

**PT175-24P
PT180 Series
PT270 Series
PT280 Series
Light Duty Pan/Tilt**

**Maintenance/
Service Manual**

C323SM (9/98)

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REVISION HISTORY

Manual #	Date	Comments
C323SM	9/98	Original version.

1.0 GENERAL

1.1 IMPORTANT SAFEGUARDS AND WARNINGS

Prior to installation and use of this product, the following WARNINGS should be observed.

1. Installation and servicing should only be done by qualified service personnel and conform to all local codes.
2. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
3. The weight of the camera, lens, and enclosure shall not exceed 15 lb (6.81 kg) for the PT270 Series and PT280 Series or 20 lb (9.08 kg) for the PT175-24P or PT180 Series.
4. Only use replacement parts recommended by Pelco.
5. After replacement/repair of 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.
6. The installation method and materials should be capable of supporting four times the weight of the enclosure, pan/tilt, camera and lens combination.

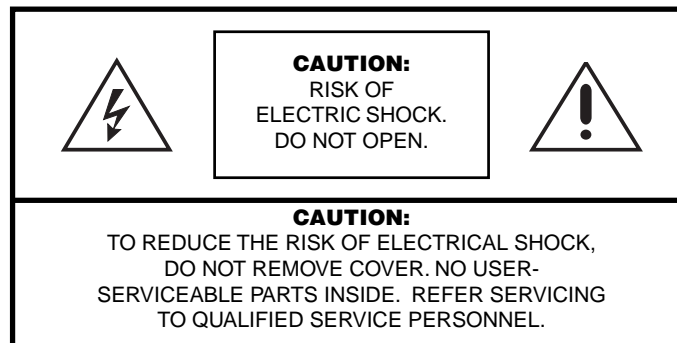
The product and/or manual may bear the following marks:



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

The PT175-24P is a light duty, indoor/outdoor pan and tilt unit capable of handling enclosure, camera and lens combinations weighing up to 20 lb. The PT175-24P is equipped with 24 VAC motors.

The PT180-24P and PT180-24SL are light duty, indoor pan/tilt units capable of handling all enclosure, camera and lens combinations up to 20 lb (9.08 kg) in weight. The PT180-24P and PT180-24SL are equipped with 24 VAC motors.

The PT180-24SL has the added feature of 360° pan rotation and both pan/tilts are pre-wired for all control functions: pan/tilt, motorized zoom lens, camera power and video. All connections are made at the input connector, eliminating the need for wiring harnesses.

Pan/tilts in the PT270 Series are engineered to accommodate lightweight CCTV cameras and are capable of handling enclosure, camera and lens combinations weighing up to 15 lb (6.8 kg). The pan/tilts feature long-life 24 VAC, 120 VAC or 230 VAC motors.

The pan/tilts of the PT280-24 Series are mini-size, light duty, indoor units capable of supporting loads up to 15 lb (6.8 kg). They operate on 24 VAC.

They are factory pre-wired for pan and tilt control functions, motorized zoom lens operation, camera power, and video. All connections are made at the input/output connectors, eliminating the need for wiring harnesses. This greatly reduces installation time, while increasing reliability and serviceability.

2.1 MODELS

PT175-24P	Light duty pan/tilt, 24 VAC
PT180-24P	Light duty pan/tilt, 24 VAC
PT180-24SL	Light duty pan/tilt with SL option (360° pan rotation), 24 VAC
PT270P	Light duty "mini" pan/tilt, 120 VAC
PT270-24P	Light duty "mini" pan/tilt, 24 VAC
PT270P/230	Light duty "mini" pan/tilt, 230 VAC
PT280-24P	Mini-size, light duty pan/tilt, 24 VAC
PT280-24SL	Mini-size, light duty pan/tilt with 360° pan rotation, 24 VAC
PT280-24P/PP	Same as PT280-24P except with preset positioning capabilities.
PT280-24SL/PP	Same as PT280-24SL except with preset positioning capabilities.

3.0 MAINTENANCE

PT175-24P Only

If your pan/tilt is installed in an inverted position, apply RTV silicone sealant to the areas circled in Figure 1 after you reinstall the cover.

3.1 RESETTING POTENTIOMETERS

IMPORTANT: *Be very careful when resetting potentiometer switches. Be sure that the pan/tilt has been centered between maximum pan and tilt travel, regardless of the adjustable limit stops. Failure to observe caution when resetting potentiometers could result in damage to the preset positioning ability of the pan/tilt.*



WARNING: *NEVER reposition the pan fixed limit stop. Doing so WILL DAMAGE the wiring harness and, if the pan/tilt has preset positioning, COULD cause the pan potentiometer to BREAK.*

PT280-24P/PP and PT280-24SL/PP Models Only

Models with preset positioning (PP) use potentiometer switches that are factory set to the full range of pan and tilt travel. Under normal operating conditions and at routine service intervals they do not need adjusting.

Should your pan/tilt require any work on the drive mechanism other than routine maintenance, perform the following procedure to reset the potentiometers.

To begin, remove the three screws on the front of the pan/tilt housing and lift the cover to gain access to the pan and tilt motor assemblies.

1. Remove the potentiometer gears and position the pan/tilt to the middle of its maximum pan and tilt travel, regardless of the position of the adjustable limit stops. That is, the tilt table should be level and the fixed limit stop should be opposite the limit switch.
2. Turn a potentiometer all the way in one direction until it stops, then observing the number of turns, turn it back the other way until it stops. Rotate the potentiometer half the number of turns the other way to reach the center.
3. Replace the potentiometer gear.
4. Perform steps 2 and 3 for the other potentiometer.

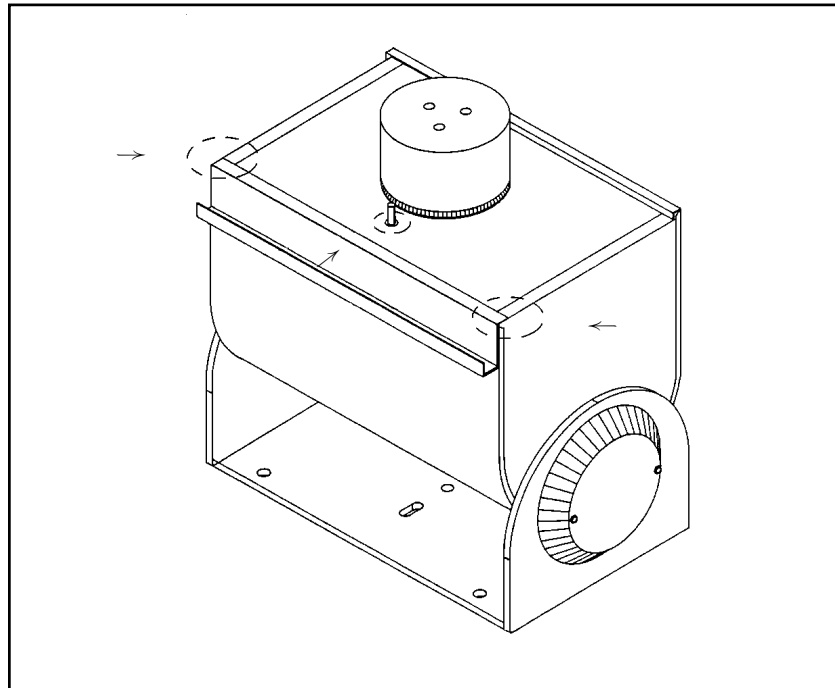


Figure 1. Sealant Locations

3.2 SERVICING DRIVE CHAIN ASSEMBLIES

Inspect the pan/tilt unit every six months to ensure trouble-free operation and an extended product life. Harsh environments and/or continuous motion applications may require more frequent maintenance.

Please read all of the instructions that follow before servicing the pan/tilt.

To begin, remove the three screws on the front of the pan/tilt housing and lift the cover to gain access to the pan and tilt motor assemblies.

3.2.1 Tightening Drive Chains

Check the pan and tilt drive chains for tension. A movement of 1/32 of an inch to 3/32 of an inch in the chains is acceptable. If the movement of a chain exceeds 3/32 of an inch, adjust the chain as follows:

1. Loosen the screws securing the motor to the mounting frame.
2. Pry on the motor to apply tension to the chain. Do not over-tension the drive chain.
3. Keep tension on the chain while tightening the screws.

3.2.2 Chain Drive Lubrication

Sprockets, chains, and gears should be well greased. If necessary, lubricate the pan and tilt gears, sprockets, and chains as follows with a high-quality grease capable of withstanding temperatures from -50° to 170°F (-46° to 77°C). Do the following:

1. Liberally apply grease to the pan and tilt gears, chains, and sprockets (refer to Figure 2 or 3).
2. Operate the pan and tilt motors to spread the grease across the parts.
3. Apply additional grease if necessary.
4. Reinstall the cover. If the pan/tilt is installed outdoors in an inverted position, apply RTV silicone sealant as shown in Figure 1.

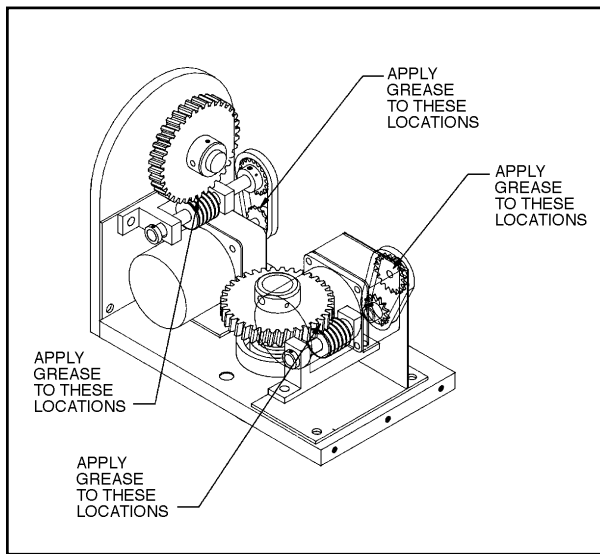


Figure 2. Servicing the PT175-24P and PT180 Series

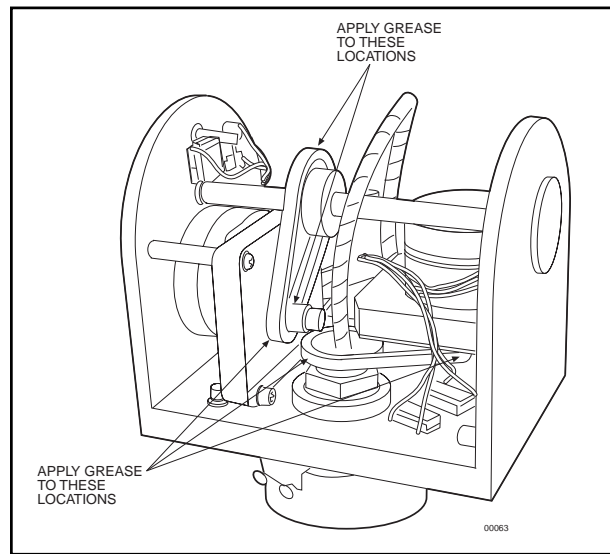


Figure 3. Servicing the PT270/PT280 Series

Table A. PT175-24P Mechanical Parts List

Item	Quantity	Description	Part Number
1	1	Tilt Side Plate	1554038COMP
2	1	Pan Side Plate	1554039COMP
3	1	Bottom Plate	1554055COMP
4	1	Tilt Shaft Assembly	1551009COMP
5	1	Tilt Table	1554037COMP
6	1	Cover	1554041COMP
7	1	Pull Up Bar	1554042COMP
8	1	Tilt Gear	1554144COMP
9	1	Hub Tilt Gear	6804049COMP
10	1	Plate Backup Tilt Gear	1554046COMP
11	1	Body Spacer	1554047COMP
12	1	Pan Limit Pin	1554049COMP
13	1	Tilt Limit Pin	1554049TCOMP
14	2	Tilt Limit Stops	1554050COMP
15	1	Bracket Pan Limit	1554051COMP
16	1	Bracket Tilt Limit	1554052COMP
17	2	Cover Plate Tilt Shaft	1554053COMP
18	1	Spindle	1554054ACOMP
19	2	Bearing FB810-5	1556004
20	1	Connector Mating Assy 9-Pin (not shown)	1751000COMP
21	1	Chain Assy Tilt	1751002COMP
22	1	Chain Assy Pan	1751003COMP
23	1	Motor Plate	1751062WA
24	1	Sprocket Motor Shaft	17512004
25	1	Sprocket Pan	1754001COMP
26	1	Bracket Pan Motor	1754002COMP
27	1	Sprocket Worm Gear Shaft	1754022COMP
28	1	Worm Gear Shaft	1754064COMP
29	1	Tilt Motor Gearhead	1758006
30	1	Nut, spindle	25010002
31	2	Bearing Pan Spindle	2506000
32	1	Pan Motor & Gearhead Assy, 24 VAC	2508001
33	1	Sprocket 25B20-3/8 W/SS	27012008
34	1	Tilt Motor Only, 24 VAC	5708007
35	3	Limit Stop, Pan	58010006
36	1	Bearing B46-2	5806005
37	1	Tilt Worm Gear	7712006
38	2	Bearing Cage Only A05CN	776001
39	4	Bearing Washer Only	776002
40	1	Connector 9-Pos Recep (not shown)	CON206705-1
41	9	Connector Crimp Pins, CPC (not shown)	CON66103-2
42	1	Bushing FB46-3	PT250010005
43	8	Sleeving PVC 105-16 X inch (not shown)	SLV16105N
44	4	Switch 1SM1	SWI1SM1
45	4	Switch Actuator w/Insulator	SWIJS138B
46	1	Terminal Strip, 9-Pin (not shown)	TRS2009
47	2	Electrovert Sp-1/4CP x Foot (not shown)	ZSSPIROBAND
48	1	Capacitor 15MF 100V (not shown)	CAPU0015.0/100N
49	1	Capacitor 60MF 200V (not shown)	CAPU0060.0/200N

Table B. PT175-24P Hardware List

Item	Quantity	Description	Part Number
A	4	Snap Ring	15510000
B	2	Pin Dowel 1/8" X 5/8" Hardened Steel	15510001
C	2	Pin Dowel 1/8" X 1/2" Hardened Steel	15510003
D	1	Pin, taper #1 x 1-1/4	17510000
E	4	Gasket, 1/8" X 1/2" X FT	EH550010030
F	2	Grommet #AN931-3-5	GRO2172N
G	1	Bolt, 1/4-20 x 5/8" Hex C/S SS	ZH1/420X.625CH
H	6	Bolt, 1/4-20 x 3/4" flat HdPhil SS	ZH1/420X.750SFS
I	1	Washer, internal star, 1/4" SS	ZH1/4LWSIS
J	—	Not used	
K	1	Set Screw 10-32 x 3/16" Soc Knur Blk	ZH10-32X.187S
L	2	Set Screw 10-32 x 5/16" Soc Knur Blk	ZH10-32X.312S
M	11	Screw, 10-32 x 1/2" Hex Soc Hd SS	ZH10-32X.500CS
N	10	Split lock washer, #10 SS	ZH10LWSSL
O	12	Flat washer #10 x .064SS	ZH204X436X60C
P	8	Screw, 2-56 x 7/16" Pan Phil SS	ZH2-56X.437SPP
Q	1	Washer, flat, 3/16 USS Spl-Size Pltd	ZH260X562X65C
R	4	Screw 4-40 x 1/4" Pan Phil SS	ZH4-40X.250SSP
S	4	Screw, 4-40 x 3/8" Pan Phil SS	ZH4-40X.375SPP
T	4	Washer, internal star #4 SS	ZH4LWSIS
U	2	Washer, flat 1/2"	ZH515X875X62

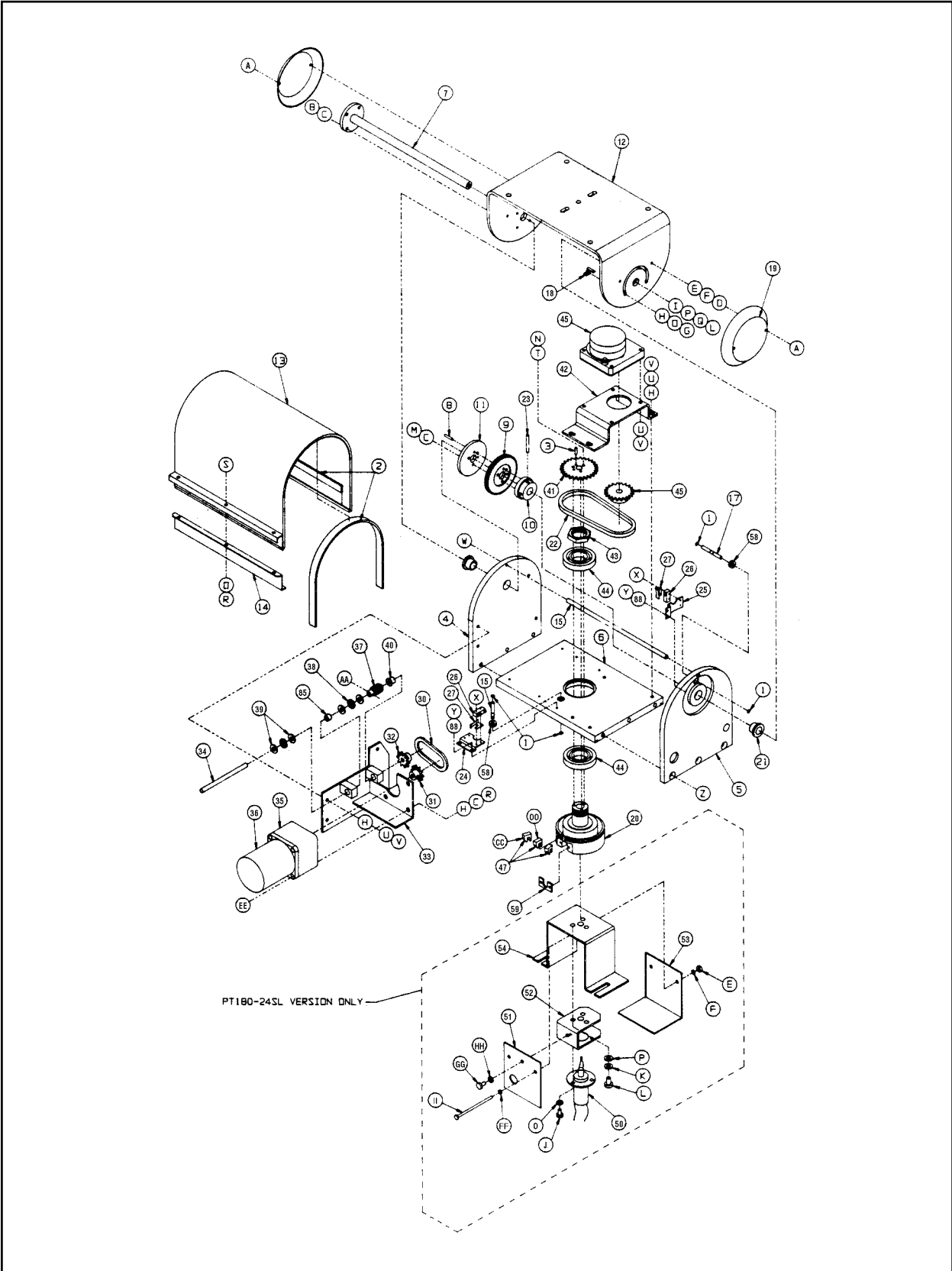


Figure 5. PT180 Series Exploded Assembly Diagram

Table C. PT180 Series Mechanical Parts List

Item	Qty	Description	Part Number
1	4	Ring, Snap	15510000
2	4	Gasket 1/8" x 1/2" #G207N x Feet	EH550010030
3	2	Pin Dowel 1/8" x 1/2" Hardened Steel	15510003
4	1	Plate, Side, Tilt	1554038COMP
5	1	Plate, Side, Pan	1804000COMP
6	1	Plate, Bottom	1554055COMP
7	1	Tilt Shaft Assy	1551009COMP
8	2	Pin, Dowel 1/8"x5/8" Hardened Steel	15510001
9	1	Gear Tilt	1554144COMP
10	1	Hub, Tilt Gear	6804049COMP
11	1	Plate, Backup, Tilt Gear	1554046COMP
12	1	Tilt Table	1554037COMP
13	1	Cover	1554041COMP
14	1	Pull-Up Bar	1554042COMP
15	1	Body Spacer	1554047COMP
16	1	Pin, Pan Limit	1554049COMP
17	1	Pin, Tilt Limit	1554049TCOMP
18	2	Stop, Tilt Limit	1554050COMP
19	2	Cover Plate, Tilt Shaft	1554053COMP
20	1	Spindle	2704105COMP
21	2	Bearing FB810-5	1556004
22	1	Chain Assy, Pan	1751003COMP
23	1	Pin, Taper, #3 x 1-1/4"	17510001
24	1	Bracket, Pan Limit	1554051COMP
25	1	Bracket, Tilt Limit	1554052COMP
26	4	Switch #1SM1	SW11SM1
27	4	Switch Actuator w/Insulator	SWIJS138B
28	1	Terminal Strip, 9-Pin (Not shown)	TRS2009
29	2	Electrovert SP-1/4CP x FT (Not shown)	ZS-SPIROBAND
30	1	Chain Assy, Tilt	1751002COMP
31	1	Sprocket, Motor Shaft	17512004
32	1	Sprocket, Worm Gear Shaft	1754022COMP
33	1	Plate Motor	1751062WA
34	1	Shaft, Worm Gear	1754064COMP
35	1	Gearhead, Tilt Motor	1758006
36	1	Motor Only, Tilt (24 VAC)	5708007
37	1	Worm Gear, Tilt	7712006
38	2	Bearing, Cage only #A05CN	776001
39	4	Bearing, Washer Only	776002
40	1	Bushing, Tilt Shaft, FB46-3	PT250010005
41	1	Sprocket, Pan	1804001COMP
42	1	Bracket, Pan Motor	1754002COMP
43	1	Nut, Spindle	25010002
44	2	Bearing, Pan Spindle	2506000
45	1	Motor W/Gearhead, Pan (24 VAC)	2508001
46	1	Sprocket, 25B20-3/8 W/SS	27012008
47	3	Limit Stop, Pan (Except PT180-24SL)	58010006
48	1	Capacitor 15mf 100v (Not shown)	CAPU0015.0/100N
49	1	Capacitor 60mf 200v (Not shown)	CAPU0060.0/200N
50	1	Connector CPC 14 Pos Pin Plug (Not shown)	CON206044-1
51	1	Connector CPC Cable Clamp (Not shown)	CON206070-1
52	2	Lug, Spade 16-20 ga. (Not shown)	CON52929-1
53	14	Connector CPC Pin (Not shown)	CON66102-7
54	1	Connector Boot (Not shown)	CON9779-513-8
55	1	Connector Mate Assy 14 Pin Skt Cble (Not shown)	CONA14S
56	1	Connector 6 Pos Fem (Not shown)	CONMAB6100
57	1	Connector BNC Crimp for RG174 (Not shown)	CONCPM88-174
58	2	Grommet # AN931-3-5	GRO2172N
59	1	Clamp, Cable	2504007COMP
60	1	Ring, Slip #AC4023-18GA w/24" Leads (SL only)	28010000
61	1	Plate, Slip Ring Adapter (SL only)	SL28004000COMP
62	1	Bracket, Slip Ring (SL only)	SL28004001COMP

Continued on next page

Table C. PT180 Series Mechanical Parts List (continued)

Item	Qty	Description	Part Number
63	1	Cover, Slip Ring Adapter (SL only)	SL28004002COMP
64	1	Mount, PM200C/SB3-1 (SL only)	PM200C4000COMP
65	1	Bearing #B46-2	5806005
66	1	Connector, Lens Mating 6 Pos (Not shown)	CONMAS6100
67	1	Strain Relief #1147 Heyco (Not shown)	STRSP5N-4

Table D. PT180 Series Hardware List

Item	Qty	Description	Part Number
A	4	Acorn Nut, 6-32 SS	ZH6-32NUTCA
B	4	Screw, 8-32 x 1/2" Soc C/S SS	ZH8-32X.500CS
C	10	Split lock washer, #8 SS	ZH8LWSSL
D	4	Set Screw, 6-32 x 3/4" SS	ZH6-32X.750SS
E	6	Hex Nut, 6-32 SS	ZH6-32NUTSH
F	6	Washer, internal star, #6 SS	ZH6LWSIS
G	2	Screw, 8-32 x 1/2" Pan Phil SS	ZH8-32X.500SPP
H	12	Washer, Flat #10 AN960C-10 x .064 SS	ZH204X436X60C
I	2	Washer, Flat 1/2 AN-960-816	ZH515X875X62
J	3	Screw, 8-32 x 3/8" Pan Phil SS	ZH8-32X.375SPP
K	3	Washer, Split lock, 1/4" SS	ZH1/4LWSSL
L	4	Bolt, 1/4-20 x 5/8" Hex C/S SS	ZH1/420X.625CH
M	3	Screw, 8-32 x 5/8" Soc C/S SS	ZH8-32X.625CS
N	3	Screw, 6-32 x 3/8" Soc C/S SS	ZH6-32X.375CS
O	8	Washer, internal star, #8 SS	ZH8LWSIS
P	4	Washer, flat, 3/16 USS Spl-Size Pltd	ZH260X562X65C
Q	1	Washer, internal star, 1/4" SS	ZH1/4LWSIS
R	6	Hex nut, 8-32 SS	ZH8-32NUTSH
S	3	Screw, 8-32 x 3/4", Pan Phil SS	ZH8-32X.750SPP
T	3	Washer, split lock #6 SS	ZH6LWSSL
U	11	Washer, split lock #10 SS	ZH10LWSSL
V	11	Screw, 10-32 x 1/2" Soc Hd C/S SS	ZH10-32X.500CS
W	2	Screw, 6-32 x 3/4" flat M/S Phil SS	ZH6-32X.750SFS
X	8	Screw, 2-56 x 7/16" Pan Phil SS	ZH2-56X.437SPP
Y	4	Screw, 4-40 x 3/8" Pan Phil SS	ZH4-40X.375SPP
Z	6	Bolt, 1/4-20 x 3/4" flat Phil M/S SS	ZH1/420X.750SFS
AA	1	Pin, spring roll, 3/32" x 3/8"	ZHPIN3/32X3/8R
BB	4	Washer, internal star #4SS	ZH4LWSIS
CC	2	Screw, 6-32 x 3/8" Pan Phil SS	ZH6-32X.375SPP
DD	1	Set Screw, 6-32 x 3/16" Soc Knur Blk	ZH6-32X.187S
EE	3	Screw, 8-32 X 2-1/4" round head slotted	ZH8-32X2.25CRS
FF	2	Washer, flat #6 AN960C-6 SS	ZH148X375X32C
GG	1	Screw, 10-32 x 3/8" Pan Phil SS	ZH10-32X.375SPP
HH	1	Washer, internal star #10 SS	ZH10LWSIS
II	2	Screw, 6-32 x 3" Pan Phil Full Thread SS	ZH6-32X3.00SRS

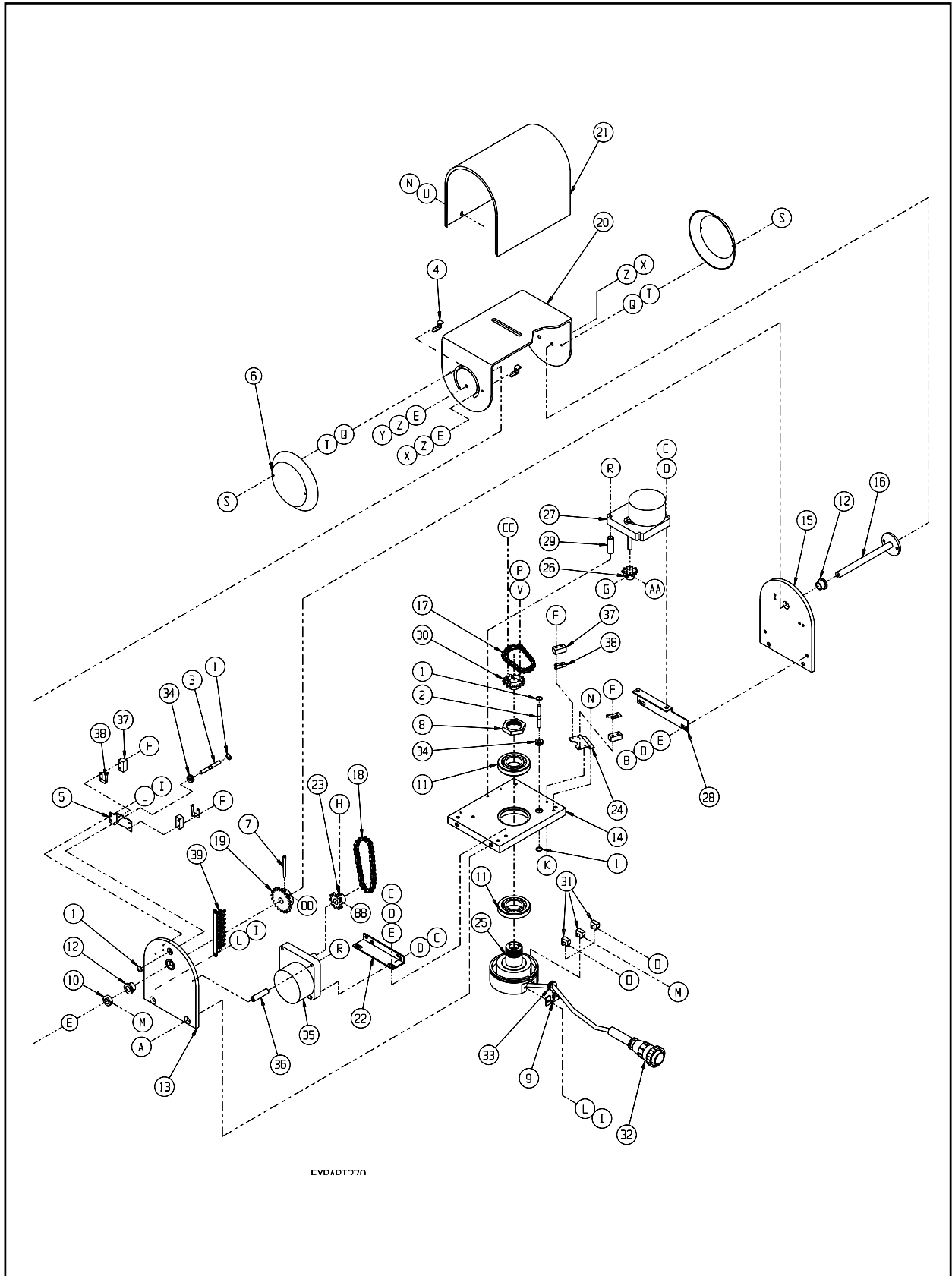


Figure 6. PT270 Series Exploded Assembly Diagram

Table E. PT270 Series Mechanical Parts List

Item	Qty	Description	Part Number
1	4	Snap ring, #Q2-18	15510000
2	1	Pin pan limit	1554049COMP
3	1	Pin tilt limit	1554049TCOMP
4	2	Tilt limit stop	1554050COMP
5	1	Bracket tilt limit	1554052COMP
6	2	Cover plate, tilt	1554053COMP
7	1	Pin, #1 x 1-1/4" taper	17510000
8	1	Nut, spindle	25010002
9	1	Clamp cable	2504007COMP
10	1	Spacer, tilt collar	2504015COMP
11	2	Bearing, pan spindle	2506000
12	2	Bearing, Tilt FB68-31/4	2506001
13	1	Plate, side tilt	2704001COMP
14	1	Bottom plate	2704100COMP
15	1	Side plate, pan	2704102COMP
16	1	Tilt shaft assembly	2701002COMP
17	1	Pan chain assembly	2701003COMP
18	1	Tilt chain assembly	2701004COMP
19	1	Sprocket, 25B20-3/8 w/SS	27012008
20	1	Tilt table	2704003COMP
21	1	Cover	2704004COMP
22	1	Bracket, pan/tilt motor	2704006COMP
23	1	Sprocket motor	2704010COMP
24	1	Pan limit bracket	2704051COMP
25	1	Spindle	2704105COMP
26	1	Sprocket	28012010
27	1	Pan motor, 2 rpm, 24 VAC (PT270-24P)	2804001COMP
	1	Pan motor, 2 rpm, 120 VAC (PT270P)	2508000
	1	Pan motor, 2 rpm, 230 VAC (PT270P/230)	2508220
28	1	Pan motor bracket	2804012COMP
29	1	Pan motor spacer	2804013COMP
30	1	Sprocket, pan spindle	2804019COMP
31	3	Pan limit stop	58010006
32	1	Connector CPC cable clamp	CON206966-1
33	1	1/4" Rubber grommet	GRO2170
34	2	Neoprene grommet	GRO2172N
35	1	Tilt Motor, 1rpm, 120 VAC (PT270P)	2708000
	1	Tilt Motor, 1rpm, 24 VAC (PT270-24P)	PS78001
	1	Tilt Motor, 1 rpm, 230 VAC (PT270/230)	2708220
36	1	Spacer, 5/16 dia. x 1.25	SPA8548
37	4	Switch	SWI1SM1
38	4	Switch actuator w/insulator	SWIJS138B
39	1	Term strip, 7 pin	TRS2007

Table F. PT270 Series Hardware List

Item	Qty	Description	Part Number
A	4	Bolt, 1/4-20 x 5/8, phil flat, SS	ZH1/4-20X.625SFS
B	2	Screw, 10-32 x 1/2", socket head, C/S, SS	ZH10-32X.437CS
C	6	Screw, 10-32 x 1/2", socket head, SS	ZH10-32X.500CS
D	8	Split lock washer, #10, SS, medium	ZH10LWSSL
E	8	Flat washer, #10, SS	ZH204X.436X60C
F	8	Screw, 2-56 x 7/16", pan phil, SS	ZH2-56X.437SPP
G	1	Set screw, 10-32 x 3/8", socket knurl, black	Supplied with #19
H	1	Set screw, 10-32 x 3/16", socket knurl, black	ZH10-32X.187S
I	6	Screw, 4-40 x 3/8", pan phil	ZH4-40X.250SPP
J	4	Screw, 4-40 x 3/8", pan phil	ZH4-40X.375SPP
K	1	Screw, 4-40 x 5/8", pan phil, SS	ZH4-40X.625SPP
L	6	#4 Internal tooth lockwasher, SS	ZH4LWSIS
M	2	Set screw, 6-32 x 3/16", socket knurl, black	ZH6-32X.187SS
N	4	Screw, 6-32 x 1/4", pan phil, SS	ZH6-32X.250SPP
O	2	Screw, 6-32 x 3/8", pan phil, SS	ZH6-32X.375SPP
P	3	Screw, 6-32 x 1/2", socket	ZH6-32X.500CS
Q	2	Set screw, 6-32 x 3/4", socket cap	ZH6-32X.750SS
R	2	Screw, 6-32 x 2", pan phil, SS	ZH6-32X2.00SPS
S	4	Nut, 6-32 x 2", pan phil, SS	ZH6-32NUTCA
T	4	Nut, hex, 6-32, SS	ZH6-32NUTSH
U	3	#6 Internal tooth lock washer, SS	ZH6LWSIS
V	3	Split lock washer, #6, SS med	ZH6LWSSL
X	3	Screw, 8-32 x 3/8", pan phil, SS	ZH8032X.375SPP
Y	1	Screw, 8-32 x 5/8", pan phil, SS	ZH8032X.625SPP
Z	4	Internal star washer, #8, SS	ZH8LWSIS
AA	1	Pin roll, 3/32" x 1/2"	ZHPIN3/32X1/2R
BB	1	Pin roll, 3/32" x 3/4"	ZHPIN3/32X3/4R
CC	1	Pin dowel, 1/8" x 5/8", hardened steel	15510001
DD	1	Set screw, 10-32 x 5/16", knurl, black	ZH10-32X.312S

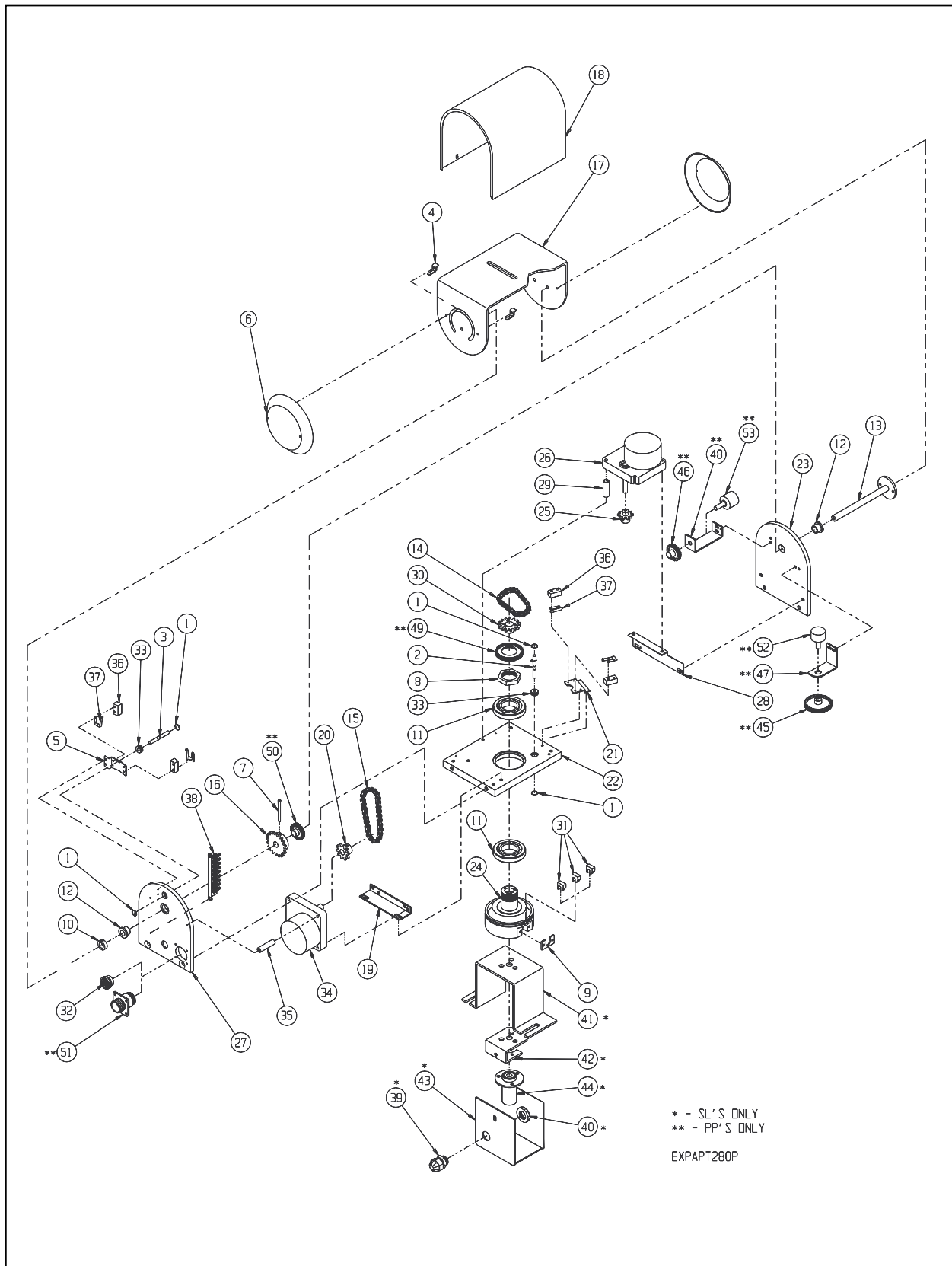


Figure 7. PT280 Series Exploded Assembly Diagram (Parts)

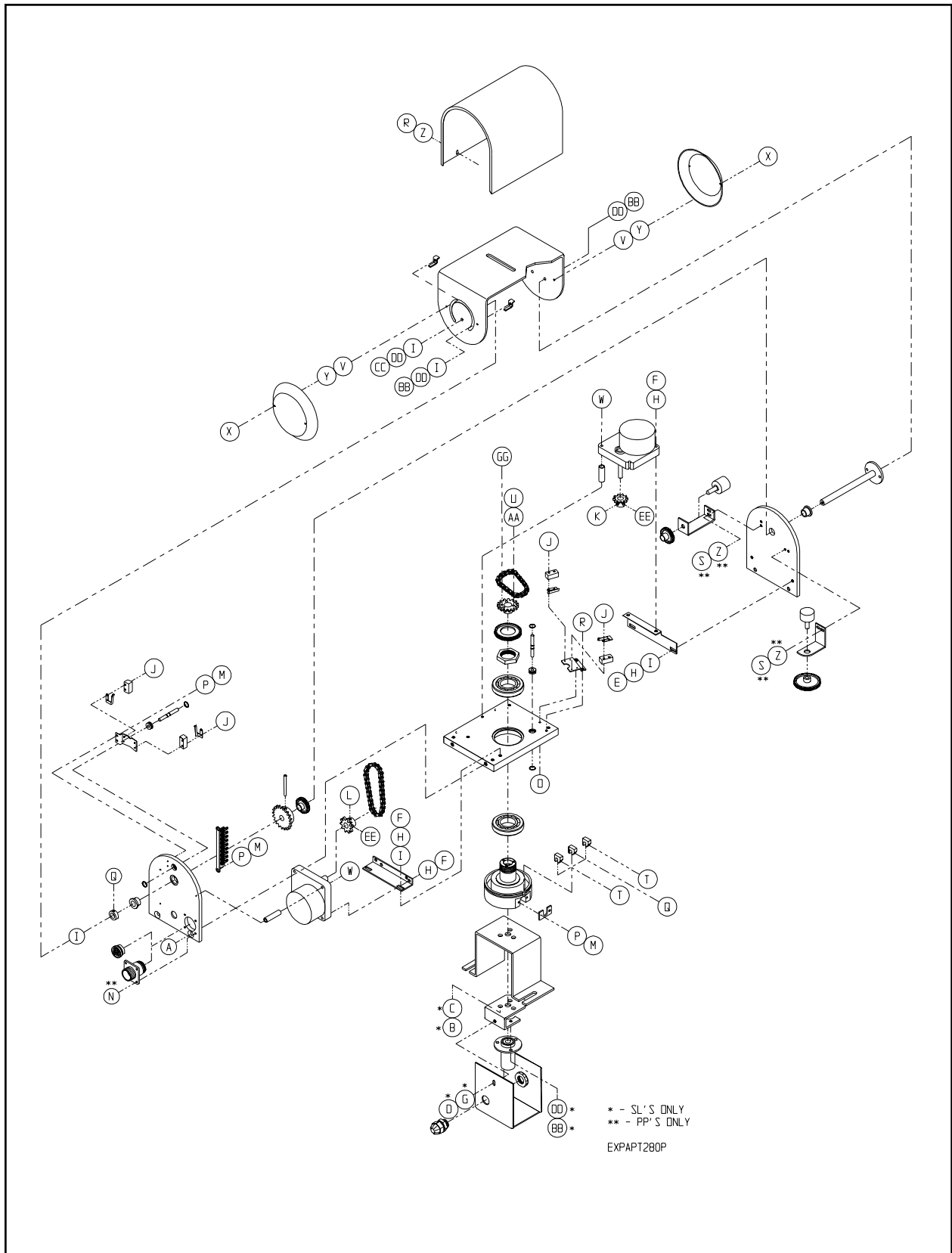


Figure 8. PT280 Series Exploded Assembly Diagram (Hardware)

Table G. PT280 Series Mechanical Parts List

Item	Qty	Description	Part Number
1	4	Snap ring (P, P/PP, and SL/PP models)	15510000
	2	Snap ring (SL model)	15510000
2	1	Pan limit pin (P and SL)	1554049COMP
	1	Pan limit pin (P/PP)	2804003COMP
	-	Not used (SL/PP)	
3	1	Tilt limit pin	1554049TCOMP
4	2	Tilt limit stop	1554050COMP
5	1	Tilt limit bracket	1554052COMP
6	2	Tilt table cover plate	1554053COMP
7	1	Tapered pin (except SL)	17510000
8	1	Spindle nut	25010002
9	1	Cable clamp (P and P/PP)	2504007COMP
10	1	Tilt collar spacer	2504015COMP
11	2	Pan spindle bearing	2506000
12	2	Tilt bearing	2506001
13	1	Tilt shaft assembly	2701002COMP
14	1	Pan chain assembly	2701003COMP
15	1	Tilt chain assembly	2701004COMP
16	1	Sprocket	27012008
17	1	Tilt table	2704003COMP
18	1	Cover	2704004COMP
19	1	Tilt motor bracket	2704006COMP
20	1	Motor sprocket	2704010COMP
21	1	Pan limit bracket (except SL/PP model)	2704051COMP
22	1	Bottom plate	2704100COMP
23	1	Side plate, pan side	2704102COMP
24	1	Spindle	2704105COMP
25	1	Sprocket	28012010
26	1	Pan motor, 2 RPM, 24 VAC	2804001COMP
27	1	Side plate, tilt side (P and SL)	2804002COMP
	1	Side plate, tilt side (P/PP and SL/PP)	2804102COMP
28	1	Pan motor bracket	2804012COMP
29	1	Pan motor spacer	2804013COMP
30	1	Pan spindle sprocket	2804019COMP
31	3	Pan limit stop (P and P/PP)	58010006
32	1	6-position connector (P and SL)	CONMAB6100
33	2	Neoprene grommet	GR02172N
34	1	Tilt motor, 1 RPM, 24 VAC	PS78001
35	1	Spacer (except P/PP model)	SPA8548
36	4	Switch (P, P/PP, and SL)	SWI1SM1
	2	Switch (SL/PP)	SWI1SM1
37	4	Switch Actuator with Insulator (P, P/PP, SL)	SWIJS138B
	2	Switch Actuator with Insulator (SL/PP)	SWIJS138B
38	1	7-pin terminal strip (P and SL)	TRS2007
	1	9-pin terminal strip, (P/PP and SL/PP)	TRS2009
39	1	Gland (SL and SL/PP)	EH400010003
40	1	Nut for gland (SL and SL/PP)	EH400010004
41	1	Bracket (SL and SL/PP)	PM200C4000COMP
42	1	Slip ring bracket (SL/PP)	SL28004101COMP
	1	Slip ring bracket (SL)	SL28004001COMP
43	1	Slip ring cover (SL and SL/PP)	SL28004100COMP
44	1	Slip ring (SL/PP)	250010000
	1	Slip ring (SL)	28010000
45	1	Gear (SL/PP)	28010016
	1	Gear (P/PP)	PT250010002
46	1	Gear (P/PP and SL/PP)	28010017
47	1	Pan potentiometer bracket (P/PP)	2804014COMP
	1	Pan potentiometer bracket (SL/PP)	2804117COMP

Continued on next page

Table G. PT280 Series Mechanical Parts List (continued)

Item	Qty	Description	Part Number
48	1	Tilt potentiometer bracket (P/PP & SL/PP)	2804015COMP
49	1	Pan spindle preset gear (P/PP & SL/PP)	2804016COMP
50	1	Tilt shaft preset gear (P/PP & SL/PP)	2804020COMP
51	1	9-position connector (P/PP and SL/PP)	CON206705-1
52	1	Dual arm potentiometer (SL/PP)	POTDARM010.0K
53	1	Precision 10K potentiometer (SL/PP)	POT010.0K
	2	Precision 10K potentiometer (P/PP)	POT010.0K

Table H. PT280 Series Hardware List

Item	Qty	Description	Part Number
A	4	Bolt, 1/4-20 x 5/8", flat head, Phillips	ZH1/420X.625SFS
B	3	Allen screw, 1/4-20 x 5/8" (SL Only)	ZH1/420X.625CH
C	3	Split lock washer (SL Only)	ZH1/4LWSSL
D	1	Screw, 10-32 x 3/8", pan head, Phillips (SL)	ZH10-32X.375SPP
E	2	Allen screw, 10-32 x 7/16"	ZH10-32X.437CS
F	6	Allen screw, 10-32 X 1/2"	ZH10-32X.500CS
G	1	Internal tooth lock washer, #10 (SL Only)	ZH10LWSIS
H	8	Split lock washer, #10	ZH10LWSSL
I	8	Flat washer, #10	ZH204X436X60C
J	8	Screw, 2-56 x 1/4", pan head, Phillips	ZH2-56X.437SPP
	4	Screw, 2-56 x 1/4", pan head, Phillips (SL)	ZH2-56X.437SPP
K	1	Set screw, 10/32 x 1/8"	ZH10-32X.187S
L	1	Set screw, 10/32 x 3/16"	ZH3/8-24X.375SS
M	6	Screw, 4-40 x 1/4", pan head, Phillips	ZH4-40X.250SPP
N	4	Screw, 4-40 x 3/8", pan head, Phillips (PP)	ZH4-40X.375SPP
O	1	Screw, 4-40 x 5/8", pan head, Phillips	ZH4-40X.625SPP
P	6	Internal tooth lock washer, #4	ZH4LWSIS
Q	2	Set screw, 6-32 x 3/16"	ZH6-32X.187S
R	4	Screw, 6-32 x 1/4", pan head, Phillips	ZH6-32X.250SPP
S	4	Allen screw, 6-32 x 3/8"	ZH6-32X.375CS
T	2	Screw, 6-32 x 3/8", pan head, Phillips	ZH6-32X.375SPP
U	3	Allen screw, 6-32 x 1/2"	ZH6-32X.500CS
V	4	Set screw, 6-32 x 3/4"	ZH6-32X.750SS
W	2	Screw, 6-32 x 2", pan head, Phillips	ZH6-32X2.00SPS
X	4	Acorn nut, 6-32	ZH6-32NUTCA
Y	4	Nut, 6-32	ZH6-32NUTSH
Z	7	Internal tooth lock washer, #6 (PP Only)	ZH6LWSIS
	3	Internal tooth lock washer, #6 (P Only)	ZH6LWSIS
AA	3	Split lock washer, #6	ZH6LWSSL
BB	6	Screw, 8-32 x 3/8", pan head, Phillips (SL)	ZH8-32X.375SPP
	3	Screw, 8-32 x 3/8", pan head, Phillips (P)	ZH8-32X.375SPP
CC	1	Screw, 8-32 x 5/8", pan head, Phillips	ZH8-32X.375SPP
DD	7	Washer, Internal Star (SL Only)	ZH8LWSIS
	4	Washer, Internal Star (P Only)	ZH8LWSIS
EE	1	Roll pin, 3/32" x 1/2"	ZHPIN3/32X1/2R
FF	1	Roll pin, 3/32" x 1/2"	ZHPIN3/32X3/4R
GG	1	Dowel pin, 1/8" x 5/8"	1510001

5.0 WIRING DIAGRAMS

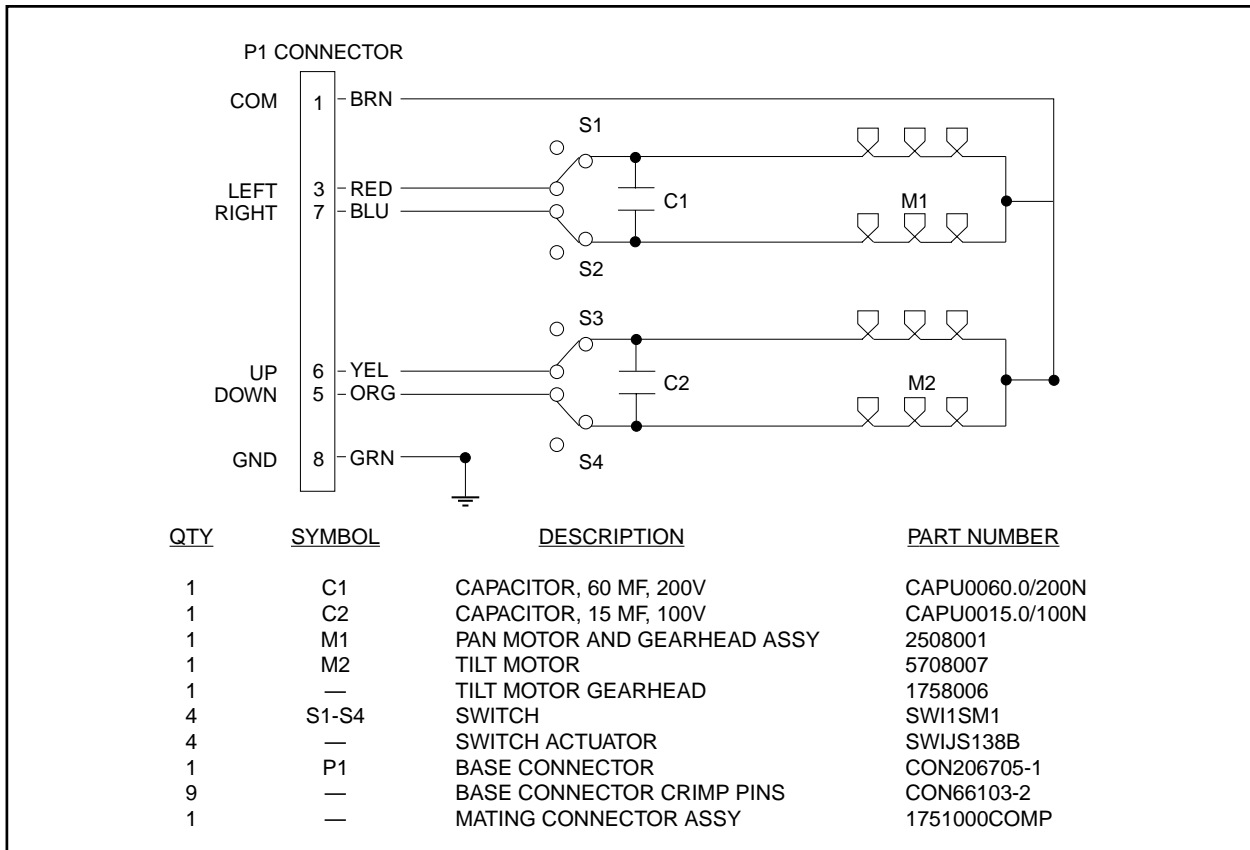


Figure 9. PT175-24P Wiring Diagram

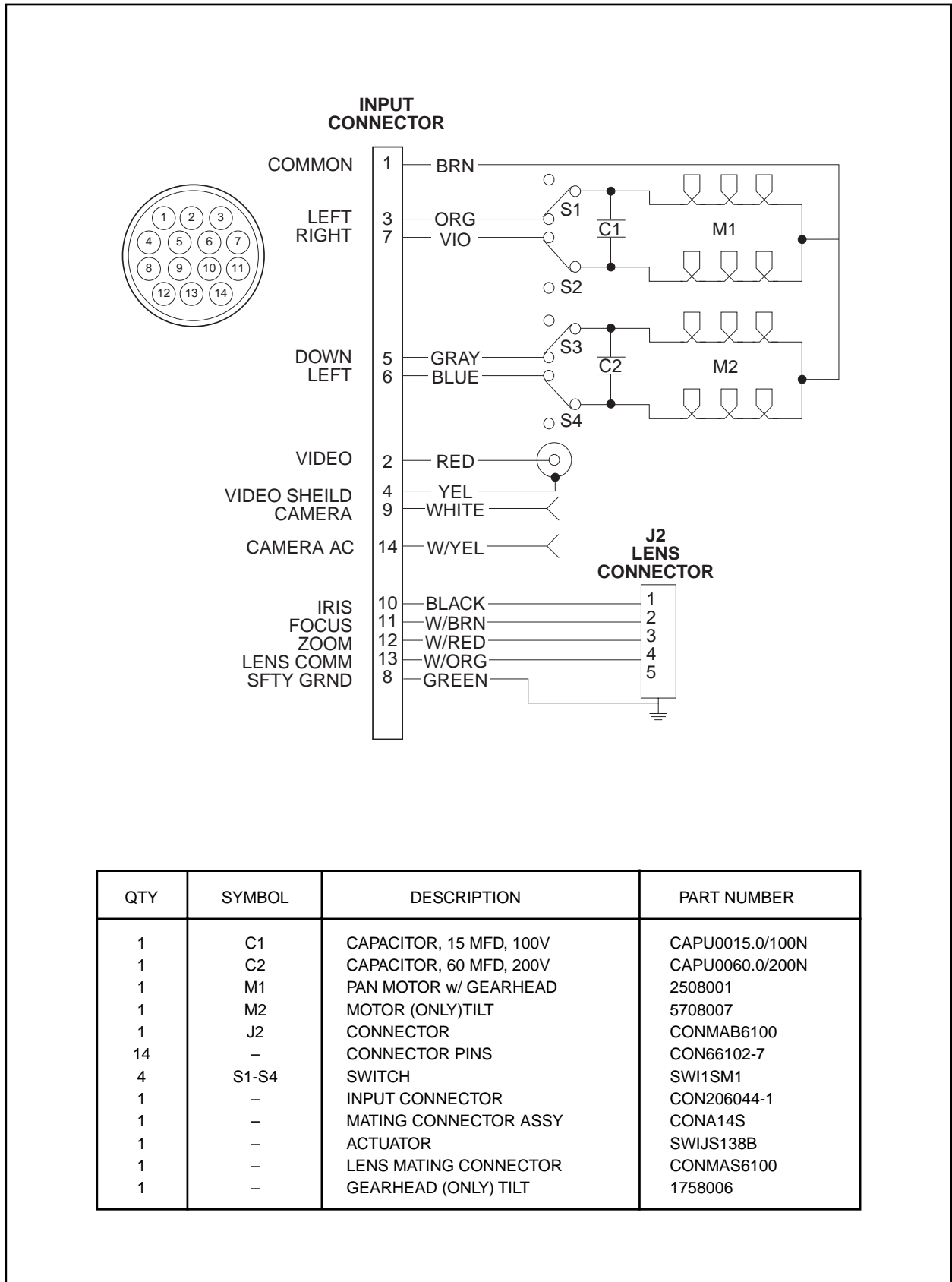
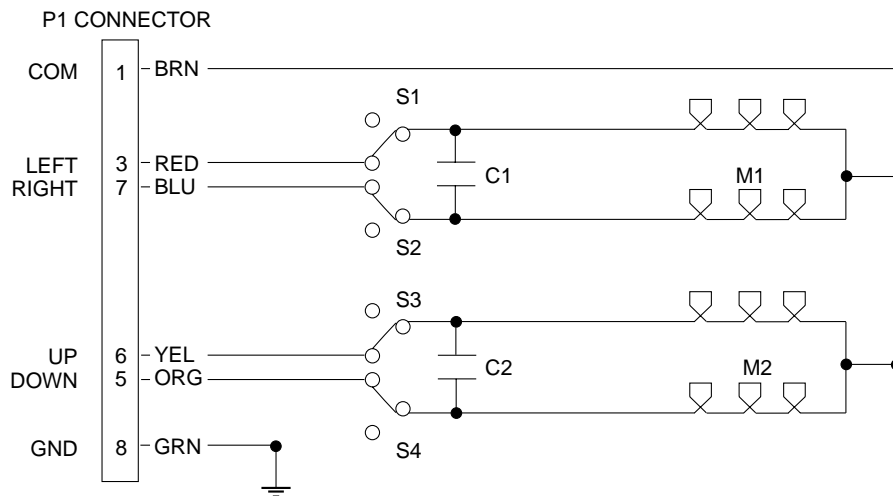


Figure 10. PT180 Series Wiring Diagram



Quantity	Symbol	Description	Part Number
2	C1-C2	Capacitor .68/400 (PT270P)	CAPU000.68/400
2	C1-C2	Capacitor 15 MFD 100V (PT270-24P)	CAPU0015.0/100N
2	C1-C2	Capacitor 0.22 MFD 600V (PT270P/230)	CAPU000.22/600
1	M1	Pan Motor (PT270P)	2508000
		Pan Motor (PT270-24P)	2804001COMP
		Pan Motor (PT270P/230)	2508220
1	M2	Tilt Motor (PT270P)	2708000
		Tilt Motor (PT270-24P)	PS78001
		Tilt Motor (PT270P/230)	2708220
1	P1	9 Pin Male Connector	CON206705-2
4	S1-S4	Switch	SWI1SM1
4	—	Actuator	SWIJS138B
1	—	Female Connector Assy.	1751000COMP
9	—	Connector Pins	CON66103-2

Figure 11. PT270 Series Wiring Diagram

Table I. PT280 Series Electrical Parts List

Parts are for all models unless specified otherwise		
Symbol	Description	Part Number
C1, C2	Capacitor, 15 MFD, 100 V	CAPU0015.0/100N
M1	Pan motor	2804001COMP
M2	Tilt motor	PS78001
—	6-pin male lens mating connector (P, SL models)	CONMAS6100
—	9-pin female lens mating connector assy (P/PP, SL/PP)	1751000COMP
S1-S4	Switch	SWI1SM1
S1-S4	Actuator	SWIJS138B
—	14-pin female mating connector assembly (P, SL)	CONA14S
—	28-pin female mating connector assembly (P/PP, SL/PP)	CONA28S
—	Pan preset potentiometer (P/PP)	POT010.0K
—	Pan preset potentiometer (SL/PP)	POTDARM010.0K
—	Tilt preset potentiometer (P/PP, SL/PP)	POT010.0K

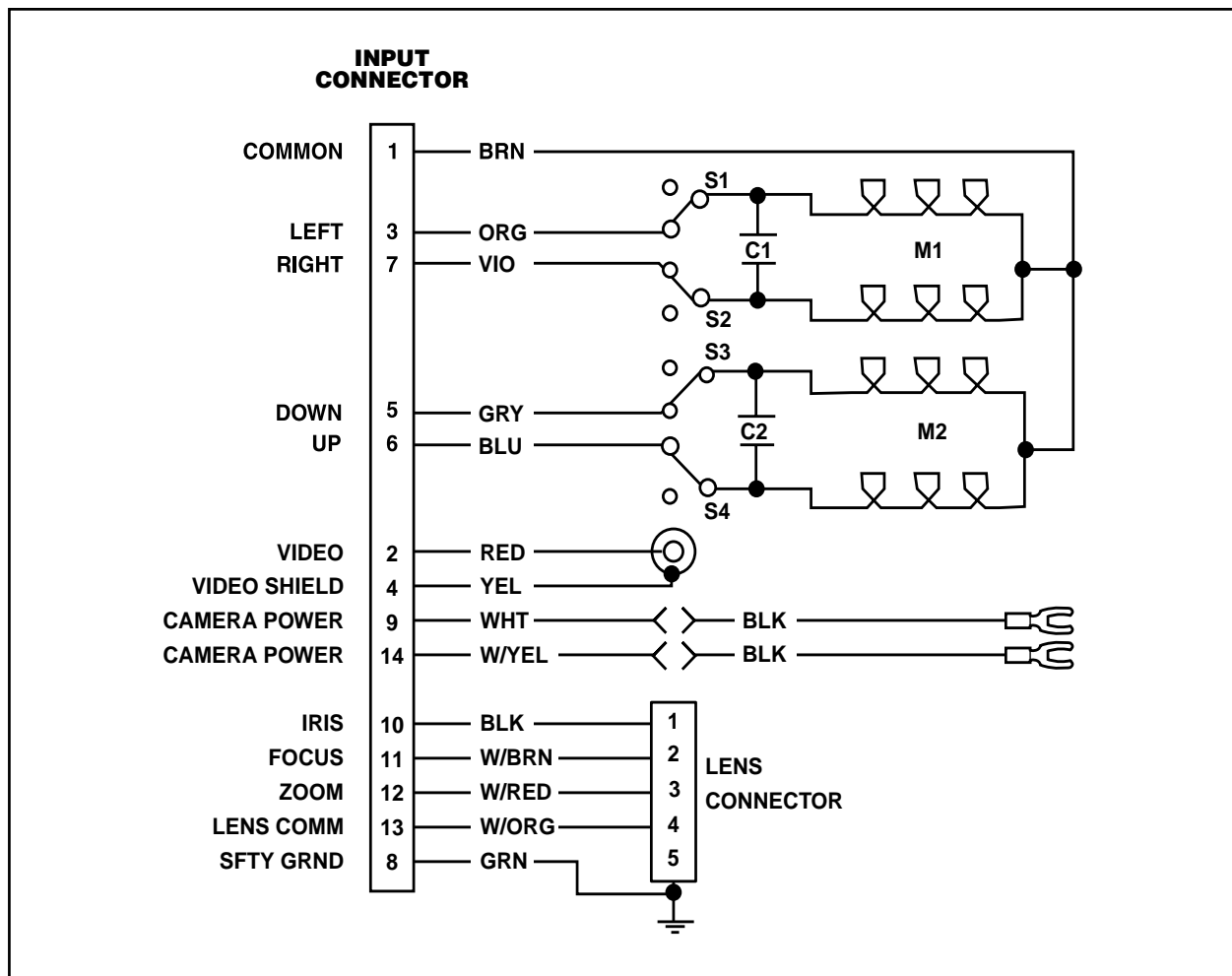


Figure 12. PT280-24P/PT280-24SL Wiring Diagram

28-PIN PAN/TILT SPINDLE CONNECTOR

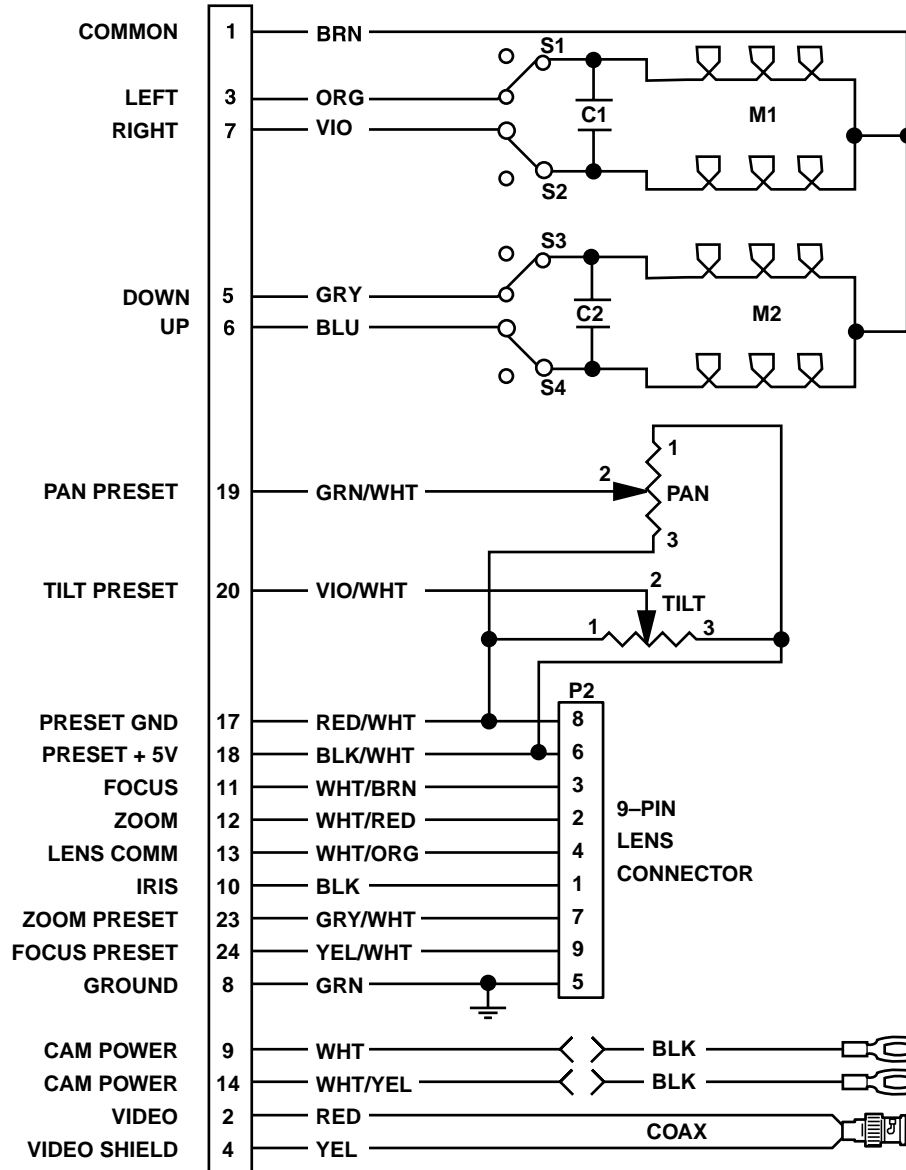


Figure 13. PT280-24P/PP Wiring Diagram

28-PIN PAN/TILT SPINDLE CONNECTOR

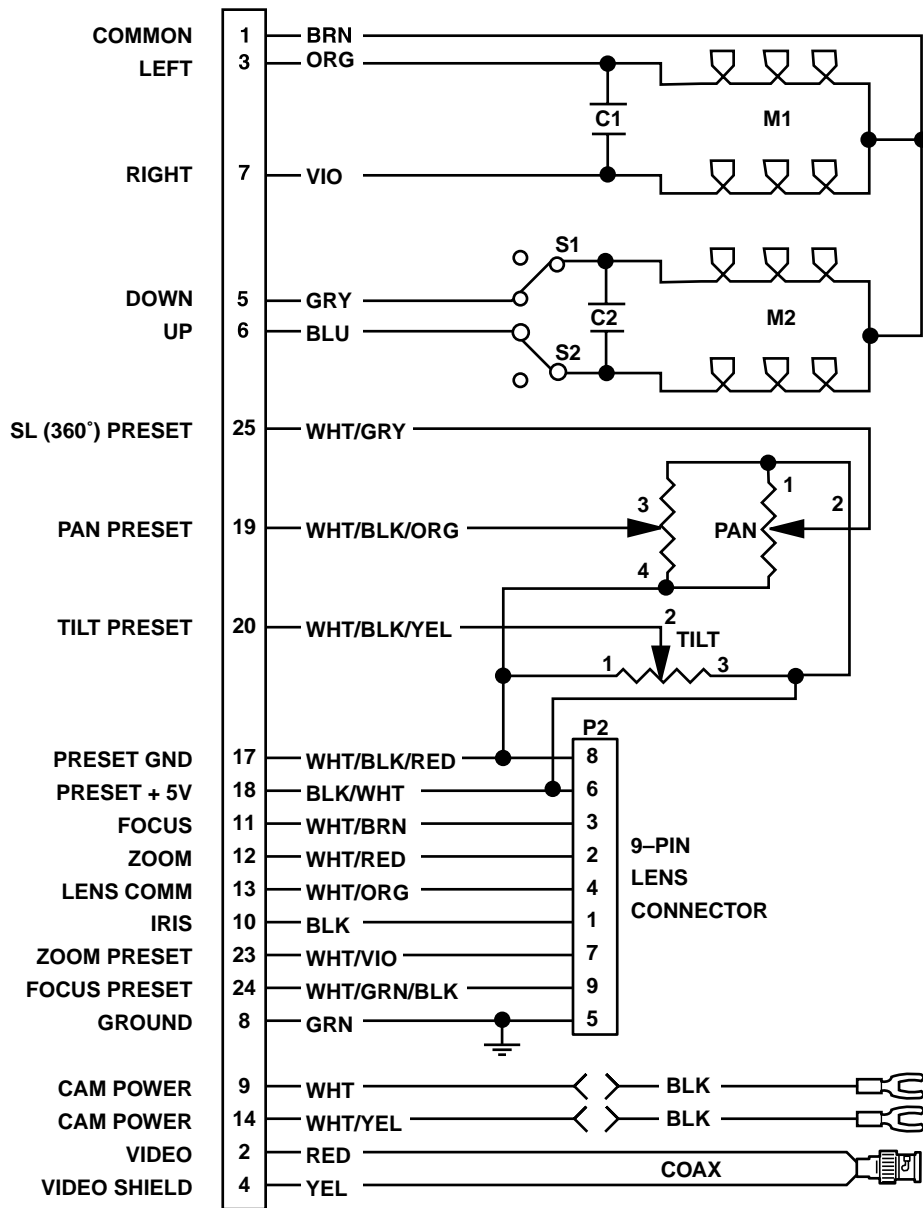


Figure 14. PT280-24SL/PP Wiring Diagram

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:

- Five years on FT/FR8000 Series fiber optic products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and CC3651H-2X camera models, which have a five-year warranty.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra®, Esprit®, ExSite™, and PS20 Scanners, including when used in continuous motion applications.
- Two years on Esprit® and WW5700 Series window wiper (excluding wiper blades).
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products. months on DX Series digital video recorders, NVR300 Series network video recorders, Endura™ Series distributed network-based video products, and TW3000 Series twisted pair transmission products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- 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 warrant 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.

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).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco
3500 Pelco Way
Clovis, CA 93612-5699 USA

If the goods are to be sent by a FREIGHT FORWARDER, send the goods to:

Pelco c/o Expeditors
473 Eccles Avenue
South San Francisco, CA 94080 USA
Phone: 650-737-1700
Fax: 650-737-0933

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