

PT780 Legacy[®] Series
Pan and Tilts

Maintenance/
Service Manual

C342SM (12/98)

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REVISION HISTORY

<u>Manual #</u>	<u>Date</u>	<u>Comments</u>
C342SM	12/98	Original version.

1.1 IMPORTANT SAFEGUARDS AND WARNINGS

Observe the following WARNINGS before installing and using this product.

1. Installation and servicing should be done by qualified service personnel only, and should conform to all local codes.
2. The weight of the camera/lens and enclosure must not exceed 40 lb (18.14 kg) with 12 VDC pan and tilts or 52 lb (23.59 kg) with 24 VAC or 120 VAC pan and tilts.
3. Only use replacement parts Pelco recommends.
4. After replacing/repairing this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.
5. Installation methods and materials should be capable of supporting four times the combined weight of the enclosure, pan and tilt, camera, and lens.

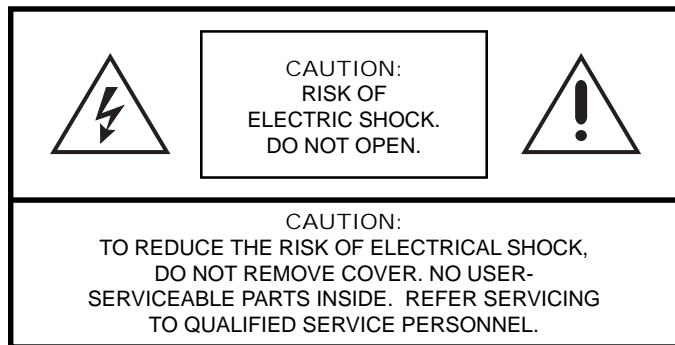
The product and/or manual may bear the following marks:



This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.



Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

2.0 DESCRIPTION

2.1 PT780 DESCRIPTION

The PT780 Series pan and tilt units are designed for medium duty, indoor/outdoor use.

Only Legacy® Series enclosures can be mounted on the pan and tilt units. These enclosures are the EH4700L and EH5700L environmental enclosures and the EH8106L pressurized enclosure.

You can easily remove the clamshell covers from the sides of the pan and tilt units to access all internal parts without having to remove the camera enclosure. This makes servicing the units and adjusting the pan and tilt limit stops easy.

2.2 PT780 MODELS

The PT780 Series consists of the following models:

PT780P	Heavy-duty, indoor/outdoor pan and tilt, 120 VAC.
PT780P/PP	PT780P with preset positioning capabilities.
PT780-SL	PT780P with 360° pan rotation.
PT780SL/PP	PT780SL with preset positioning capabilities.
PT780VS	Heavy-duty, indoor/outdoor, variable-speed pan and tilt, 12 VDC.
PT780VS/PP	PT780VS with preset positioning capabilities.
PT780-VSSL	PT780VS with 360° pan rotation.
PT780-VSSL/PP	PT780-VSSL with preset positioning capabilities.
PT780-24P	Heavy-duty, indoor/outdoor pan/tilt, 24 VAC.
PT780-24P/PP	PT780-24P with preset positioning capabilities.
PT780-24SL	PT780-24P with 360° pan rotation.
PT780-24SL/PP	PT780-24SL with preset positioning capabilities.

3.0 MAINTENANCE

If you need to remove the enclosure, protect the RediLINK™ connector area against moisture, dust, dirt, etc. Failure to do so could result in a bad connection. Also, damage to the pan and tilt unit or enclosure could occur when power is turned on.

The following servicing should be done every six months with average use.

1. Remove the PT780's outer casing.
 - a. Remove the Phillips screw on each side of the pan and tilt unit.
 - b. Place your hands under the cover halves. Exert a strong, upward force to release the covers from their internal latching devices.
 - c. Pull the cover halves away from the pan and tilt unit. Set the covers down or hang them by the eyelets inside the covers. (The wire and hook on which to hang the covers is not provided.)
2. Inspect the gaskets around the cover, tilt shaft, and spindle for damage.
3. Refer to Figure 1. It shows the parts locations of the tilt assembly. Look for similar orientations of parts when adjusting the pan assembly.
4. Check the backlash adjustment.

Backlash is the slack or binding in a pan and tilt base mount. Determine backlash by lifting the maintenance assembly, grasping the base, and wiggling it. There should not be any play or binding between the gear (A) and worm drive (B). Play or binding indicates a backlash problem.

- One backlash problem involves a worm and worm gear connection loose enough to cause slipping or tight enough to cause binding.
 - The second involves a too-loose or too-tight chain, usually causing symptoms similar to the worm and worm gear problem—slipping or binding.
- a. Verify that the worm drive (B) is fully seated in the worm gear (A). If it is not:
 - (1) Locate the worm-driven gear for either the pan or the tilt motor linkage. Loosen the three hex screws (F) holding the worm in place, but leave enough thread in place to hold the assembly on the mount.
 - (2) Using your thumbs, gently move the worm forward or pull the assembly back from the worm gear to either tighten or loosen the gear spacing to the worm gear. Move the base of the pan and tilt to check the adjustment.
 - (3) If you get movement in the base, press a finger down in the middle of the worm assembly. If you get no movement in the base, use your thumb and forefinger to pull the worm assembly back until you get movement.
 - (4) When the spacing is correct, tighten the hex screws. Start with the middle screw to ensure proper spacing.
 - (5) Remove the screw (C) in the gear train nut (D).
 - (6) Tighten the gear train nut to remove any play.
 - (7) Line up the hole in the gear train nut with the nearest hole in the gear train bracket (E).
 - (8) Replace the screw.

- b. Refer to Figure 1. Adjust chain tension, if needed:
 - (1) Locate the pan or tilt motor on the assembly. Loosen the hex screws (G) that hold the motor to its mounting bracket. Depending on which motor assembly you are adjusting, there will be either three (pan) or four (tilt). (Only two screws are shown in Figure 1.)
 - (2) Using a screwdriver, pry the motor down (at H) to tighten for the correct chain tension. (You should not be able to freely move the motor with your finger, nor should it be so tight that it will not move at all as this usually leads to binding.)
 - (3) Tighten the hex screws.
 - c. Using a controller, you should now be able to move the PT780 without looseness or binding. If you have any problems, contact Pelco's Technical Support Department.
5. Lubricate the chains. Use a Teflon chain lubricant, such as TriFlon™.
 6. Replace the covers.
 - a. Grasp one cover half in each hand and position the covers on each side of the pan and tilt unit.
 - b. Bring the two cover halves together, aligning the two pins in one cover half with the mating holes in the other cover half.
 - c. When the cover halves are together, press downward to force the covers into their latches.
 - d. Replace the screws in the covers.

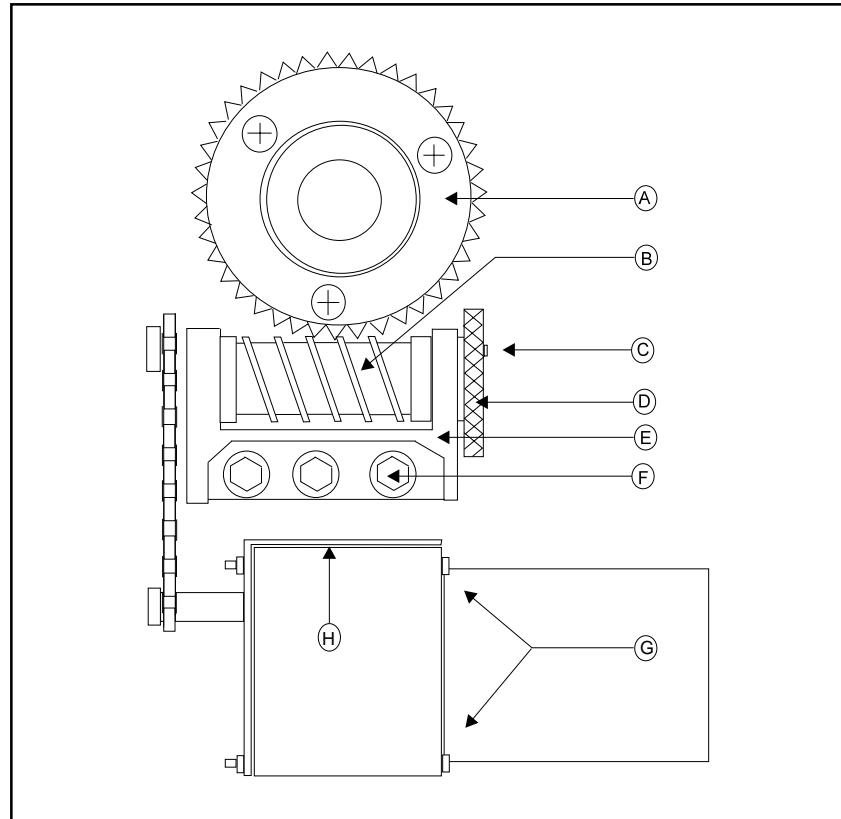


Figure 1. Pan and Tilt Adjustments

4.0 WIRING DIAGRAMS

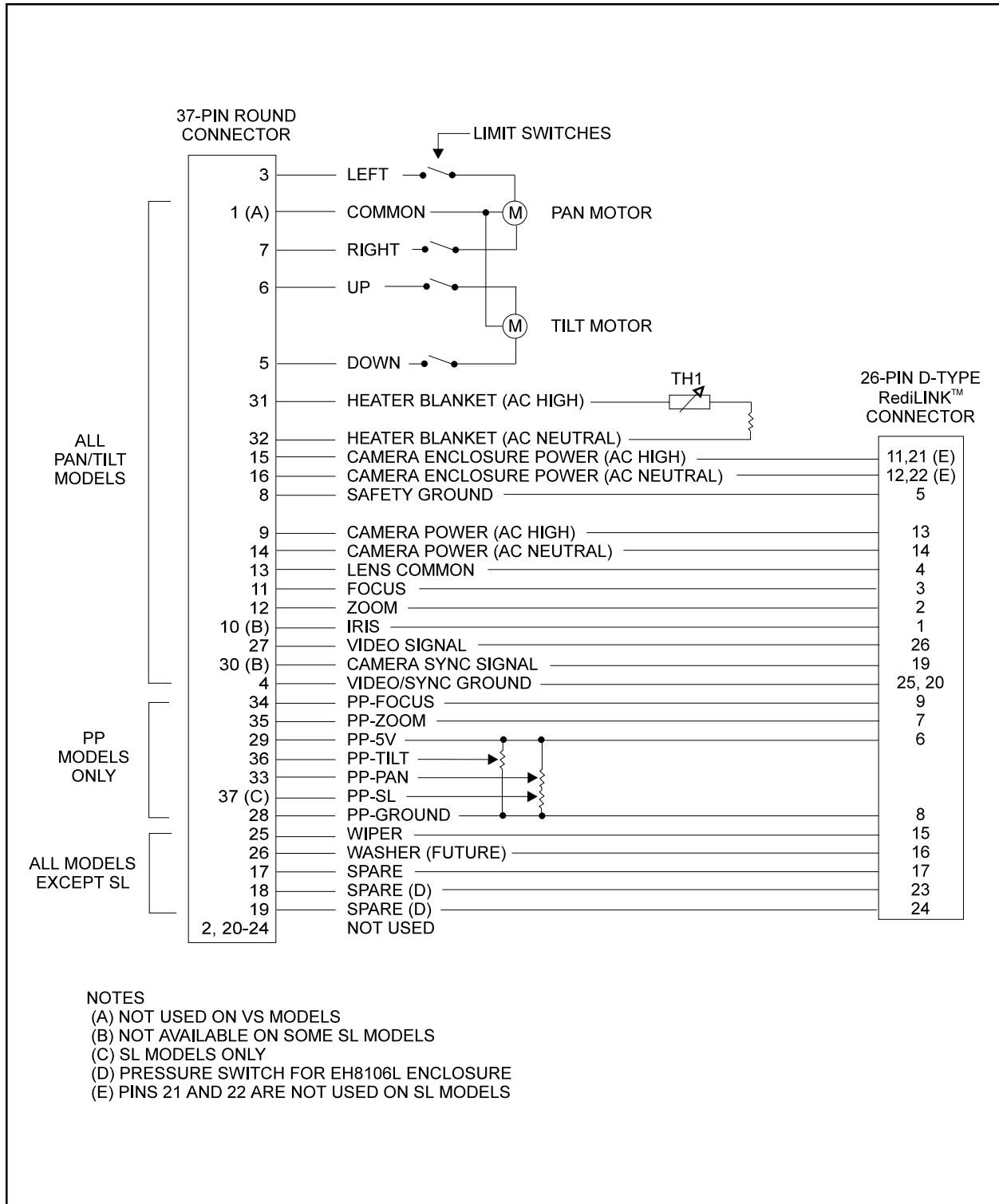


Figure 2. PT780 Series Wiring Diagram

5.0 EXPLODED ASSEMBLY DIAGRAMS

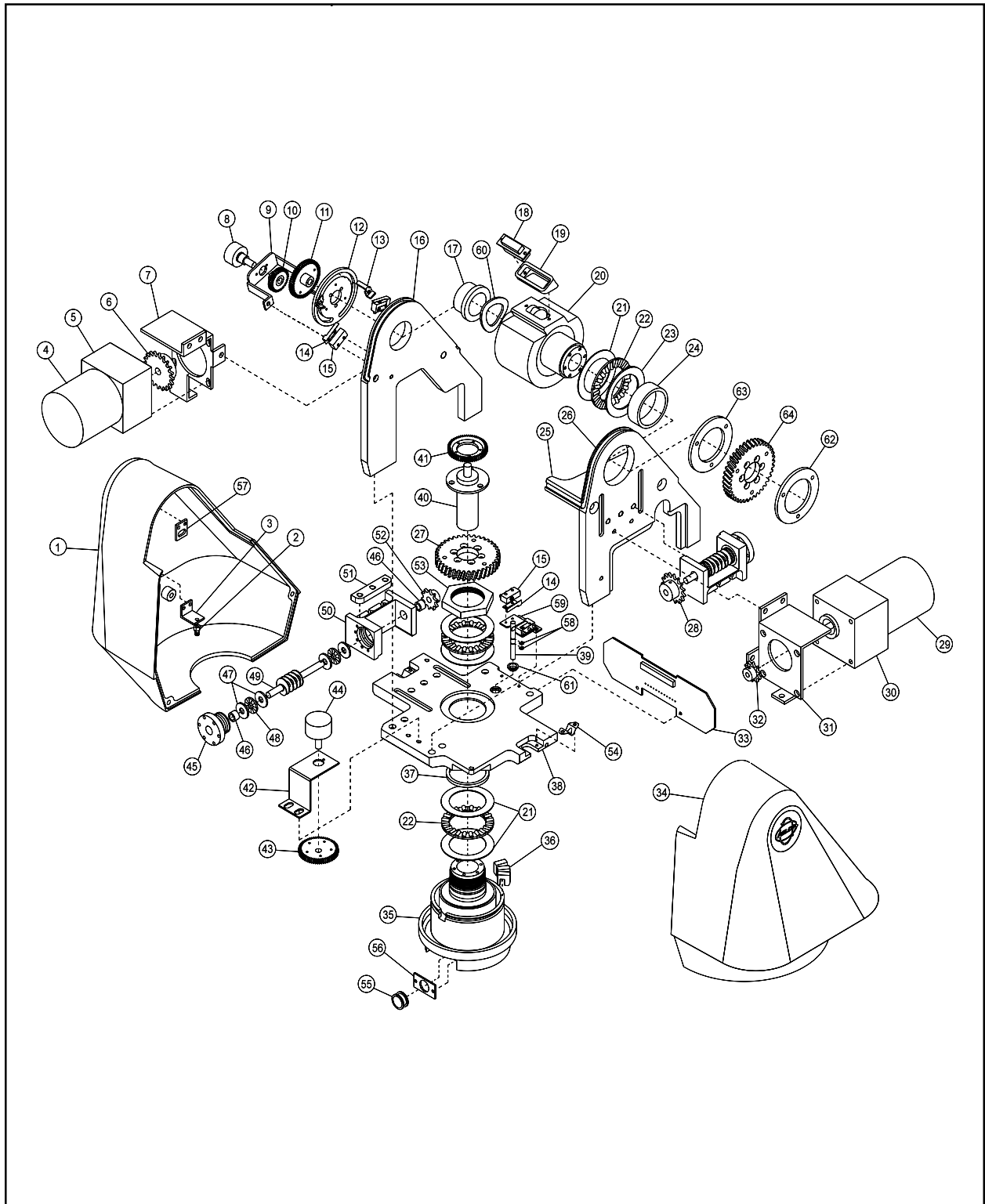


Figure 3. Exploded Assembly Diagram of Mechanical Parts—PT780 Series 24 VAC and 120 VAC Models

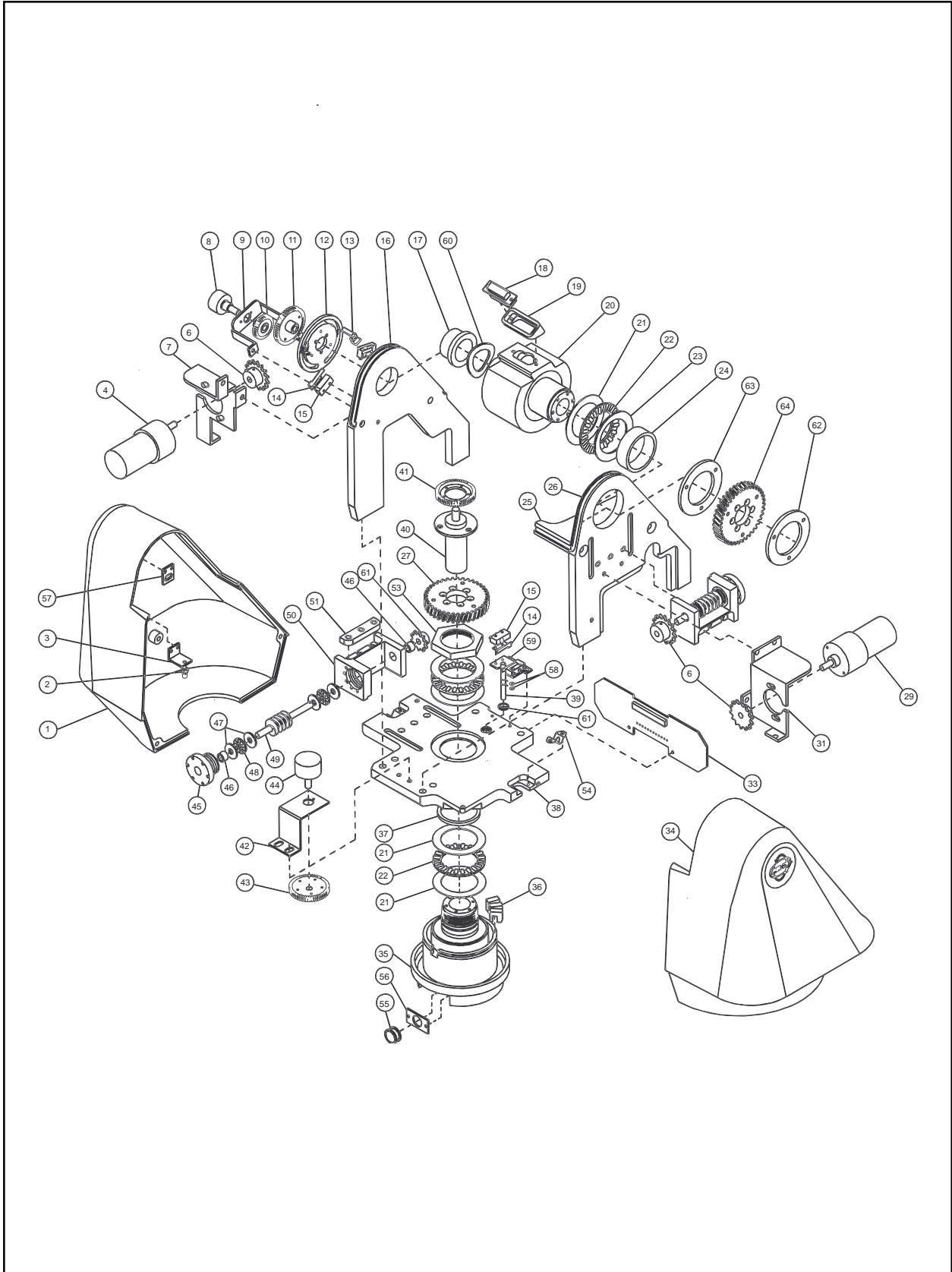


Figure 4. Exploded Assembly Diagram of Mechanical Parts–PT780 Series 12 VDC Models

Table A. Mechanical Parts List (Figure 3 and Figure 4)

Refer to Figure 12 for 24 VAC and 120 VAC models. Refer to Figure 13 for 12 VDC models.			
Item	Quantity	Description	Part Number
1	1	Cover, pan side	9064003COMP
2	2	Ball stud	PT180410000
3	2	Ball stud bracket	9064010COMP
4	1	Pan motor, 24 VAC	5708007
		Pan motor, 120 VAC	1758005
		Pan motor with gearhead, 12 VDC	9068102
5	1	Pan motor gearhead, 24 VAC and 120 VAC	1758006
		Not used, 12 VDC	
6	1	Pan motor sprocket, 24 VAC and 120 VAC	5804010ACOMP
		Pan motor sprocket, 12 VDC	9004007COMP
7	1	Pan motor bracket, 24 VAC and 120 VAC	9064006COMP
		Pan motor bracket, 12 VDC	9064060COMP
8	1	Tilt preset potentiometer	POTP010.0K*
9	1	Tilt potentiometer bracket	9064012COMP*
10	1	Gear, 32 teeth	28010017*
11	1	Gear, 52 teeth	28010016*
12	1	Tilt limit ring	9004012COMP
13	2	Tilt limit stop	1554050COMP
14	4	Actuator, with insulator	SWIJS138B
	2**		
15	4	Switch	SWI1SM1
	2**		
16	1	Upright, pan side	9064002COMP
17	1	Bushing, pan side	PT250010004
18	1	26-pin, subminiature, D-type socket	COND226S
19	1	Tilt shaft connector guide	9004015COMP
20	1	Tilt shaft feed-through	9004000COMP
21	5	Thrust washer, .030"	90010002
22	3	Thrust bearing	90010001
23	1	Thrust washer, .060"	90010024
24	1	Bronze bushing	90010006
25	1	Cross-brace uprights	9064008COMP
26	1	Upright, tilt side	9064001COMP
27	1	Worm gear, 40 teeth	90010009
			9004024COMP***
			9004025COMP****
28	1	Sprocket, 24 VAC and 120 VAC	90010028
		Not used, 12 VDC	
29	1	Tilt motor, 24 VAC	5808000
		Tilt motor, 120 VAC	1758005
		Tilt motor with gearhead, 12 VDC	9068101
30	1	Tilt motor gearhead, 24 VAC	5808001
		Tilt motor gearhead, 120 VAC	1758006
		Not used, 12 VDC	
31	1	Tilt motor bracket, 24 VAC and 120 VAC	9064005COMP
		Tilt motor bracket, 12 VDC	9064059COMP
32	1	Sprocket, 24 VAC	5804022COMP
		Sprocket, 120 VAC	7512004
		Not used, 12 VDC	
33	1	Circuit board assembly, 24 VAC	PCB9061000ASSY
		Circuit board assembly, 120 VAC	PCB9061120ASSY
		Circuit board assembly, 12 VDC	PCB9061001ASSY
34	1	Cover, tilt side	9064004COMP
35	1	Pan spindle	9004030COMP

* PP models only
** All SL models

*** SL/PP model only
**** Non-360° PP models

Continued on next page

Table A. Mechanical Parts List (Figure 3 and Figure 4) (continued)

Item	Quantity	Description	Part Number
36	3	Pan limit stop	5804006COMP*****
37	1	Bronze bushing	90010029
38	1	Base	9064007COMP
39	1	Pan limit stop	1554049COMP*****
40	1	Slip ring	250010000*** 28010000*****
41	1	Preset gear, pan spindle	9004017COMP*** 9004022COMP****
42	1	Pan potentiometer bracket	9004008COMP
43	1	Gear, 56 teeth	90010020*
44	1	Pan preset potentiometer	POTDARM010.0K*** POTP010.0K****
45	2	Gear train nut	9004009COMP
46	4	Bronze bushing	5806005
47	8	Thrust washer	5806003
48	4	Thrust bearing	5806002
49	2	Worm	90010008
50	2	Gear train bracket	9004005COMP
51	1	3-position bar nut	9004006COMP
52	1	Sprocket, 24 VAC and 120 VAC Not used, 12 VDC	PT18004003COMP
53	1	Pan spindle nut	9004019COMP
54	2	Ball stud receiver	90010030
55	1	Grommet, 3/8" ID Grommet, 1/4" ID	GRO2175 GRO2170**
56	1	Wire clamp	9004020COMP***** 9004021COMP**
57	2	Eyelet service bracket	9004023COMP
58	2	Snap ring	15510000*****
59	1	Pan limit switch bracket	1554051COMP*****
60	1	Wave spring	90010017
61	1	Grommet	GRO2172N*****
62	1	Unthreaded backup plate	9064015COMP
63	1	Threaded backup plate	9064014COMP
64	1	Worm gear	90010009
The following items are <u>not</u> shown:			
65	1	Pan chain assembly, 29 pitch, 24 VAC and 120 VAC	9061002ASSY
66	1	Pan chain assembly, 32 pitch, 12 VDC Tilt chain assembly, 35 pitch, 24 VAC and 120 VAC Tilt chain assembly, 28 pitch, 12 VDC	9061013ASSY 9061003ASSY 9061008ASSY
67	1	2-position plastic connector	CON640428-2
68	6	3-position plastic connector	CON640428-3
69	1	6-position plastic connector	CON640428-6
70	2	Cover labels	LBL19000
71	1	Dust protector, 26-pin, subminiature, D-type socket	90010025
72	1	37-pin connector plug (installed on cable)	CON206305-1
73	37	Connector pins	CON66400-1
74	1	Cable connector clamp	CON206138-1
75	1	37-pin connector socket assembly (loose equipment) Includes 37-position housing, boot, sockets, cable clamp	CONA37S
		* PP models only	**** Non-360° PP models
		** All SL models	***** Not on SL models
		*** SL/PP model only	***** SL model

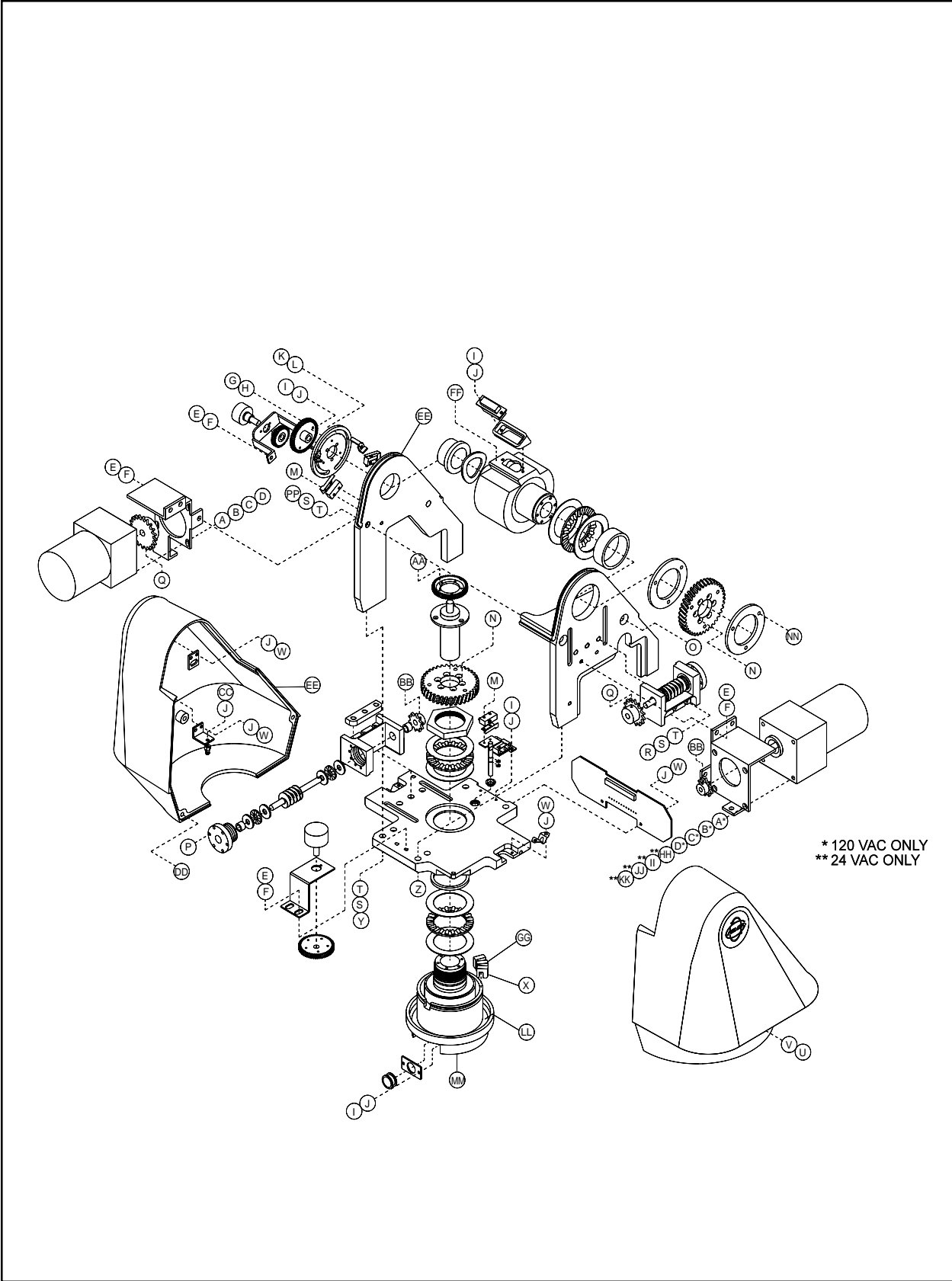


Figure 5. Exploded Assembly Diagram of Hardware-PT780 Series 24 VAC and 120 VAC Models

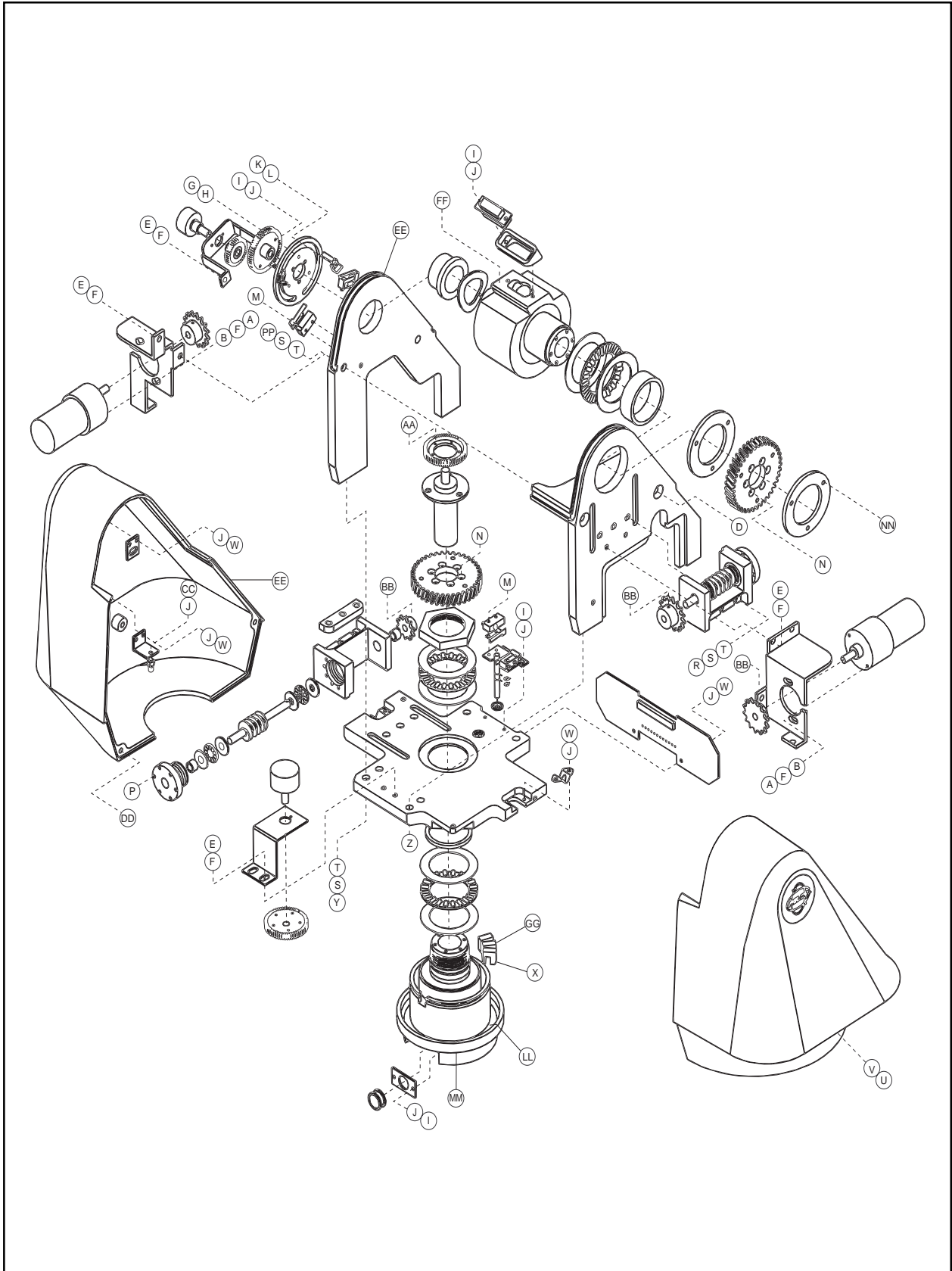


Figure 6. Exploded Assembly Diagram of Hardware—PT780 Series 12 VDC Models

Table B. Hardware Parts List (Figure 5 and Figure 6)

Refer to Figure 14 for 24 VAC and 120 VAC models. Refer to Figure 15 for 12 VDC models.			
Item	Quantity	Description	Part Number
A	4	Screw, 6-32 x 2 1/2", pan head, Phil, 24 VAC	ZH6-32X2.50SPP
	8	Screw, 8-32 x 2 1/2", pan head, Phil, 120 VAC	ZH8-32X2.50CPS
	4	Screw, 10-32 x 1/2", pan head, Phil, 12 VDC	ZH10-32X.500SPP
B	4	Flat washer, 24 VAC	ZH932X1.75X130
	8	Flat washer, 120 VAC	ZH932X1.75X130
	4	Flat washer, 12 VDC	ZH240X436X60C
C	4	Split lock washer, #6, 24 VAC	ZH6LWSSL
	8	Split lock washer, #8, 120 VAC	ZH8LWSSL
		Not used, 12 VDC	
D	4	Hex nut, 6-32, 24 VAC	ZH6-32NUTSH
	8	Hex nut, 8-32, 120 VAC	ZH8-32NUTSH
		Not used, 12 VDC	
E	12	Allen screw, 10-32 x 3/8", 24 VAC and 120 VAC	ZH10-32X.375SSS
	11	Allen screw, 10-32 x 3/8", 12 VDC	
F	12	Split lock washer, #10, 24 VAC and 120 VAC	ZH10LWSSL
	15	Split lock washer, #10, 12 VDC	
G	3	Screw, 2-56 x 3/8", pan head, Phillips	ZH2-56X.375SRS
H	3	Internal star washer, #2	ZH2LWSIS
I	9	Screw, 4-40 x 3/8", pan head, Phillips	ZH4-40X.375SPP
J	25	Internal star washer, #4	ZH4LWSIS
K	2	Screw, 8-32 x 1/4", pan head, Phillips	ZH8-32X.250SPP
L	2	Internal star washer, #8	ZH8LWSIS
M	8	Screw, 2-56 x 7/16", pan head, Phillips	ZH2-56X.437SPP
N	12	Screw, 6-32 x 1/2", flat head, Phillips	ZH6-32X.500FPF
O	2	Bolt, 1/4-20 x .625", flat head, Phillips	ZH1/420X.625SFS
P	2	Screw, 4-40 x 5/8", pan head, Phillips	ZH4-40X.625SPP
Q	2	Roll pin (Not shown in Figure 15)	ZHPIN3/32X3/4R
R	6	Allen bolt, 1/4-20 x 1/2"	ZH1/420X1.50SS
S	11	Flat washer, 1/4	ZH260X562X65C
T	11	Split lock washer, 1/4	ZH1/4LWSSL
U	2	Screw, 10-32 x .875", gray	ZH10-32X.875GRY
V	2	Thread sealing washer	PS3010002
W	14	Screw, 4-40 x .250", pan head, Phillips	ZH4-40X.250SPP
X	2	Screw, 6-32 x .375", pan head, Phillips	ZH6-32X.375SPP
Y	3	Allen bolt, 1/4-20 x 3/4"	ZH1/420X.750SS
Z	3	Bolt, 1/4-20 x 3/4", flat head, Phillips	ZH1/420X.750SFS
AA	2	Self-tapping screw, 6-32	ZH6-SAX.250CPP
BB	2	Roll pin	ZHPIN3/32X1/2R
CC	2	Allen screw, 4-40 x .250"	ZH4-40X.250SS
DD	2	Dowel pin	90010004
EE	1	Cover gasket	90610010
FF	1	Tilt shaft gasket	90010014
GG	1	Set screw, 6-32 x 3/16"	ZH6-32X.187S
HH	4	Screw, 8-32 x 2 1/2", pan head, Phillips, 24 VAC only	ZH8-32X2.50CPS
II	4	Flat washer, 24 VAC only	ZH932X1.75X130
JJ	4	Split lock washer, #8, 24 VAC only	ZH8LWSSL
KK	4	Hex nut, 8-32, 24 VAC only	ZH8-32NUTSH
LL	1	Spindle cover gasket	90010003
MM	1	Spindle mount gasket	90010012
NN	3	Screw, 10-32 x 3/4", pan head, Phillips	ZH10-32X.750SPP
PP	2	Allen bolt, 1/4-20 x .625"	ZH1/420X.625CS

NOTES

6.0 WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment. Exceptions to this warranty are as noted below:

- Three years on Genex™ Series (multiplexers, server, and keyboard).
- Two years on all standard motorized and fixed focal length lenses.
- Two years on Legacy®, Intercept®, PV1000 Series, CM6700/CM8500/CM9500/CM9750/CM9760 Matrix, Spectra®, DF5 Series and DF8 Fixed Dome products.
- Two years on WW5700 series window wiper (excluding wiper blades).
- Two years on cameras.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warranty all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Ship freight prepaid to: Pelco
300 West Pontiac Way
Clovis, CA 93612-5699

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair). Goods returned for repair or credit should be clearly identified with the assigned CA/RA number and freight should be prepaid. All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Ship freight prepaid to: Pelco
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