamber door and give it a slight push for it to hold in the open position. Place the test cylinder in the press between the platen and the screw and center it on the platen. Turn the hand-wheel until the adjustment screw makes contact with the top of the cylinder, then back it off about 1/8" for this test. Close the door. Since the door actuates a safety interlock, it must be closed during press operation.

Press the green START button. The unit will run through the automatic cycle:

1. The unit's main valve will close and the pump will pressurize the piston underneath the platen. The platen will rise until the top of the test cylinder contacts the screw. The word “STANDBY” will change to next step in program (e.g. Dwell).
2. The PRESSURE field will show the increasing force being exerted on the piston. The unit will stop pumping when the pressure reaches the programmed setting of 20 tons.
3. The unit will pause for 30 seconds while the tonnage is held constant and DWELL is displayed, dwell time counts down the remaining time.

7.1 Performing a Test Run (Cont'd)

4. At the end of the dwell period, the main valve will open and the PRESSURE display will show the decreasing tonnage on the test block. The word RELEASE will be displayed at the bottom of the screen and the time remaining in the release field, counting down from 30 seconds.
5. When the release period ends and the applied tonnage is zero, the platen will pump down, and PUMP DOWN will be displayed at bottom of screen.
6. The controls will reset to the beginning of a new cycle and the message at bottom of screen will return to "STANDBY".
7. The door can be opened at this point, or another cycle can be run by pressing the START button again.

7.2 Changing the Settings

The X-Press always starts up in automatic mode, indicated by "STANDBY" displayed at the bottom of the screen. One set of values is stored for the automatic cycle indefinitely, even after the power to the press is turned off. The press will use these default values to run automatic cycles unless programmed otherwise.

To change the PRESSURE, DWELL, or RELEASE settings, touch the appropriate button on the display screen. Use the plus (+) and minus (-) buttons to adjust (to decrease and increase) until the desired setting is reached. The new settings will be saved once the press is operated at these settings. When the X-Press is turned off, it will revert to the last saved settings upon start-up.

The X-Press is shipped with an initial set of default values: 20 tons pressure, 30 seconds dwell, and 30 seconds release. These will remain the default values until the settings are changed.

NOTE: ***For maximum consistency in pressure, it is not recommended that the X-Press be operated below 10 tons.***

7.3 Running an Automatic Cycle

Before running a cycle, be sure that the pellet die is properly loaded, that the plunger is properly seated in the die, and that the die is centered on the platen. Turn the hand-wheel to bring the adjustment screw in contact with the top of the plunger, and tighten to take up any slack. Check to see that the STANDBY is displayed on the touch screen. If this field displays "Manual", the press is in manual mode. Touch AUTO/MANUAL button to revert to automatic mode. Close the sample chamber door; the press will not run if the door is not fully closed. A safety interlock engages once the START button has been pressed to lock the door during operation.

Press the green START button to begin the run.

1. The main valve will close and the unit will pump up to the selected maximum tonnage. The START button will flash continuously during the run and PUMPING will be displayed followed by other functions (e.g. Dwell, etc.).
2. Once the set pressure is reached, the press will hold at maximum tonnage for the specified dwell time, while the timer counts down in one-second increments.
3. At the end of the dwell period, the main valve will open and RELEASE is displayed as the timer counts down to zero. The PRESSURE display will show the changing tonnage as it gradually decreases. When the pressure reaches zero, the piston will be brought back to its rest position. The message will change to "Pump Down".
4. At the end of a run, or when the red STOP button is pressed, the unit will "beep "and both the START and STOP buttons will flash. The controls will reset to the beginning of a new cycle and the message at the bottom of the page will return to "STANDBY".
5. The door can be opened and the die removed at this point.

NOTE: ***To halt the cycle at any point and return the tonnage to zero, press the red STOP button.***

The cycle may be run again immediately after the previous one is complete. Remember, the door of the press must be closed during the cycle. If it is not, the safety interlock will prevent the unit from running its cycle.

Figure 5 shows the operating cycle graphically. During the Pump Up Period, the press is activated and the pressure increases from zero to the set tonnage. Then the pressure is held constant during the Dwell Period. Finally, the pressure is relieved during the Release Period and gradually decreases back to zero.

7.3 Running an Automatic Cycle (Cont'd)

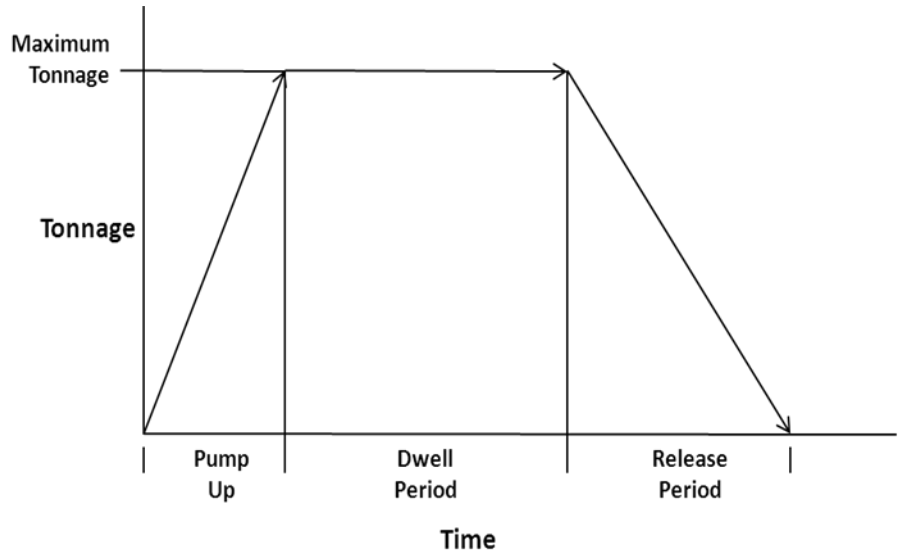


Figure 5 – XP-400 X-Press® Automatic Cycle Profile

7.4 Manual Operation

Although the XP-400 X-Press is easy to program for automatic operation, the press can be operated manually.

To run manually:

1. Insert a loaded die into the press, center it on the platen, and turn the hand-wheel to bring the adjustment screw in contact with the top of the plunger. Tighten with the hand-wheel to take up any slack. Close the sample chamber door.
2. Touch AUTO/MANUAL on the main screen. This field will change to display "MANUAL" at bottom. All other fields will be inactive, prohibiting adjustment.
3. Press and hold the green START button. The pump will activate and the display screen will show the increasing pressure in tons in the PRESSURE field. Release the START button when the desired tonnage is reached.
4. The press will hold at the specified tonnage and the timer will count the elapsed dwell time (maximum 30:00 minutes). Allow the press to hold for the desired length of time. The START button will flash, indicating that the press is in operation.
5. Press the red STOP button to release. The unit will "beep" and main valve will open, the pressure will gradually decrease to zero, and the timer will reset. The START and STOP buttons will flash when the run is complete.
6. Touch the AUTO/MANUAL button to exit manual mode and return to automatic mode. This releases the latch and allows the door to be opened.
7. Open the door and remove the sample die.

7.4 Manual Operation (Cont'd)

It is possible to increase the pressure during the dwell period. For instance, if after a specified dwell time, a second dwell time at a higher pressure is desired:

1. Press and hold the START button to activate the pump.
2. Release the START button when the new target pressure is reached. The timer will reset and begin counting the new dwell period.
3. When the desired dwell time has elapsed, press the STOP button to release the pressure. The unit will "beep" signifying the run is complete.

NOTE: ***Touching AUTO/MANUAL button during a run in manual mode will immediately release pressure and return the press to automatic mode.***

7.5 Emergency Stops

During an automatic or manual run, the STOP button can be pressed at any time to interrupt the cycle. The unit will "beep" signifying the run is complete and the X-Press will immediately begin to pump the piston down and release pressure.

If the power is shut off during a run, pressure may remain. To relieve this pressure, open the manual pressure-relief valve on the right side of the unit. Be sure to close it again before continuing operation; **this valve must be closed for the press to operate properly.**

8.0 MAINTENANCE

8.1 General Procedures

The X-Press has been designed to provide trouble-free operation over a long period of time. To assure proper performance, perhaps the most important factor is cleanliness. Any spilled powders or hydraulic oil should be wiped up immediately. Although the X-Press is designed for industrial use, it should not be exposed to dust, moisture, etc., more than necessary, as those can affect both the mechanical and electronic functions.

Exposed steel parts, particularly the screw and platen, can be wiped down with rust preventative oil. In doing this, care must be taken not to expose the electronics or cables to oil, which can damage them. The motor bearings are factory-lubricated for ten years of use.

Before any hydraulic parts of the X-Press are disassembled, the manual pressure-relief valve should be opened by turning the lever on the right side of the press counterclockwise. This will bring all the oil in the press to safe pressure. The valve must be closed again for normal press operations.

8.2 Removing the Cover

The sheet-metal enclosure at the rear of the X-Press is removable for such tasks as changing or adjusting the V-belt or replacing the motor.

WARNING: Always unplug the X-Press before removing the cover to avoid hazardous voltages!

To detach the rear cover it is necessary to remove the 8-32 x 3/8” button-head Allen screws (two on each side, one on the back). On the left-hand side of the press there is a fill strip that runs along the front edge of the cover. Remove the two screws on the front and the side screw that sits midway up from the base (Figure 3). The rear cover and fill strip can then be removed.

8.3 Draining, Refilling, and Checking Hydraulic Oil

It is recommended that the oil be changed annually using 20W hydraulic oil, Cole-Parmer VPN 60361 (sold separately).

To drain the hydraulic oil for an oil change, there is a drain plug on the bottom of the oil reservoir, reached through the base of the press. To access the drain plug, the plate on the bottom of the press must be removed. Tilt the press to one side and support it while removing the four #6 Phillips head screws from the edge of the base plate. Then tilt the press to the other side and remove the remaining four screws. The base plate can then be removed. Insert a shallow pan with a capacity of about one pint (500 ml) under the drain plug. Remove the plug with a 5/32" Allen wrench. Return the press to its upright position; the oil will drain into the catch pan.

To refill the X-Press, replace the drain plug and the base plate and fill the oil reservoir, first remove the access panel on the right-hand side of the press (see Figure 1). Then remove the fill plug from the fill port. Screw the pour spout onto the bottle of oil (sold separately) and carefully pour into the fill port. (Pour slowly to avoid overflow.) Be sure to drain the entire container into the press. Then replace the fill plug and the side plate. The oil capacity of the press is about ¾ pint (355 ml). When the oil reservoir is filled, the oil level should be approximately 1-1/8 inch (3 cm) above the bottom of the reservoir.

NOTE: Never use hydraulic fluid as this will cause serious damage to the press.

To measure the hydraulic oil level without removing the fill port, use a 6 inch rod of about 1/16 inch diameter. Take off the fill plug plastic cap and filter medium and measure the oil level through the vent hole in the fill plug.

NOTE: Dirt is detrimental to any hydraulic device. Take suitable precautions to prevent dust and debris from entering the fill port during filling and level-checking.

8.4 Bleeding the Air

The X-Press hydraulic system should be bled of air (a) whenever hydraulic oil is added, and (b) after any repairs to the system.

Follow these simple steps to complete this operation.

1. Set the press to manual mode by touching AUTO/MANUAL on the main screen. This field will change to display "MANUAL".
2. Press and hold the green START button to operate the pump. Continue pumping until the piston reaches its maximum height and the pressure reaches 5 tons.
3. Open the pressure relief valve on the side of the press.
4. Press and hold the green START button to move the piston back down to its lowest position.
5. Let the press sit for 15 minutes to allow any air bubbles to escape.
6. Close the pressure relief valve.

8.5 Changing the V-Belt

The V-belt of the X-Press connects the motor with the hydraulic pump. If the pump cannot attain maximum tonnage, it may be because the belt is slack and is slipping on its pulleys.

WARNING: ***Always unplug the X-Press before opening the cover, to avoid an electric shock hazard. After changing the belt or motor, make sure that the motor mounting bolts are tightened securely before operating the X-Press.***

To tighten or replace the V-belt, the sheet metal cover must be removed as described in Section 8.2. The V-belt may be tightened, or slacked off and removed, by loosening the motor mounting bolts and shifting the motor. The motor mounting bolts are threaded into the base of the X-Press.

V-belt tension may be checked by applying finger pressure to the V-belt halfway between the motor and pump pulleys. If the V-belt can be depressed more than 3/8" (10 mm) it should be tightened. A badly worn V-belt should be replaced.

The motor and pump pulleys must be properly aligned. Misalignment can cause excessive operating noise, rapid wear of the V-belt, and damage to the motor or pump. When viewed on edge, the pulleys should line up with respect to each other.

8.6 Changing the Fuses

Unplug the X-Press and open the door on the fuse compartment by lifting up. Press the small tabs on the fuse holders out from the center and pull forward to remove the fuse holders from the unit. Check the fuses using a continuity tester. If either fuse is blown or defective, replace both with 3AG 10-amp, 250 V slow-blow fuses for the 115 V model. For the 230 V model, use 3AG 5-amp, 250V slow-blow fuses. Replace the fuse holders and plug the press back in to power outlet.

9.0 MECHANICAL OPERATION

Figure 7 shows a simplified schematic of the mechanical layout of the XP-400 X-Press. Study this to become familiar with the basic operation of your X-Press.

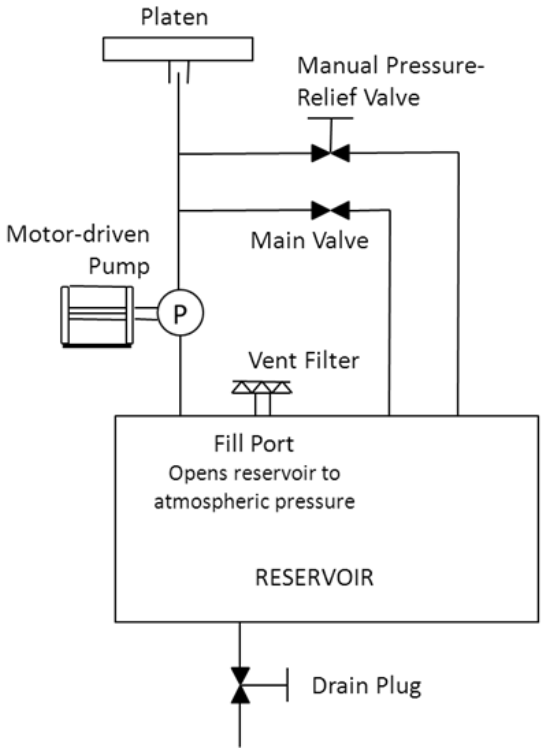


Figure 7 – Simplified Press Schematic

The press has an oil reservoir maintained at atmospheric pressure, which is open to the air through the fill port. A filter in the fill plug prevents particulate matter from entering the hydraulic loop. A drain plug on the bottom of the reservoir allows the oil to be drained out of the system. A pump operated by the unit's motor draws oil from the reservoir to pressurize the piston beneath the press platen.

Two valves, the microprocessor-controlled bleed/main valve and the manual pressure-relief valve, relieve piston pressure by opening the piston passage to the reservoir. The main valve doubles as the unit's safety valve, preventing over pressurization.

When the main and manual pressure-relief valves are closed and the pump is run, pressure builds up under the piston. If the piston is free to move (that is, it is not in contact with a sample die), it will extend upward. The piston extends to a maximum of about an inch before coming up against internal stops.

9.0 MECHANICAL OPERATION (Cont'd)

When the main valve opens, pressure is allowed to escape from under the piston, lowering the force (tonnage) on the pellet die.

Both the main valve and the pump are microprocessor-controlled; the amount of force applied to the specimen in controlled by use of the touch screen on the front of the unit. Because a microprocessor is used, the unit can be programmed to run pressing cycles automatically.

A second valve allows you to manually relieve pressure, in the event of an emergency or for maintenance. The handle for this manual pressure-relief valve is on the right side of the unit. To open this valve and relieve pressure rapidly, turn the valve handle counterclockwise.

If the manual valve is open while the press is operated, pressure will not build up and the piston will not extend. Instead, oil will circulate around the hydraulic loop created. In automatic mode, the press will run with no pressure in the system for 90 seconds, then shut down automatically. The valve therefore must be closed for normal operations.

10.0 ERROR MESSAGES

The X-Press performs tests and checks on itself during operation, and is capable of diagnosing a variety of internal problems. If an error occurs, the bottom of the screen will change to red and an error message will appear. The following error messages are possible:

LATCH ERROR - appears if the latch has not closed at the beginning of a run, or has not released at the end of a run. If this occurs at the beginning of a run, press the red STOP button to reset, check that the sample chamber door is completely closed, and try running the cycle again.

PRESSURE ERROR - appears if the press is not pumping at the beginning of a run, or has not released pressure at the end of a run. If this occurs at the beginning of a run, check the manual pressure-relief valve to make sure it is closed. This error message will also appear if there is a severe pressure leak during a dwell period and the actual pressure falls more than 5 tons below the set value.

VALVE ERROR - indicates that either the main valve has not closed at the beginning of a run, or has not released at the end of a run.

If one of these errors occurs, please contact COLE-PARMER assistance in diagnosing the problem and determining the proper course of action.

11.0 TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Press does not activate.	Unplugged.	Check power cord connections.
	Power switch is off.	Press switch to on position.
	Fuse is blown.	Unplug the unit; pull out fuse holders to check fuses. If blown, locate and correct the cause. Replace both fuses (3AG 8-amp slow-blow only).
Press cannot attain full tonnage.	Manual valve is open.	Turn valve handle clockwise to close.
	V-belt is slipping.	Tighten or replace belt (see Section 8.5).
	Air in hydraulic loops.	Bleed air (see Section 8.4).
	Low hydraulic oil.	Check oil level and add oil if necessary.
Press will not run an automatic cycle.	Unit is in Manual Mode.	Check MANUAL is displayed at the bottom of screen. Touch AUTO/MANUAL on the screen to revert to automatic mode. STANDBY is displayed at bottom when unit is automatic mode.
Press does not save programmed cycle after power-down.	Cycle not saved as default cycle.	Press must be run at new settings to save (see Section 7.2).

12.0 WARRANTY

Cole-Parmer® guarantees its products against defects in materials or workmanship for three years from the date of original shipment. Repairs, replacements, or parts are guaranteed for 30 days or for the remaining original warranty period (whichever is greater) for the item that was repaired or replaced. Items not produced by Cole-Parmer® carry the manufacturer's warranty only.

The warranty excludes damage due to wear, negligence, or misuse. Wear parts are those parts that wear out through use and must be replaced periodically for proper operation.

In the event that these or other parts require service, please contact Cole-Parmer to arrange a return shipment.

The customer pays return freight for warranty claims. If the warranty claim is valid, Cole-Parmer® will pay return freight to the customer. However, Cole-Parmer® reserves the right to judge whether a malfunction during the warranty period is due to defects in materials or workmanship, or to wear, negligence, or misuse.

12.1 Product Specifications

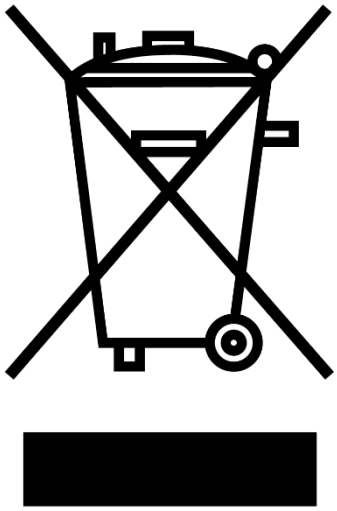
Every effort has been made to provide complete and accurate product operation and information in this manual. However, since specifications are subject to change without notice, changes may be made from time to time to improve the performance of the product.

12.2 To Arrange a Return Shipment

We want you to be satisfied with your purchase from Cole-Parmer®. Please bring any problem to our attention, but please DO NOT RETURN any item before contacting us for a Return Authorization Number and instructions. Unauthorized returns will be refused. The cost for all return transportation is the responsibility of the customer. Credit for returned merchandise will be issued only after goods have been received and inspected. Returned goods are subject to a 25% restocking charge.

13.0 INSTRUMENT DISPOSAL

In accordance to the EU Directive 2012/19/EU covering Waste Electrical and Electronic Equipment, all equipment with the disposal symbol must not be disposed of with general waste. (See Figure 8)



Disposal Label is located on the back of unit.

Figure 8 – Disposal Symbol

Throughout the European Community, guidelines regarding disposal regulations may vary from territory to territory. Please contact the national legislation or local authority for more information on proper disposal of all equipment with this symbol.

14.0 CONTACT US

Repair Service
Phone: 1.732.623.0465

Cole-Parmer
65 Liberty St
Metuchen, NJ 08840
US

Attn: Service and Repair
Please include RA Number on the shipping label.

Cole-Parmer®
an Antylia scientific company

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Vernon Hills, IL 60061
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