



# Winona Van Norman®

www.winonavannorman.com

engine rebuilding  
equipment

balancing

block  
machining

boring

cleaning

crankshaft

cylinder head  
machining

flywheel  
grinders

honing

motorcycle  
small engine

rod  
reconditioning

surfacing

## Operation & Service Manual

*PS2V Power Stroke Cylinder Hone*



Model 866837  
Serial 1561196

### 1-800-533-8008

710 E. 17th St. Wichita, Kansas 67214  
Phone: 316-219-3500 Fax: 316-219-3510  
sales@winonavannorman.com

Part No.

☐ 866837 .....230V, 60 Hz, 1 Ph

☐ 866829 .....230V, 50 Hz, 1 Ph

Serial Number \_\_\_\_\_

Purchase Date \_\_\_\_\_

Purchaser's Name \_\_\_\_\_

Address \_\_\_\_\_

Set-Up Date \_\_\_\_\_

Set-Up By \_\_\_\_\_

## ABOUT THIS MANUAL

Knowledge of and compliance with the operational and service principles outlined in this manual are essential for operation of your machine. Maximum benefit will be gained from the initial set up and training session if all prospective operators have read and are familiar with this manual before the technician arrives. The more you know about your PS2V Power Stroke Cylinder Hone – the more profitable it will be. Please specify the Model and Serial Number of the machine in any correspondence referring to this machine.

If any problems relative to operation or service should arise, contact Winona Van Norman direct, as we maintain personnel whose purpose is to take care of conditions relative to either service or production which might arise.

## WARNING

1. All operators should read and understand the complete operation manual before attempting to operate this machine. If any portion of this manual is unclear, contact the manufacturer for additional instructions before operating machine.
2. Never allow unskilled or improperly trained personnel to operate this equipment.
3. DO NOT operate this equipment under the influence of alcohol, drugs or medication which may alter judgement or physical performance.
4. All electrical installation and maintenance should be performed by a licensed electrician only. Use of unqualified personnel to perform electrical maintenance may result in unsafe conditions causing personal injury.
5. Electrical installation must conform to all national electrical codes as well as any state or local codes governing this machine.
6. DO NOT use this machine for honing any items other than internal combustion engine blocks.
7. Honing head must be completely stopped before retracting from engine block.
8. Use only manufacturers recommended hone stone holders and coolants.
9. Honing head must be completely inserted into block before starting.
10. Always securely clamp workpieces with tooling provided.
11. Turn off and lock out electrical power before opening door or removing cover.
12. DO NOT operate this machine with covers removed. Always replace and secure covers after any maintenance work is completed.
13. All machine operators should wear proper clothing and eye protection.  
SEE MANUAL.
14. Keep clothing, hair and body parts out of rotating parts, belts and gearing.
15. If skin or eye irritation due to contact with honing coolant occurs, refer to honing coolant manufacturer's recommendations for medical instruction.
16. Dispose of waste honing coolant according to federal, state, and local codes.
17. It is your responsibility to keep this warning label in place and legible. Replacement labels are available from the manufacturer.
18. Failure to heed these warnings may result in damage to the equipment, or failure resulting in properly damage, personal or fatal injury.

Part No. 863361

## LIMITED WARRANTY

WVN warrants for a period of twelve months from date of shipment by WVN to the original purchaser ("Buyer") that equipment manufactured by WVN will be free from defects in materials and workmanship when installed and operated in accordance with the instructions in the equipment manual. This warranty does not cover any failure due to: accident; modification; tampering; abuse; normal wear and tear; shipping damage; deterioration or wear occasioned by chemicals; abrasion, corrosion, or erosion; improper erection; operation or maintenance; abnormal conditions of temperature or dirt; or operation of the equipment above rated capacities or in an otherwise improper manner.

If within the one-year warranty period WVN receives written notice at 710 E. 17th Street, Wichita, Kansas, 67214, promptly after discovery by Buyer of any defect in material or workmanship in the equipment warranted by WVN herein, WVN shall, at its sole option, either replace (F.O.B. WVN's plant), or repair any defective part(s). If the defective part has a limited useful life, a charge for the replacement part will be prorated according to the amount of wear.

### DISCLAIMER OF

**IMPLIED WARRANTIES:** THE FOREGOING LIMITED WARRANTY IS THE SOLE WARRANTY MADE BY WVN. WVN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANT-ABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE FACE HEREOF. AND WVN HERBY DISCLAIMS ALL SUCH WARRANTIES.

UNDER NO CIRCUMSTANCES SHALL WVN BE LIABLE TO BUYER OR ANY OTHER PERSON FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS, LOSS OF USE, LOSS OF TIMES, AND LOSS OF GOODWILL, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT, OR OTHERWISE.

Any equipment or components thereof that are not manufactured by WVN, carry only the warranties given by the respective manufacturers thereof which warranties, WVN will make available to Buyer to the extent permissible without

## TABLE OF CONTENTS

|                                                               | Page    |
|---------------------------------------------------------------|---------|
| Identification of Controls & Functions.....                   | 2       |
| Unpacking and Setup of PS2V .....                             | 3       |
| Installing and Assembling Hone Head .....                     | 3       |
| Electrical Requirements.....                                  | 3       |
| Loading Engine Blocks into Machine .....                      | 4       |
| Adjusting Honing Stroke.....                                  | 5       |
| Basic Operation .....                                         | 5       |
| Determining Cylce Rate Based on Cross Head Angle and RPM..... | 5       |
| Parts Drawings .....                                          | 6 - 18  |
| Electrical Schematic Assemblies .....                         | 19 - 20 |
| Maintenance .....                                             | 21      |

## SPECIFICATIONS:

|                                                     |                  |
|-----------------------------------------------------|------------------|
| Maximum Block Length: in. (mm) .....                | 42 (1066)        |
| Maximum Stroke with powered feed: in. (mm) .....    | 14 (356)         |
| (manual feed): in. (mm) .....                       | 16 (406)         |
| Honing Range with standard equipment: in. (mm)..... | 2.7-5.5 (69-140) |
| (with optional equipment): in. (mm) .....           | 1.5-7.0 (38-177) |
| Hone Motor: HP .....                                | 2                |
| Honing Speed (infinitely variable): RPM .....       | 120-240          |
| Stroke Motor: HP .....                              | 0.33             |
| Stroking Speed (infinitely variable): SPM .....     | 9-105            |
| Coolant Capacity: gallons (liters) .....            | 65 (246)         |
| Coolant Flow: gpm (lpm) .....                       | 13.5 (51)        |
| Machine Length: in. (mm) .....                      | 68 (1727)        |
| Machine Width: in. (mm) .....                       | 60 (1524)        |
| Machine Height: in. (mm) .....                      | 70 (1778)        |
| Door Opening: in. (mm) .....                        | 48 (1219)        |
| Machine Weight: lbs. (kg) .....                     | 1450 (657)       |
| Domestic Shipping Weight: lbs. (kg) .....           | 1600 (726)       |
| Export Shipping Weight: lbs. (kg) .....             | 1850 (839)       |

Winona Van Norman is committed to product innovation and improvement and therefore reserves the right to change product specifications without notice.

## STANDARD EQUIPMENT

| Part No. | Item                                    |
|----------|-----------------------------------------|
| 866899   | Friction Feed - Hone Head               |
| 866890   | Drive Shaft - Hone Head                 |
| 866891   | Hone Head, 2.5" - 5.5" (64-140mm) range |
| 866938   | Tall Parallels - 2 Pcs.                 |
| 804684   | Short Parallels - 2 Pcs.                |
| 866939   | Engine Bar Clamp, Standard              |
| 867206   | Engine Bar Clamp, Heavy Duty            |
| 804831   | Coolant, 30 gallons (113 liters)        |
|          | Hone Stones, 6 sets                     |
|          | (see entries marked * below)            |

## OPTIONAL EQUIPMENT

| Part No. | Hone Heads                                                                                     |
|----------|------------------------------------------------------------------------------------------------|
| 867095   | Hone Head, 1.5" - 2.2" (38-56mm) range                                                         |
| 867096   | Hone Head, 2.0" - 2.68" (51-69mm) range                                                        |
| Part No. | Hone Stone Sets                                                                                |
| 804770   | * 70 Grit, 2 <sup>3</sup> / <sub>4</sub> " - 4 <sup>1</sup> / <sub>2</sub> " (70-114mm) Range  |
| 809772   | * 150 Grit, 2 <sup>3</sup> / <sub>4</sub> " - 4 <sup>1</sup> / <sub>2</sub> " (70-114mm) Range |
| 863358   | 220 Grit, 2 <sup>3</sup> / <sub>4</sub> " - 4 <sup>1</sup> / <sub>2</sub> " (70-114mm) Range   |
| 804774   | * 280 Grit, 2 <sup>3</sup> / <sub>4</sub> " - 4 <sup>1</sup> / <sub>2</sub> " (70-114mm) Range |
| 863359   | 400 Grit, 2 <sup>3</sup> / <sub>4</sub> " - 4 <sup>1</sup> / <sub>2</sub> " (70-114mm) Range   |
| 809771   | * 70 Grit, 3 <sup>1</sup> / <sub>2</sub> " - 5 <sup>1</sup> / <sub>2</sub> " (89-140mm) Range  |
| 804773   | * 150 Grit, 3 <sup>1</sup> / <sub>2</sub> " - 5 <sup>1</sup> / <sub>2</sub> " (89-140mm) Range |
| 863356   | 220 Grit, 3 <sup>1</sup> / <sub>2</sub> " - 5 <sup>1</sup> / <sub>2</sub> " (89-140mm) Range   |
| 804775   | * 280 Grit, 3 <sup>1</sup> / <sub>2</sub> " - 5 <sup>1</sup> / <sub>2</sub> " (89-140mm) Range |
| 863357   | 400 Grit, 3 <sup>1</sup> / <sub>2</sub> " - 5 <sup>1</sup> / <sub>2</sub> " (89-140mm) Range   |

Other sizes available to reach size 7.0.

KEEP THESE LABELS attached to the machine and legible at all times.  
Replacements are available from the factory.



Part No. 814485



Part No. 862302



Part No. 863261

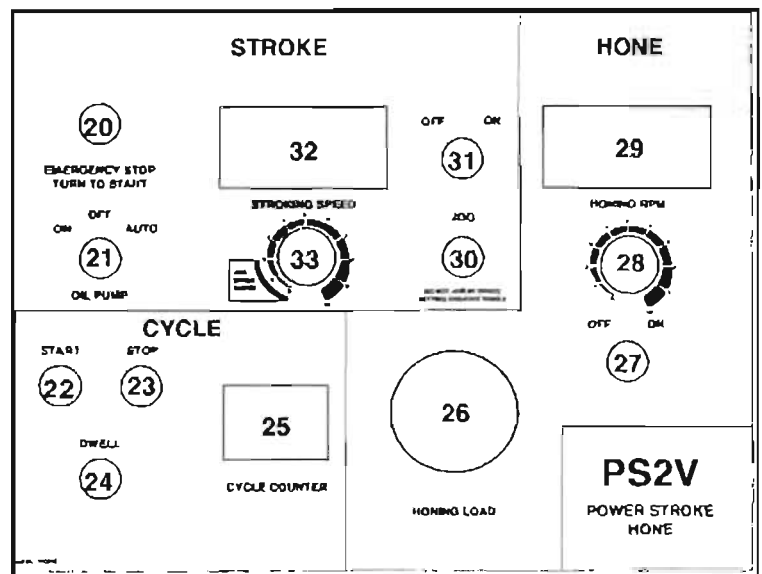
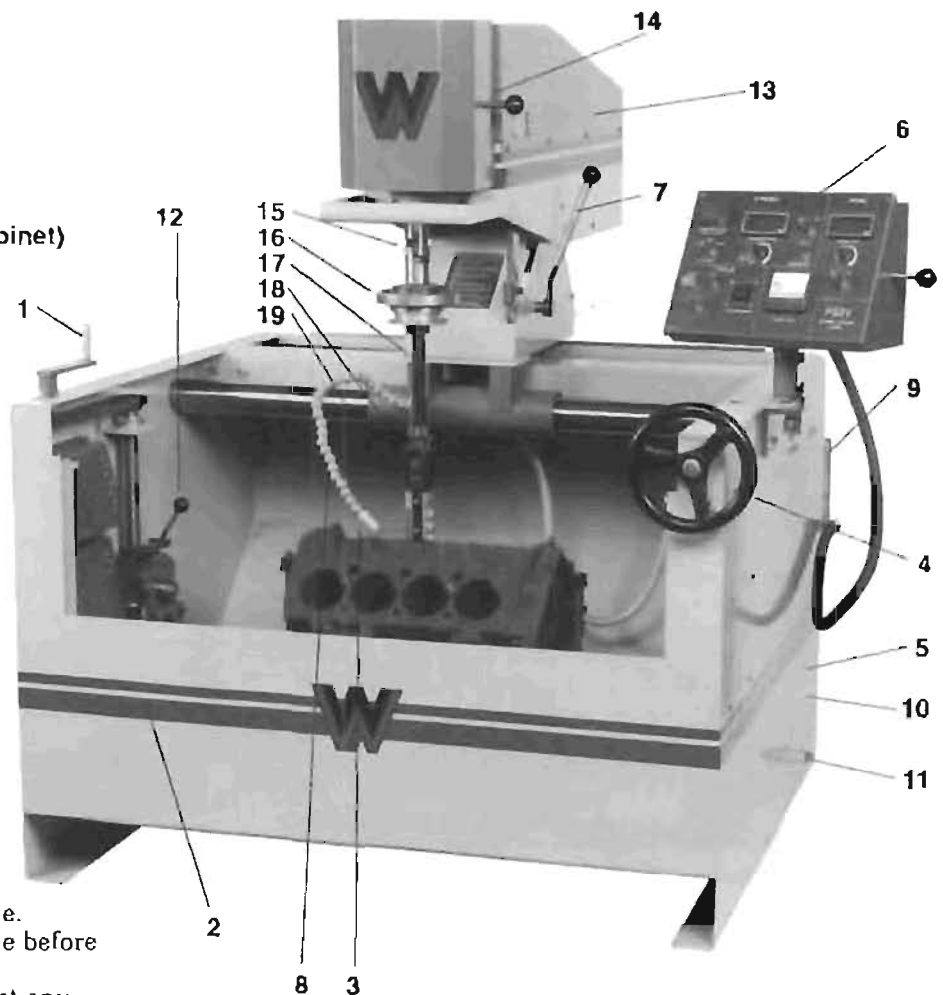


Part No. 863266

PS2V, 12/08  
COPYRIGHT © 2001 Winona Van Norman

# IDENTIFICATION OF CONTROLS AND FUNCTIONS

1. Cradle Raise & Lower
2. Parallels
3. Oil Flow Control Valve
4. Traverse Handwheel
5. Oil Filter (inside cabinet)
6. Control Panel
7. Head Lock
8. Oil Nozzle
9. Main Fuse Box (on rear of cabinet)
10. Oil Pump (inside cabinet)
11. Oil Drain Plug
12. Index Release Handle
13. Drive Head
14. Stroke Adjustment Access Door
15. Universal Joint
16. Bi-Directional Hone Friction Feed Unit
17. Drive Shaft
18. Hone Head, Standard
19. Stones & Guides
20. **Emergency Stop:** Turn knob to supply power to machine, push knob to stop all functions of machine.
21. **Oil Pump On/Off Auto:** Select between manual and automatic function of the oil pump. On allows the pump to run continuously. Auto activates the pump only when the machine is cycling.
22. **Cycle Start:** Begin honing cycle.
23. **Cycle Stop:** Stops honing cycle before counter reaches zero.
24. **Cycle Dwell:** Stops the stroke at any point in the cycle while the hone head continues to rotate.
25. **Cycle Counter:** Sets the number of full cycles desired for a honing operation. (one cycle includes both a down and up motion)
26. **Honing Load Meter:** Shows amount of current being drawn by the hone motor. This allows consistent loading of the stones.
27. **Hone ON/OFF:** Turns hone motor on and off.
28. **Honing Speed Adjustment:** Infinitely variable honing RPM.
29. **Honing RPM Digital Display:** Shows actual hone head RPM.
30. **Stroke Jog Button:** Each push of this button cycles the drive head to the next position following a sequence of TOP - MIDDLE - BOTTOM - TOP.
31. **Stroke ON/OFF:** Controls power to stroke controls.
32. **Stroke Speed Digital Display:** Shows actual stroking speed in cycles/min.
33. **Stroke Speed Adjustment:** Infinitely variable stroking speed.

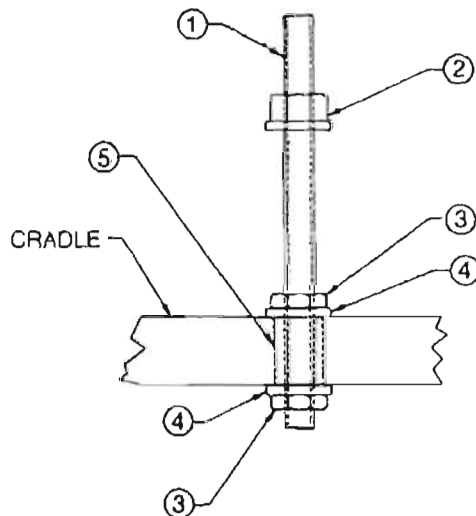


PS2V, 12/06

## UNPACKING AND SETUP

1. Unpack oil and packaged tooling inside hone cabinet and on skid. Verify standard equipment against equipment list.
2. Take machine off skid. Place machine so there is adequate clearance in front for loading and unloading of parts. There should also be clearance for access to the back of the machine. The hone should sit flat on the floor. Shim the high corner, if necessary, to achieve a solid footing.
3. Take blocking from head assembly or remove bolt from back rail of hone.
4. Put coolant pump in coolant pan.
5. Add honing oil to machine 860263 - 30 Gallons
6. Assemble hold downs to cradle.

## INSTALLING AND



### HOLD DOWN ASSEMBLY

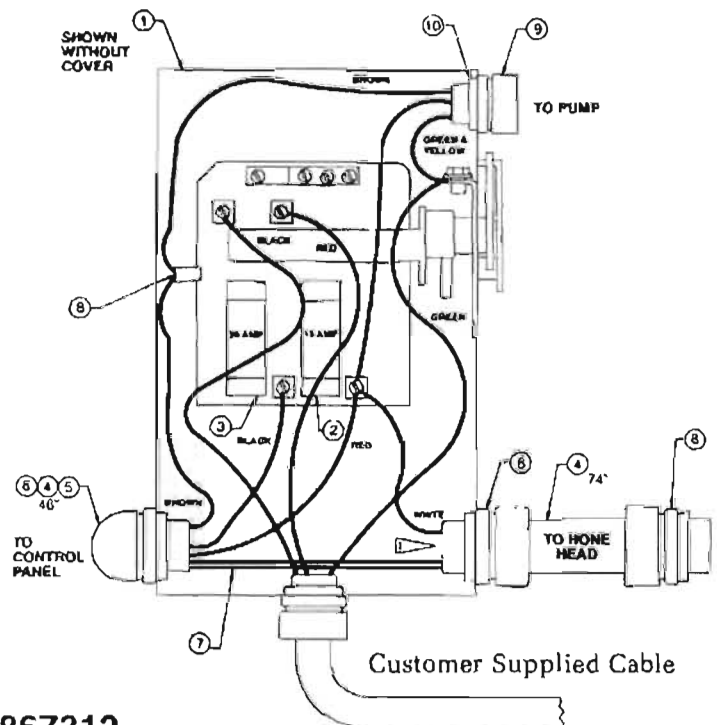
| Item | Part No. | Description              | Qty. |
|------|----------|--------------------------|------|
| 1    | 810132   | Clamp Rod.....           | 1    |
| 2    | 141950   | Flange Nut .750-10 ..... | 1    |
| 3    | 808750   | Jam Nut .750-10 .....    | 2    |
| 4    | 808744   | Washer.....              | 2    |
| 5    | 866954   | Clamp Block.....         | 1    |

## ASSEMBLING HONE HEAD

1. Mount Friction Feed unit into the U-joint. Tighten the two set screws securely. Check the four set screws that hold the U-joint to the gear motor to be sure they are tight.
2. Assemble the hone head to the drive shaft ring using the two button head cap screws and spacers attached to the hone head.
3. Mount Drive Shaft/Hone Head assembly to the Friction Feed unit by securing the Drive shaft collar. Be sure the square shaft and drive pin are properly engaged.
4. Install the Stones and guides into the Hone Head. Be sure to install them so the rack teeth are toward the center and inserted from the side with the "X".

## ELECTRICAL REQUIREMENTS

Machine requires 220V, 60 Hz, 1 Ph 4 wire electrical supply. Have a qualified electrician wire machine into 20 amp (minimum) supply.



### 867312

### ELECTRICAL SHUT OFF ASSEMBLY

| Item | Part No. | Description                 | Qty. |
|------|----------|-----------------------------|------|
| 1    | 864874   | Remote Sbutoff Switch ..... | 1    |
| 2    | 862306   | Fuse 15 Amp .....           | 1    |
| 3    | 862881   | Fuse 20 Amp .....           | 1    |
| 4    | 804881   | Flex. Conv. Hose .75 .....  | 120" |
| 5    | 809607   | Connector 90° .....         | 1    |
| 6    | 809606   | Connector Str.....          | 3    |
| 7    | 814365   | Cable 22 / 4 .....          | 300" |
| 8    | 801475   | Wire Nut .....              | 1    |
| 9    | 801471   | Strain Relief.....          | 1    |
| 10   | 866793   | Lock Nut .....              | 1    |

PS2V, 12/06



# LOADING ENGINE BLOCKS INTO MACHINE

Positioning Parallels for Inline and "V" Blocks.

1. If engine blocks main bearing centerline is in line with its pan rails, (Figure 1), position Parallels upward (Figure 2).

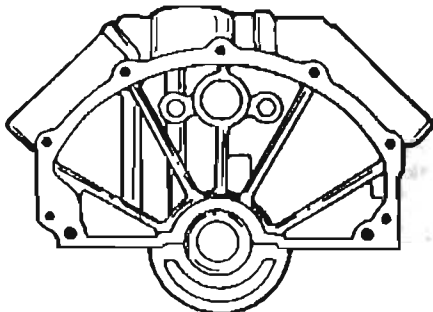


Figure 1

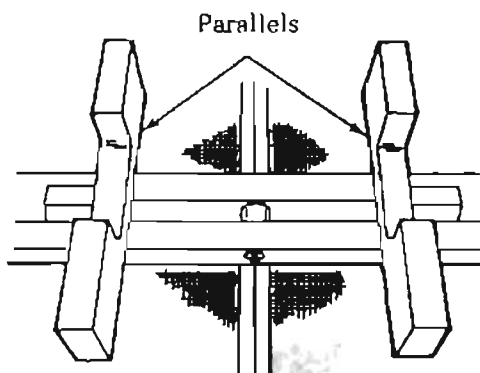


Figure 2

2. If main bearing centerline is above pan rails, (Figure 3) turn Parallels to the down position (Figure 4). If the bearing centerline is more than 3 inches above the pan rail then use the short parallel set. When properly positioned the bearing centerline should be approximately in line with the pivot axis of the cradle.

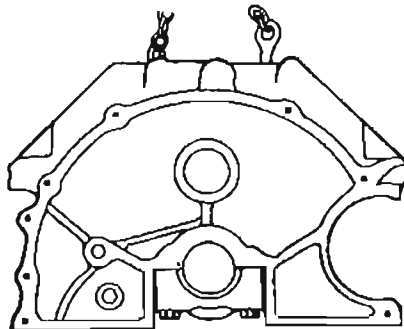


Figure 3

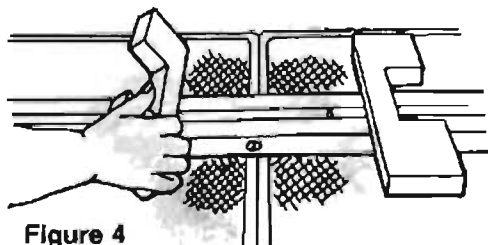
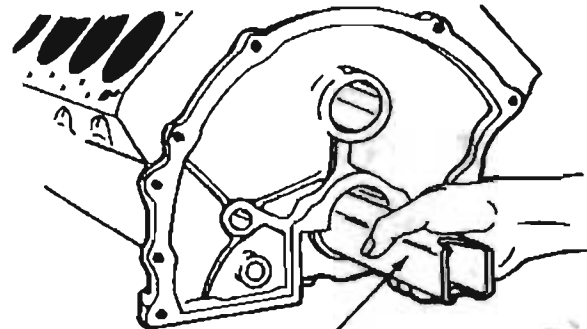


Figure 4

# CLAMPING ENGINE BLOCK IN PLACE (INLINE AND "V" BLOCKS).

NOTE: At least the two end bearing caps must be bolted in place. Distortion will be kept to a minimum if all main bearing caps are installed and torqued properly.

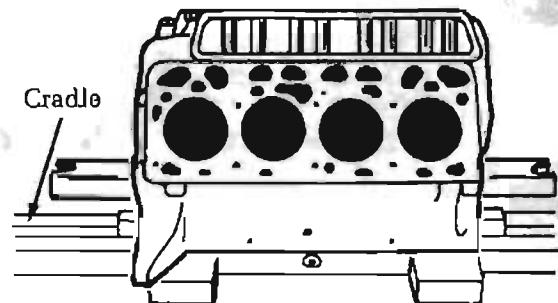
1. Place Clamp Bar through main bearing bores (Figure 5).
2. Move carriage to the left and raise the drive head.
3. Make sure that the pan rails do not have any gasket material or dirt on them.
4. Slide Parallels to approximate position near the ends of the engine block.



Clamp Bar

Figure 5

5. Place the engine block on the parallels near the center of the Cradle (Figure 6).



Cradle

Figure 6

6. Slide the Hold Downs into the Clamp Bar slots. It may be necessary to shift the position of the engine block so that both Hold Downs will slide into the slots of the Clamp Bar.
7. With both Hold Downs in position, tighten clamp nuts evenly, first by hand and then with wrench, so that engine block is held firmly to Cradle. NOTE: DO NOT overtighten. Inline Engine Blocks are now in a position to be honed.

## POSITIONING "V" TYPE BLOCKS.

1. Release cradle index latch at the left end of the Cradle and rotate the Cradle and engine block to position for honing. The first notch from the center position is for 60° "V" blocks; the second notch is for 90° "V" blocks. "V" Engine Blocks are now in a position to be honed.

## ADJUSTING HONING STROKE

1. Measure length of cylinder to be honed. Add overtravel to this length. Generally you will only be able to overtravel at the top of the cylinder. If it is possible to overtravel the bottom then additional overtravel distance should be added. For 4" stones approximately .75" of overtravel is required.
2. Release the Drive Head lock and carefully lower the Honing Head into the cylinder bore. Be sure the stones are retracted enough to clear the bore diameter. Clamp the Drive Head securely in the lowered position. Lower the cradle so that only 1-2 inches of the stone are in the bore.
3. Turn main power on, release the Emergency Stop switch and set the Strokings speed to "2". Turn stroke on and momentarily push the JOG button and release. The Drive Head will move down to a horizontal position.
4. Open access door to stroke setting plate. Using the 1/4" hex wrench supplied adjust the stroke.
5. Loosen the stroke lock by turning the top cap screw about 1/2 turn CCW
6. Turn the lower cap screw to adjust the stroke. The front edge of the sliding block indicates the stroke setting on the scales. (This is viewed from the right side of the Drive Head) NOTE: each full turn of the screw changes the stroke 1/4".
7. Tighten the stroke lock by turning the top cap screw until snug. It is not necessary to tighten more than 5 ft-lbs.
8. Remove hex wrench.
9. Momentarily push the JOG button then release. The Drive Head will stop at the bottom position. Raise the cradle until the stones are positioned at the bottom of the cylinder or below the bottom if overtravel is required.
10. Jog Drive Head to the top to verify that the top overtravel is correct. If necessary repeat the stroke setting procedure until proper travel is achieved.

## BASIC OPERATION

### Power Stroke Honing

1. Lower Hone head into cylinder and expand stones to within a few thousandths of the cylinder diameter. Clamp Drive Head in lowest position.
2. Release emergency stop switch, select "AUTO" oil pump and turn stroke "OFF".
3. Set cycle counter to desired number of cycles, turn Hone "ON", and select Honing RPM. (Honing motor does not need to be running)
4. Set stroking speed at 3-4 on the potentiometer scale, turn stroke "ON", push cycle "START". The Hone will start full operation at this point. Readjust stroke speed to desired setting.

### Manual Honing

1. With Stroke "ON" and Hone "OFF" jog head to lowest position.
2. Turn Stroke "OFF", set Cycle Counter to 1.
3. Release Drive Head Clamp.
4. Press Cycle Start. Raise and lower Drive Head manually.

## USING THE FRICTION FEED HONE HEAD

1. Holding the upper friction feed ring will expand the stones, holding the lower ring will retract the stones.
2. The Honing Load meter will show how hard the stones are working. It will also indicate how straight the bore. Reading within one amp on the meter indicates a straight bore.
3. If the load reading fluctuates more than one division, take note at what point in the cycle the readings are highest. A high reading indicates a tight spot in the bore. By using the "DWELL" button, it is possible to run the stones in one place to selectively remove additional stock

## DETERMINING CYCLE RATE BASED ON CROSS HEAD ANGLE AND RPM

$$\text{Cycles/Min.} = \frac{K \times D \times R}{L}$$

K = Cross Hatch Angle Constant (See Chart)

D = Diameter of Bore

R = RPM of Hone (Based on Bore Dia.) (See below)

L = Length of Stroke of Stones

| CROSS HATCH ANGLE | K    |
|-------------------|------|
| 10°               | .137 |
| 15°               | .207 |
| 20°               | .277 |
| 25°               | .348 |
| 30°               | .421 |
| 35°               | .495 |
| 40°               | .572 |
| 45°               | .651 |

### Example:

Required cross hatch angle = 20°

Bore diameter = 3.5"

Length of bore = 6.0"

Length of stones = 4.0"

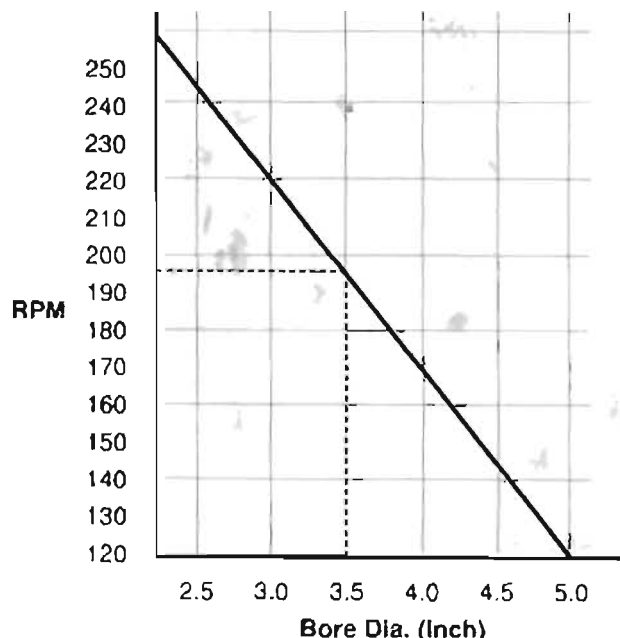
Overtravel = .75"

K = .277 for 20° CHA

RPM = 197 for 3.5" Bore

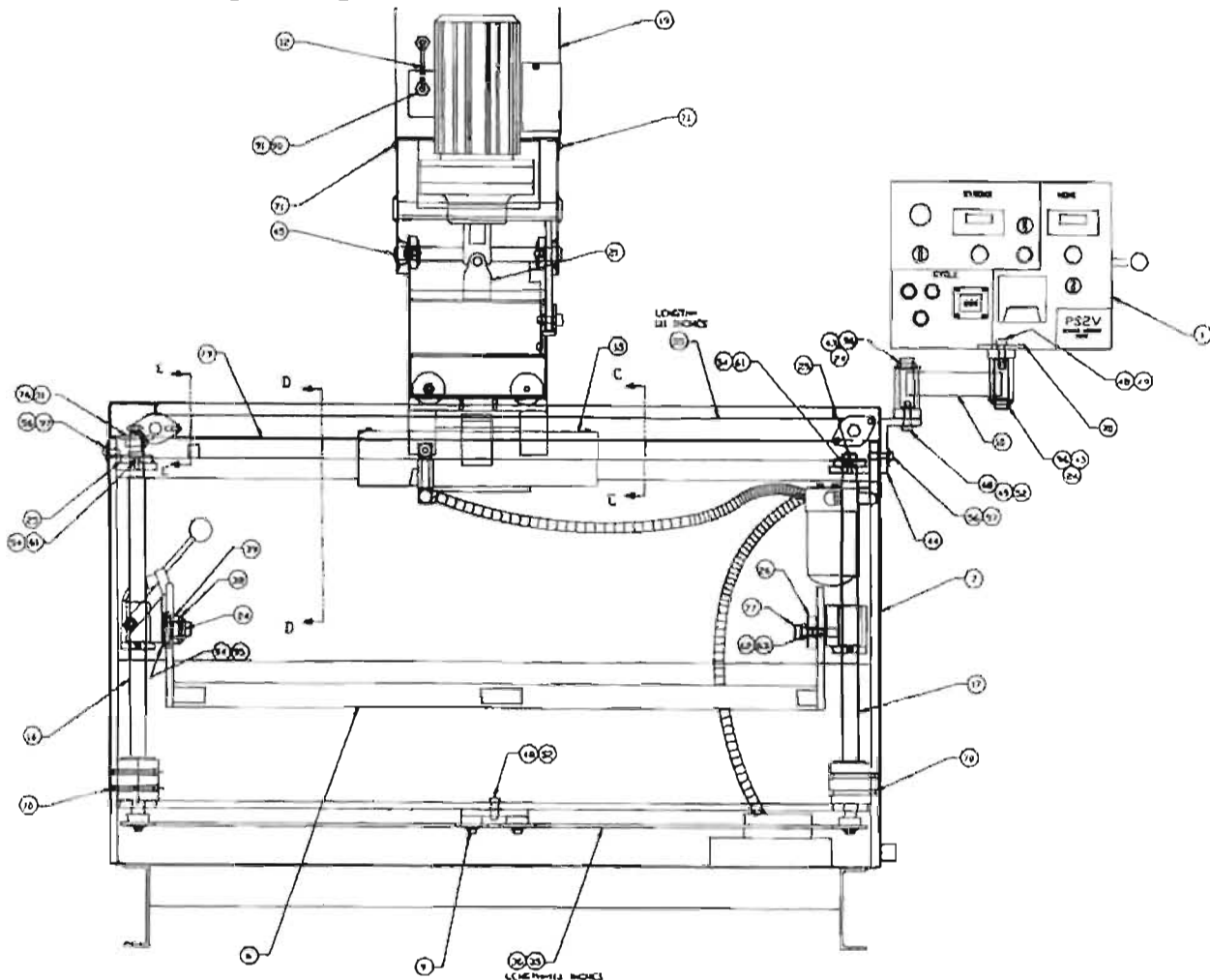
L = 6.0 - 4.0 + .75 = 2.75

$$\text{Cycles/Minute} = \frac{.277 \times 3.5 \times 197}{2.75} = 69 \text{ Cycles/Min.}$$



# 866838 POWER STROKE HONE ASSEMBLY

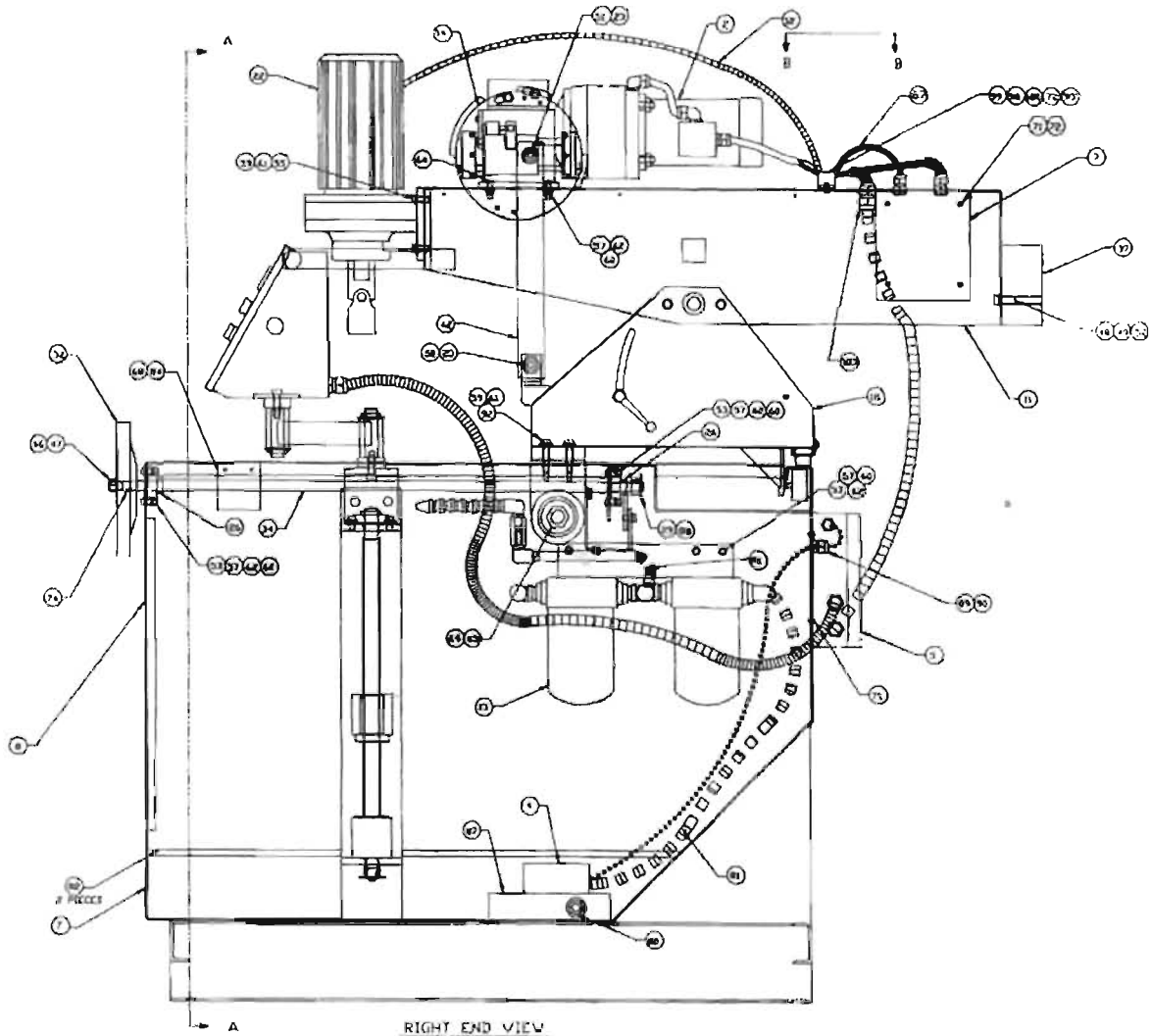
| Item | Part No. | Description                              | Qty. | Item | Part No. | Description                 | Qty. |
|------|----------|------------------------------------------|------|------|----------|-----------------------------|------|
| 1    | 867000   | Control Box Assembly (P. 17,18).....     | 1    | 27   | 866867   | Flange Bearing 3/4".....    | 1    |
| 2    | 867277   | DC Gearmotor Assembly (P. 14).....       | 1    | 28   | 866866   | Pillow Bl. Bearing.....     | 1    |
| 3    | 867280   | AC Controller Assembly.....              | 1    | 29   | 866865   | Sprocket 11 T.....          | 1    |
| 4    | 867162   | Coolant Pump Assembly.....               | 1    | 30   | 866864   | Sprocket 14 T.....          | 3    |
| 5    | 867275   | Electrical Shut-Off Assembly (P. 3)..... | 1    | 31   | 866863   | Sprocket 16 T.....          | 1    |
| 6    | 866926   | Cradle Assembly Weldment.....            | 1    | 32   | 801240   | Lead. Handwheel.....        | 1    |
| 7    | 866040   | Hone Tank Weldment.....                  | 1    | 33   | 866941   | Cradle Handwheel Shaft..... | 1    |
| 8    | 867040   | Tank Weldment Door.....                  | 1    | 34   | 866942   | Handwheel Shaft.....        | 1    |
| 9    | 866933   | Idler Plate Assembly.....                | 1    | 35   | 806022   | #40 Roller Chain.....       | 1    |
| 10   | 867086   | Pivot Arm Assembly.....                  | 1    | 36   | 806023   | #40 Master Link.....        | 4    |
| 11   | 867010   | Power Head Assembly.....                 | 1    | 37   | 867022   | PH Counterweight.....       | 1    |
| 12   | 867268   | Motor Cable Assembly.....                | 1    | 38   | 866956   | Cradle Pivot Spacer.....    | 1    |
| 13   | 867271   | Oil Filter Assembly (Page 9).....        | 1    | 39   | 866946   | Thrust Bearing.....         | 1    |
| 14   | 867276   | Str. Cam Assembly (Page 13).....         | 1    | 40   | 866949   | Cradle Handle Assembly..... | 1    |
| 15   | 867281   | Supp. Slide Assembly (Page 16).....      | 1    | 41   | 866974   | Chain Hookup Assembly.....  | 1    |
| 16   | 867273   | LH Leadscrew Assembly (P. 11).....       | 1    | 42   | 866993   | Str. Operat. Rod.....       | 1    |
| 17   | 867274   | RH Leadscrew Assembly (P. 12).....       | 1    | 43   | 867085   | Pivot Shaft.....            | 2    |
| 18   | 867272   | PH Base Assembly (Page 10).....          | 1    | 44   | 867097   | Pivot Arm Base.....         | 1    |
| 19   | 867279   | PH Cover Assembly (Page 15).....         | 1    | 45   | 867013   | Pivot Pin.....              | 1    |
| 20   | 860749   | Flange Hub.....                          | 1    | 46   | 801591   | Hex Nut .625-11 Jam.....    | 1    |
| 21   | 866884   | Universal Joint.....                     | 1    | 47   | 801562   | Washer Sr. .625.....        | 1    |
| 22   | 867212   | Gearmotor.....                           | 1    | 48   | 801613   | HHCS .500-13 x 1.25.....    | 5    |
| 23   | 866874   | Ball Bearing.....                        | 1    | 49   | 801604   | LC Washer .50.....          | 3    |
| 24   | 866872   | Blk Locknut.....                         | 3    | 50   | 817949   | SHCS M12 x 35mm.....        | 1    |
| 25   | 866869   | Flange Bearing 1".....                   | 2    | 51   | 866995   | BHCS M12 x 30mm.....        | 1    |
| 26   | 866868   | Flange Bearing 3/4".....                 | 3    |      |          |                             |      |





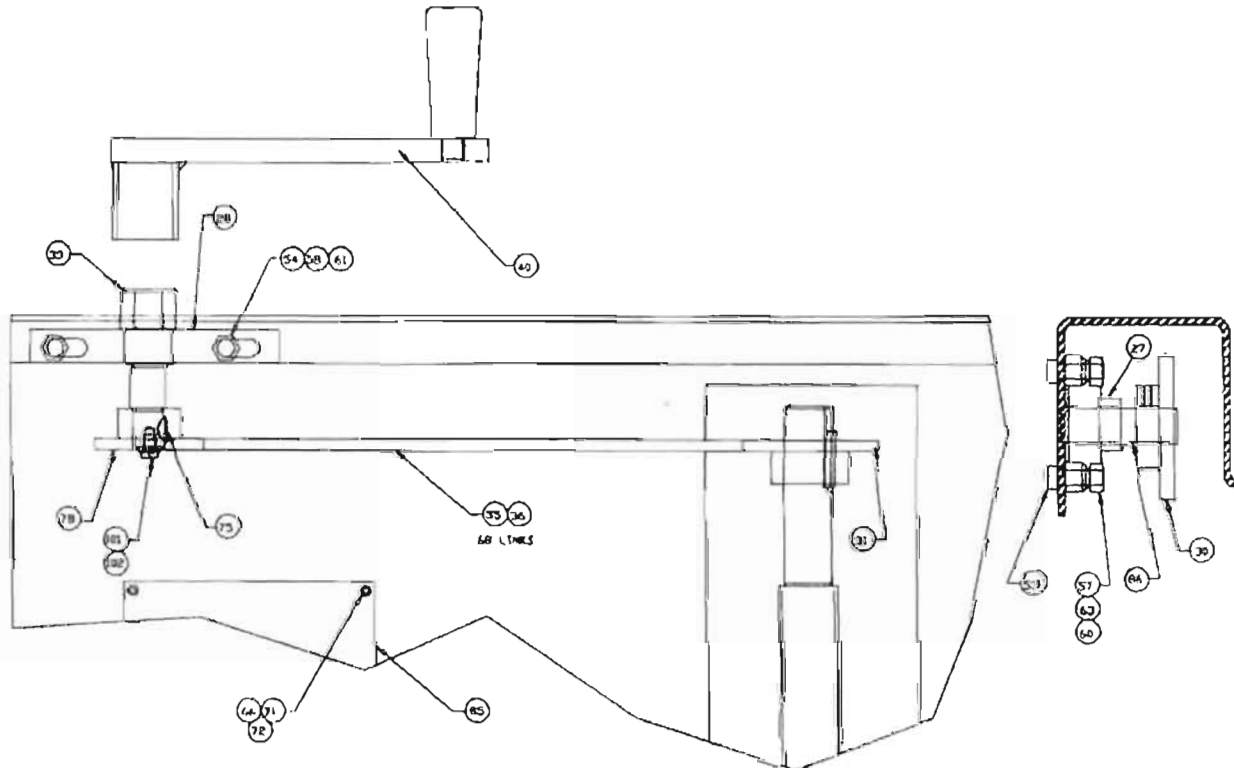
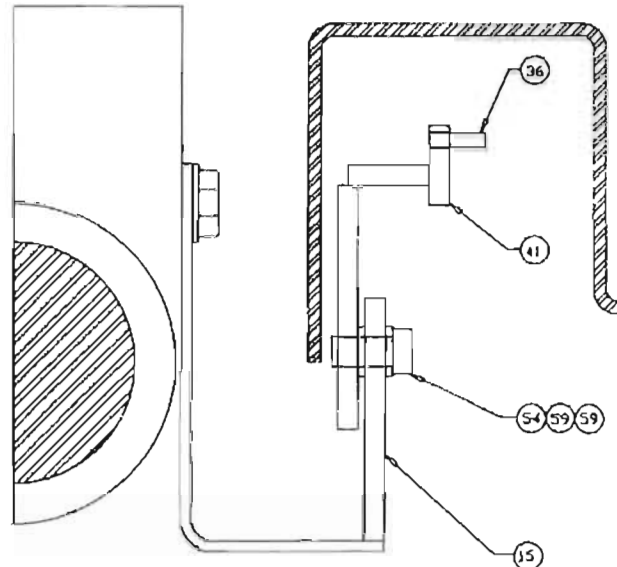
# 866838 POWER STROKE HONE ASSEMBLY

| Item | Part No. | Description            | Qty. | Item | Part No. | Description           | Qty. |
|------|----------|------------------------|------|------|----------|-----------------------|------|
| 52   | 803024   | Washer Flat .50        | 5    | 78   | 867041   | Sprocket 9 T          | 1    |
| 53   | 804735   | HHCS .312-18 x 1.00    | 10   | 79   | 866945   | Traverse HD Shaft     | 1    |
| 54   | 811237   | HHCS .375-16 x .75     | 6    | 80   | 867987   | Hex Plug 3/4 NPT      | 1    |
| 55   | 801625   | HHCS .375-16 x 1.00    | 4    | 81   | 814700   | Urethane Tube .625    | 5    |
| 56   | 805324   | HHCS .437-14 x 1.0     | 4    | 82   | 867207   | Tank Screen (Set)     | 1    |
| 57   | 803082   | Hex Nut .312-18        | 1    | 83   |          |                       |      |
| 58   | 801637   | Hex Nut .375-16        | 2    | 84   | 867253   | Gauge Holder          | 1    |
| 59   | 801023   | Washer Flat .375       | 12   | 85   | 804716   | Tool Holder Rack      | 2    |
| 60   | 801661   | Washer Lock .312       | 1    | 86   | 867217   | Sprocket Shaft        | 1    |
| 61   | 803061   | Washer Lock .375       | 10   | 87   | 867256   | Coolant Pump Pan      | 1    |
| 62   | 801601   | Washer Flat .314       | 1    | 88   | 861846   | Shaft Key             | 1    |
| 63   | 109391   | SHCS .312-18 x .875    | 2    | 89   | 801471   | Strain Relief 1/2 NPT | 1    |
| 64   | 804747   | HHCS .312-18 x .875    | 2    | 90   | 866793   | Lock Nut 1/2 NPT      | 2    |
| 65   | 866904   | HHCS 1.00-14 x 2.00    | 2    | 91   | 801469   | Strain Relief 1/2 NPT | 1    |
| 66   | 114160   | Washer #10             | 8    | 92   | 801622   | HHCS .375-16 x 1.75   | 4    |
| 67   | 801478   | Cable 16/4 Std.        | 8"   | 93   | 804765   | BHCS #10-32 x .62     | 2    |
| 68   | 866805   | Self-Tap Screw #10-32  | 2    | 94   | 866860   | Timken Cup Bearing    | 1    |
| 69   | 866888   | Washer Flat 1.00 I.D.  | 2    | 95   | 866859   | Timken Cone Bearing   | 1    |
| 70   | 866992   | SHCS .312-18 x 3.00    | 8    | 96   | 813927   | Washer 1.00 x 2.00    | 2    |
| 71   | 804764   | BHCS #10-32 x .375     | 2    | 97   | 105288   | Washer .437           | 4    |
| 72   | 808374   | Hex Nut #10-32         | 1    | 98   | 867230   | Mounting Rail         | 1    |
| 73   |          |                        |      | 99   | 813398   | Terminal Block        | 18   |
| 74   | 802422   | Woodruff Key #304      | 1    | 100  | 867218   | Din Rail Clip         | 6    |
| 75   | 809018   | Woodruff Key #605      | 1    | 101  | 802413   | Washer .25            | 1    |
| 76   | 814566   | Key .187 x .187 x .875 | 2    | 102  | 813498   | HHCS .250-20 x .375   | 1    |
| 77   | 867023   | Stripper Bolt .750     | 1    | 103  | 809606   | Strain Relief 3/4 NPT | 1    |



# 866838 POWER STROKE HONE ASSEMBLY

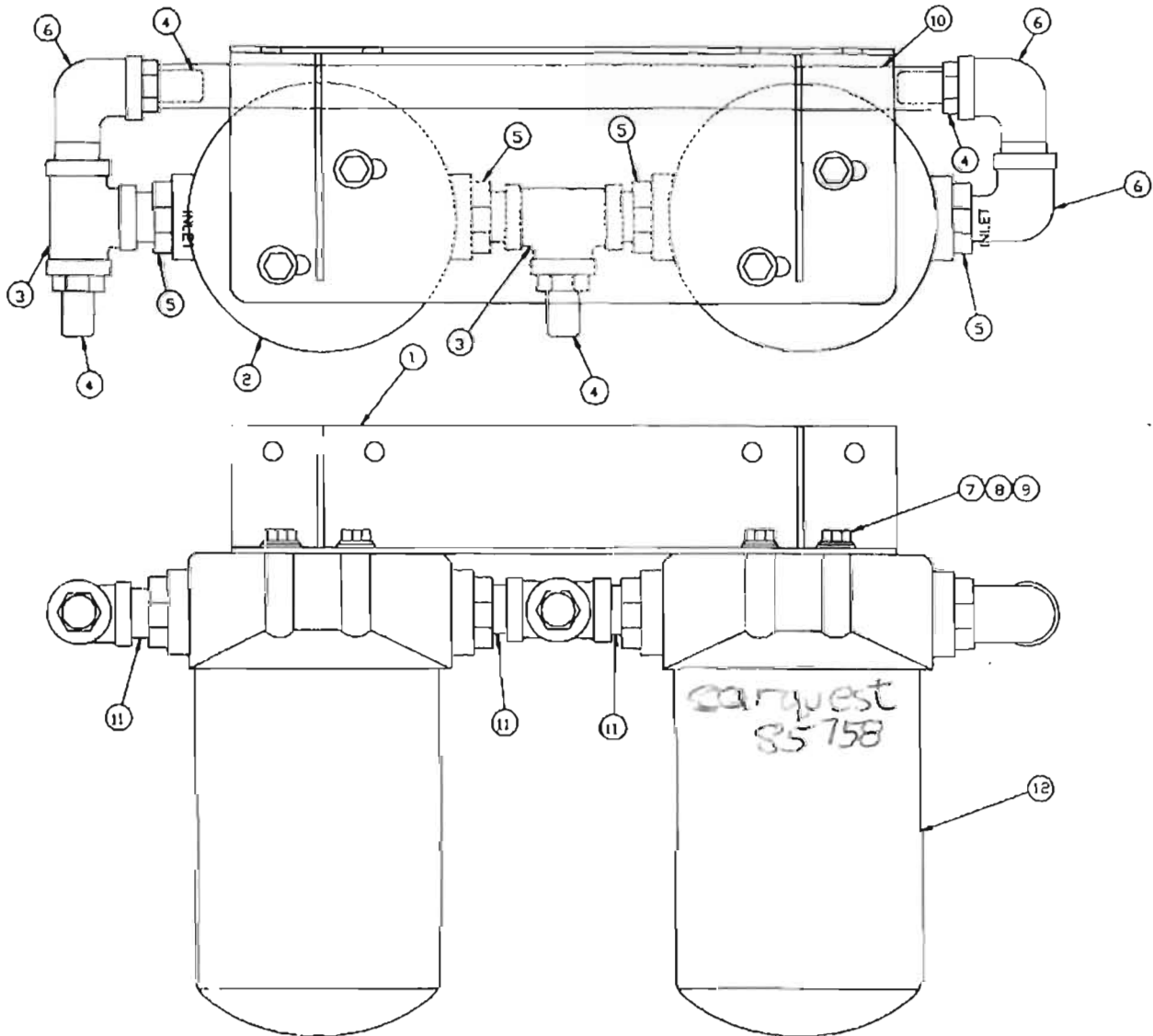
| Item | Part No. | Description                 | Qty. |
|------|----------|-----------------------------|------|
| 15   | 867281   | Supp. Slide Assembly.....   | 1    |
| 27   | 866867   | Flange Bearing 3/4".....    | 1    |
| 28   | 866866   | Pillow Bl. Bearing.....     | 1    |
| 30   | 866864   | Sprocket 14 T.....          | 3    |
| 31   | 866863   | Sprocket 16 T.....          | 1    |
| 33   | 866941   | Cradle Handwheel Shaft..... | 1    |
| 35   | 806022   | #40 Roller Chain.....       | 1    |
| 36   | 806023   | #40 Master Link.....        | 4    |
| 40   | 866949   | Cradle Handle Assembly..... | 1    |
| 41   | 866974   | Chain Hookup Assembly.....  | 1    |
| 53   | 804735   | HHCS .312-18 x 1.00.....    | 10   |
| 54   | 811237   | HHCS .375-16 x .75.....     | 6    |
| 57   | 803082   | Hex Nut .312-18.....        | 1    |
| 58   | 801637   | Hex Nut .375-16.....        | 2    |
| 59   | 801023   | Washer Flat .375.....       | 12   |
| 60   | 801661   | Washer Lock .312.....       | 1    |
| 61   | 803061   | Washer Lock .375.....       | 10   |
| 63   | 109391   | SHCS .312-18 x .875.....    | 2    |
| 66   | 114160   | Washer #10.....             | 8    |
| 71   | 804764   | BHCS #10-32 x .375.....     | 2    |
| 72   | 808374   | Hex Nut #10-32.....         | 1    |
| 75   | 809018   | Woodruff Key #605.....      | 1    |
| 78   | 867041   | Sprocket 9 T.....           | 1    |
| 85   | 804716   | Tool Holder Rack.....       | 2    |
| 86   | 867217   | Sprocket Shaft.....         | 1    |
| 101  | 802413   | Washer .25.....             | 1    |
| 102  | 813498   | HHCS .250-20 x .375.....    | 1    |



PS2V, 12/06

# 867271 OIL FILTER ASSEMBLY

| Item | Part No. | Description                  | Qty. |
|------|----------|------------------------------|------|
| 1    | 867138   | Filter Support Bracket ..... | 1    |
| 2    | 867142   | Filter & Adapter .....       | 2    |
| 3    | 807167   | Tee .50 NPT .....            | 2    |
| 4    | 867141   | Pushlock Fitting .....       | 4    |
| 5    | 867140   | Reducing Bushing .....       | 4    |
| 6    | 801479   | Elbow 90° .50 NPT .....      | 3    |
| 7    | 806241   | HHCS .312-18 x .750 .....    | 2    |
| 8    | 801601   | Washer Fl. .314 x .75 .....  | 2    |
| 9    | 801661   | Washer LC. .312 x .57 .....  | 2    |
| 10   | 814700   | Urethane Tube .625 .....     | 18"  |
| 11   | 801386   | Nipple P .50 NPT .....       | 3    |
| 12   | 867143   | Replacement Filter .....     | 2    |



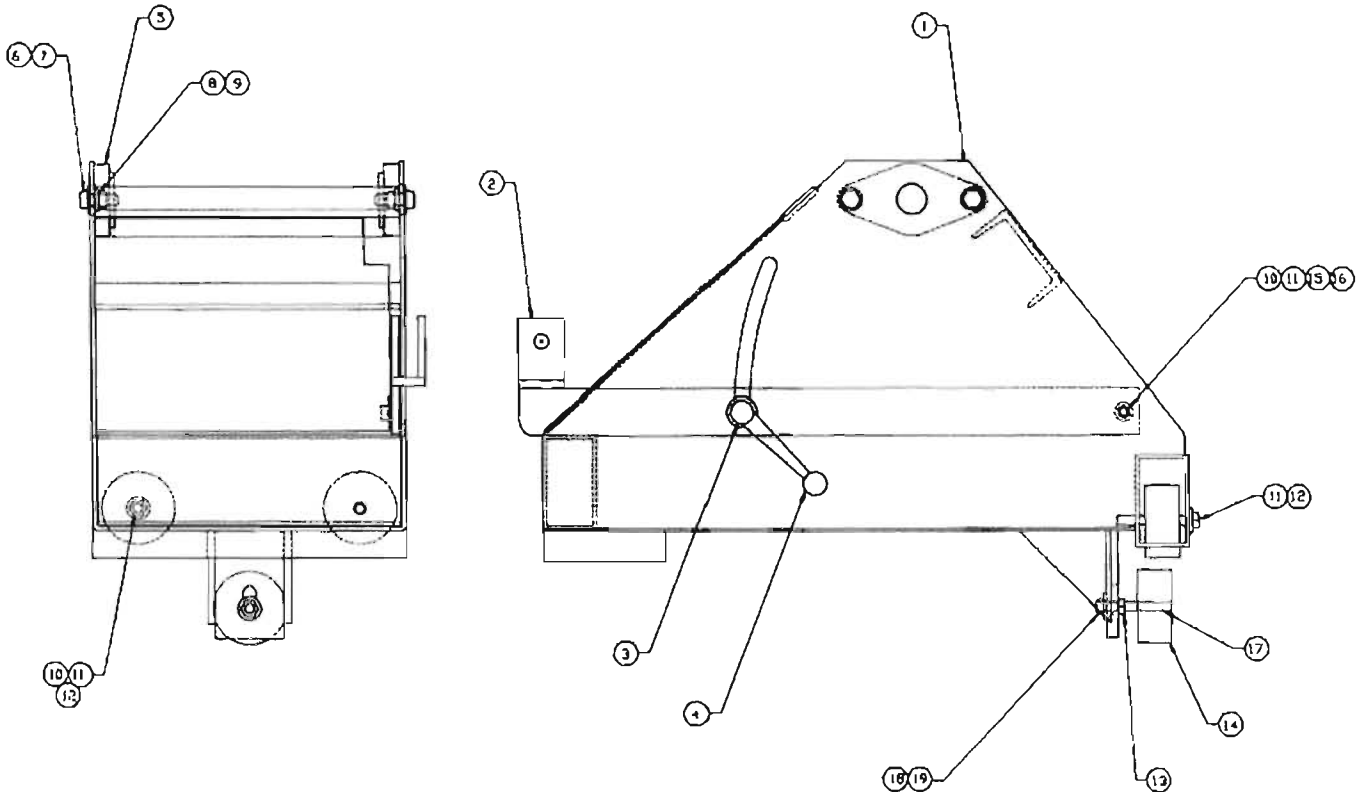
PS2V, 12/06

**W Winona Van Norman®**  
710 E. 17th St. • Wichita, KS 67214

Phone: 316-219-3500 Fax: 316-265-0013  
**1-800-533-008**  
www.winonavanorman.com

# 867272 BASE ASSEMBLY, POWER HEAD

| Item | Part No. | Description               | Qty. | Item | Part No. | Description              | Qty. |
|------|----------|---------------------------|------|------|----------|--------------------------|------|
| 1    | 867012   | Base Weldment .....       | 1    | 11   | 801601   | Washer .314 .....        | 3    |
| 2    | 866985   | Bar Weldment .....        | 1    | 12   | 804444   | HHCS .312-18 x 2.5 ..... | 3    |
| 3    | 140695   | Washer .50 H.D. ....      | 1    | 13   | 807868   | Jam Nut .437-14 .....    | 1    |
| 4    | 142174   | Handle K/E .....          | 1    | 14   | 866876   | Wheel .....              | 3    |
| 5    | 867021   | Flange Bearing .....      | 2    | 15   | 867025   | Stripper Bolt .....      | 1    |
| 6    | 801618   | HHCS .375-16 x 1.25 ..... | 4    | 16   | 866870   | Needle Bearing .....     | 1    |
| 7    | 801023   | Washer Flat .375 .....    | 4    | 17   | 867216   | Axle .....               | 1    |
| 8    | 803061   | Washer LC .375 .....      | 4    | 18   | 803342   | Hex Nut .437-14 .....    | 1    |
| 9    | 801637   | Hex Nut .375 .....        | 4    | 19   | 105288   | Washer .437 .....        | 1    |
| 10   | 803082   | Hex Nut .312 .....        | 2    |      |          |                          |      |



PS2V, 12/06

**W Winona Van Norman®**

710 E. 17th St. • Wichita, KS 67214

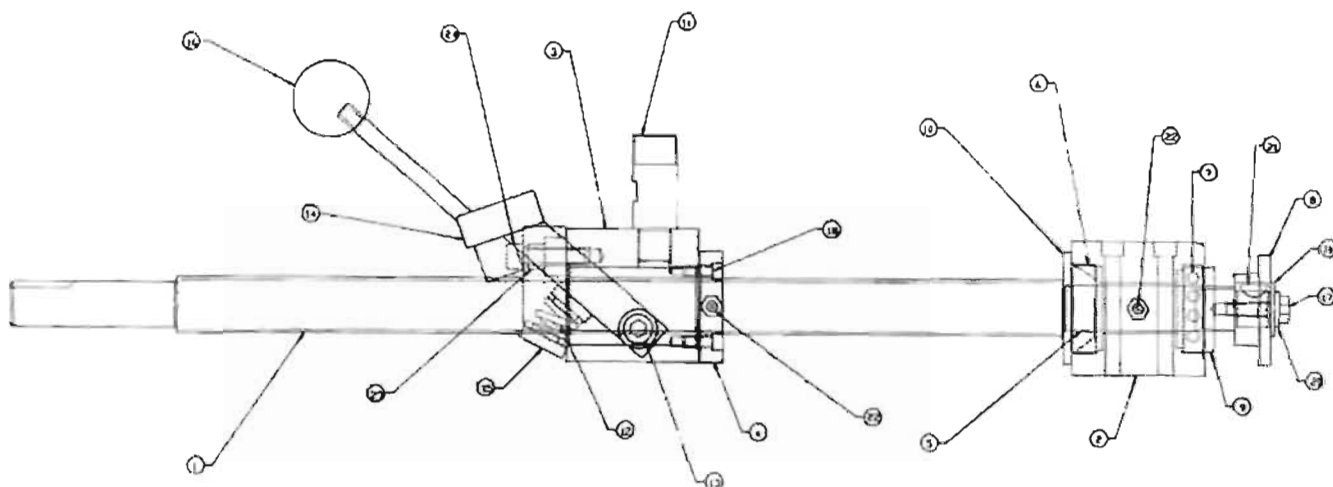
Phone: 316-219-3500 Fax: 316-265-0013

**1-800-533-008**

[www.winonavannorman.com](http://www.winonavannorman.com)

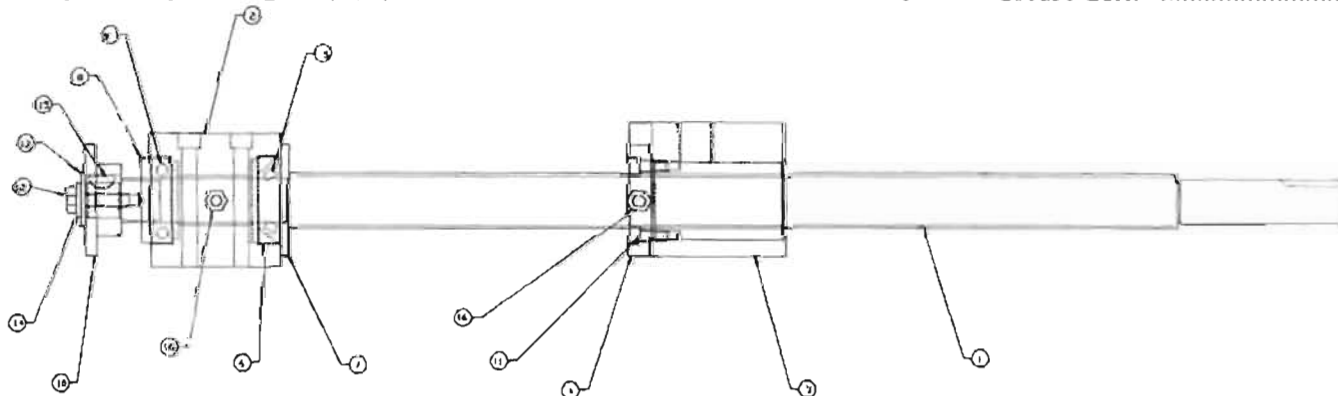
## 867273 LEADSCREW ASSEMBLY (LEFT)

| Item | Part No. | Description                | Qty. | Item | Part No. | Description               | Qty. |
|------|----------|----------------------------|------|------|----------|---------------------------|------|
| 1    | 866853   | Leadscrew L.H. ....        | 1    | 13   | 803649   | Stripper Bolt .50.....    | 2    |
| 2    | 866855   | Bearing Mount Block.....   | 1    | 14   | 866958   | Cradle Lock Assembly..... | 1    |
| 3    | 866918   | Cradle Mounting Block..... | 1    | 15   | 866959   | Cradle Lock Assembly..... | 1    |
| 4    | 866920   | Cradle Block Nut.....      | 1    | 16   | 866980   | Knob .....                | 1    |
| 5    | 866859   | Bearing (Cone).....        | 1    | 17   | 801568   | HHCS .250-20 x .75 .....  | 1    |
| 6    | 866860   | Bearing (Cup) .....        | 1    | 18   | 801640   | SHCS .250-20 x .75 .....  | 4    |
| 7    | 866861   | Ball Bearing.....          | 1    | 19   | 804523   | Washer .250.....          | 1    |
| 8    | 867282   | Sprocket.....              | 1    | 20   | 801616   | Washer LC .250 .....      | 1    |
| 9    | 866872   | Locknut.....               | 1    | 21   | 809018   | Woodruff Key #605 .....   | 1    |
| 10   | 866888   | Washer 2.50.....           | 1    | 22   | 801656   | Grease Zerk .....         | 2    |
| 11   | 866955   | Pivot Stud.....            | 1    | 23   | 801610   | SHCS .375-16 x 1.....     | 1    |
| 12   | 866957   | Comp. Spring .....         | 1    | 24   | 801599   | SHCS .375-16 x 1.25.....  | 1    |



## 867274 LEADSCREW ASSEMBLY (RIGHT)

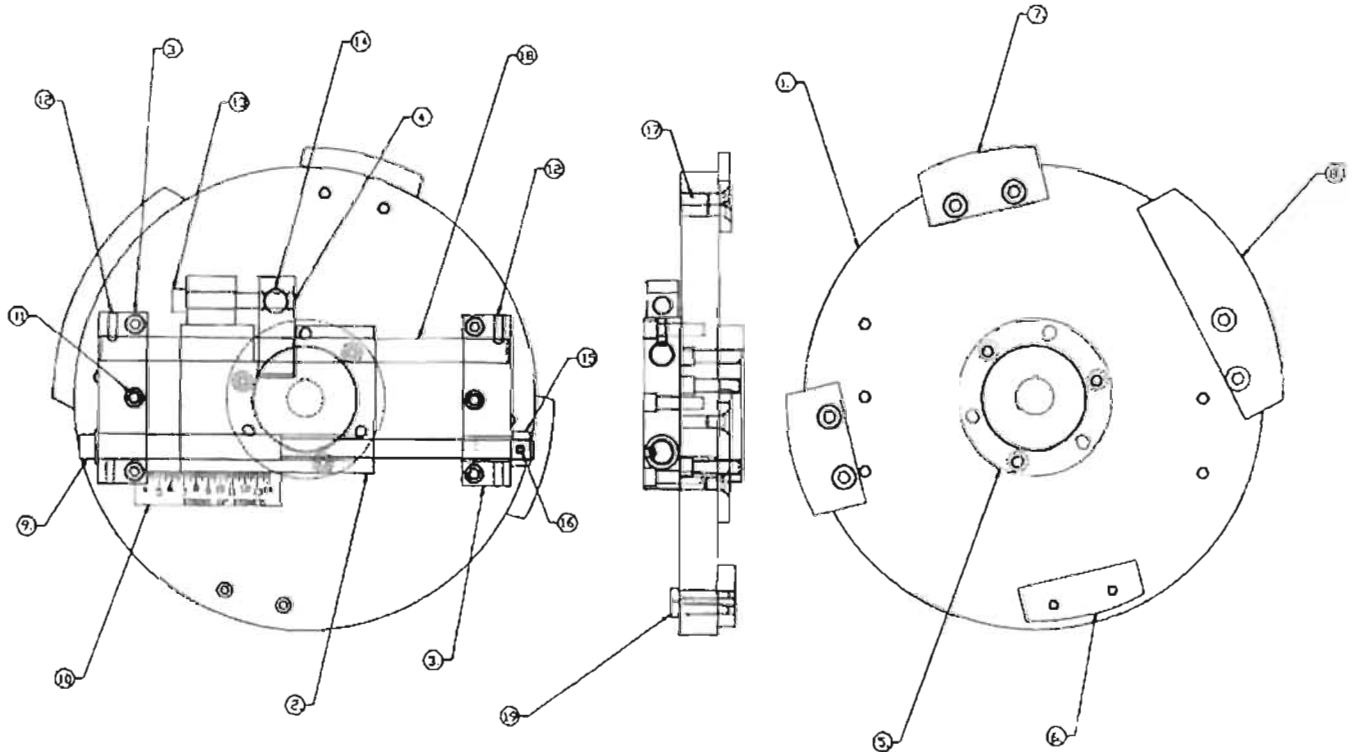
| Item | Part No. | Description            | Qty. | Item | Part No. | Description              | Qty. |
|------|----------|------------------------|------|------|----------|--------------------------|------|
| 1    | 866857   | Leadscrew R.H. ....    | 1    | 9    | 866861   | Ball Bearing.....        | 1    |
| 2    | 866856   | Bearing Block R.H..... | 1    | 10   | 867282   | Sprocket.....            | 1    |
| 3    | 866919   | Cradle Block R.H.....  | 1    | 11   | 801640   | SHCS .250-20 x .75 ..... | 4    |
| 4    | 866920   | Cradle Block Nut.....  | 1    | 12   | 801568   | HHCS .250-20 x .75 ..... | 1    |
| 5    | 866859   | Bearing (Cone).....    | 1    | 13   | 804523   | Washer .250.....         | 1    |
| 6    | 866860   | Bearing (Cup) .....    | 1    | 14   | 801616   | Washer LC .....          | 1    |
| 7    | 866888   | Washer 2.50.....       | 1    | 15   | 809018   | Woodruff Key #605 .....  | 1    |
| 8    | 866872   | Locknut BH .....       | 1    | 16   | 801656   | Grease Zerk .....        | 2    |





# 867276 STROKE CAM ADJUSTING PLATE ASSEMBLY

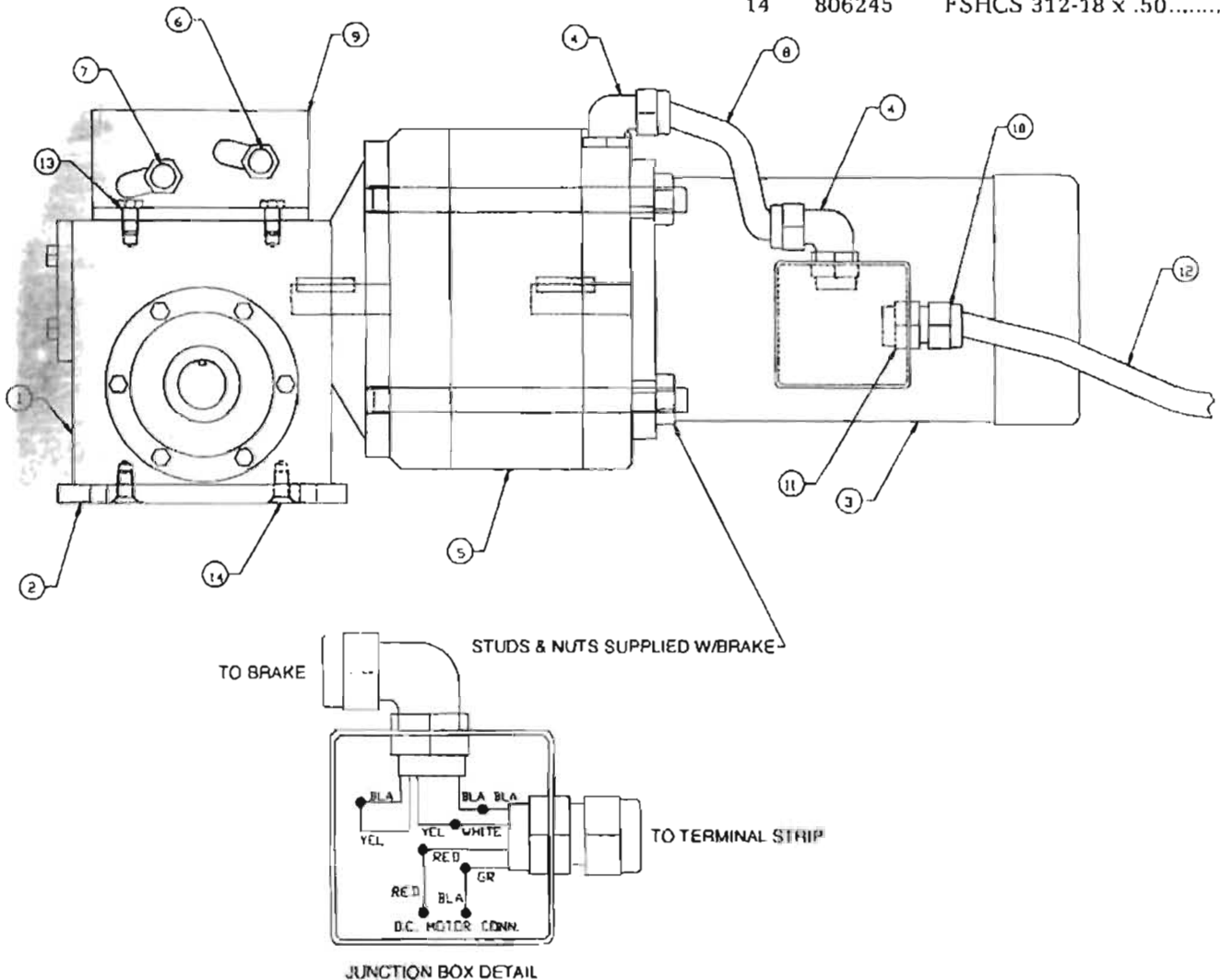
| Item | Part No. | Description                   | Qty. | Item | Part No. | Description               | Qty. |
|------|----------|-------------------------------|------|------|----------|---------------------------|------|
| 1    | 867035   | Wheel (Mach.).....            | 1    | 11   | 801609   | SHCS .250-20 x 1 .....    | 6    |
| 2    | 867082   | Block Assembly .....          | 1    | 12   | 803998   | SSS #10-32 x .62 .....    | 2    |
| 3    | 867076   | End Block .....               | 2    | 13   | 864965   | SHCS .312-18 x 2.25 ..... | 1    |
| 4    | 867080   | Stroke Adjustment Clamp ..... | 1    | 14   | 867081   | Clamp Pin.....            | 1    |
| 5    | 866902   | Bushing.....                  | 1    | 15   | 867078   | Screw Retainer .....      | 1    |
| 6    | 867209   | Spacer.....                   | 1    | 16   | 111539   | SSS #10-32 x .25 .....    | 1    |
| 7    | 867036   | Cam Plate .....               | 2    | 17   | 802087   | FSHCS .25-20 x .50 .....  | 6    |
| 8    | 867208   | Cam Plate (Large).....        | 1    | 18   | 867004   | Adjusting Rod .....       | 1    |
| 9    | 867099   | Shaft Assembly .....          | 1    | 19   | 867249   | SHCS #10-32 x 1 .....     | 2    |
| 10   | 867137   | Scale .....                   | 1    |      |          |                           |      |



PS2V, 12/06

# 867277 GEARMOTOR ASSEMBLY

| Item | Part No. | Description                | Qty. |
|------|----------|----------------------------|------|
| 1    | 866882   | Gear Reducer.....          | 1    |
| 2    | 867309   | Reducer Base.....          | 1    |
| 3    | 867676   | D.C. Motor.....            | 1    |
| 4    | 814403   | Connector 90°.....         | 2    |
| 5    | 866873   | Clutch Brake.....          | 1    |
| 6    | 866903   | Sensor Switch (NC).....    | 1    |
| 7    | 866862   | Sensor Switch (NO).....    | 1    |
| 8    | 804881   | Flexible Hose.....         | 5"   |
| 9    | 867005   | Sensor Pickup Weldment ... | 1    |
| 10   | 801471   | Strain Relief.....         | 1    |
| 11   | 866793   | Lock Nut.....              | 3    |
| 12   | 801478   | Cable 16/4 STO.....        | 12"  |
| 13   | 801860   | HHCS .312-18 x .50.....    | 2    |
| 14   | 806245   | FSHCS 312-18 x .50.....    | 4    |



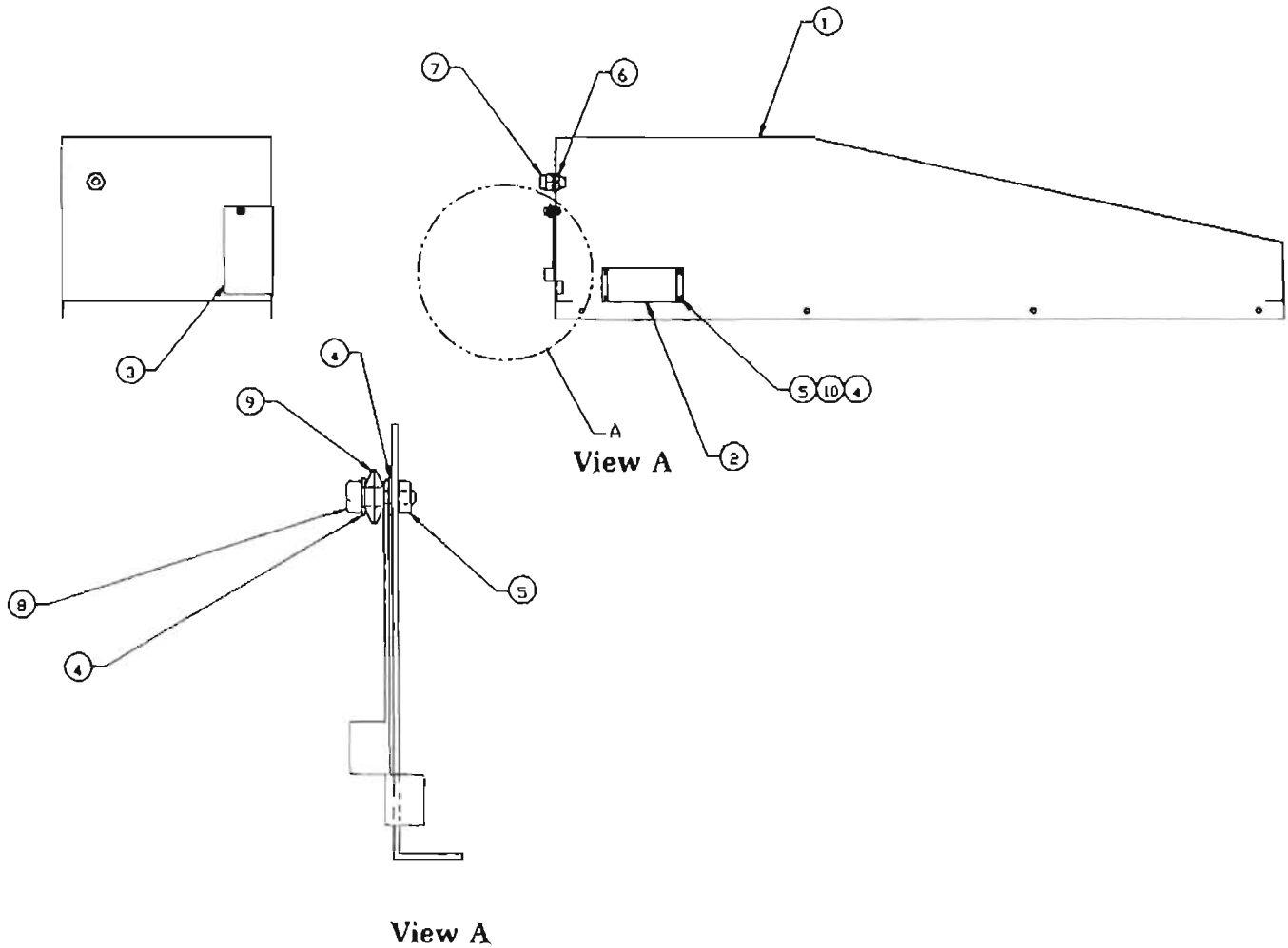
PS2V, 12/06

**W Winona Van Norman®**  
710 E. 17th St. • Wichita, KS 67214

Phone: 316-219-3500 Fax: 316-265-0013  
**1-800-533-008**  
www.winonavannorman.com

# 867279 POWER HEAD COVER ASSEMBLY

| Item | Part No. | Description             | Qty. |
|------|----------|-------------------------|------|
| 1    | 867011   | Cover.....              | 1    |
| 2    | 867135   | Viewport.....           | 1    |
| 3    | 867136   | Door.....               | 1    |
| 4    | 114160   | Washer #10.....         | 6    |
| 5    | 807142   | Hex Nut #10-24.....     | 5    |
| 6    | 801469   | Strain Relief.....      | 1    |
| 7    | 866793   | Lock Nut.....           | 1    |
| 8    | 860598   | Stripper Boll.....      | 1    |
| 9    | 867267   | Belleville Washer.....  | 2    |
| 10   | 129340   | BHCS #10-24 x .375..... | 4    |



PS2V. 12/06

**W Winona Van Norman®**

710 E. 17th St. • Wichita, KS 67214

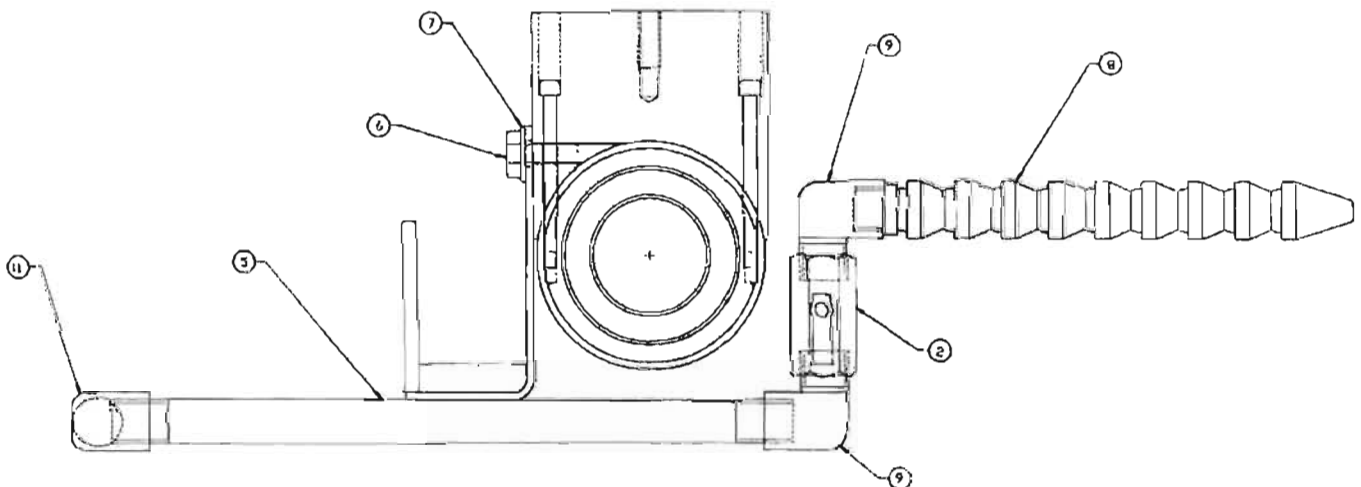
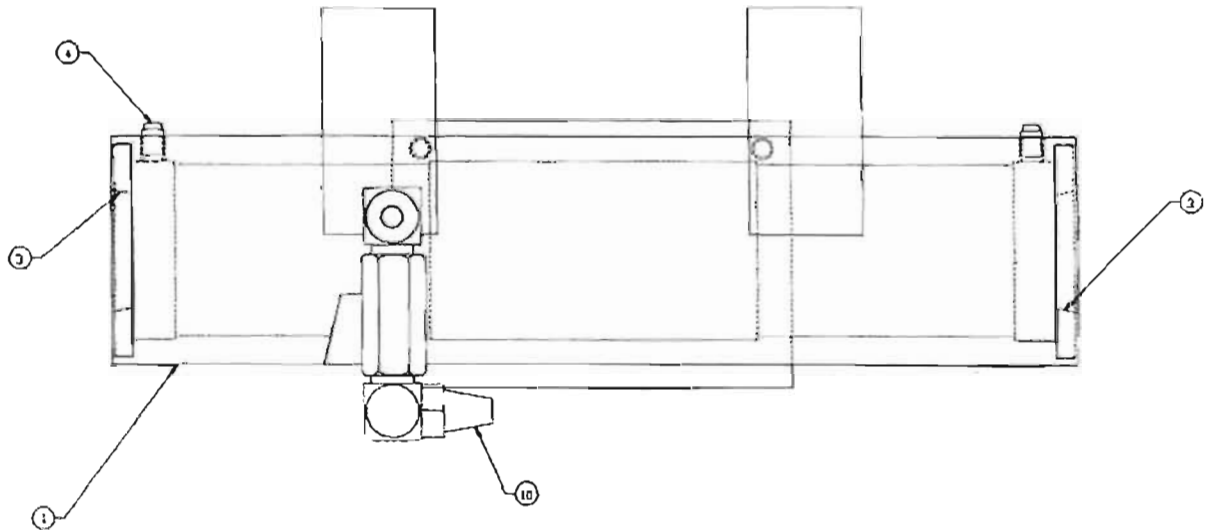
Phone: 316-219-3500 Fax: 316-265-0013

1-800-533-008

www.winnavannorman.com

# 867281 SUPPORT SLIDE ASSEMBLY

| Item | Part No. | Description                 | Qty. |
|------|----------|-----------------------------|------|
| 1    | 866910   | Support Housing A'bly ..... | 1    |
| 2    | 804806   | Ball Valve .....            | 1    |
| 3    | 866871   | Oil Seal .....              | 1    |
| 4    | 807112   | Pipe Plug .....             | 2    |
| 5    | 866979   | Tube Assembly .....         | 1    |
| 6    | 863141   | HHCS .375-16 x .62 .....    | 2    |
| 7    | 801636   | Washer .375 .....           | 2    |
| 8    | 867154   | Nozzle Assembly .....       | 1    |
| 9    | 802264   | Elbow .50 Br. ....          | 2    |
| 10   | 867141   | Pushlock Fitting .....      | 1    |
| 11   | 810038   | Elbow .50 .....             | 1    |

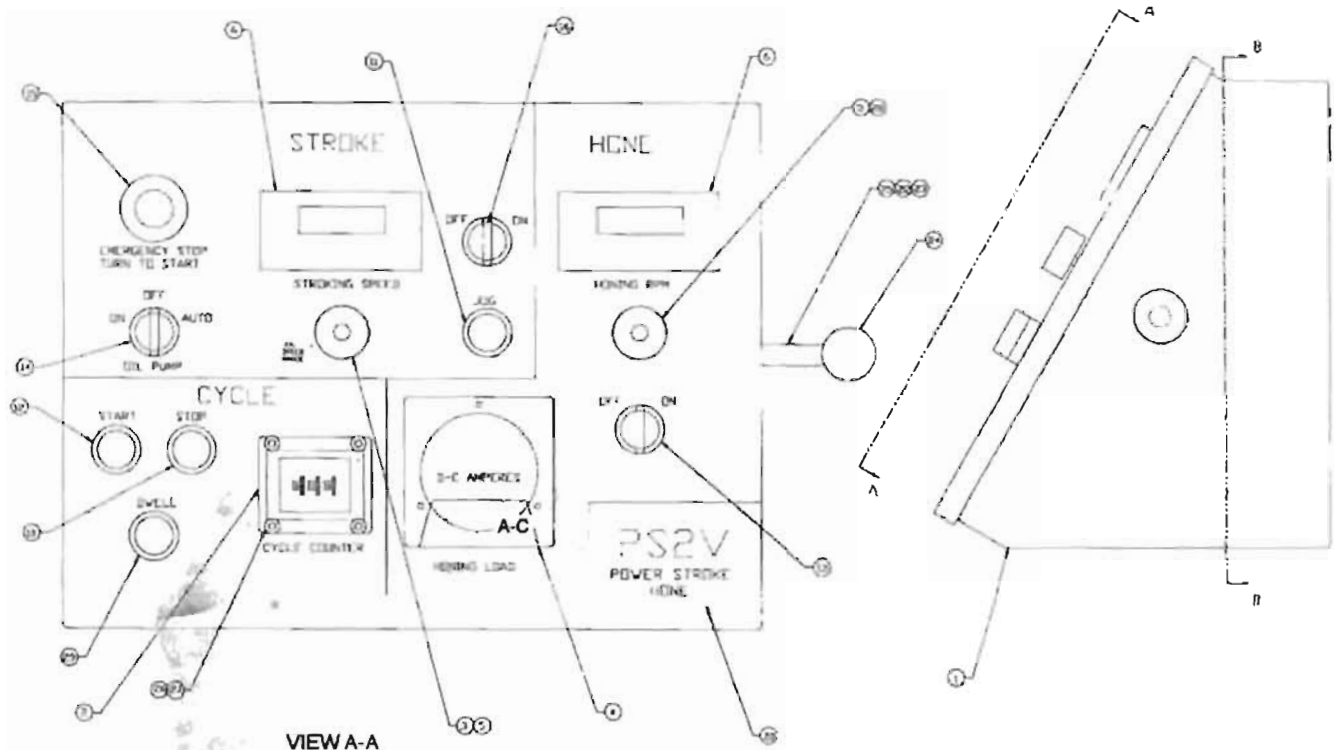


LEFT END VIEW

PS2V, 12/06

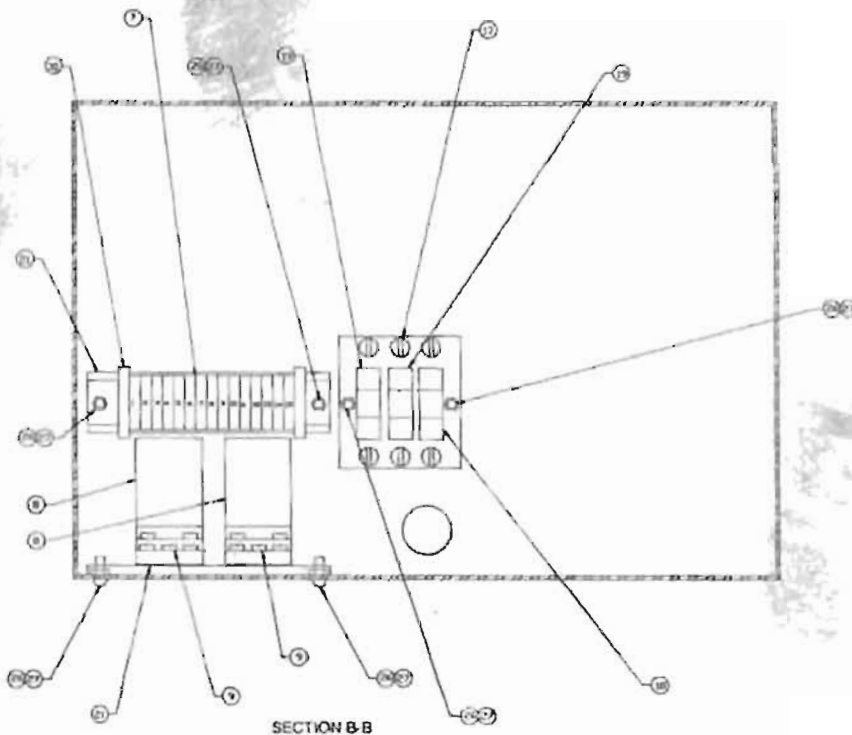
**W Winona Van Norman®**  
710 E. 17th St. • Wichita, KS 67214

Phone: 316-219-3500 Fax: 316-285-0013  
1-800-533-008  
www.winonavannorman.com



VIEW A-A

## 867000 CONTROL BOX ASSEMBLY



SECTION B-B

| Item | Part No. | Description               | Qty. |
|------|----------|---------------------------|------|
| 1    | 867001   | Control Box.....          | 1    |
| 2    | 866880   | Counter.....              | 1    |
| 3    | 860679   | D.C. Controller.....      | 1    |
| 4    | 804725   | Control Ampmeter.....     | 1    |
| 5    | 864382   | Knob Kit.....             | 1    |
| 6    | 864455   | RPM Indicator.....        | 2    |
| 7    | 813398   | Terminal Block.....       | 15   |
| 8    | 862515   | Relay 10 Amp 115V.....    | 2    |
| 9    | 867066   | Relay Socket.....         | 2    |
| 10   | 867067   | Switch PB (NC).....       | 1    |
| 11   | 867068   | Switch PB (NO).....       | 1    |
| 12   | 867069   | Switch PB (NO).....       | 1    |
| 13   | 867070   | Switch 2-Pos (2NO).....   | 1    |
| 14   | 867071   | Switch 3-Pos (2NO).....   | 1    |
| 15   | 867072   | Switch E-Stop 2NC.....    | 1    |
| 16   | 867073   | Switch 2-Pos (1NO).....   | 1    |
| 17   | 813270   | Fuse Holder.....          | 1    |
| 18   | 862306   | Fuse 15A FRN-R-15.....    | 1    |
| 19   | 814212   | Fuse 6A FRN-R-6.....      | 2    |
| 20   | 867144   | Control Box Label.....    | 1    |
| 21   | 867251   | Mounting Rail.....        | 2    |
| 22   | 807137   | HHCS .250-20X .50.....    | 1    |
| 23   | 801616   | LC. Washer .25.....       | 1    |
| 24   | 803016   | Ball Knob.....            | 1    |
| 25   | 867260   | Handle.....               | 1    |
| 26   | 808374   | Hex Nut #10-32.....       | 10   |
| 27   | 801901   | BHCS #10-32X .50.....     | 10   |
| 28   | 805850   | Potentiometer.....        | 1    |
| 29   | 867308   | Switch PB (1NC)(1NO)..... | 1    |
| 30   | 865367   | Clamp Block.....          | 2    |

**867312**



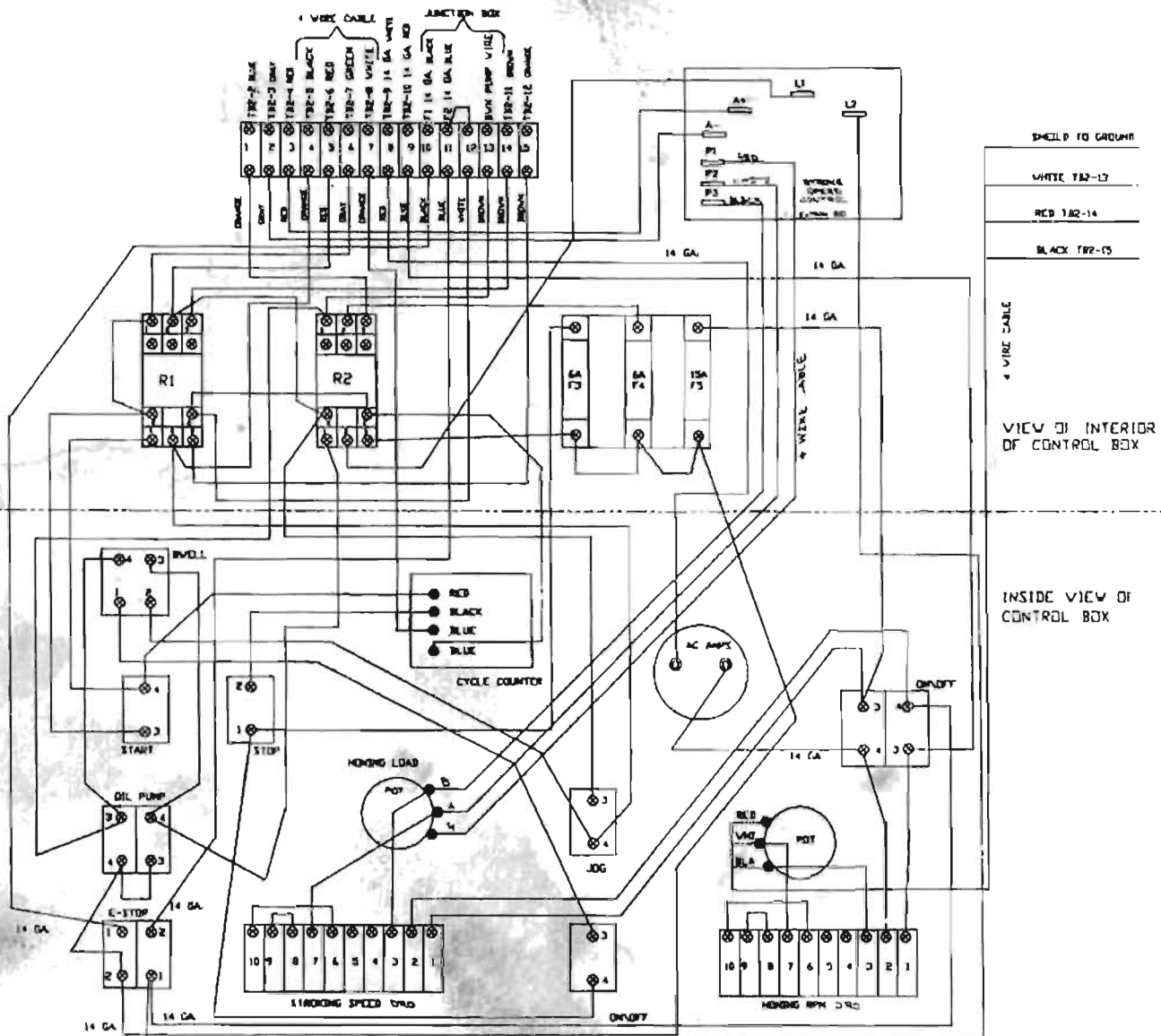
## D.C. VARIABLE SPEED DRIVE WIRING



## A.C. VARIABLE SPEED DRIVE WIRING

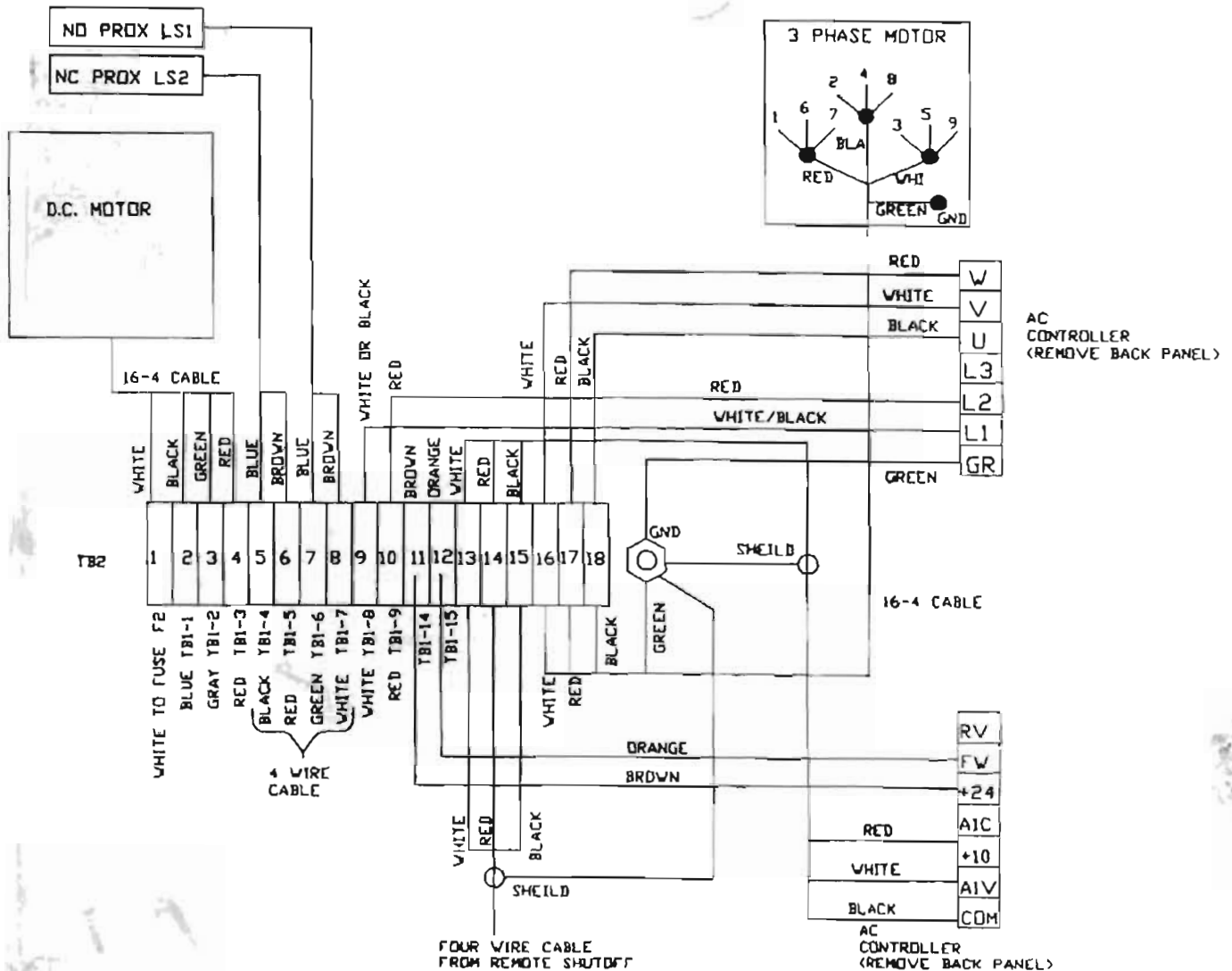
| Item  | Part No. | Description                        |
|-------|----------|------------------------------------|
| S1    | 867072   | E-Stop Switch Contact Block (2NC)  |
| S2    | 867067   | PB Switch Contact Block (1NC)      |
| S3    | 867069   | PB Switch Contact Block (1NO)      |
| S4    | 867073   | 2 Pos. Switch Contact Block (1NO)  |
| S5    | 867308   | PB Switch Contact Block (1NC)      |
| (1NO) |          |                                    |
| S6    | 867068   | PB Switch Contact Block (1NO)      |
| S7    | 867072   | 3 Pos. Switch Contact Block (2NO)  |
| S8    | 867070   | 2 Pos. Switch Contact Block (2NO)  |
| F1    | 862881   | 20 Amp Fuse                        |
| F2    | 862306   | 15 Amp Fuse                        |
| F3    | 814212   | 6 Amp Fuse                         |
| F4    | 814212   | 6 Amp Fuse                         |
| F5    | 862306   | 15 Amp Fuse                        |
| R1    | 801709   | Relay                              |
| R2    | 801709   | Relay                              |
| CTR   | 866880   | Counter                            |
| LS1   | 866862   | Sensor Switch                      |
| LS2   | 866903   | Sensor Switch                      |
| DR01  | 864455   | RPM Indicator                      |
| DR02  | 864455   | RPM Indicator                      |
| VS1   | 866878   | AC Controller                      |
| VS2   | 864379   | DC Controller                      |
| POT   | 805850   | Potentiometer                      |
| M1    | 867212   | AC Gearmotor                       |
| M2    | 867676   | DC Motor 1/3 HP,<br>1725 RPM, 180V |
| PUMP  | 866887   | AC Gearmotor                       |
| BRAKE | 866873   | Electric Clutch Brake              |

# ELECTRICAL SCHEMATIC





# 867312 ELECTRICAL SCHEMATIC



PS2V, 12/08

**W** **Winona Van Norman®**

710 E. 17th St. • Wichita, KS 67214

Phone: 316-219-3500 Fax: 316-265-0013

1-800-533-008

www.winonavannorman.com

# MAINTENANCE AND SERVICE

## SCHEDULED MAINTENANCE

1. **Weekly**  
Grease all fittings (Figure 1).
2. **Monthly**  
Check wayoil in traverse Shaft Housing. Fill to top of housing.

## GENERAL MAINTENANCE

### Oil

1. Change oil filters (2 pcs.) when honing oil flow rate gets low.
2. Before sediment gets 1 1/2" deep in tank, change honing oil. Remove Drain Plug from right side of machine, drain oil, remove sediment, wipe out coolant tank, install drain plug, fill with oil (30-65 gallons).

### Gearmotor

1. The Sumitomo SM-Cyclo gearmotor is grease packed and is maintenance free.

### Speed Reducer

Dayton Speed Reducer or

Alling-Lander Blue Max Speed Reducer

1. After initial operation of 100 hours, change oil (when oil is warm), then oil should be changed every 2500 hours or 6 months whichever comes first. Refill with AGMA #8 gear oil.

### Dayton Magnetic Disc Brake

## CAUTION

Load must be removed or blocked.  
Brake will be inoperative during this procedure.

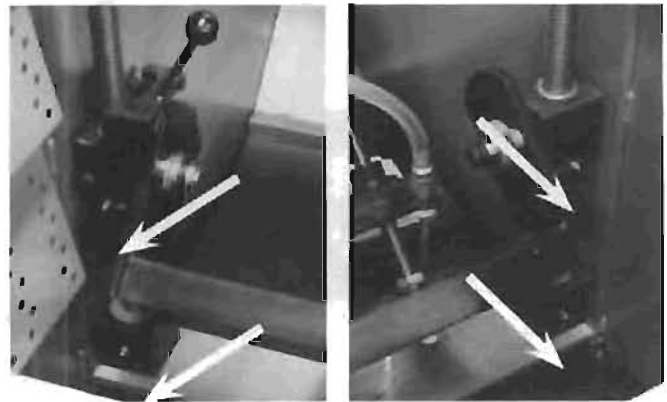
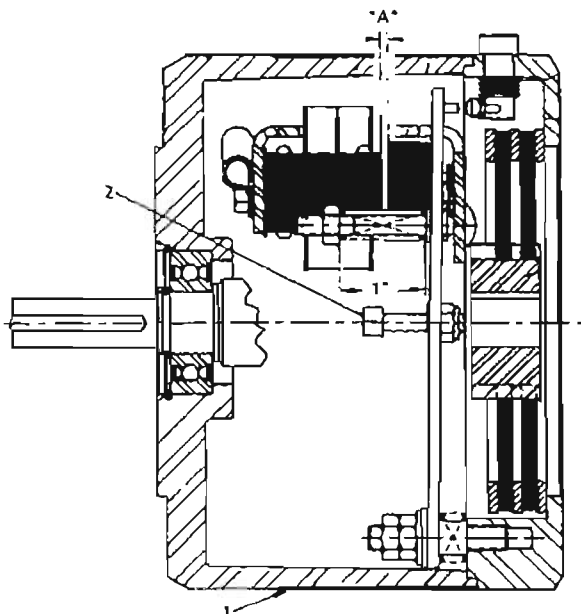
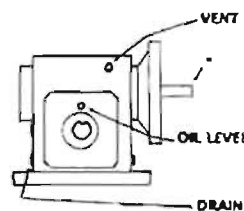
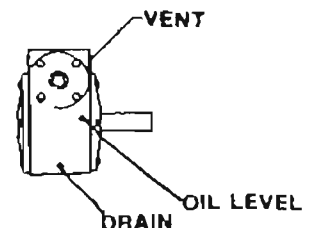


Figure 1



Dayton Speed Reducer



Alling-Lander Blue Max  
Worm Over

Approximate Oil Capacity 10 ounces, fill to oil level plug.

Before air gap "A" reaches .100", adjustment is required. Any delay in adjusting the magnetic air gap will result in eventual loss of torque.

1. To adjust, remove cover (Ref. 1) to expose adjusting screws (Ref. 2) and magnet air gap "A".
2. Measure air gap "A" using 3/8" to 1/2" wide feeler gauge as shown below.
3. Turn two square head set screws (Ref. 2) until air gap "A" measures:

.045/.050 for 1 disc models

Air gap should be the same on both sides.

