

# PARTS LISTS CATALOG 2011

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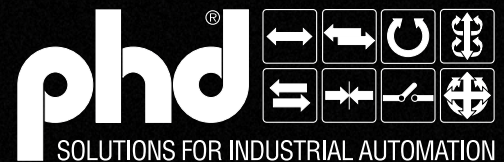
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PLC2011



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# PHD PARTS ORDERS USING “H” CODES

-H codes are used on products as noted. The purpose of the -H code call-out is to give a consistent order code to parts that are option/stroke/rotation dependent. The -H code requires the full unit description before the -H code.

**Example: AVB 1 1/8 x 4-DR-M-H1000**

The following listing is a general listing of the -H codes that are currently being used. Some products may have -H codes that are specific for that product. As products are updated, -H codes will be added. -H codes are not valid on all products. See individual products parts list for valid numbers.

H NUMBER	H-CODE DESCRIPTION
<b>Unit H Options</b>	
H1	No cylinder, slide section only
H4	No slide: cylinder assembly only
H11	VDMA / ISO cylinder ready 25,32,40,50mm bore
H12	ISO 6432 cylinder ready 12,16,20,25,32,40,50mm bore
H13	ISO Mechman cylinder ready 20mm bore
H17	Linear section only
H18	Rotary section only
H46	Cylinder - rod lock ready (lock sold separately)
H47	Unit with Rodlok Assembled (pre-assembled)
H48	Unit with Rodlok Assembled 180° from standard position (pre-assembled)
<b>Replacement Parts H Codes</b>	
H0005	Slide Shaft Scraper - all
H1000	P & R Assembly # 1
H1005	Piston Assembly # 1
H1010	P & R Assembly # 2
H1090	Total P & R Assembly (complete with bushing, retainer, etc.) or P & R Assembly for Bore A of dual bore unit
H1092	Total P & R Assembly (complete with bushing, retainer, etc.) or P & R Assembly for Bore B of dual bore unit
H1100	Head Assembly # 1
H1105	Head #1 only
H1110	Head Assembly # 2
H1115	Head # 2 only
H1200	Cap Assembly # 1 / Jaw Cover
H1205	Cap # 1 only
H1210	Cap Assembly # 2
H1215	Cap # 2 only
H1300	Tube # 1 - primary tube (linear units), # 1 (rotary units) or Rack Cover Tube
H1310	Tube # 2 - secondary tube (linear units, 3-position, back to back, tandems), # 2 (rotary units)
H1320	Tube # 3 (rotary units)

H1330	Tube # 4 (rotary units)
H1340	Tube # 5 (rotary units)
H1350	Tube # 6 (rotary units)
H1360	Tube # 7 (rotary units)
H1370	Tube # 8 (rotary units)
H1380	Tube - Linear section of multi-motion
H1400	Tierod & Nut Assemblies - All Tierod & Nut Assemblies for unit
H1410	1 Tierod & Nut Assembly Only - Linear
H1440	Head End / Standard Cap Tierod & Nut Assemblies (all) / Fastener
H1441	1 Head End / Standard Cap Tierod & Nut Assembly (one) / Fastener
H1450	1 Tierod & Nut Assembly only (tierod from tube #1 set) rotary
H1455	Tierod & Nut Assemblies, set tube #1 (rotary)
H1460	1 Tierod & Nut Assembly only (tierod from tube #2 set) rotary
H1465	Tierod & Nut Assemblies, set tube #2 (rotary)
H1470	1 Tierod & Nut Assembly only (tierod from tube #3 set) rotary
H1475	Tierod & Nut Assemblies, set tube #3 (rotary)
H1480	1 Tierod & Nut assembly only (tierod from tube #4 set) rotary
H1485	Tierod & Nut Assemblies, set tube #4 (rotary)
H1490	All rotary section Tierod & Nut Assemblies (complete sets)
H1600	Spring # 1
H1610	Spring # 2
H1700	Stop Tube # 1
H1705	Stop Tube Kit # 1
H1710	Stop Tube # 2
H1715	Stop Tube Kit # 2
H1725	Stop Tube Kit # 3
H1735	Stop Tube Kit # 4
H1745	Stop Tube Kit # 5
H1755	Stop Tube Kit # 6
H1800	Shock Pad # 1 / extend / CCW
H1810	Shock Pad # 2 / retract / CW

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H1820	Shock Pad # 3
H2000	Mounting Parts Kits - all parts
H2001	Mounting Part - one
H2005	RF / CF Mounting Flange only
H2020	Mounting Part Kit # 3 - all parts
H2030	Mounting Part Kit # 4 - all parts
H2040	Mounting Part Kit # 5 - all parts
H2050	Piston Fastener
H2100	Spacer
H2200	Spline Assembly
H2400	Body Assembly
H2410	Body only
H2600	Jaw A
H2605	Jaw A Assembly Kit
H2610	Jaw B
H2615	Jaw B Assembly Kit
H2621	Jaw A pivot / Driver / Drive Pin
H2622	Jaw B pivot / Driver / Drive Pin
H2650	Bushing Block A
H2651	Bushing Block B
H2652	Bushing Block - both
H2660	Guide Block A
H2661	Guide Block B
H2662	Guide Block - both
H2800	Fitting Kit
H3100	Bore Plug
H3110	Body Plug
H3120	Port Plug Assemblies - all required
H3150	Sleeve
H3310	Rack # 1 (1 rack only if both are the same, upper section if different)
H3410	Cartridge / Bearing Assembly
H3420	Shaft Bearing Kit - 1 shaft
H3450	Shaft Bearing Kit - both shafts
H3600	Rod End Jam Nut - 1 only
H3800	Pinion Shaft
H4710	Guideshaft – Section # 1 if different, 1 only if the same
H4720	Guideshaft - Section # 2 if different (Extend Port Guideshaft if applicable)
H4740	Guideshaft Screw – all
H4750	Guideshaft Screw – one
H4800	Housing / Saddle
H4810	Center Plate Assembly
H4900	Stop Rod / Pin
H5010	Slide Tierod & Nut Assembly - 1 assembly only

H5110	Spacer Tube - 1 only
H5310	Outer Band
H5610	Jaw Driver / Arm
H5810	Rod only - rod 1
H5900	Clamp Assembly - 1
H5910	Clamp Assembly - both / all
H6100	Base / Support Plate Assembly
H6210	Front / Left End Plate Assembly (end block # 1)
H6220	Rear / Right End Plate Assembly (end block # 2)
H6300	Carriage Assembly
H6310	Carriage only
H6400	Tool Plate
H7000	Rail Assembly Kit
H7100	Retaining Ring - all
H7101	Retaining Ring # 1 - one
H9000	Seal Kit
H9001	Linear Seal Kit
H9002	Rotary Seal Kit
H9010	Repair Kit
H9011	Linear Repair Kit
H9012	Rotary Repair Kit
H9013	Head Repair Kit
H9020	Fastener Kit
H9030	Stroke / Angle Adjustment Kit - both directions
H9031	Stroke Adjustment Kit - extend only / Angle Adjustment Kit - CW only
H9032	Stroke Adjustment Kit - retract only / Angle Adjustment - CCW only
H9040	Miscellaneous Mounting Kit
H9041	Miscellaneous Mounting Kit # 2
H9055	Bottom Mounting Flange Kit
H9090	Manifold Kit
H9091	Manifold Conversion Kit
H9100	Rodlok Only Kit (single)
H9105	Rodlok Adaptor Only Kit (single) (does not include Rodlok)
H9110	Complete Rodlok Kit (single) (includes Rodlok)
H9115	Rodlok Seal Kit

# phd SERIES GRME ELECTRIC CLAMP

## PARTS LIST, REPAIR KITS, & EXPLODED VIEW

KEY	DESCRIPTION	PART NUMBER		
		GRME2xS, GRME2xC, GRME2xD, GRME2xG, GRME2xH, GRME2xJ, GRME2xN, GRME2xP, GRME2xR	GRME2xF, GRME2xK	GRME2xL, GRME2xM
1	Body Assembly*	79390-01	79390-02	79390-03
22	Motor Mounting Head	79399-01		
23	Piston Rod/Motor Screw Assembly	79389-01	79389-02	
24	Motor Assembly	79407-01-00-01		
25	Motor Cover/Controller Assembly	79410-02-01	79410-02-02	
26	Motor Cover Cap	79405-01		
27	Head Mounting SHCS	59104-120		
28	Motor Mounting SHCS	59104-034		
29	Cover Mounting SHCS	59104-021		
30	Cap Mounting SHCS	59104-129		
31	Cover Seal O-Ring	1950-234-1		

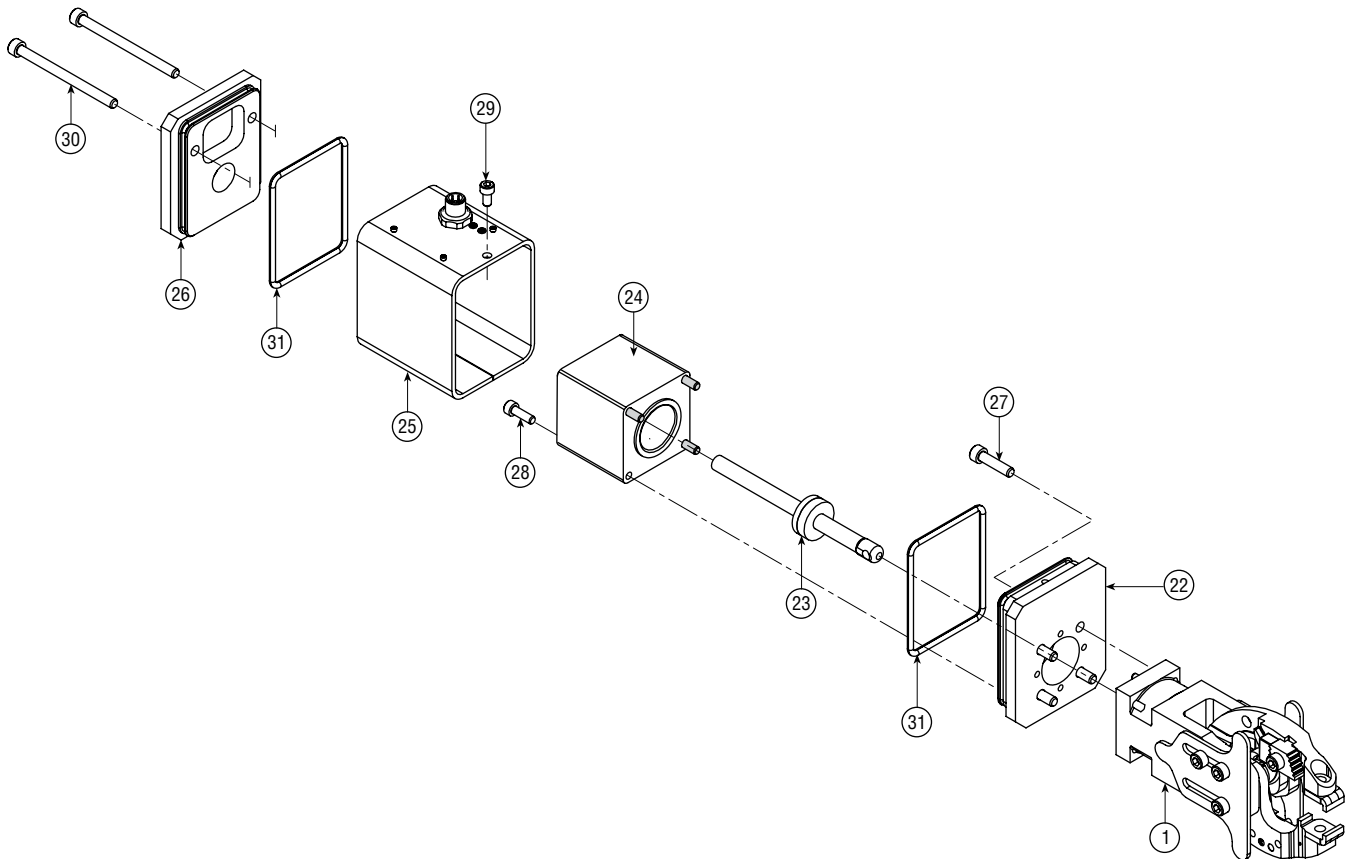
\*Body assembly includes body, rod seal, and locating dowel pins only.  
For parts not noted, see pages 6 to 11 of the Parts Lists Catalog.

**JAW STYLES**  
S, C, D, F, G, H, J, K, N, P, & R

KIT DESCRIPTION	KIT NUMBER
Seal Kit	79412-01
Fastener Kit	79413-01

**JAW STYLES**  
L & M

KIT DESCRIPTION	KIT NUMBER
Seal Kit	79412-02
Fastener Kit	79413-02

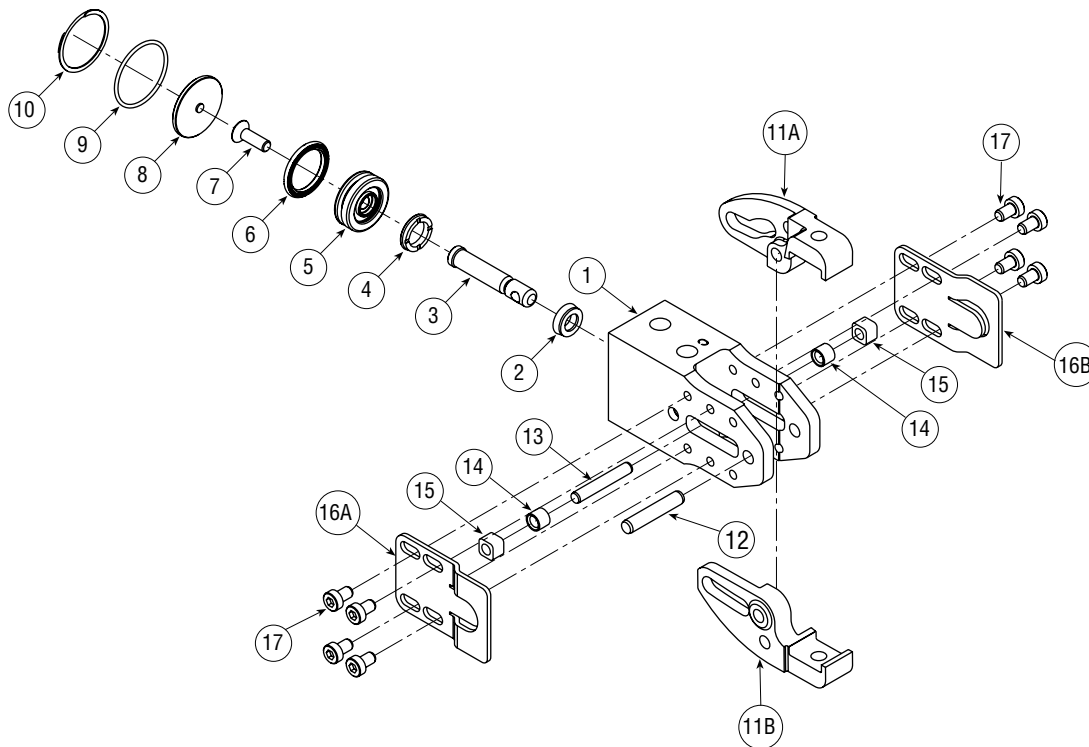


# phd SERIES GRM CLAMPS SIZE 1 PARTS LIST, REPAIR KITS, & EXPLODED VIEW

KEY	DESCRIPTION	PART NUMBER	
		Imperial	GRM1TS
1	Body	Imperial	81666-001-11
		Metric	81666-001-12
	Body w/-B11 opt	Imperial	81663-005-00-11
		Metric	81663-005-00-12
2	Rod Seal		59842-006-1
3	Piston Rod/Jaw Driver		81669-001
4	Shock Pad		54600-06
5	Piston		81668-001
6	Piston Seal		74042-006
7	SFHCS (M5 x 16)		59104-587
8	Bore Plug		61466
9	O-Ring Seal		3642-033-1
10	Retaining Ring		57618-028
11A	Jaw (S) 0°		81667-002-000
	Jaw (S) 5°		81667-002-050
	Jaw (S) 30°		81667-002-300
	Jaw (S) 50°		81667-002-500
11B	Jaw (S) 0°		81667-002-000
	Jaw (S) 5°		81667-002-050
	Jaw (S) 30°		81667-002-300
	Jaw (S) 50°		81667-002-500
12	Dowel Pin (6 x 32)		17831-098
13	Dowel Pin (5 x 32)		52416-020
14	Roller Bushing		74506-01
15	Slider Bushing		81670-001
16A	Impact Plate		81671-001
16B	Impact Plate		81671-001
17	LHCS (M5 x 8)		59104-414

## KITS

KIT DESCRIPTION	KIT NUMBER	
	Imperial	GRM1TS
Seal Kit		81665-001-01
Jaw Rebuild Kit		81665-002-00
Fastener Kit		81665-003-00
Impact Plate Kit		81665-004-00
90° Spherical Mounting Bracket Kit	Imperial	64658-02
GRMxCx	Metric	64658-03
Non-Spherical Mounting Bracket Kit	Imperial	62149-02
GRMxRx	Metric	62196-02
Spherical Mounting Bracket Kit	Imperial	62149-01
GRMxSx	Metric	62196-01
Oversize Spherical Mounting Bracket Kit	Imperial	62201-01
GRMxWx	Metric	62201-03

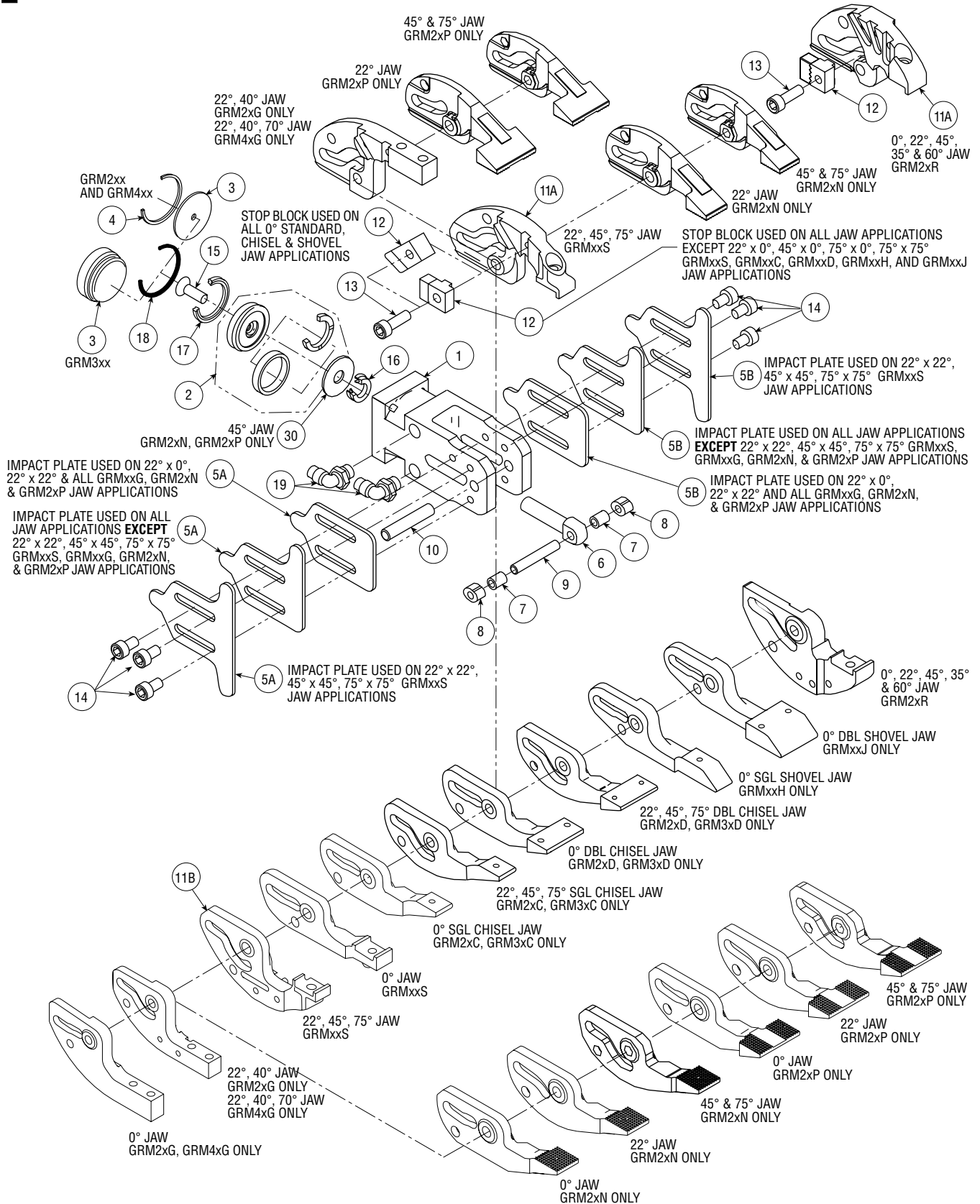






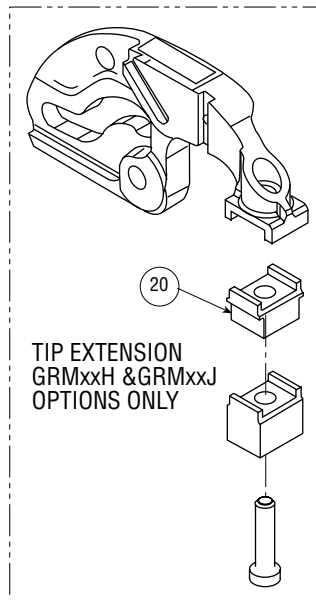
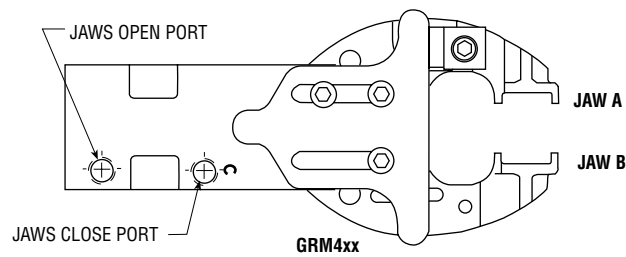
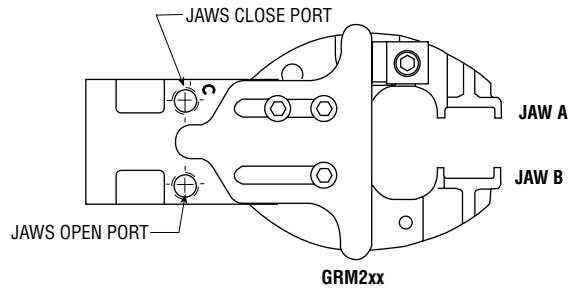
# SERIES GRM CLAMPS SIZES 2 & 4 DESIGN #2

## C, D, G, H, J, N, P, R, & S JAW STYLES EXPLODED VIEW





# SERIES GRM CLAMPS SIZES 2 & 4 DESIGN #2 C, D, G, H, J, N, P, & S JAW STYLES EXPLODED VIEW







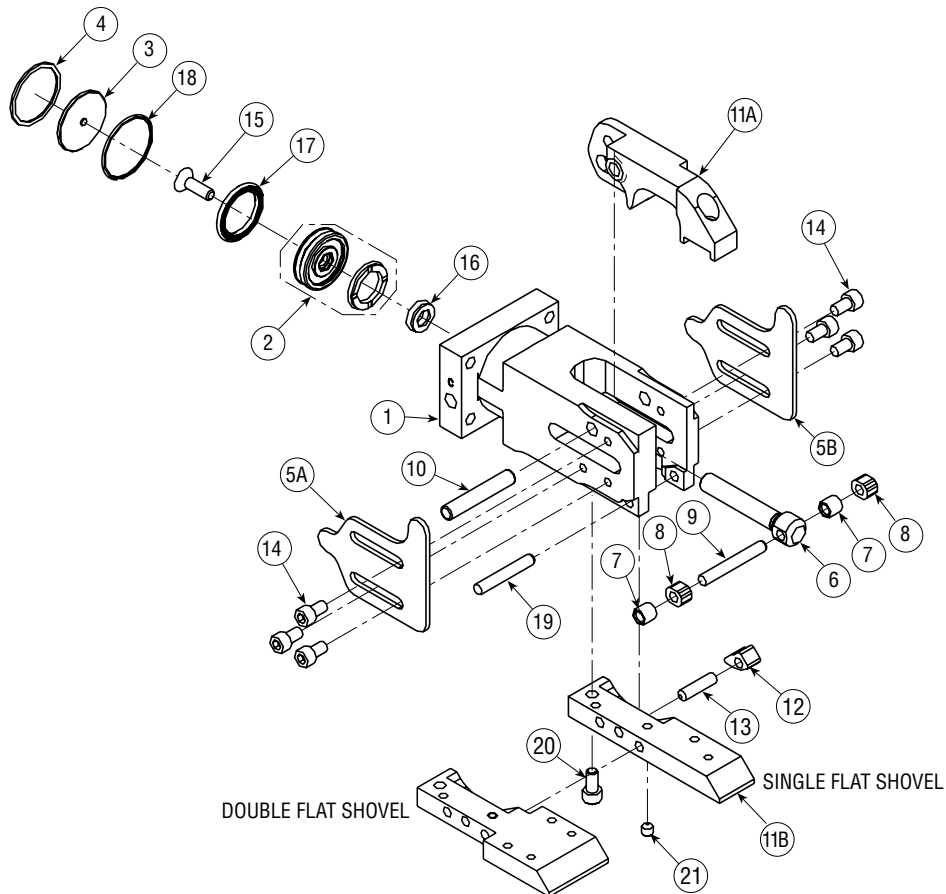
# SERIES GRM CLAMPS SIZE 2 DESIGN #2

## L & M JAW STYLES PARTS LIST, KITS, & EXPLODED VIEW

### KITS

KEY	PART DESCRIPTION	SIZE 2
1	Body Imperial Metric	73059-01 73059-02
2	Piston & Shock Pad	63949
3	Bore Plug	61467
4	Retaining Ring	57618-034
5A	Impact Plate	63952-01
5B	Impact Plate	63952-01
6	Rod/Jaw Driver	73061-01
7	Jaw Bushing	62097
8	Slider Bushing	62099-01
9	Rod/Jaw Driver Pin	52416-059
10	Pivot Pin	62176-02
11A	Jaw	73062-02
11B	Jaw Single Flat Shovel Double Flat Shovel	73064-01 73063-01
12	Stop Block	73065-01
13	Stop Block Pin	17831-169
14	Impact Plate SHCS	59104-114
15	Piston SFHCS	59104-600
16	Rod Seal	77635-009
17	Piston Seal	74042-008
18	Bore Plug Seal	3642-027-1
19	Jaw Mounting Pin	17831-009
20	Jaw Mounting SHCS	59104-115
21	Jaw Mounting Socket Set Screw	17424-103

KIT DESCRIPTION	SIZE 2
Impact Plate Kit	63967-01
Jaw Rebuild Kit	62152-07
Seal Kit	63965-02
Fastener Kit	63966-06





# SERIES GRM CLAMPS SIZES 2 & 4 DESIGN #2 F & K JAW STYLES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 2	SIZE 4
1	Body Imperial Metric	63972-11	64629-11
		63972-12	64629-12
2	Piston Assembly	63949	64631
3	Bore Plug	61467	61468
4	Retaining Ring	57618-034	57618-042
5A	Cover Plate	63974	64634
5B	Impact Plate Hook Jaw Style	63952-01	64636-01
		64659-01	—
6	Rod/Jaw Driver	63950	63969
7	Jaw Bushing	62097	62098
8	Slider Bushing	62099-01	62100
9	Rod/Jaw Driver Pin	52416-009	52416-027
10	Pivot Pin	62176-02	62177-02
11A	Jaw 50°, 85° Flange 25°, 50° Hook	63961-02	63983-01
		64654-01	—
11B	Jaw 0° Flange 22.5° Flange 0° Hook 20°, 40° Hook	63959-02	63981-01
		63960-02	—
		64656-01	—
		64655-01	—
12	Stop Block All Flange Jaw Rotations, 25° x 20°, 50° x 40° Hook Jaw Rotations 50° x 0° Hook Jaw Rotations	63962-02	64635-02
		63962-03	—
13	Stop Block SHCS	59104-118	59104-118
14	Impact Plate SHCS	59104-114	59104-114
15	Piston SFHCS	59104-600	62221-001
16	Rod Seal	77635-009	78610-006
17	Piston Seal	74042-008	74042-009
18	Bore Plug Seal	3642-027-1	3642-028-1
19	Port Fitting, -LAA Imperial Metric	62178-003	62178-003
		62195-005	62195-005
	Port Fitting, -LBB Imperial Metric	71120-001	71120-001
		71121-001	71121-001
	Port Fitting, -LCC Imperial Metric	—	—
		62195-007	62195-007

## KITS

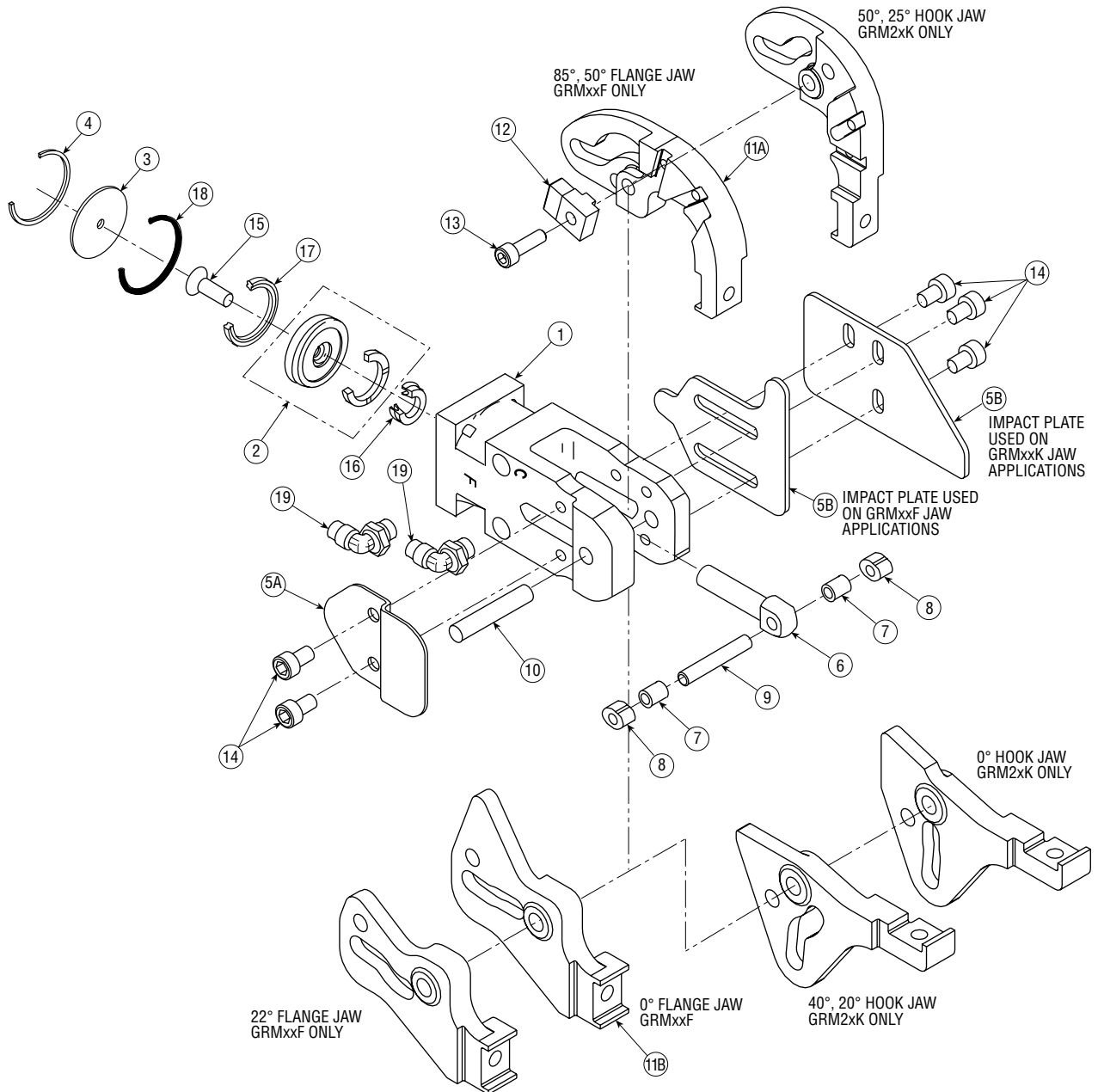
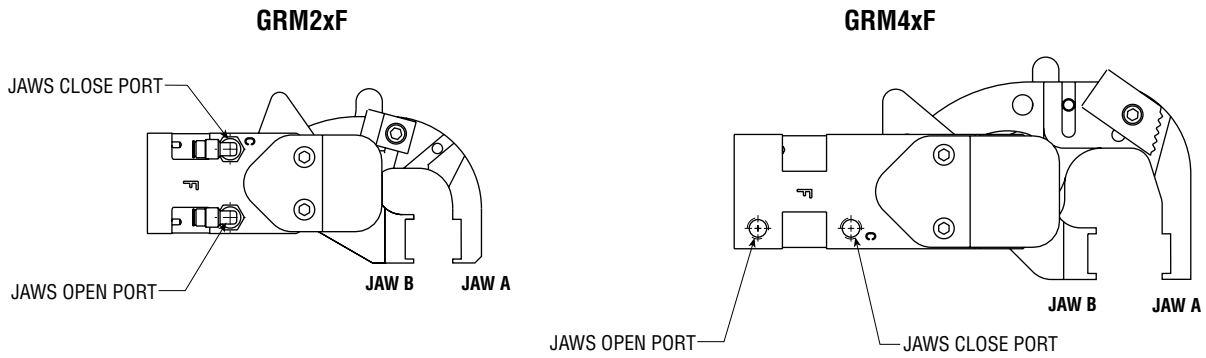
KIT DESCRIPTION	SIZE 2	SIZE 4
Jaw Rebuild Kit	62152-03	62152-04
Seal Kit	63965-02	63965-04
Fastener Kit	63966-02	63966-04
Impact Plate Kit	GRMxxF	63967-03
	GRMxxK	63967-06
Rear Spherical Mounting Bracket Kit	Imperial	65008-03
	Metric	65008-05
Oversize Rear Spherical Mtg. Bracket Kit	Imperial	65016-03
	Metric	65016-04
90° Spherical Mounting Bracket Kit	Imperial	64658-02
	Metric	64658-03
Rear Mounting Plate Kit	Imperial	65004-03
	Metric	65004-03
Non-Spherical Mounting Bracket Kit	Imperial	62149-02
	Metric	62196-02
Spherical Mounting Bracket Kit	Imperial	62149-01
	Metric	62196-01
Oversize Spherical Mounting Bracket Kit	Imperial	62201-01
	Metric	62201-03

## FLANGE TIP KITS

OPTION CODE	PART COLOR	UNIT SIZE	KIT NUMBER
-SCB	BLACK	2	GRM2-SCB-1
		4	GRM4-SCB-1
-SCS	SILVER	2	GRM2-SCS-1
		4	GRM4-SCS-1
-SCG	GOLD	2	GRM2-SCG-1
		4	GRM4-SCG-1
-SDB	BLACK	2	GRM2-SDB-1
		4	GRM4-SDB-1
-SDS	SILVER	2	GRM2-SDS-1
		4	GRM4-SDS-1
-SDG	GOLD	2	GRM2-SDG-1
		4	GRM4-SDG-1
-SUB	BLACK	2	GRM2-SUB-1
		4	GRM4-SUB-1
-DCB	BLACK	2	GRM2-DCB-1
		4	GRM4-DCB-1
-DCS	SILVER	2	GRM2-DCS-1
		4	GRM4-DCS-1
-DCG	GOLD	2	GRM2-DCG-1
		4	GRM4-DCG-1
-DDB	BLACK	2	GRM2-DDB-1
		4	GRM4-DDB-1
-DDS	SILVER	2	GRM2-DDS-1
		4	GRM4-DDS-1
-DDG	GOLD	2	GRM2-DDG-1
		4	GRM4-DDG-1
-DUB	BLACK	2	GRM2-DUB-1
		4	GRM4-DUB-1
-SCR	RED	2	GRM2-SCR-1
-SDR	RED	2	GRM2-SDR-1
-DCR	RED	2	GRM2-DCR-1
-DDR	RED	2	GRM2-DDR-1



# SERIES GRM CLAMPS SIZES 2 & 4 DESIGN #2 F & K JAW STYLES EXPLODED VIEW

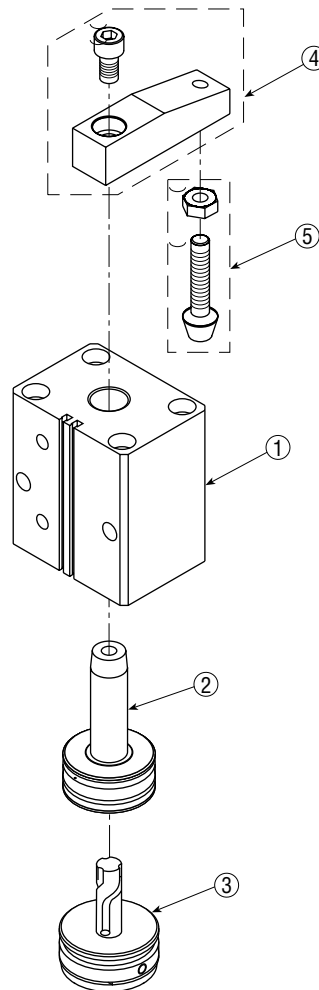


# phd SERIES PA CLAMP PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	PART NUMBER					
		PAS2x	PAS3x	PAS4x	PAS5x	PAS6x	
1	Body Assembly	Imperial	71087-02	71087-03	71087-04	71087-05	71087-06
		Metric	71088-02	71088-03	71088-04	71088-05	71088-06
2	Piston & Rod Assembly	71091-02	71091-03	71091-04	71091-05	71091-06	
3	Splines & Plug Assembly	90° Right	71092-02-R	71092-03-R	71092-04-R	71092-05-R	71092-06-R
		90° Left	71092-02-L	71092-03-L	71092-04-L	71092-05-L	71092-06-L

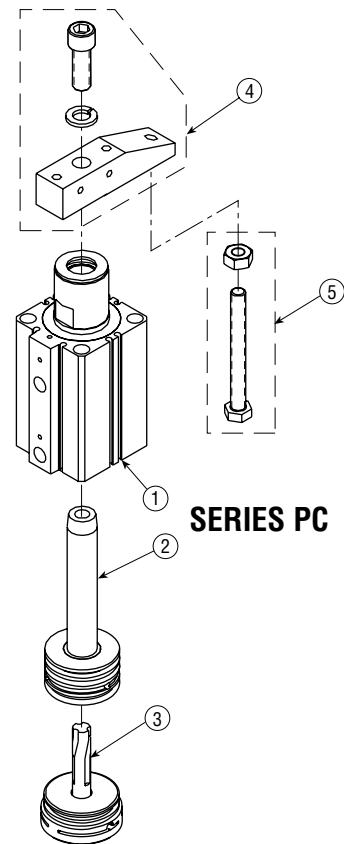
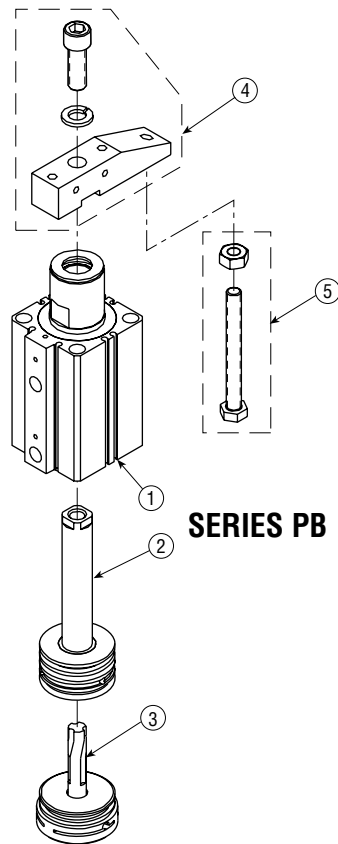
## KITS

KEY	KIT DESCRIPTION	PART NUMBER					
		PAS2x	PAS3x	PAS4x	PAS5x	PAS6x	
4	Arm Kits	Single Steel	AS-PAS2-1	AS-PAS3-1	AS-PAS4-1	AS-PAS5-1	AS-PAS6-1
		Single Copper	ASC-PAS2-1	ASC-PAS3-1	ASC-PAS4-1	ASC-PAS5-1	ASC-PAS6-1
5	Spindle Kits	Standard Adjustable	71200-02	71200-03	71200-03	71200-05	71200-05
		Neoprene Tipped	71100-02	71100-03	71100-03	71100-05	71100-05
	Seal Kit	71105-02	71105-03	71105-04	71105-05	71105-06	
	Mounting Kit	End	71110-02	71110-03	71110-04	71110-05	71110-06
		Side	71111-02	71111-03	71111-04	71111-05	71111-06
	Switch Kit	Reed	71115-01-01	71115-01-01	71115-01-01	71115-01-01	71115-01-01
		Hall Effect PNP (Source)	71125-01-01	71125-01-01	71125-01-01	71125-01-01	71125-01-01
		Hall Effect NPN (Sink)	71125-02-01	71125-02-01	71125-02-01	71125-02-01	71125-02-01
		Magnetoresistive PNP (Source)	71125-04-01	71125-04-01	71125-04-01	71125-04-01	71125-04-01
		Magnetoresistive NPN (Sink)	71125-03-01	71125-03-01	71125-03-01	71125-03-01	71125-03-01



# phd SERIES PB AND PC CLAMPS PARTS LIST AND REPAIR KITS

KEY	DESCRIPTION	MODEL NUMBER								
		PBS2x	PBL2x	PBS3x	PBL3x	PBS4x	PBL4x	PBS5x	PBL5x	PCL5x
1	Body Assembly Imperial	73364-04	73364-05	73364-06	73364-07	73364-08	73364-01	73364-02	73364-03	80274-08
	Body Assembly Metric	73365-04	73365-05	73365-06	73365-07	73365-08	73365-01	73365-02	73365-03	80275-08
2	Piston & Rod Assembly	73366-04	73366-05	73366-06	73366-07	73366-08	73366-01	73366-02	73366-03	80270-08
3	Spline & Plug Assembly									
	90° Rotation, Right	73367-04-R	73367-05-R	73367-06-R	73367-07-R	73367-08-R	73367-01-R	73367-02-R	73367-03-R	73367-03-R
	90° Rotation, Left	73367-04-L	73367-05-L	73367-06-L	73367-07-L	73367-08-L	73367-01-L	73367-02-L	73367-03-L	73367-03-L
4	Arm Kit									
	Aluminum	73352-003	73352-003	73352-004	73352-004	73352-001	73352-001	73352-002	73352-002	80267-05-03-01
	Aluminum Blank	73354-003	73354-003	73354-004	73354-004	73354-001	73354-001	73354-002	73354-002	80268-05-03-01
5	Spindle Kit	Steel	71200-02	71200-02	71200-03	71200-03	71200-03	71200-03	71200-06	71200-06
	Seal Kit		73368-03	73368-03	73368-04	73368-04	73368-01	73368-01	73368-02	73368-03
	Mounting Kit		73362-04	73362-04	73362-06	73362-06	73362-01	73362-01	73362-02	73362-03
	Anti-Backlash Kit		73356-04	73356-05	73356-06	73356-07	73356-08	73356-01	73356-02	73356-03
	Weld Cover Kit		73363-04	73363-05	73363-06	73363-07	73363-08	73363-01	73363-02	73363-03
	Switch Kit									
	Solid State NPN (Sink)		73360-01	73360-01	73360-01	73360-01	73360-01	73360-01	73360-01	73360-01
	Solid State PNP (Source)		73360-02	73360-02	73360-02	73360-02	73360-02	73360-02	73360-02	73360-02



# phd SERIES PDG DISAPPEARING GAGE PARTS LIST AND REPAIR KITS

KEY	DESCRIPTION	PART NUMBER
1	Mounting Bracket, Molded Bearing	73183-01
2	Impact Bar Assembly	73162-xxx
4	40 mm Bore ISO Cylinder	PDG4-5-xxx-H4
5	Rod Coupling	73156
6	Rod Coupling Nut	73158
7	Thrust Washer	73157
8	Cylinder Mounting Screws	59104-118
9	Hex Head Screw	16281-087
10	Nut	3204-020
11	Lock Washer	61745-003

-xxx = stroke (mm) - Available strokes: 50 mm (-050)  
80 mm (-080)  
100 mm (-100)  
125 mm (-125)  
160 mm (-160)  
200 mm (-200)

#### ORDERING EXAMPLE:

Replacement Cylinder Only = PDG4-5x100-H4

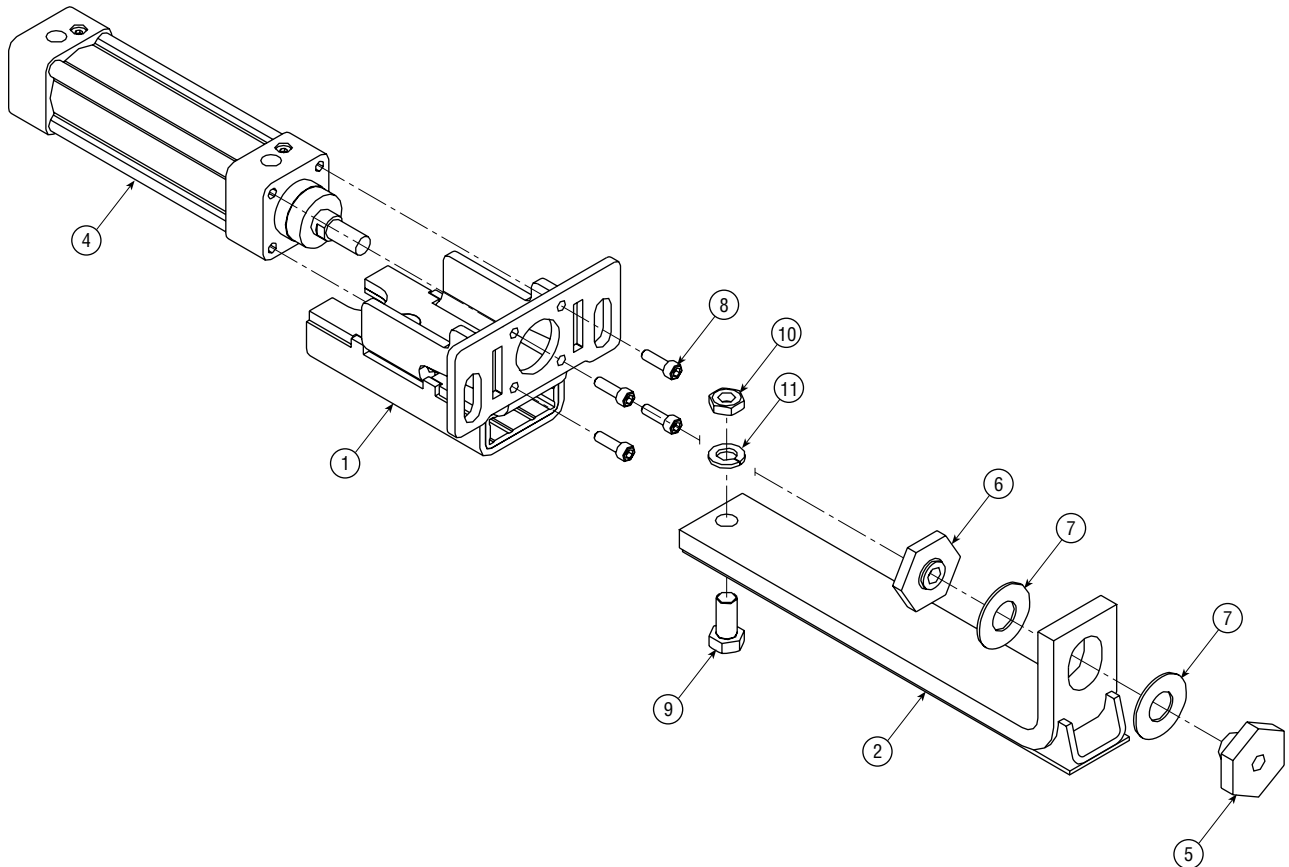
Replacement Gage Without Cylinder = PDG4-5x100-H1

## KITS

KIT DESCRIPTION	KIT NUMBER
Thrust Washer Kit	73169
Fastener Kit	73171-01

OPTION	FITTING PART NUMBER
PF01	62178-008
PF02	62178-010
PF03	71121-005

DESCRIPTION	KIT NO.
Reed Switch	73198-01
Hall Effect Switch (PNP)	73198-02
Hall Effect Switch (NPN)	73198-03
Switch Bracket	73167



# phd SERIES PDK CROWDER PARTS LIST AND REPAIR KITS

KEY	DESCRIPTION	PART NUMBER
1	Mounting Bracket, Molded in Place Bearing	73183-02
2	Guide Bar	73184-xxx
3	Tool Plate	- Standard - 1363A
		73180-01-02 73180-01-01
4	Backing Plate	73188-02
5	40 mm Bore ISO Cylinder	PDK4-5-xxx-H4
6	Cylinder Coupling	73189-01
7	Thrust Washer	73157
8	Socket Head Cap Screw (M10 x 16)	59104-162
9	Socket Head Cap Screw (M6 x 20)	59104-118
10	Hex Head Cap Screw (M12 x 25)	16281-087
11	Nut (M12)	3204-020
12	Lock Washer (M12)	61745-003
13	Socket Head Cap Screw (M10 x 30)	59104-027

-xxx = stroke (mm) - Available strokes: 50 mm (-050)  
75 mm (-075)  
80 mm (-080)  
100 mm (-100)  
125 mm (-125)  
150 mm (-150)  
160 mm (-160)  
200 mm (-200)

#### ORDERING EXAMPLE:

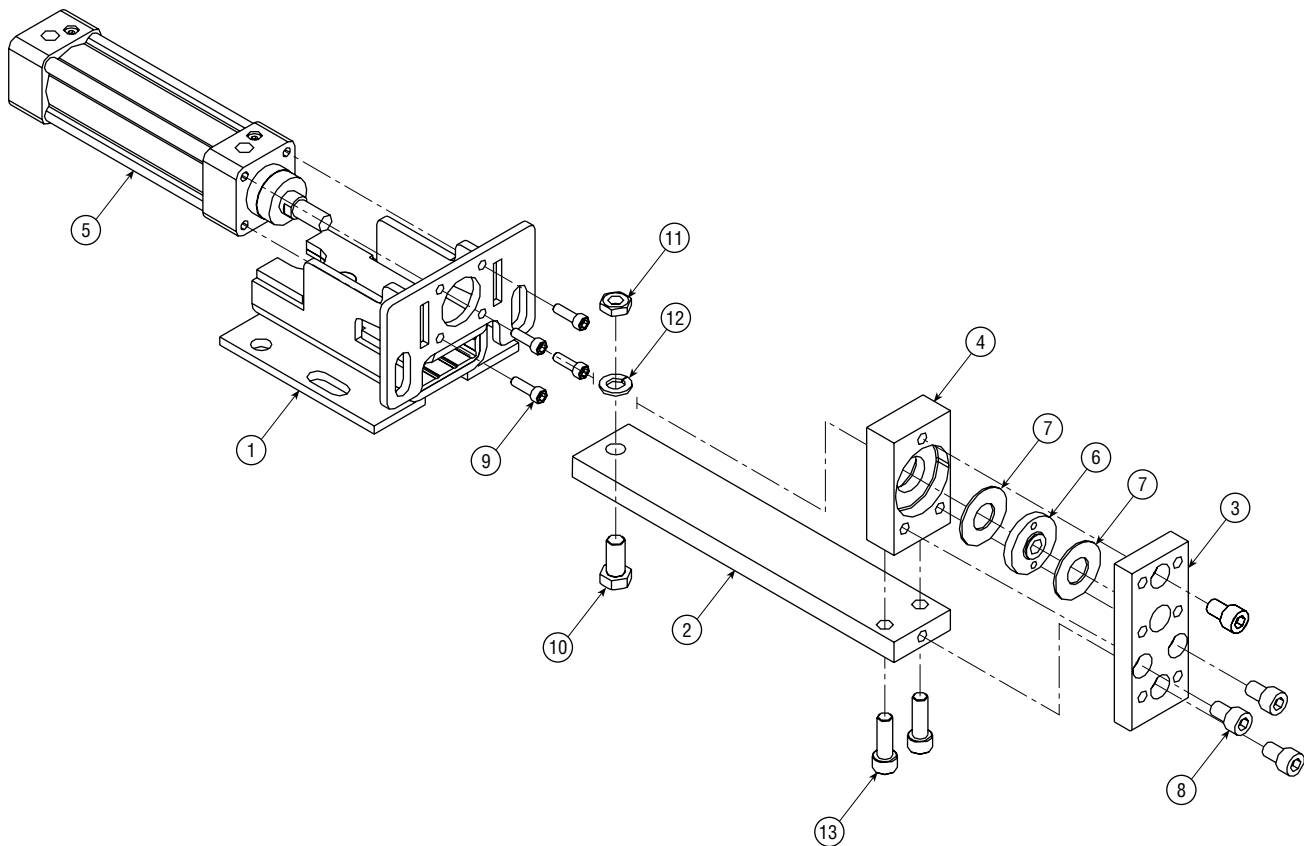
Replacement Cylinder Only = PDK4-5x100-H4  
Replacement Crowder Without Cylinder = PDK4-5x100-H1

## KITS

KIT DESCRIPTION	KIT NUMBER
Thrust Washer Kit	73169
Fastener Kit	73171-02

OPTION	FITTING PART NUMBER
PF01	62178-008
PF02	62178-010
PF03	71121-005

DESCRIPTION	KIT NO.
Reed Switch	73198-01
Hall Effect Switch (PNP)	73198-02
Hall Effect Switch (NPN)	73198-03
Switch Bracket	73167



# phd SERIES PEC CLAMPS PARTS LIST AND REPAIR KITS

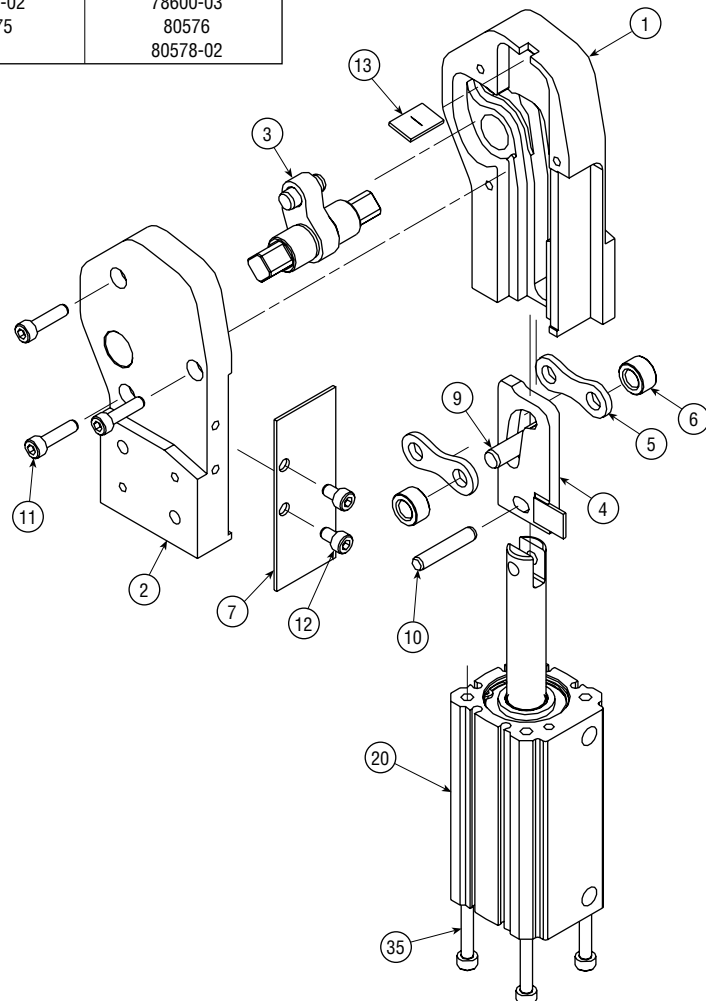
KEY	DESCRIPTION	PEC22/PEC23	PEC33/PEC34	PEC44/PEC45	
1	Right Body	80509-3-1	78595-1-1	80534-1-1	
2	Left Body	80510-3-1	78596-1-1	80535-1-1	
3	Pinion Assembly	PEC3xD - Double	80511	78597	80536
		PEC3xL - Left	80512	78598	80537
		PEC3xR - Right	80513	78599	80538
4	Cam	80514-03-1	78559-05-1	80539-03-1	
5	Link	80515-01	78560-01	80540-01	
6	Roller Bearing	80516	78561	80541	
7	Switch Slot Cover	80517	80517	80542	
9	Dowel Pin	Roller-Link-Cam	17831-098	17831-106	17831-117
10	Dowel Pin	Piston Rod-Cam	17831-049	17831-098	17831-098
11	Body Mounting Screws	59104-102	59104-102	59104-102	
12	Switch Slot Cover Screw	59104-098	59104-098	59104-098	
13	Lock Release Cover	78577	78577	78577	
20	Cylinder Assembly	* 80521-xx-xx-xx-xxx	* 78601-xx-xx-xx-xxx	* 80546-xx-xx-xx-xxx	
35	Cylinder Mounting Screws	74675-728	74675-729	74675-730	

\* Consult PHD for cylinder assembly replacement part numbers

KIT DESCRIPTION	PEC22	PEC23	PEC33	PEC34	PEC44	PEC45
Cylinder Repair Kit (Standard)	80573-01	80573-03	78586-01	78586-03	80574-01	80574-03
Cylinder Repair Kit (-V4 Option)	80573-02	80573-04	78586-02	78586-04	78586-02	80574-04
Blank Straight Arm Kit	80569-00		78585-00		80570-00	
Straight Arm Kit	80569-01		78585-01		80570-01	
Blank U-Style Arm Kit	80569-02		78585-02		80570-02	
U-Style Arm Kit	80569-03		78585-03		80570-03	
96° Rotation Kit	78600-01		78600-02		78600-03	
Positional Sensor Mounting Kit	80575		80575		80576	
Flange Mounting Kit (-M002)	80578-01		—		80578-02	

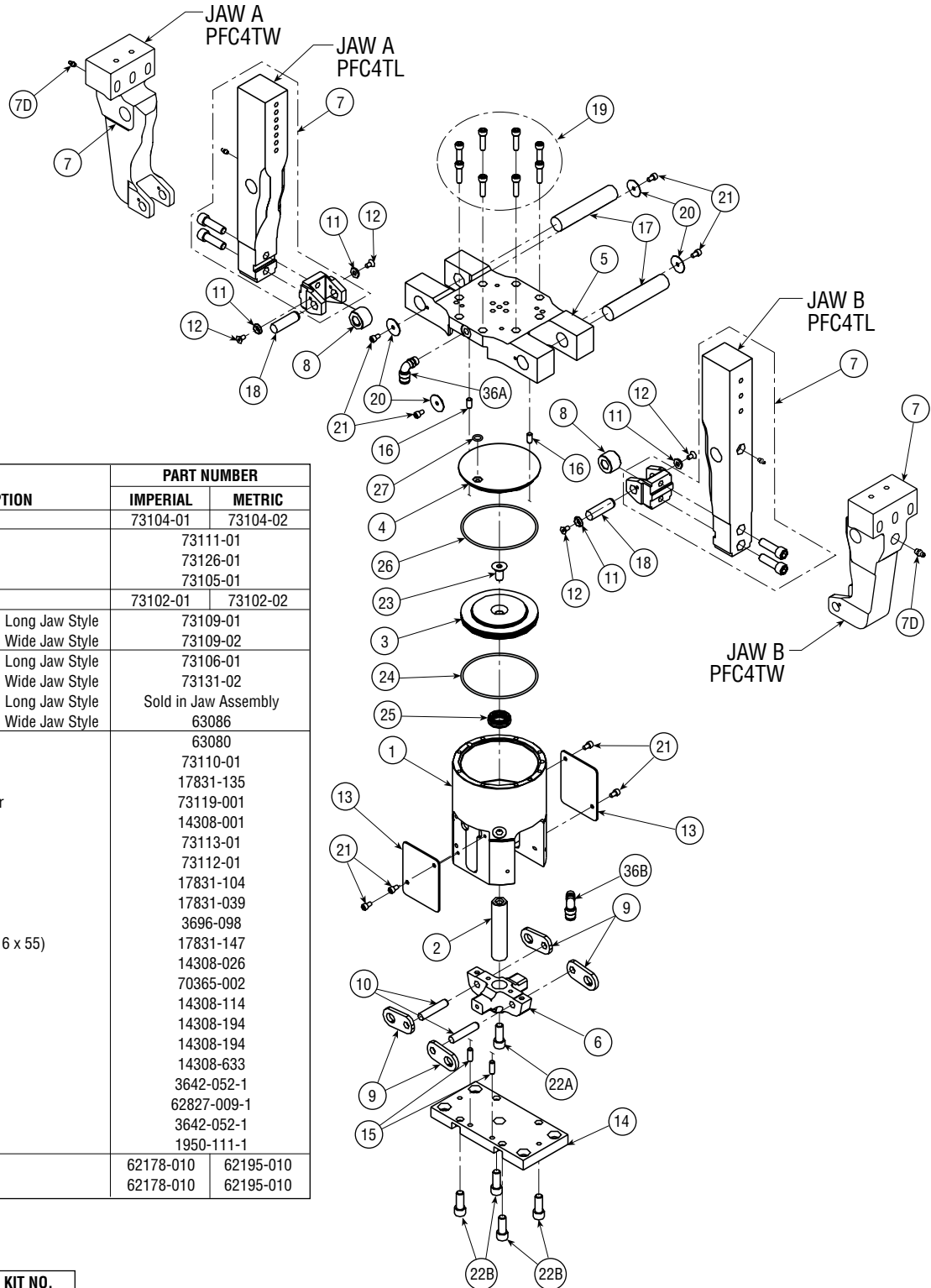
#### NOTES:

- 1) Cylinder repair kits include all seals, retaining rings, and shock pads required to rebuild cylinder. Consult PHD for piston rod, bushing and bore plug replacements.
- 2) Position sensor mounting kit includes switch housing and mounting hardware.





# phd SERIES PFC FRAME CLAMP PARTS LIST AND REPAIR KITS



KEY	DESCRIPTION	PART NUMBER	
		IMPERIAL	METRIC
1	Body	73104-01	73104-02
2	Piston Rod		73111-01
3	Piston		73126-01
4	Bore Plug		73105-01
5	Bushing Block	73102-01	73102-02
6	16° Rotation Cam	Long Jaw Style	73109-01
		Wide Jaw Style	73109-02
7	Jaw Assembly	Long Jaw Style	73106-01
		Wide Jaw Style	73131-02
7D	Grease Zerk	Sold in Jaw Assembly 63086	
8	Roller Bearing		63080
9	Link		73110-01
10	Dowel Pin (12 x 60)		17831-135
11	Counter Sink Washer		73119-001
12	SFHCS (M6 x 12)		14308-001
13	Cover Plate		73113-01
14	Mounting Plate		73112-01
15	Dowel Pin (8 x 24)		17831-104
16	Dowel Pin (8 x 16)		17831-039
17	Pivot Pin (1 x 5)		3696-098
18	Roller Bearing Pin (16 x 55)		17831-147
19	SHCS (M8 x 30)		14308-026
20	Washer		70365-002
21	SHCS (M6 x 10)		14308-114
22A	SHCS (M12 x 30)		14308-194
22B	SHCS (M12 x 30)		14308-194
23	SFHCS (M12 x 25)		14308-633
24	Piston Seal		3642-052-1
25	Rod Seal		62827-009-1
26	Bore Plug Seal		3642-052-1
27	Manifold Seal		1950-111-1
36A	Port Fitting, LAA	62178-010	62195-010
36B	Port Fitting, LAA	62178-010	62195-010

## KITS

KIT DESCRIPTION	KIT NO.
Seal Kit	73123-01
Fastener Kit	73124-01
Cover Plate Kit	73122-01
Mounting Plate Kit	73125-01

# phd SERIES PHL HEAVY LIFTER PARTS LIST AND REPAIR KITS

OPTION	KEY	DESCRIPTION	PART NUMBER				
			M001-T001	M002-T001	M004-T002		
			PHL6	PHL4	PHL6	PHL8	
Standard Unit	1	ISO Cylinder	73165-XCPC6-5-xxx	73165-XCPC6-5-xxx	73165-XCPC4-5-xxx	73165-XCPC6-5-xxx	73165-XCPC8-5-xxx
	2	Bearing Flange	73805-001	73805-001	73805-001	73805-001	73805-001
	3	Bearing Cartridge Assembly	73802-001-01	73802-001-01	73802-001-01	73802-001-01	73802-001-03
	4	Mounting Plate	73807-001	73807-002	73807-009	73807-010	73807-011
	5	Rod Coupling	73808-001	73808-001	73808-005	73808-001	73808-007
	6	Tool Plate Coupling	73808-002	73808-002	73808-006	73808-002	73808-008
	7	Guide Shaft	73809-11-xxxx	73809-11-xxxx	73809-11-xxxx	73809-11-xxxx	73815-11-xxxx
	8	Tool Plate	73810-001	73810-001	73810-007	73810-006	73810-008
	9	Thrust Washer	73811-001	73811-001	73811-002	73811-001	73811-003
	10	Flat Washer	70365-007	70365-007	70365-007	70365-007	70365-007
	11	Guide Shaft SHCS (M10 x 16)	59104-162	59104-162	59104-162	59104-162	59104-162
	12	Bearing Flange SHCS (M8 x 20)	59104-139	59104-139	59104-139	59104-139	59104-139
	13	Cylinder Mounting SHCS	59104-031	59104-032	59104-122	59104-142	59104-170
	14	Tool Plate SHCS (M10 x 25)	59104-166	59104-166	59104-166	59104-166	59104-166
	15	Grease Zerk	63086	63086	63086	63086	63086
PF02 PF04	17	Plastic Tube Port Fitting	62178-014 62195-011	62178-014 62195-011	62178-010 62195-010	62178-014 62195-011	62178-014 62195-011
SC01 SC01	18 19	Shock Pad Stop Collar	52990 11272-011-0	52990 11272-011-0	52990 11272-011-0	52990 11272-011-0	79652 79627-1-4

-xxx and -xxxx = Stroke (mm) - Available Strokes: 50 mm (-050 or -0050)  
 75 mm (-075 or -0075)  
 80 mm (-080 or -0080) (Not available as standard on PHL8 units)  
 100 mm (-100 or -0100)  
 125 mm (-125 or -0125)  
 150 mm (-150 or -0150)  
 160 mm (-160 or -0160) (Not available as standard on PHL8 units)  
 175 mm (-175 or -0175)  
 200 mm (-200 or -0200)  
 225 mm (-225 or -0225)  
 250 mm (-250 or -0250)  
 275 mm (-275 or -0275)  
 300 mm (-300 or -0300)

**ORDERING EXAMPLE:**  
 Replacement Cylinder Only = PHL6-5x100-H4  
 Replacement Lifter Without Cylinder = PHL6-5x100-H1

## KITS

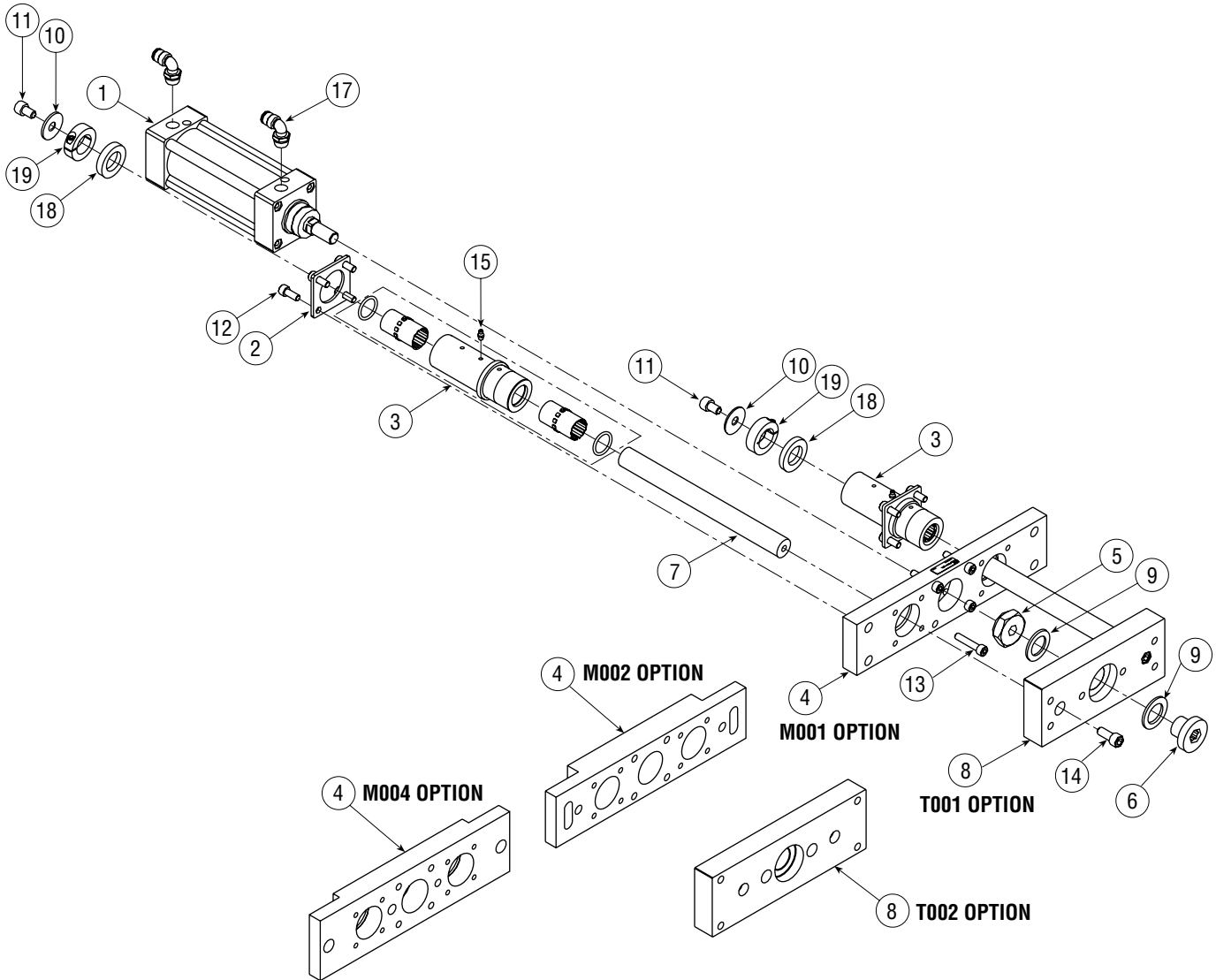
KIT DESCRIPTION	KIT NUMBER		
	PHL4	PHL6	PHL8
Fastener Kit M001-T001	—	73812-001	—
M002-T001	—	73812-002	—
M004-T002	73812-013	73812-014	73812-015
Stop Collar and Shock Pad Kit	73812-003	73812-003	73812-016
Thrust Washer Kit	73812-011	73812-005	73812-017
Composite Bearing Kit	73812-006	73812-006	73812-018

## GM SPECIFICATION NUMBER

PHD LIFTER DESCRIPTION	GMGDS CODE		
	PHL4-5-xxx	PHL6-5-xxx	PHL8-5-xxx
PHLx-x-050-M004-T002	90.35.55-4050	90.35.60-6350	90.35.65-8050
PHLx-x-075-M004-T002	90.35.55-4075	90.35.60-6375	90.35.65-8075
PHLx-x-100-M004-T002	90.35.55-40100	90.35.60-63100	90.35.65-80100
PHLx-x-125-M004-T002	90.35.55-40125	90.35.60-63125	90.35.65-80125
PHLx-x-150-M004-T002	90.35.55-40150	90.35.60-63150	90.35.65-80150
PHLx-x-175-M004-T002	90.35.55-40175	90.35.60-63175	90.35.65-80175
PHLx-x-200-M004-T002	90.35.55-40200	90.35.60-63200	90.35.65-80200
PHLx-x-225-M004-T002	90.35.55-40225	90.35.60-63225	90.35.65-80225
PHLx-x-250-M004-T002	90.35.55-40250	90.35.60-63250	90.35.65-80250
PHLx-x-275-M004-T002	90.35.55-40275	90.35.60-63275	90.35.65-80275
PHLx-x-300-M004-T002	90.35.55-40300	90.35.60-63300	90.35.65-80300

-xxx = STROKE IN mm

# phd SERIES PHL HEAVY LIFTER EXPLODED VIEW



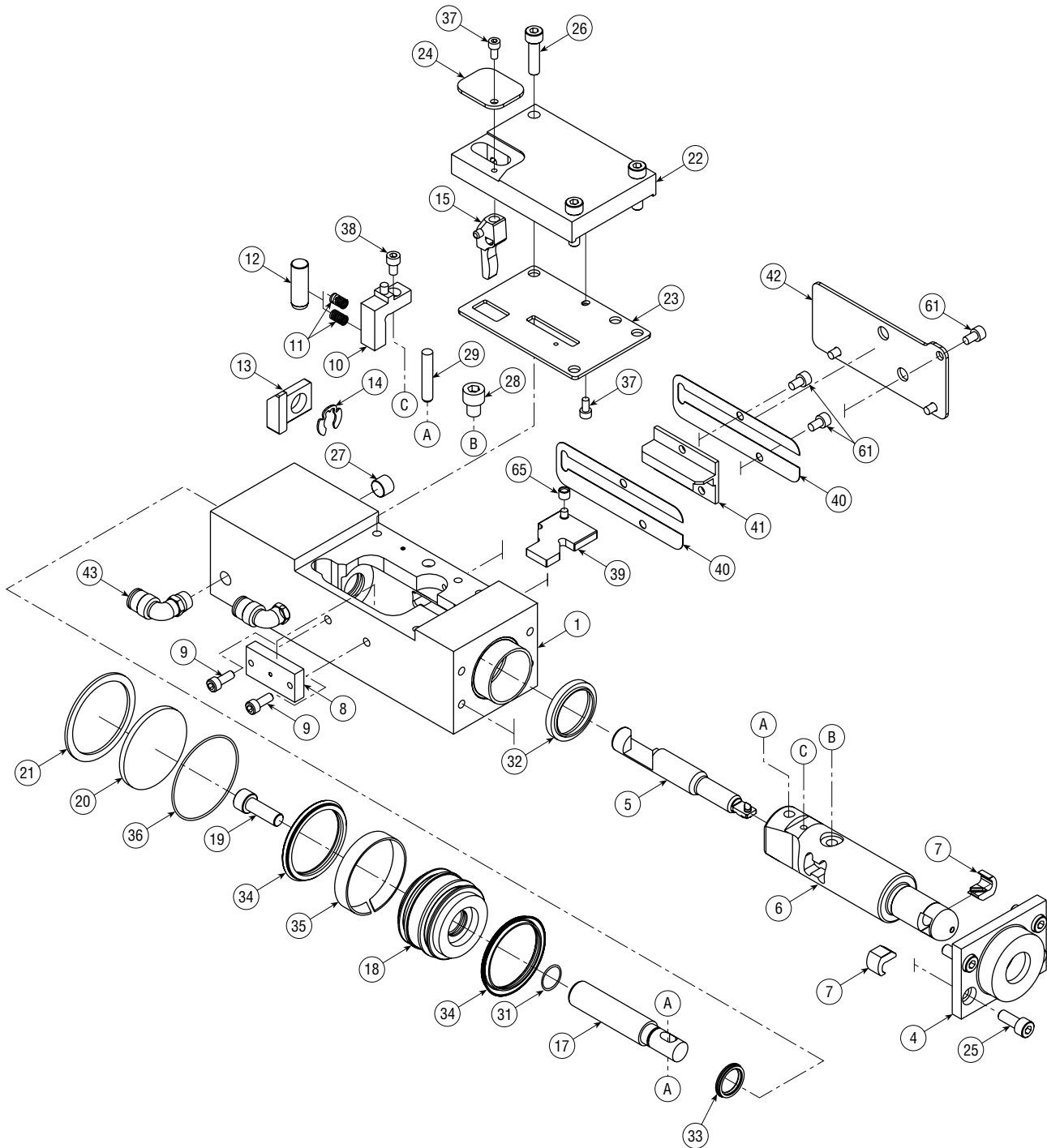
# phd SERIES PLC PIN CLAMP PARTS LIST AND REPAIR KITS

ITEM NO.	DESCRIPTION	PART NUMBER					
		PLC5T-x-16x	PLC5T-x-19x	PLC5T-x-20x	PLC6T-x-25x	PLC6T-x-35x	PLC6T-x-40x
1	Body Assembly	Imperial	76765-01-01			76765-02-01	
		Metric	76765-01-02			76765-02-02	
4	Part Support		74729-16-02	74729-19-02	74729-20-02	74729-25-01	74729-35-01
5	Drive Rod		75716-16-01	75716-20-01	75716-20-01	75716-25-01	
6	Locator Pin	xxA	74726-16-03	—	74726-20-03	74726-25-03	74726-35-03
		xxB	75722-16-03	75722-19-03	75722-20-03	75722-25-03	75722-35-03
7	Finger		74727-16-01	74727-19-01	74727-20-01	74727-25-01	74727-35-01
8	Race		74742-01				
9	M6 x 16 SHCS		59104-033				
10	Spring Holder Assembly		74748-02				
11	Cam Spring		52152				
12	Cam Locking Pin		3696-099				
13	Lock Release		74739-02				
14	Retaining Ring		71011-002-01				
15	Lock Release Pin		74734-02				
17	Piston Rod		74733-01				
18	Piston		74732-02			74732-01	
19	M10 x 30 SHCS		59104-027				
20	Bore Plug		73881			73882	
21	Retaining Ring		1980-493			1980-646	
22	Lock Release Housing		74737-02				
23	Cover Plate		74736-01				
24	Release Pin Slot Cover		74747-01				
25	M8 x 20 (Part Spacer) SHCS		59104-139				
26	M8 x 30 (Switch Cover) SHCS		59104-026				
27	Port Plug	Imperial	5733-003				
		Metric	14613-002				
28	M10 x 12 SHCS		59104-160				
29	Dowel Pin (8 mm x 45) Rod to Pin		17831-110				
31	Piston Rod O-Ring Seal		3642-022-1				
32	Rod Wiper		74745-001-1				
33	Rod Seal		74744-001-1				
34	Piston Seal		63624-013-1			74743-001-1	
35	Piston Wear Ring		62829-003			62829-004	
36	Bore Plug Seal		3642-029-1			3642-083-1	
37	M5 x 10 (Release Cover & Cover Plate) SHCS		59104-021				
38	M6 x 10 (Spring Holder Mounting) SHCS		59104-114				
39	Driver		75714-02				
40	Driver Shim		75717-01				
41	Cam		75712-04				
42	Cam Cover Plate		75713-01				
61	M6 x 12 (Cam Mounting & Cover) SHCS		59104-115				
65	Roller Bearing		74506-01				
43	Port Fitting For LxA Option	Imperial	62178-010				
		Metric	62195-010				
43	Port Fitting For LxB Option	Imperial	71120-002				
		Metric	71121-002				

## KITS

KIT DESCRIPTION	PART NUMBER	
	PLC5x	PLC6x
Seal Kit	75725-01	75725-02
Fastener Kit	75726-01	75726-02
Rebuild Kit	76279-01	76279-02

# phd SERIES PLC PIN CLAMP EXPLODED VIEW



# phd SERIES PLCE ELECTRIC PIN LOCATING CLAMP PARTS LIST AND REPAIR KITS

(These parts do not change with pin size/style)

ITEM NO	DESCRIPTION	PART NUMBER
5	Body Assembly	80023-01
7	Rod Wiper	74745-001-1
9	Motor Mounting Head	80028-01
10	SHCS; (M6 x 25)	59104-120
11	O-Ring; 4-3/4 x 5 x 1/8	1950-243-1
12	Motor Leadscrew Assembly	80021-01
14	Motor	80032-01-00
16	Motor Mounting Cap	80029-01
17	SHCS; (M6 x 100)	59104-131
18	Finger Rod Driver	75714-02
19	Roller Bushing	74506-01
20	Cam Shim	75717-01
21	Cam	75712-04
22	Cam Cover	75713-01
23	SHCS; (M6 x 12)	59104-115
24	Dowel Pin; (8 mm x 45 mm)	17831-110
25	SHCS; (M10 x 12)	59104-160
26	Spring Holder	74748-02
27	SHCS; (M6 x 10)	59104-114
28	Cover Plate	74736-01
29	Housing	74737-02
30	Slot Cover	74747-01
31	SHCS; (M5 x 10)	59104-021
32	SHCS; (M8 x 30)	59104-026
33	SHCS; (M8 x 20)	59104-139

## KITS

KIT DESCRIPTION	KIT NUMBER
Seal Kit	80050-01
Fastener Kit	80051-01

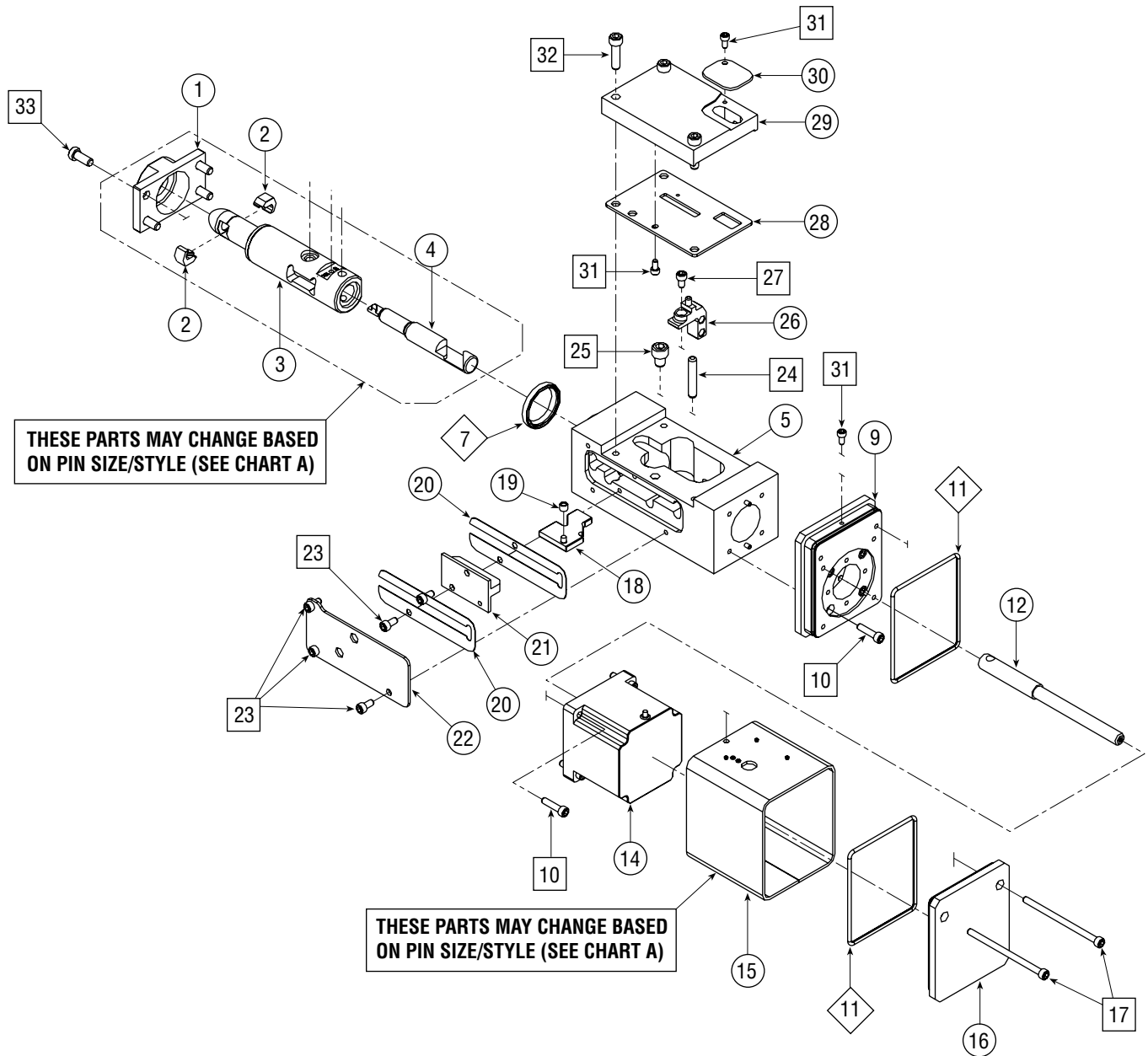
## CHART A

(These parts may change with pin size/style)

ITEM NO	DESCRIPTION	PART NUMBER								
		PLCExT-1-16x	PLCExT-1-18x	PLCExT-1-19x	PLCExT-1-20x	PLCExT-1-23x	PLCExT-1-25x	PLCExT-1-35x	PLCExT-1-40x	
1	Part Support	74729-16-02	74729-18-02	74729-19-02	74729-20-02	74729-23-02	74729-25-01	74729-35-01	74729-40-01	
2	Finger	74727-16-01	74727-18-01	74727-19-01	74727-20-01	74727-23-01	74727-25-01	74727-35-01	74727-40-01	
3	Locating Pin	xxA	74726-16-03	—	—	74726-19-03	—	74726-25-03	74726-35-03	74726-40-03
		xxB	75722-16-03	75722-18-03	75722-19-03	75722-20-03	75722-23-03	75722-25-03	75722-35-03	75722-40-03
4	Finger Drive Rod	75716-16-01			75716-20-01		75716-25-01			
15	Controller Assembly	79410-03-02				79410-03-01				



# SERIES PLCE ELECTRIC PIN LOCATING CLAMP EXPLODED VIEW



**NOTES:**

- 1) ITEMS SHOWN IN ARE INCLUDED IN FASTENER KIT
- 2) ITEMS SHOWN IN ARE INCLUDED IN SEAL KIT

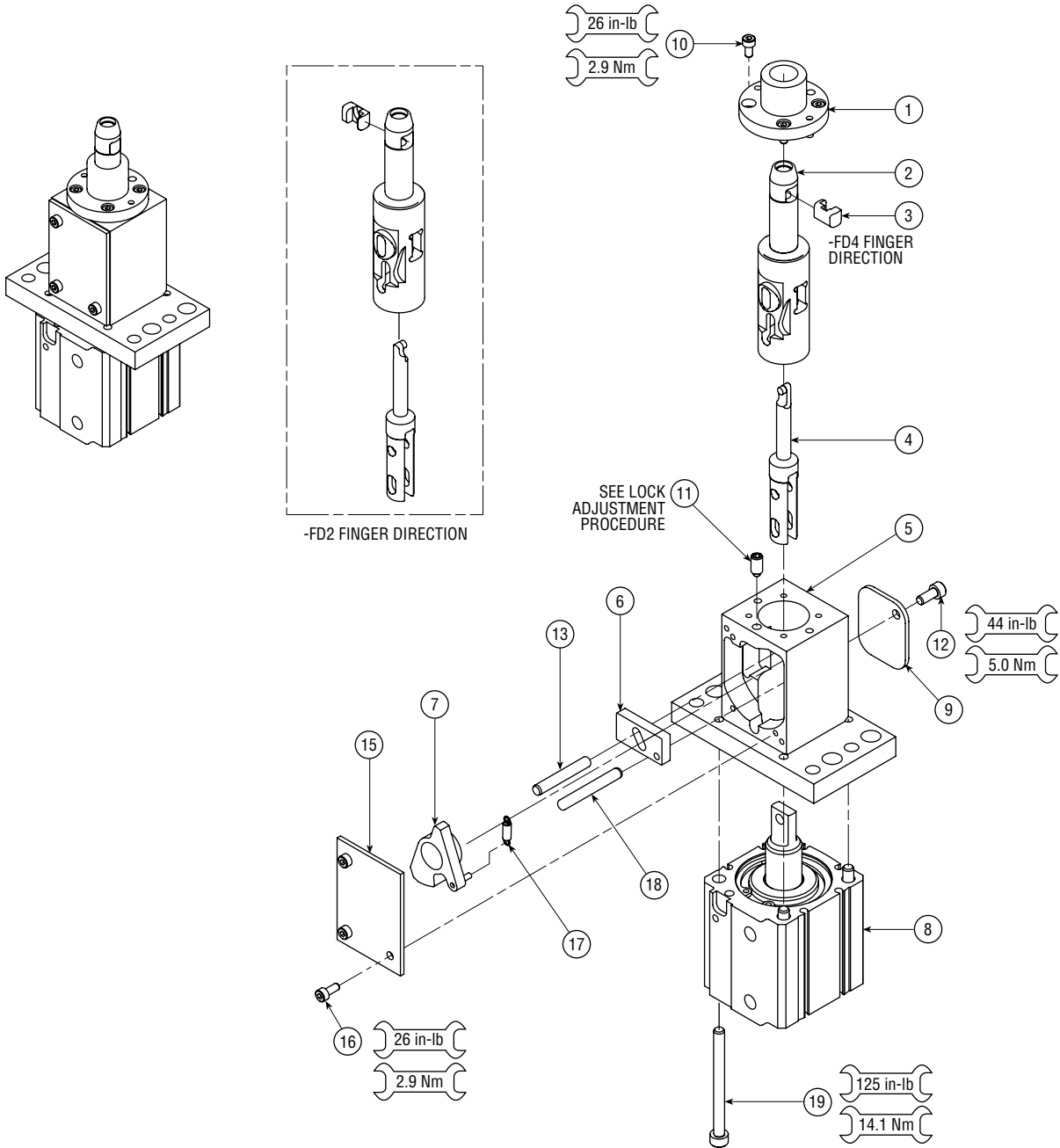


# SERIES PLK PIN LOCATING CLAMP PARTS LIST AND REPAIR KITS

ITEM NO.	DESCRIPTION	CLAMP SIZE							
		1250		1550		1850		2450	
		IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
1	Part Support Assembly	79944-01-1250		79944-01-1550		79944-01-1850		79944-01-2450	
2	Locating Pin Assembly	79943-01-1250		79943-01-1550		79943-01-1850		79943-01-2450	
3	Finger	79952-01-1250		79952-01-1550		79952-01-1850		79952-01-2450	
4	Drive Rod	79954-01-1250		79954-01-1550		79954-01-1850		79954-01-1550	
5	Body Assembly PLK510	79946-01							
5	Body Assembly PLK505	79946-02							
6	Sequence Cam	79958-01							
7	Lock Bracket Assembly	79945-01							
8	Cylinder Assembly without Magnet								
	Standard	79969-01-01-01-1	79969-02-01-01-1	79969-01-01-01-1	79969-02-01-01-1	79969-01-01-01-1	79969-02-01-01-1	79969-01-01-01-1	79969-02-01-01-1
	R01 (flag rod)	79969-01-03-01-1	79969-02-03-01-1	79969-01-03-01-1	79969-02-03-01-1	79969-01-03-01-1	79969-02-03-01-1	79969-01-03-01-1	79969-02-03-01-1
	R02 (double rod)	79969-01-02-01-1	79969-02-02-01-1	79969-01-02-01-1	79969-02-02-01-1	79969-01-02-01-1	79969-02-02-01-1	79969-01-02-01-1	79969-02-02-01-1
	Cylinder Assembly with Magnet								
	SW00, 41, 42, 51, 52								
	Standard	79969-01-01-02-1	79969-02-01-02-1	79969-01-01-02-1	79969-02-01-02-1	79969-01-01-02-1	79969-02-01-02-1	79969-01-01-02-1	79969-02-01-02-1
	R01 (flag rod)	79969-01-03-02-1	79969-02-03-02-1	79969-01-03-02-1	79969-02-03-02-1	79969-01-03-02-1	79969-02-03-02-1	79969-01-03-02-1	79969-02-03-02-1
	R02 (double rod)	79969-01-02-02-1	79969-02-02-02-1	79969-01-02-02-1	79969-02-02-02-1	79969-01-02-02-1	79969-02-02-02-1	79969-01-02-02-1	79969-02-02-02-1
9	Cover Plate	74747-01							
10	Part Support Mounting Screws	59104-086							
11	Socket Set Screw	17424-136							
12	Cover Plate Mounting Screw	59104-099							
13	Dowel Pin	17831-009							
15	Cover Plate	79962-00							
16	Switch Cover Mounting Screws	59104-018							
17	Tension Spring	2579-045							
18	Dowel Pin	17831-059							
19	Cylinder Mounting Screws	59104-127							



# phd SERIES PLK PIN LOCATING CLAMP EXPLODED VIEW



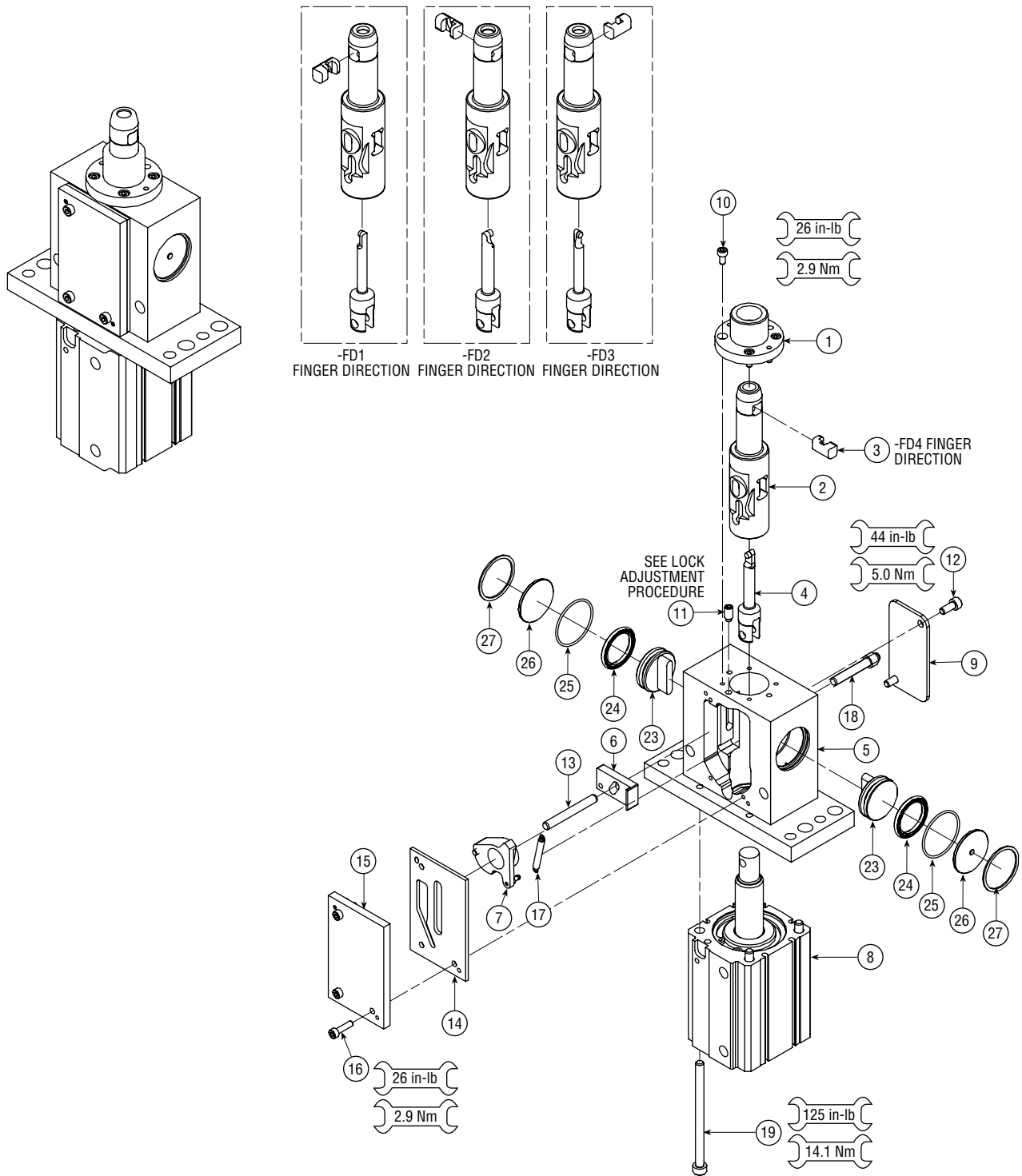
- NOTES:**  
 1) -FD4 FINGER DIRECTION SHOWN IS STANDARD  
 2) PORT POSITION SHOWN IN POSITION 1



# SERIES PLKD DISAPPEARING PIN LOCATING CLAMP PARTS LIST AND REPAIR KITS

ITEM NO.	DESCRIPTION	CLAMP SIZE							
		1250		1550		1850		2450	
		IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
1	Part Support Assembly	79944-02-1250		79944-02-1550		79944-02-1850		79944-02-2450	
2	Locating Pin Assembly	79943-01-1250		79943-01-1550		79943-01-1850		79943-01-2450	
3	Finger Standard, FDx	79952-01-1250		79952-01-1550		79952-01-1850		79952-01-2450	
4	Drive Rod FD2, FD4 (Standard) FD1, FD3	79954-25		79954-16		79954-16		79954-16	
		79954-26		79954-24		79954-24		79954-24	
5	Body Assembly 505 510	81350-01	81350-02	81350-01	81350-02	81350-01	81350-02	81350-01	81350-02
		81350-03	81350-04	81350-03	81350-04	81350-03	81350-04	81350-03	81350-04
6	Sequence Cam	79958-02		79958-02		79958-02		79958-02	
7	Lock Bracket Assembly	79945-02		79945-02		79945-02		79945-02	
8	Cylinder Assembly without Magnet								
	505-Standard	79970-01-01-01-1	79970-02-01-01-1	79970-01-01-01-1	79970-02-01-01-1	79970-01-01-01-1	79970-02-01-01-1	79970-01-01-01-1	79970-02-01-01-1
	510-Standard	79970-01-04-01-1	79970-02-04-01-1	79970-01-04-01-1	79970-02-04-01-1	79970-01-04-01-1	79970-02-04-01-1	79970-01-04-01-1	79970-02-04-01-1
	505-R01 (flag rod)	79970-01-03-01-1	79970-02-03-01-1	79970-01-03-01-1	79970-02-03-01-1	79970-01-03-01-1	79970-02-03-01-1	79970-01-03-01-1	79970-02-03-01-1
	510-R01 (flag rod)	79970-01-06-01-1	79970-02-06-01-1	79970-01-06-01-1	79970-02-06-01-1	79970-01-06-01-1	79970-02-06-01-1	79970-01-06-01-1	79970-02-06-01-1
	Cylinder Assembly with Magnet SW00, 41, 42, 51, 52								
	505-Standard	79970-01-01-02-1	79970-02-01-02-1	79970-01-01-02-1	79970-02-01-02-1	79970-01-01-02-1	79970-02-01-02-1	79970-01-01-02-1	79970-02-01-02-1
	510-Standard	79970-01-04-02-1	79970-02-04-02-1	79970-01-04-02-1	79970-02-04-02-1	79970-01-04-02-1	79970-02-04-02-1	79970-01-04-02-1	79970-02-04-02-1
505-R01 (flag rod)	79970-01-03-02-1	79970-02-03-02-1	79970-01-03-02-1	79970-02-03-02-1	79970-01-03-02-1	79970-02-03-02-1	79970-01-03-02-1	79970-02-03-02-1	
510-R01 (flag rod)	79970-01-06-02-1	79970-02-06-02-1	79970-01-06-02-1	79970-02-06-02-1	79970-01-06-02-1	79970-02-06-02-1	79970-01-06-02-1	79970-02-06-02-1	
9	Cover Plate	79962-06							
10	Part Support Mounting Screws	59104-086							
11	Socket Set Screw	17424-136							
12	Cover Plate Mounting Screw	59104-099							
13	Dowel Pin	17831-010							
14	Cover	79962-05							
15	Cover Plate Assembly	79942-02							
16	Cover Mounting Screws	59104-020							
17	Tension Spring	81349							
18	Drive Pin Assembly	81351-01							
19	Cylinder Mounting Screws	59104-130							
23	Strip Off Piston	79984-02							
24	Strip Off Piston Seal	74042-008							
25	Bore Plug Seal	3642-027-1							
26	Bore Plug	61467							
27	Retaining Ring	57618-034							

# phd SERIES PLKD DISAPPEARING PIN LOCATING CLAMP EXPLODED VIEW



**NOTES:**  
 1) -FD4 FINGER DIRECTION SHOWN IS STANDARD  
 2) PP1 PORT POSITION SHOWN IS STANDARD

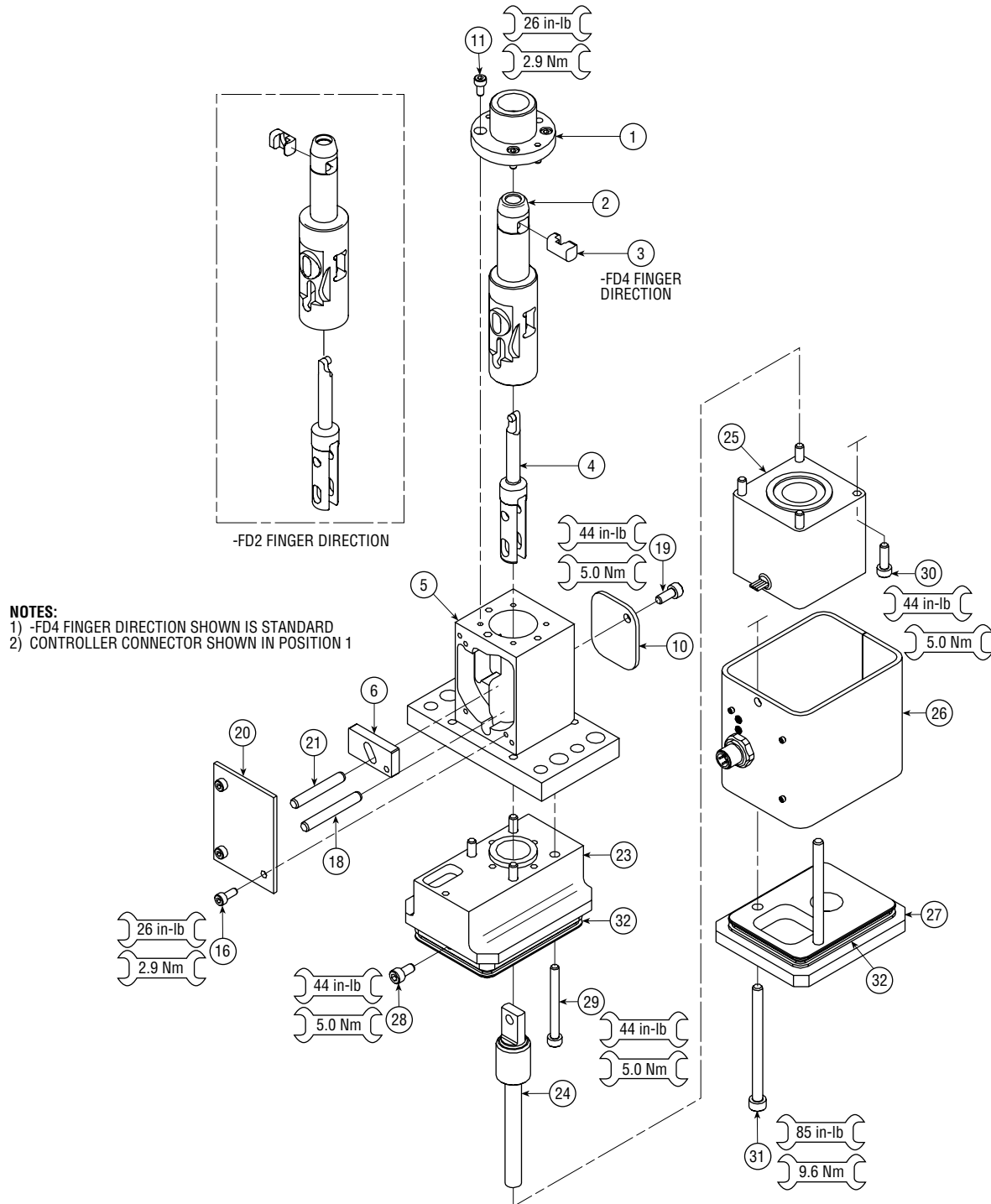


# SERIES PLKE ELECTRIC PIN LOCATING CLAMP PARTS LIST AND REPAIR KITS

ITEM NO.	DESCRIPTION	CLAMP SIZE			
		1250	1550	1850	2450
1	Part Support Assembly	79944-01-1250	79944-01-1550	79944-01-1850	79944-01-2450
2	Locating Pin Assembly	79943-01-1250	79943-01-1550	79943-01-1850	79943-01-2450
3	Finger	79952-01-1250	79952-01-1550	79952-01-1850	79952-01-2450
4	Drive Rod	79954-01-1250	79954-01-1550	79954-01-1550	79954-01-1550
5	Body Assembly PLKE505 PLKE510	79946-02	79946-02	79946-02	79946-02
		79946-01	79946-01	79946-01	79946-01
6	Sequence Cam	79958-01	79958-01	79958-01	79958-01
10	Cover Plate	74747-01	74747-01	74747-01	74747-01
11	Part Support Mounting Screws	59104-086	59104-086	59104-086	59104-086
16	Cover Mounting Screws	59104-018	59104-018	59104-018	59104-018
18	Dowel Pin	17831-059	17831-059	17831-059	17831-059
19	Cover Plate Mounting Screw	59104-099	59104-099	59104-099	59104-099
20	Cover Plate	79962-00	79962-00	79962-00	79962-00
21	Dowel Pin	17831-009	17831-009	17831-009	17831-009
23	Motor Mounting Head Assembly	79445-05-01	79445-05-01	79445-05-01	79445-05-01
24	Motor Screw Assembly	79959-05-01	79959-05-01	79959-05-01	79959-05-01
25	Motor	79407-01-00-01	79407-01-00-01	79407-01-00-01	79407-01-00-01
26	Motor Cover/Controller Assembly	79410-02-04	79410-02-04	79410-02-04	79410-02-04
27	Motor Cover Cap	79405-01	79405-01	79405-01	79405-01
28	SHCS (M5 x 10)	59104-021	59104-021	59104-021	59104-021
29	SHCS (M5 x 45)	59104-108	59104-108	59104-108	59104-108
30	SHCS (M5 x 16)	59104-034	59104-034	59104-034	59104-034
31	SHCS (M5 x 80)	59104-129	59104-129	59104-129	59104-129
32	O-Ring Seal	1950-234-1	1950-234-1	1950-234-1	1950-234-1



# SERIES PLKE ELECTRIC PIN LOCATING CLAMP EXPLODED VIEW



# phd SERIES PLL LITE LIFTER PARTS LIST AND REPAIR KITS

KEY	DESCRIPTION	PART NUMBER
1	Mounting Bracket w/Molded in Place Bearing - Standard - 1363	73183-03 73183-04
2	Guide Bar	73184-xxx
3	Tool Plate - Standard - 1363	73180-01-02 73180-01-01
4	Backing Plate	73188-02
5	40 mm Bore ISO Cylinder	PLL4-5-xxx-H4
6	Cylinder Coupling	73189-01
7	Thrust Washer	73157
8	Socket Head Cap Screw (M10 x 16)	59104-162
9	Socket Head Cap Screw (M6 x 20)	59104-118
10	Hex Head Cap Screw (M12 x 25)	16281-087
11	Nut (M12)	3204-020
12	Lock Washer (M12)	61745-003
13	Socket Head Cap Screw (M10 x 30)	59104-027

-xxx = stroke (mm) - Available strokes: 50 mm (-050)  
80 mm (-080)  
100 mm (-100)  
125 mm (-125)  
160 mm (-160)  
200 mm (-200)

#### ORDERING EXAMPLE:

Replacement Cylinder Only = PLL4-5x100-H4

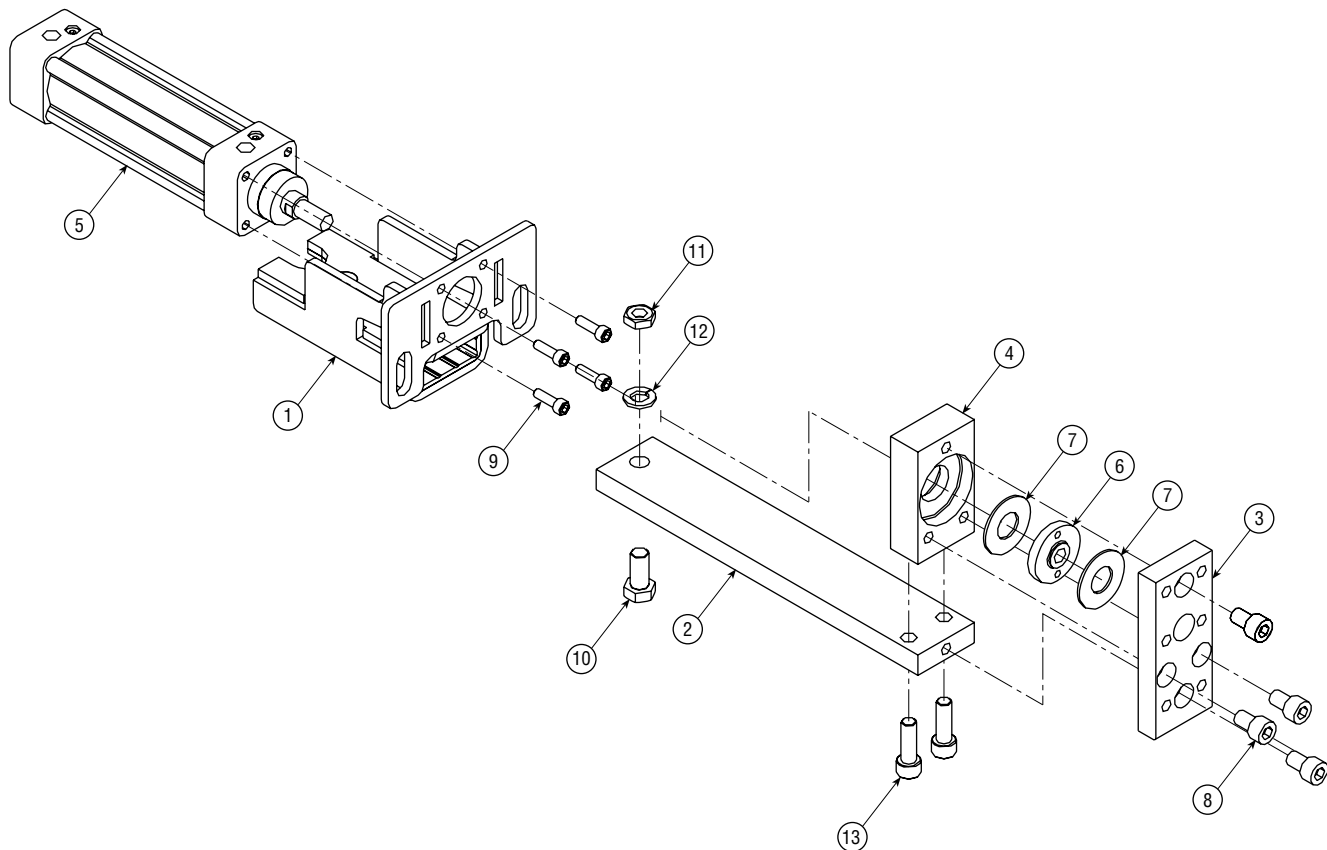
Replacement Lifter Without Cylinder = PLL4-5x100-H1

## KITS

KIT DESCRIPTION	KIT NUMBER
Thrust Washer Kit	73169
Fastener Kit	73171-02

OPTION	FITTING PART NUMBER
PF01	62178-008
PF02	62178-010
PF03	71121-005

DESCRIPTION	KIT NO.
Reed Switch	73198-01
Hall Effect Switch (PNP)	73198-02
Hall Effect Switch (NPN)	73198-03
Switch Bracket	73167



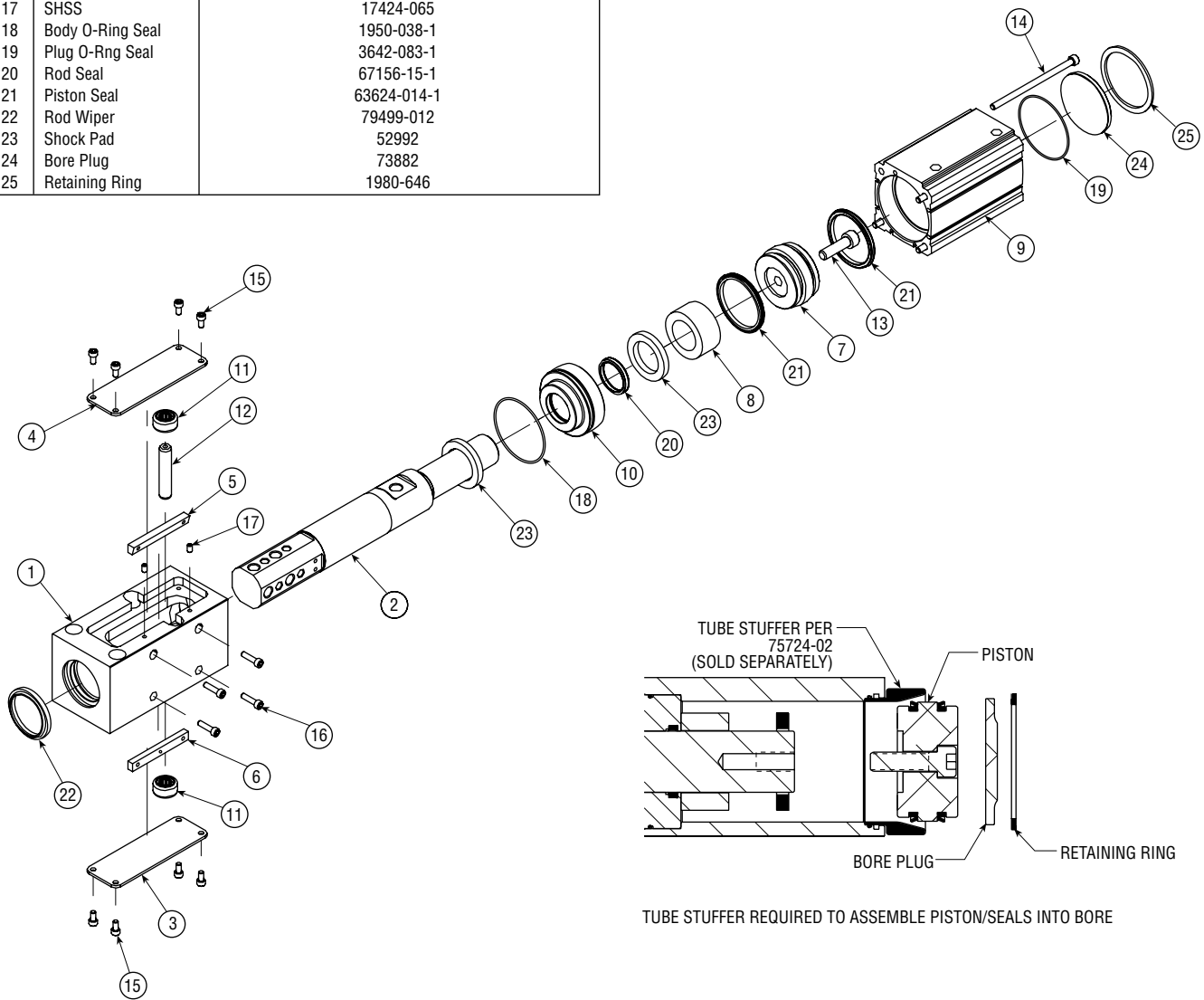
# phd SERIES PSP SHOT PIN CLAMP

## PARTS LIST & EXPLODED VIEW

KEY	DESCRIPTION	MODEL			
		PSP6W-1x25	PSP6W-1x50	PSP6W-5x25	PSP6W-5x50
1	50 mm Ram Body	79486-01			
2	NAAMS L-Block Ram	79487-01			
3	Bottom Cover	79488-01			
4	Top Cover	79488-01			
5	Preload Bearing Rail	79489-01			
6	Flat Bearing Rail	79489-02			
7	Piston	79491-01			
8	25 mm Stop Tube	79512-01	—	79512-01	—
9	Cylinder Body	79493-01-1	79493-01-1	79493-01-5	79493-01-5
10	Bushing	79510-01			
11	Bearing Assembly	79495-01			
12	Pull Dowel Pin	79498-041			
13	Piston SHCS	59104-167			
14	Cylinder Body SHCS	59104-132			
15	Cover SHCS	59104-021			
16	Rail SHCS	59104-102			
17	SHSS	17424-065			
18	Body O-Ring Seal	1950-038-1			
19	Plug O-Rng Seal	3642-083-1			
20	Rod Seal	67156-15-1			
21	Piston Seal	63624-014-1			
22	Rod Wiper	79499-012			
23	Shock Pad	52992			
24	Bore Plug	73882			
25	Retaining Ring	1980-646			

KIT DESCRIPTION	PART NO.
Cylinder Repair Kit	79513-01*
Rap Coupling Kit	79514-01*
Rod Wiper Kit	79515-01
Rod Scraper Kit	79516-01
Positional Sensing Kit	79517-01

\* = Kit requires tube stuffer 75724-02 (sold separately)



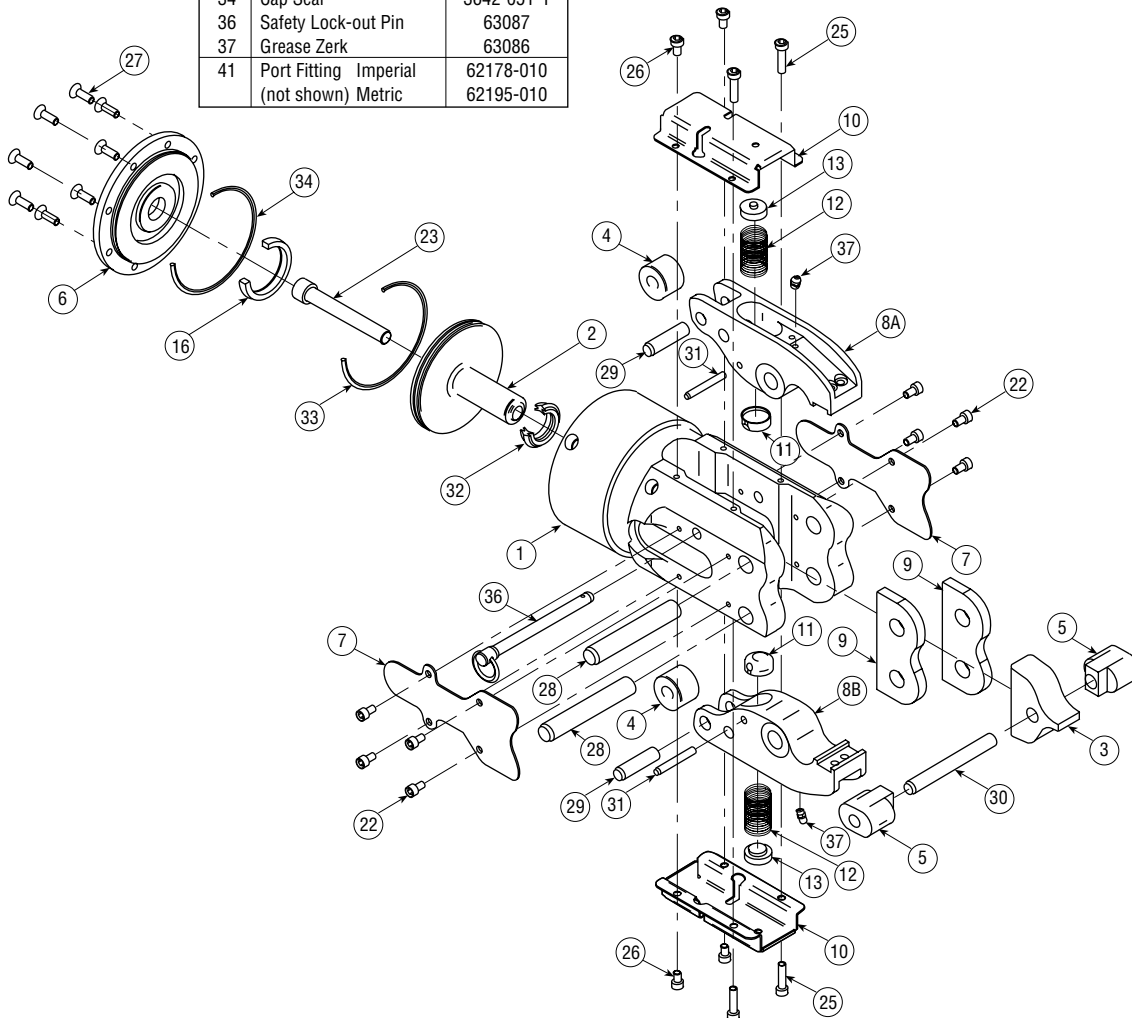


# SERIES PNC44x CLAMP "NUMBER CRUNCHER®" PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	PNC44x
1	Body -Imperial -Metric	63057-01 63057-02
2	Piston & Rod	63058
3	Cam	63059
4	Roller Bearing	63060
5	Slider Bushing	63061
6	Cap	63062-01
7	Impact Plate	63093
8A	Jaw (A)	63064-01
8B	Jaw (B)	63064-01
9	Pivot Pin Link	63071-02
10	Spring Cover	63072
11	Spring Retainer Cup	63066
12	Spring	15520
13	Spring Step	63073
16	Shock Pad	62648
22	Impact Plate SHCS	59104-114
23	Piston & Rod SHCS	59104-205
25	Spring Cover SHCS	59104-120
26	Spring Cover SHCS	59104-114
27	Cap SFHCS	59104-600
28	Pivot Pin	17831-056
29	Roller Bearing Pin	17831-057
30	Cam Pin	17831-058
31	Spring Retainer Cup Pin	17831-059
32	Rod Seal	62827-009-1
33	Piston Seal	3642-051-1
34	Cap Seal	3642-051-1
36	Safety Lock-out Pin	63087
37	Grease Zerk	63086
41	Port Fitting Imperial (not shown) Metric	62178-010 62195-010

## KITS

KIT DESCRIPTION		PNC44x
Seal Kit		63098-01
Fastener Kit		63097-01
Non-Spherical Mounting Bracket Kit	Imperial	63099-01
PNC44R		
Rear Mounting Plate Kit	Imperial	63099-02
PNC44P		
Side Mounting Plate Kit	Imperial	63099-03
PNC44M		
Oversize Non-Spherical Mounting Bracket Kit	Imperial	63099-04
PNC44V		







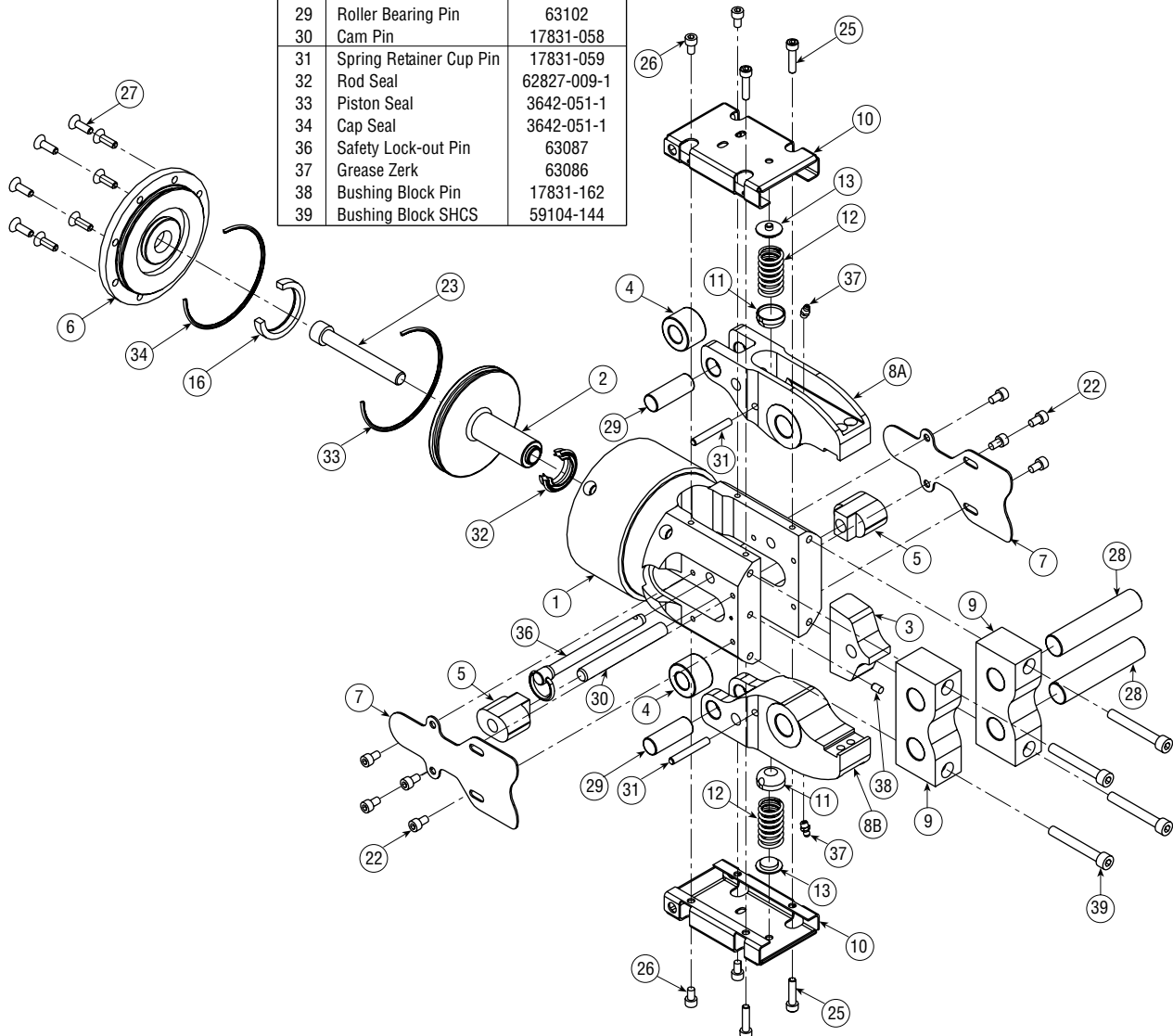
# SERIES PNC55x CLAMP "NUMBER CRUNCHER®"

## PARTS LIST AND REPAIR KITS

KEY	DESCRIPTION	PART NUMBER
		PNC55x
1	Body Imperial	63079-01
	Metric	63079-02
2	Piston & Rod	63058
3	Cam	63090-516
4	Roller Bearing	63080
5	Slider Bushing	63061
6	Cap	63062-01
7	Impact Plate	63093
8A	Jaw (A)	63094-01
8B	Jaw (B)	63094-01
9	Bushing Block	63091
10	Spring Cover	63082
11	Spring Retainer Cup	63066
12	Spring	15520
13	Spring Step	63081
16	Shock Pad	62648
22	Impact Plate SHCS	59104-114
23	Piston & Rod SHCS	59104-205
25	Spring Cover SHCS	59104-120
26	Spring Cover SHCS	59104-114
27	Cap SFHCS	59104-600
28	Pivot Pin	63101
29	Roller Bearing Pin	63102
30	Cam Pin	17831-058
31	Spring Retainer Cup Pin	17831-059
32	Rod Seal	62827-009-1
33	Piston Seal	3642-051-1
34	Cap Seal	3642-051-1
36	Safety Lock-out Pin	63087
37	Grease Zerk	63086
38	Bushing Block Pin	17831-162
39	Bushing Block SHCS	59104-144

### KITS

KIT DESCRIPTION		PNC55x
Seal Kit		63098-01
Fastener Kit		63097-02
Non-Spherical Mounting Bracket Kit	Imperial	63099-01
PNC55R		
Rear Mounting Plate Kit	Imperial	63099-02
PNC55P		
Side Mounting Plate Kit	Imperial	63099-03
PNC55M		
Oversize Non-Spherical Mounting Bracket Kit	Imperial	63099-04
PNC55V		



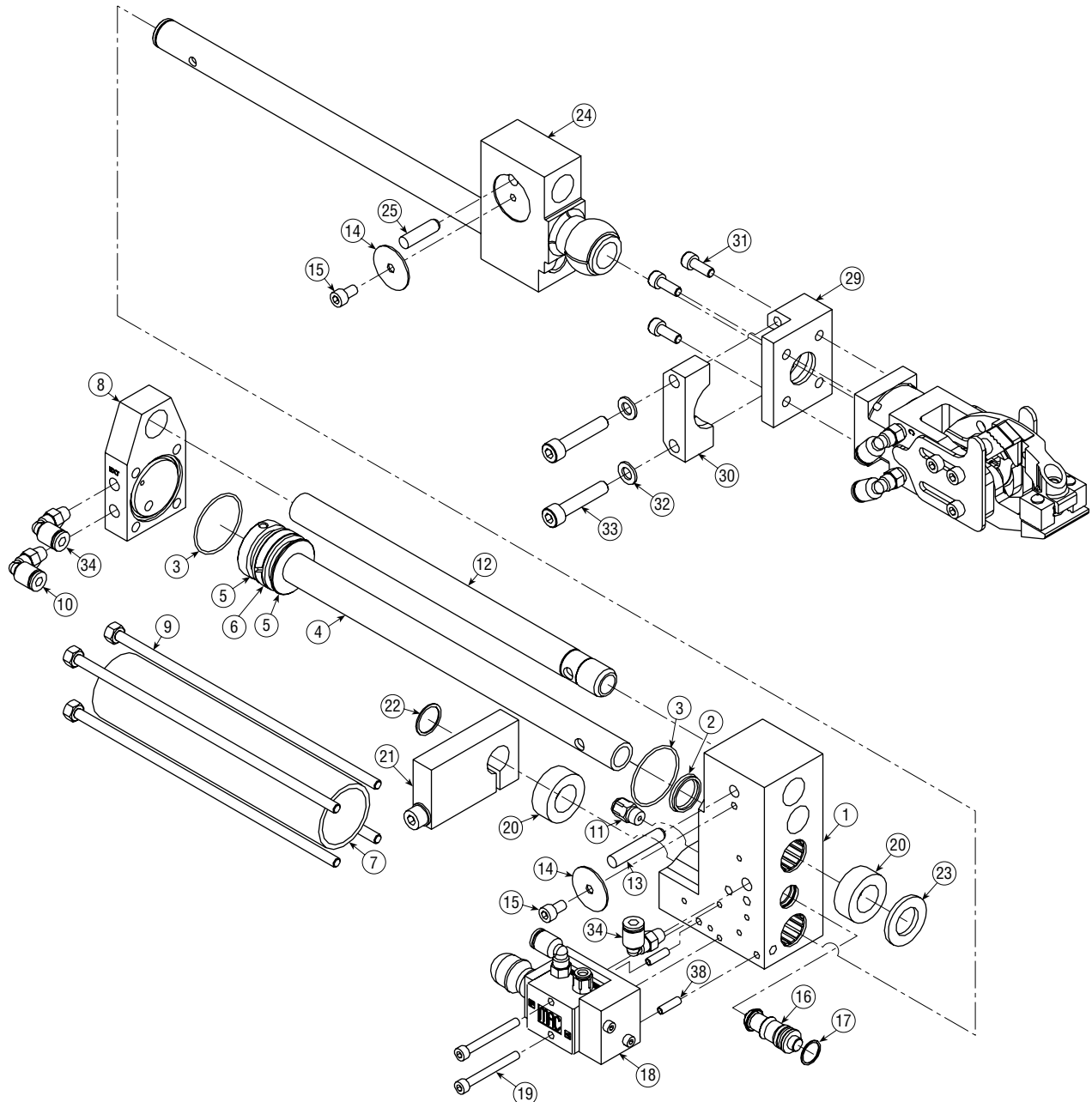
# phd SERIES PS CLAMP PARTS LIST

KEY	DESCRIPTION	MODEL NUMBER				
		PSx2TS-x				
		STROKE LENGTH				
		6 in [152 mm]	12 in [305 mm]	18 in [457 mm]		
STANDARD SLIDE COMPONENTS	1	Housing Assembly	PSR2TS-1 Imperial PSR2TS-5 Metric PSL2TS-1 Imperial PSL2TS-5 Metric	71157-01 71157-02 75627-01 75627-02		
	2	Rod Seal		68689-005-1		
	3	Tube Seal		1950-029-1		
	4	Piston & Rod Assembly		71184-012140	71184-018140	71184-024140
	5	Piston Seal			71185-001-1	
	6	Wear Ring			71186-001	
	7	Tube		71192-007750	71192-013765	71192-019780
	8	Cap	PSR2TS-1 Imperial PSR2TS-5 Metric PSL2TS-1 Imperial PSL2TS-5 Metric		71165-01 71165-02 75625-01 75625-02	
	9	Tierod & Nut Assembly		71190-009125	71190-015125	71190-021125
	10	Port Fitting, 90° Elbow	Imperial Metric		71120-001 71121-001	
	11	Port Fitting, Straight	Imperial Metric		71120-004 71121-004	
	12	Mounting Tube		71169-010500	71169-016500	71169-022500
	13	Dowel Pin (M8 x 45)			17831-110	
	14	Dowel Retaining Washer			70365-002	
	15	SHCS; (M6 x 10)			59104-114	
	16	Check Seal Cartridge Assembly			71177-01-1	
	17	Cartridge Retaining Ring			1980-008	
	18	Valve Assembly	PSR2TS-1 Imperial PSR2TS-5 Metric PSL2TS-1 Imperial PSL2TS-5 Metric		71187-01 71187-02 75628-01 75628-02	
	19	SHCS (M5 x 45)			59104-107	
	20	Shock Pad			71173-01	
	21	Stop Block Assembly			71188-01	
	22	Stop Block Retaining Ring			1980-024	
	23	Shock Pad Washer			71193-001-01	
	24	Tool Plate Assembly		71189-013540	71189-019540	71189-025540
	25	Dowel Pin (M8 x 30)			17831-105	
	26	Tubing - Not Shown	Imperial Metric	71195-001-008000 71195-002-008000	71195-001-014000 71195-002-014000	71195-001-020000 71195-002-020000
	27	Tubing - Not Shown	Imperial Metric	71195-001-036000 71195-002-036000	71195-001-054000 71195-002-054000	71195-001-072000 71195-002-072000
	28	Tubing - Not Shown	Imperial Metric	71195-001-039000 71195-002-039000	71195-001-057000 71195-002-057000	71195-001-075000 71195-002-075000
	36	Tie Down Strap (Not Shown)			8164-391	
	38	Spring Pin (5 mm x 22 mm)			71208-001	
	D2 OPT.	29	Rear Spherical Mtg Bracket		71180-01	
		30	Ball Clamp Bracket		71180-02	
		31	SHCS; (M6 x 16)		59104-033	
		32	Washer		59022-007-1	
		33	SHCS; (M8 x 40)		59104-031	
	D8 OPT.	29	Rear Spherical Mtg Bracket		71180-03	
30		Ball Clamp Bracket		71180-02		
31		SHCS; (M8 x 18)		59104-138		
32		Washer		59022-007-1		
33		SHCS; (M8 x 40)		59104-031		
PF01 OPT.	34	Port Fitting, 90° Elbow (1/4 Tube)	Imperial Metric	71120-001 71121-001		
PF02 OPT.	34	Port Fitting, 90° Elbow (3/8 Tube)	Imperial Metric	71120-003 71121-003		
CLAMP OPT.	35	Clamp Assembly		SEE SERIES GRM CLAMP CATALOGS		

# phd SERIES PS CLAMP REPAIR KITS & EXPLODED VIEW

KIT DESCRIPTION	KIT NUMBER	
	IMPERIAL	METRIC
Seal Kit - Total	71205-02-1	71205-02-1
Seal Kit - Valve Assembly	71205-03-1	71205-03-1
Fastener Kit - Total	71210-02	71210-02
Fastener Kit - Valve Assembly	71210-03	71210-03
Fastener Kit - Mounting Bracket	71210-04	71210-04
Bearing Kit	71202-02	71202-02
Fitting Kit*	71206-02	71206-03
Tubing Kit - 6 in Stroke	71207-02	71212-02
Tubing Kit - 12 in Stroke	71207-03	71212-03
Tubing Kit - 18 in Stroke	71207-04	71212-04
D2 Mounting Bracket Kit	71201-02	71201-02
D8 Mounting Bracket Kit	71201-03	71201-03

\*Does not include optional port fittings









# SERIES AV, HV MEDIUM DUTY CYLINDERS 1-3/8" BORE PARTS LIST AND REPAIR KITS

## KITS

KEY	PART DESCRIPTION	1/2" ROD	5/8" ROD		
1	Head	Full unit description required followed by -H1100			
2	Cap	Full unit description required followed by -H1200			
3	Tube	Full unit description required followed by -H1300			
4	Tierod & Nut Assembly	Full unit description required followed by -H1410			
5	Piston & Rod Assembly	Full unit description required followed by -H1000			
6	Rod Retainer Nut	Sold as part of Piston & Rod Assembly only			
7	Cushion Stud				
8	Cushion Retaining Ring				
9	Cushion Seal (AV only)				
10	Cushion Disc (HV only)				
11	Cushion Spring				
12	Rod End Stud				
30	Piston				
31	Rod				
13	Rod Bushing			Sold as part of Seal Kit or Repair Kit only	
14	Rod Seal Washer				
15	Rod Seal				
16	Rod Seal Backup Ring (HV only)				
17	Rod Wiper				
18	Bushing Seal				
19	Bushing Seal Backup Ring (HV only)				
20	Tube Seal				
21	Piston Seal				
22	Piston Seal Backup Ring (HV only)				
23	Port Control Kit*	3390-04-x	3390-04-x		
24	Cushion Control Kit*	3390-04-x	3390-04-x		
25	Shock Pad Rod End	2370	2449-05		
26	Shock Pad Cap End	2370	2370		
27	Stop Tube	Full unit description required followed by -H1700			
28	Spring	Full unit description required followed by -H1600			
29	Stop Tube Guide	4602-02	4602-02		
35	Rod End Jam Nut -G, -J	1972-019	1972-020		
	-F	1972-020	1972-021		
	-L	1972-018	1972-057		
36	Bushing Retainer	2346-01	2346-02		
37	Stroke Adjustment Screw	Sold as part of			
38	Stroke Adjustment Nut	Cap Assembly only			
—	"T" Mounting Nut	4080	4080		
—	"RF" or "CF" Flange	Full unit description required followed by -H2005			
—	Spherical End Cap End	7113-004	—		
	Rod End	7127	—		
—	"F" Mounting Bracket tab for -P caps	1332	1332		

KIT DESCRIPTION	1/2" ROD	5/8" ROD
Repair Kit	Full unit description required followed by -H9010	
Cushion Repair Kit AV	3407-04-x	3407-04-x
HV	3408-04-x	3408-04-x
Seal Kit	Full unit description required followed by -H9000	

**NOTE:** Repair Kit contains parts to repair one cylinder.  
Cushion Repair Kit includes parts to rebuild one cushion, including internal seals and springs and a Cushion Control Kit.  
Seal Kit contains all seals, wiper seal, and backup rings.

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

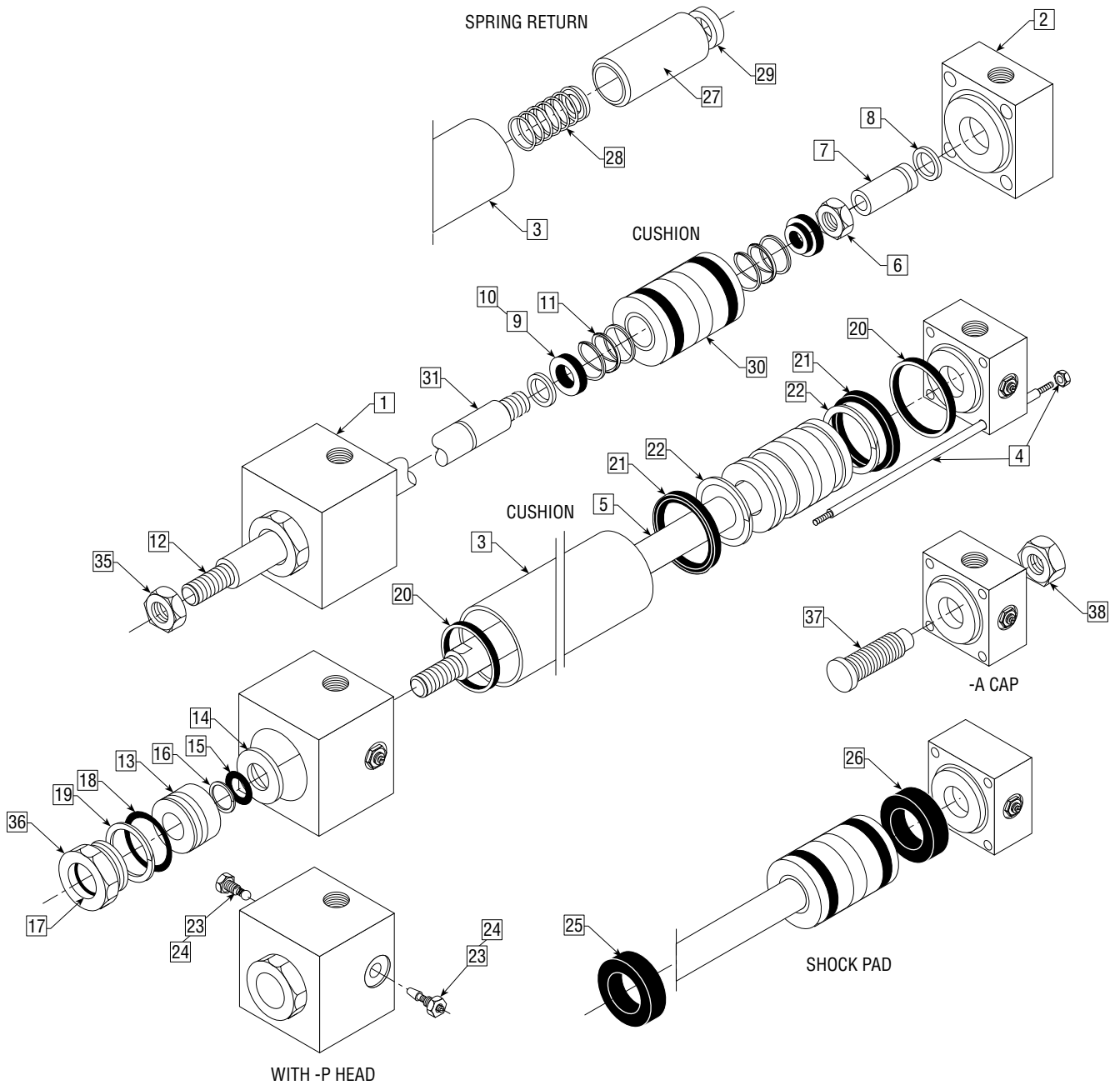
Part number suffix (-1) indicates Buna-N seals.

Part number suffix (-2) indicates Fluoro-Elastomer seals.

\* Port Control Kit and Cushion Control Kit contain all parts required for one flow control function.



# SERIES AV, HV MEDIUM DUTY CYLINDERS 1-3/8" BORE EXPLODED VIEW





# SERIES CRS CYLINDERS DESIGN #2 (OLD) REPAIR KITS

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## KITS

KIT DESCRIPTION		12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
Seal Kit, All		Full unit description required followed by -H9000							
Repair Kit		Full unit description required followed by -H9010							
Jam Nut	Fine Thread	N/A	N/A	1972-015	1972-015	1972-017	1972-017	1972-019	1972-019
	Coarse Thread	1972-039	1972-039	1972-014	1972-014	1972-016	1972-016	1972-018	1972-018

**NOTE:** Seal Kit contains all seals needed to repair one unit.  
 Repair Kit contains all seals and bushings needed to repair one unit.



# phd SERIES CRS CYLINDERS DESIGN #3 & 6

## PARTS LIST AND REPAIR KITS

### SINGLE AND DOUBLE ROD UNITS

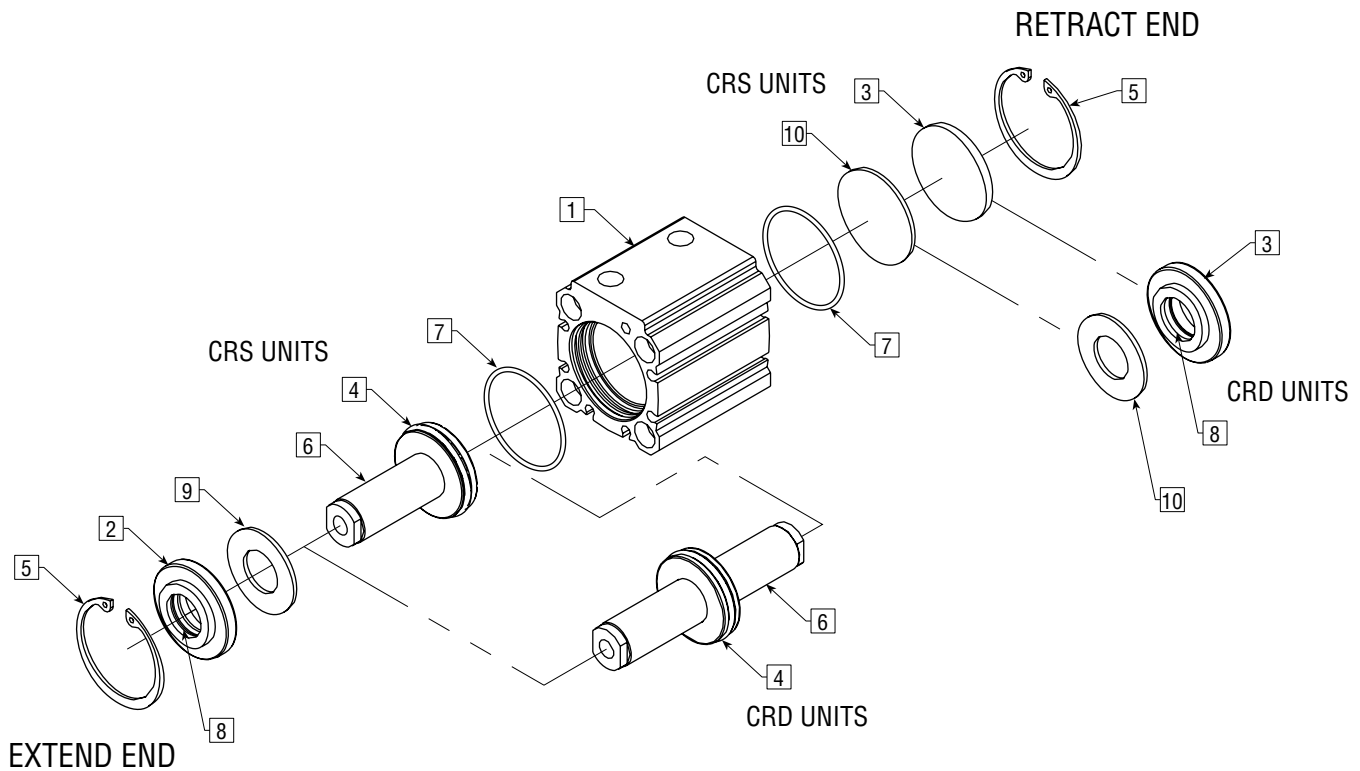
KEY	PART DESCRIPTION	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
1	Body	Full unit description required followed by -H2410							
2	Rod Bushing	Sold as part of Repair Kit only							
3	Bore Plug	Full unit description required followed by -H3100							
4	Piston Seal	Sold as part of Seal or Repair Kit only							
5	Retaining Ring	1980-028	1987-065	1987-066	1987-068	1987-073	1987-079	1987-085	1987-095
6	Piston and Rod Assembly	Full unit description required followed by -H1000							
7	O-ring Seal	Sold as part of Seal or Repair Kit only							
8	Rod Seal	Sold as part of Seal or Repair Kit only							
9	Shock Pad, Extend	Sold as part of Repair Kit only							
10	Shock Pad, Retract	Sold as part of Repair Kit only							

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### KITS

KIT DESCRIPTION	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	
Seal Kit, All	Full unit description required followed by -H9000								
Repair Kit	Full unit description required followed by -H9010								
Jam Nut									
Fine Thread	N/A	N/A	1972-015	1972-015	1972-017	1972-017	1972-019	1972-019	
Coarse Thread	1972-039	1972-039	1972-014	1972-014	1972-016	1972-016	1972-018	1972-018	

**NOTE:** Seal Kit contains all seals needed to repair one unit.  
 Repair Kit contains all seals and bushings needed to repair one unit.





# SERIES CTS COMPACT GUIDE ROD CYLINDERS DESIGN 2 & 6, PARTS LIST AND REPAIR KITS

## CTS CYLINDER (SINGLE ROD)

KEY	PART DESCRIPTION	12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm
1	Body Assembly	Full unit description required followed by -H2400							
2	Rod Bushing	Sold as part of Repair Kit only							
3	Bore Plug	Full unit description required followed by -H3100							
4	Piston Seal	Sold as part of Seal or Repair Kit only							
5	Retaining Ring	Full unit description required followed by -H7101							
6	Piston and Rod Assembly	Full unit description required followed by -H1000							
7	Body O-ring Seal	Sold as part of Seal or Repair Kit only							
8	Bushing O-ring Seal								
9	Rod Seal								
10	Tool Plate	Full unit description required followed by -H6400							
11	Guide Shaft	Full unit description required followed by -H4710							
12	Guide Shaft Screw	Sold as part of Fastener Kit only							
13	Tool Plate Screw								
15	Extend Shock Pad	Sold as part of Repair Kit only							
16	Retract Shock Pad								

## CTD CYLINDER (DOUBLE ROD)

KEY	PART DESCRIPTION	12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm
1	Body Assembly	Full unit description required followed by -H2400							
2	Rod Bushing	Sold as part of Repair Kit only							
3	Retract Rod Bushing								
4	Piston Seal	Sold as part of Seal or Repair Kit only							
5	Retaining Ring	Full unit description required followed by -H7101							
6	Piston and Rod Assembly	Full unit description required followed by -H1000							
7	Body O-ring Seal	Sold as part of Seal or Repair Kit only							
8	Bushing O-ring Seal								
9	Rod Seal								
10	Tool Plate	Full unit description required followed by -H6400							
11	Guide Shaft	Full unit description required followed by -H4710							
12	Guide Shaft Screw	Sold as part of Fastener Kit only							
13	Tool Plate Screw								
15	Extend Shock Pad	Sold as part of Repair Kit only							
16	Retract Shock Pad								

## KITS

KIT DESCRIPTION	12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm
Seal Kit, All	Full unit description required followed by -H9000							
Repair Kit	Full unit description required followed by -H9010							
Fastener Kit	Full unit description required followed by -H9020							
J or K mount Kit	Full unit description required followed by -H2010							

**NOTE:** Seal Kit contains all seals, O-rings, etc., needed to repair one unit.  
Repair Kit contains all seals, retaining rings, and bushings, needed to repair one unit.

## CTS2 IMPERIAL OPTION KITS

KIT DESCRIPTION	12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm
Rear Cylinder Pivot Kit	60278-1	60279-1	60280-1	60281-1	60282-1	60283-1	60284-1	60285-1
Rear Base Pivot Kit	60294-1	60294-1	60295-1	60295-1	60296-1	60296-1	60297-1	60297-1
Rear Pivot Pin Kit	60330-1	60330-1	60331-1	60331-1	60332-1	60332-1	60333-1	60333-1

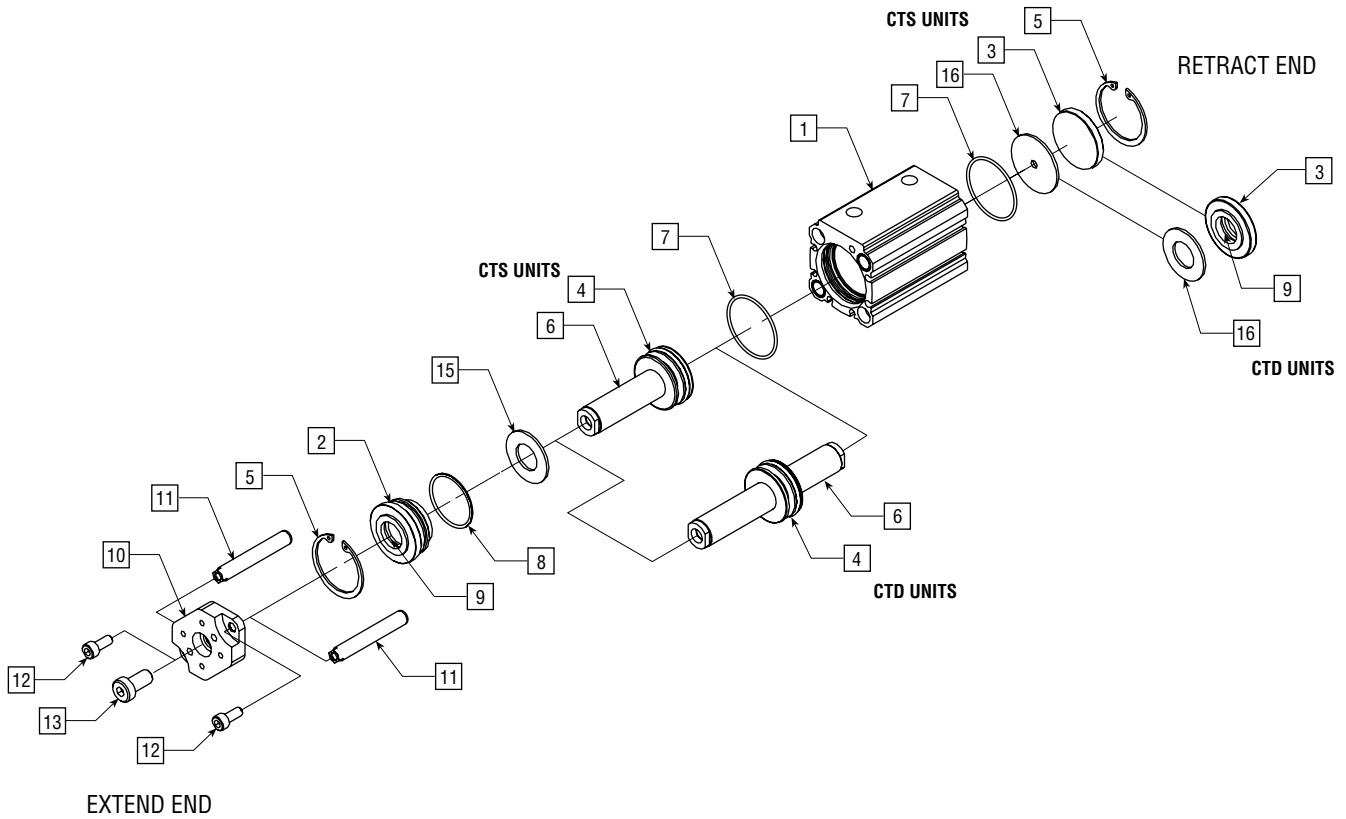
## CTS6 METRIC OPTION KITS

KIT DESCRIPTION	12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm
Rear Cylinder Pivot Kit	60286-1	60287-1	60288-1	60289-1	60290-1	60291-1	60292-1	60293-1
Rear Base Pivot Kit	60294-1	60294-1	60295-1	60295-1	60296-1	60296-1	60297-1	60297-1
Rear Pivot Pin Kit	60330-1	60330-1	60331-1	60331-1	60332-1	60332-1	60333-1	60333-1

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
Option Kits not compatible with J or K mount units.



# SERIES CTS COMPACT GUIDE ROD CYLINDERS DESIGN 2 & 6, EXPLODED VIEW



# phd SERIES CV CYLINDERS SIZES 20 & 25 mm

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	20 mm	25 mm
1	Head Assembly (Extend End)	Consult factory	
1A	Rod Bearing	Sold as part of Repair Kit	
1B	Rod Seal	Sold as part of Seal and Repair Kit	
2	Cap Assembly (Retract End) Head Assembly (3 Position and Dbl. Rod only)	Consult factory	
2A	Rod Bearing (3 Position and Dbl. Rod only)	Sold as part of Repair Kit	
2B	Rod Seal (3 Position and Dbl. Rod only)	Sold as part of Seal and Repair Kit	
3	Cylinder Tube (Cylinder 1 on 3 Position Units)	Full unit description required followed by -H1300	
4	Piston & Rod Assembly (Cylinder 1 on 3 Position Units)	Full unit description required followed by -H1000	
5	Piston Seal	Sold as part of Seal and Repair Kit	
6	Piston Wear Ring	Sold as part of Repair Kit	
7	Impact Seal/Shock Pad	Sold as part of Seal and Repair Kit	
8	PHD Cushion Control	Sold as part of	
9	Cushion Seal/O-Ring	Cushion Control Kit	
10	PHD Port Control Assembly	Sold as part of Port Control Kit	
11	Assembly Bolts (2 required head or cap)	63771-1-01	63771-1-01
12	Nut (Standard)	3204-002-01	3204-010-01
	Nut (-Z1)	19735-002	19735-010
13	Snout Nut (Standard)	3204-034-01	3204-034-01
	Jam Nut (-Z1)	19735-034	19735-034

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### THREE POSITION STANDARD PARTS

KEY	PART DESCRIPTION	20 mm	25 mm
14	Set Screw*	17424-075	17424-075
	-Z1 Set Screw*	19732-075	19732-075
15	Set Screw or Chrome Ball*	17424-011	17424-011
	-Z1 Set Screw or Chrome Ball*	19732-011	19732-011
16	Nut*	3204-035	3204-035
	-Z1 Nut*	19735-035	19735-035
17	Assembly Bolts*	14308-436	14308-436
	-Z1 Assembly Bolts*	19731-436	19731-436
18	Piston & Rod Assembly (Cyl. 2)	Full unit description required followed by -H1010	
19	Adaptor Tube	65597-1	65598-1
20	Cylinder 2 Tube	Full unit description required followed by -H1310	
21	Exhaust Filter	2570	2570

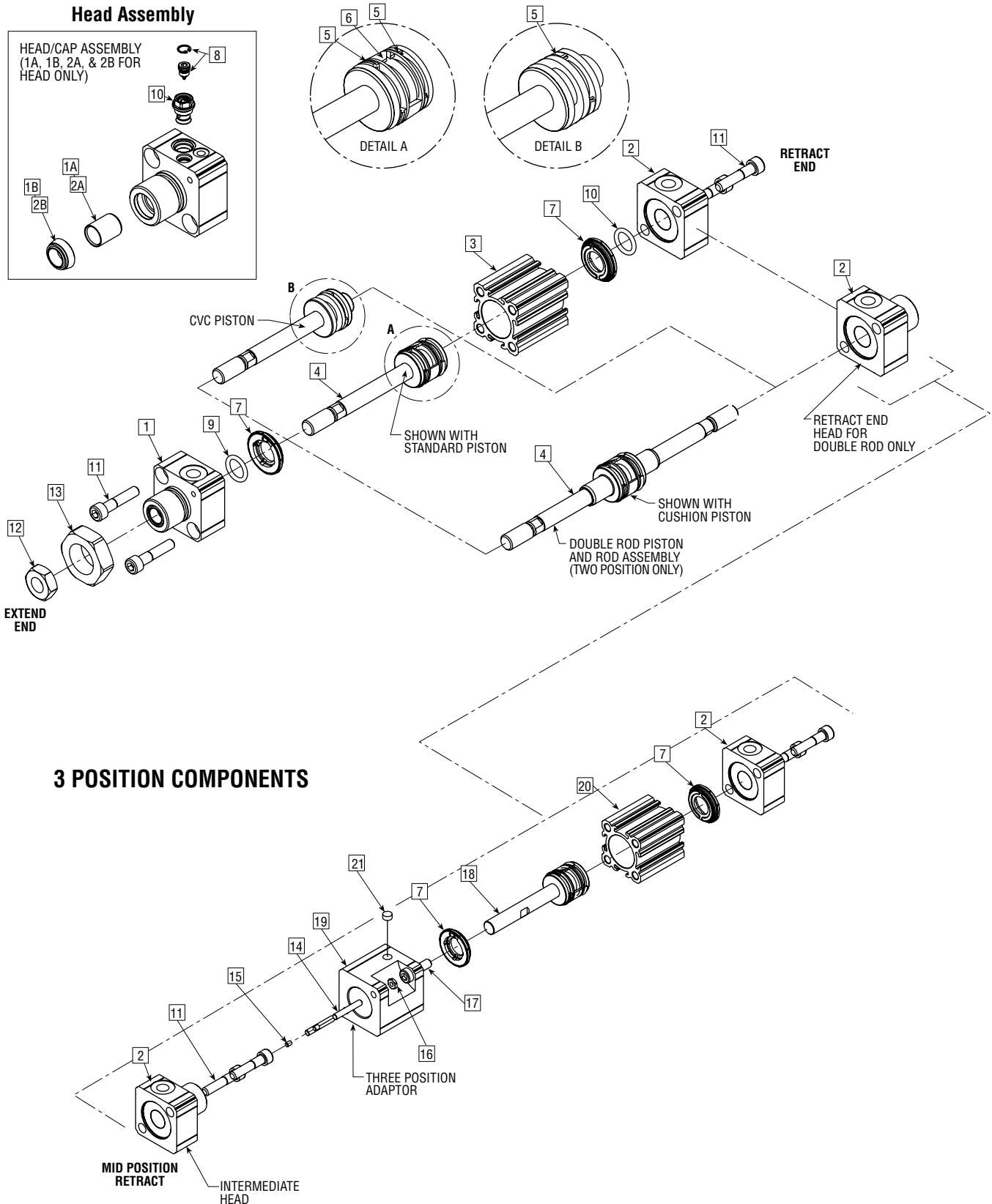
\*Two required per unit

### KITS

KIT DESCRIPTION	20 mm	25 mm
Repair Kit	Full unit description required followed by -H9010	
Seal Kit	Full unit description required followed by -H9000	
Cushion Control Kit (1/end)	63434-07-1	63434-08-1
Port Control Kit (1/end)	63435-07-1	63435-07-1

**NOTES:** Seal Kit contains all seals needed to repair one standard unit.  
 Repair Kit contains all seals, bearings, and wear rings to repair one standard unit.  
 Cushion Control Kit includes cushion needle, retaining ring, and cushion seal for one end only.  
 Port Control Kit includes port control cartridge for one end only.

# phd SERIES CV CYLINDERS SIZES 20 & 25 mm EXPLODED VIEW





# SERIES CV CYLINDERS SIZES 32 & 100 mm PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
1	Head Assembly (Extend End)	Consult factory					
1A	Rod Bearing	Sold as part of Repair Kit					
1B	Rod Seal	Sold as part of Seal and Repair Kit					
2	Cap Assembly (Retract End) Head Assembly (3 Position and Dbl. Rod only)	Consult factory					
2A	Rod Bearing (3 Position and Dbl. Rod only)	Sold as part of Repair Kit					
2B	Rod Seal (3 Position and Dbl. Rod only)	Sold as part of Seal and Repair Kit					
3	Cylinder Tube (Cylinder 1 on 3 Position Units)	Full unit description required followed by -H1300					
4	Piston & Rod Assembly (Cylinder 1 on 3 Position Units)	Full unit description required followed by -H1000					
5	Piston Seal	Sold as part of Seal and Repair Kit					
6	Piston Wear Ring	Sold as part of Repair Kit					
7	Impact Seal/Shock Pad	Sold as part of Seal and Repair Kit					
8	O-Ring Seal (Tube Seal)	—	—	—	—	Sold as part of Seal and Repair Kit	
9	PHD Cushion Control	Sold as part of Cushion Control Kit					
10	Cushion Seal/O-Ring	Sold as part of Cushion Control Kit					
11	PHD Port Control Assembly	Sold as part of Port Control Kit					
12	Assembly Bolts (4 required per head or cap)	61932-1-01	61932-1-01	61933-1-01	61933-1-01	61934-1-01	61934-1-01
13	Nut (Standard) Nut (-Z1)	3204-010-01 19735-010	3204-014-01 19735-014	3204-003-01 19735-003	3204-003-01 19735-003	3204-005-01 19735-005	3204-005-01 19735-005

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## THREE POSITION STANDARD PARTS

KEY	PART DESCRIPTION	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
14	Set Screw* -Z1 Set Screw*	17424-096 19732-096	17424-096 19732-096	17424-078 19732-078	17424-078 19732-078	17424-080 19732-080	17424-080 19732-080
15	Set Screw or Chrome Ball* -Z1 Set Screw or Chrome Ball*	17424-008 19732-008	17424-008 19732-008	1976-007 1976-007	1976-007 1976-007	1976-012 1976-012	1976-012 1976-012
16	Nut* -Z1 Nut*	3204-045-01 19735-045	3204-045-01 19735-045	3204-046-01 19735-046	3204-046-01 19735-046	3204-012-01 19735-012	3204-012-01 19735-012
17	Assembly Bolts* -Z1 Assembly Bolts*	14308-453 19731-453	14308-453 19731-453	59716-061 19731-468	59716-061 19731-468	14308-483 19731-483	14308-483 19731-483
18	Piston & Rod Assembly (Cyl. 2)	Full unit description required followed by -H1010					
19	Adaptor Tube	65599-1	65600-1	65601-1	65602-1	65603-1	65604-1
20	Cylinder 2 Tube	Full unit description required followed by -H1310					
21	Exhaust Filter	2570	2570	2570	2570	2570	2570

\*Four required per unit

## KITS

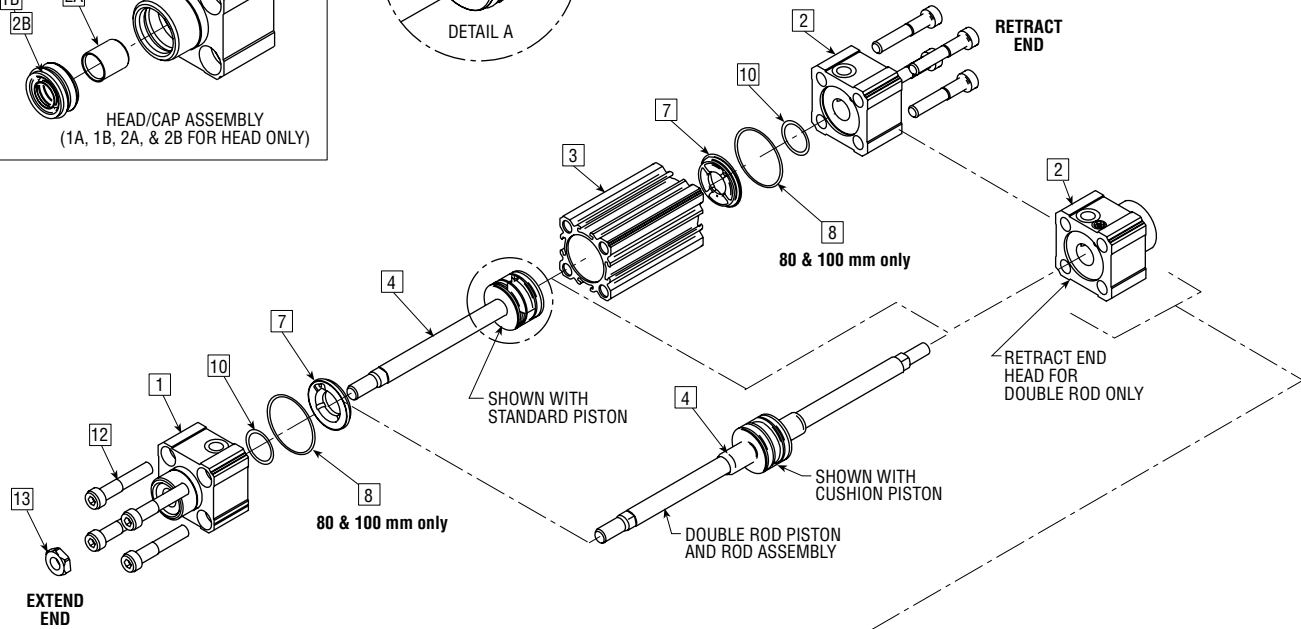
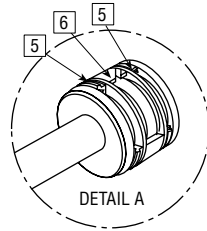
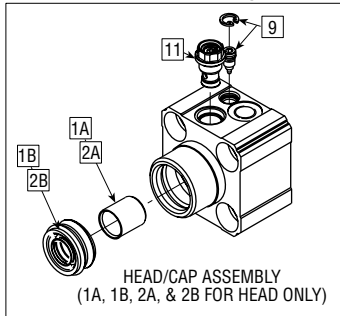
KIT DESCRIPTION	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Repair Kit	Full unit description required followed by -H9010					
Seal Kit	Full unit description required followed by -H9000					
Cushion Control Kit (1/end)	63434-01-1	63434-02-1	63434-03-1	63434-04-1	63434-05-1	63434-06-1
Port Control Kit (1/end)	63435-01-1	63435-02-1	63435-03-1	63435-04-1	63435-05-1	63435-06-1

**NOTES:** Seal Kit contains all seals needed to repair one standard unit.  
 Repair Kit contains all seals, bearings, and wear rings to repair one standard unit.  
 Cushion Control Kit includes cushion needle, retaining ring, and cushion seal for one end only.  
 Port Control Kit includes port control cartridge for one end only.

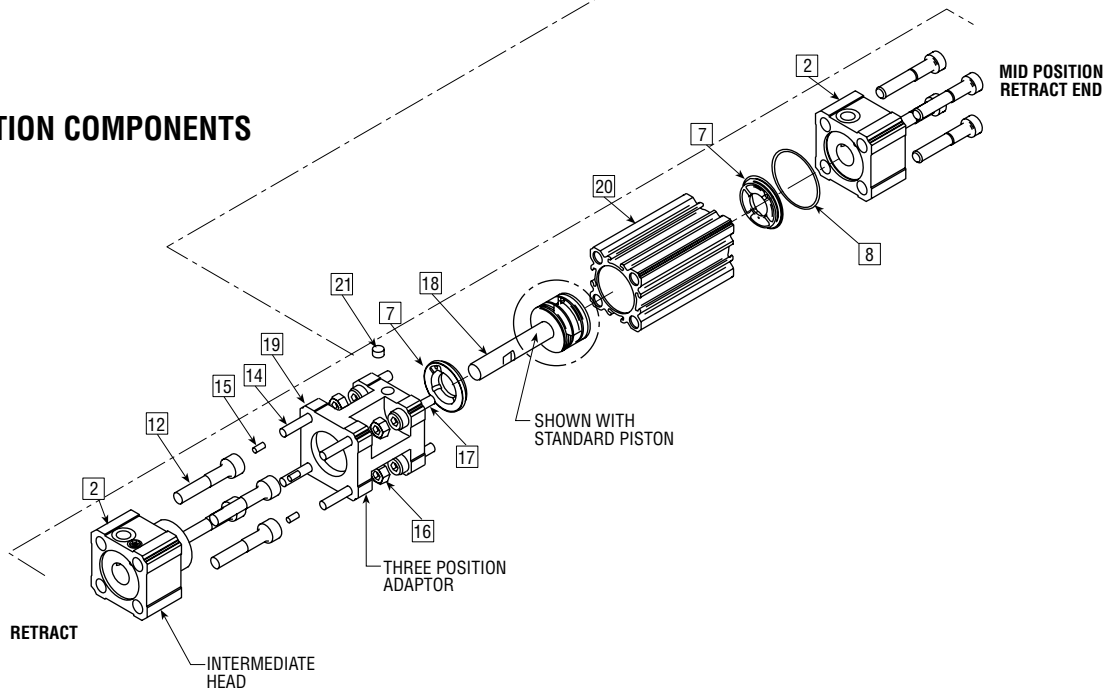
# phd SERIES CV CYLINDERS SIZES 32 - 100 mm

## EXPLODED VIEW

### Head Assembly



### 3 POSITION COMPONENTS





# SERIES EA, EL, EH, ES HEAVY DUTY CYLINDERS 3/4, 1-1/8, 1-3/8" BORE PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION		3/4" BORE	1-1/8" BORE	1-3/8" BORE	
1	Head Assembly		Consult factory			
2	Cap Assembly		Consult factory			
3	Tube		Full unit description required followed by -H1300			
4	Tierod & Nut Assembly		Full unit description required followed by -H1410			
5	Piston & Rod Assembly		Full unit description required followed by -H1000			
6	Rod Bushing	Air	Sold as part of Repair Kit only			
6A	Rod Bushing	Front Hyd.				
6B	Rod Bushing	Rear Hyd.				
7	Rod Seal Retainer					
8	Rod Seal					
9	Rod Seal Backup Ring	Hyd. only				
10	Bushing Seal					
11	Bushing Seal Backup Ring	Hyd. only				
12	Piston Seal					
13	Piston Seal Backup Ring	Hyd. only				
14	Tube Seal					
15	Tube Seal Backup Ring	Hyd. only				
16	Rod Wiper					
17	Rod Wiper Retainer					
18	Port Control Kit*	EA / EL EH / ES	3406-04-x 3406-04-x	3406-05-x 3406-05-x	3406-06-x 3406-08-x	
19	Bushing Retainer		2251-01	2251-02	2251-03	
20	Shock Pad	Rod End	3/8" dia. 1/2" dia. 5/8" dia. 3/4" dia.	2449-01	—	—
				—	2449-03	—
				—	2449-04	2449-05
				—	—	2449-06
21	Shock Pad	Cap End	3/8" dia. 1/2" dia. 5/8" dia. 3/4" dia.	2449-02	—	—
				—	2449-03	—
				—	2449-03	2449-05
				—	—	2449-05
26	Rod End Jam Nut	Standard	-G, -J -F -L	1972-015	1972-019	1972-020
				1972-017	1972-020	1972-024
				1972-014	1972-018	1972-057
				—	—	—
27	Cushion Component Kit**	EA EL, EH, ES	3407-05-x	3407-06-x	3407-07-x	
			3408-05-x	3408-06-x	3408-07-x	
—	Clevis Pin		2203-01	1376	2203-02	
—	Clevis Pin Retainer		1987-002	1987-001	1987-003	
—	Flange	Rod End (MF1) Cap End (MF2)	Full unit description required followed by -H2005			
—	Stroke Adjustment Screw		5308	5311	3208-03	
—	Stroke Adjustment Screw Seal		1950-010-x	1950-014-x	1950-113-x	
—	Stroke Adjustment Screw Seal Backup		2525-010	2525-014	2525-113	
—	Stroke Adjustment Screw Nut		1972-019	1972-021	1972-018	
—	Stroke Adjustment Screw Retainer		1987-024	1987-015	1987-018	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
Part number suffix (-1) indicates Buna-N seals. Part number suffix (-2) indicates Fluoro-Elastomer seals.

\* Port Control Kit contains all parts required for one flow control function.

\*\* Cushion Component Kit contains parts for one cushion control function, plus cushion components for Piston & Rod Assembly.

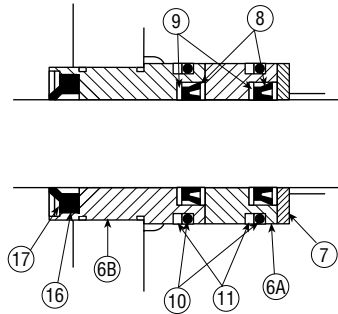
## REPAIR KITS

Full unit description required followed by -H9010  
**NOTE:** Repair Kit contains parts to repair one cylinder.

## SEAL KITS

Full unit description required followed by -H9000  
**NOTE:** Seal Kit contains all seals, wiper seal, and backup rings.

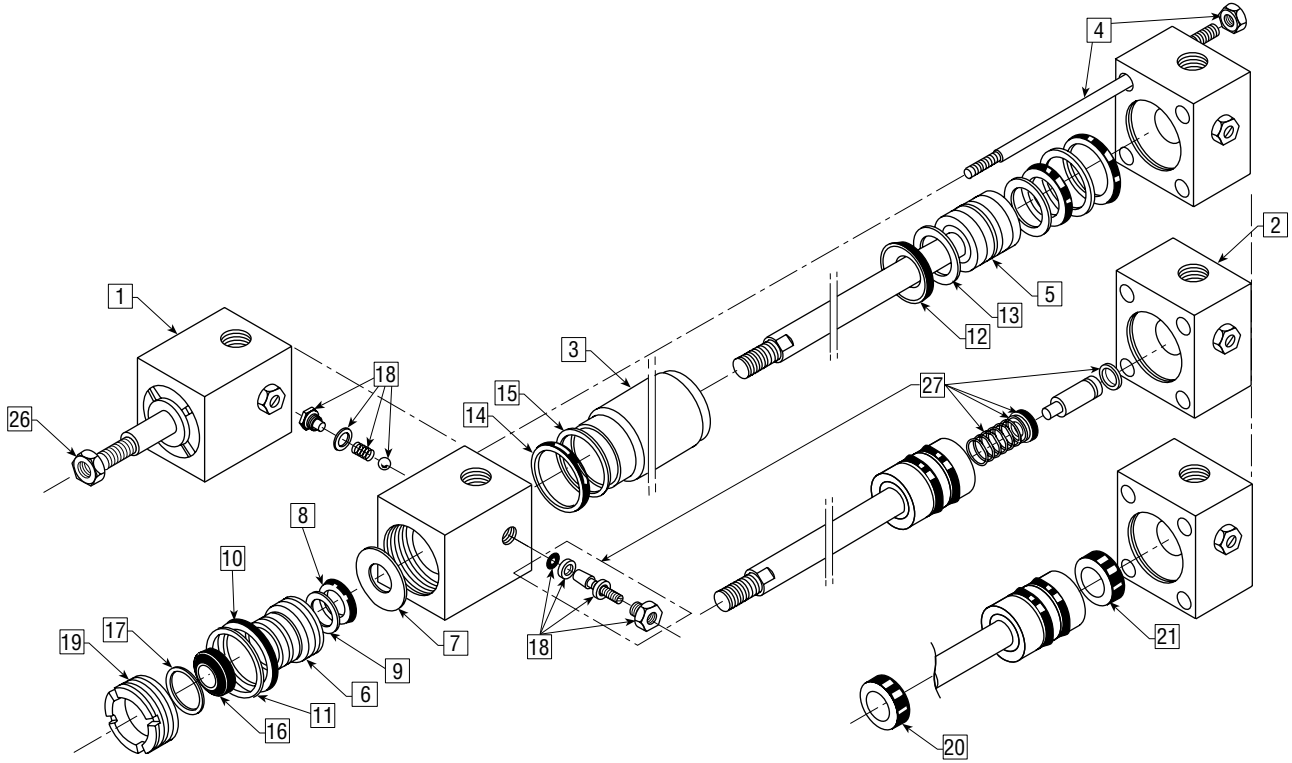
## HYDRAULIC BUSHING ASSEMBLY DETAIL







# SERIES EA, EL, EH, ES HEAVY DUTY CYLINDERS 3/4, 1-1/8, 1-3/8" BORE EXPLODED VIEW

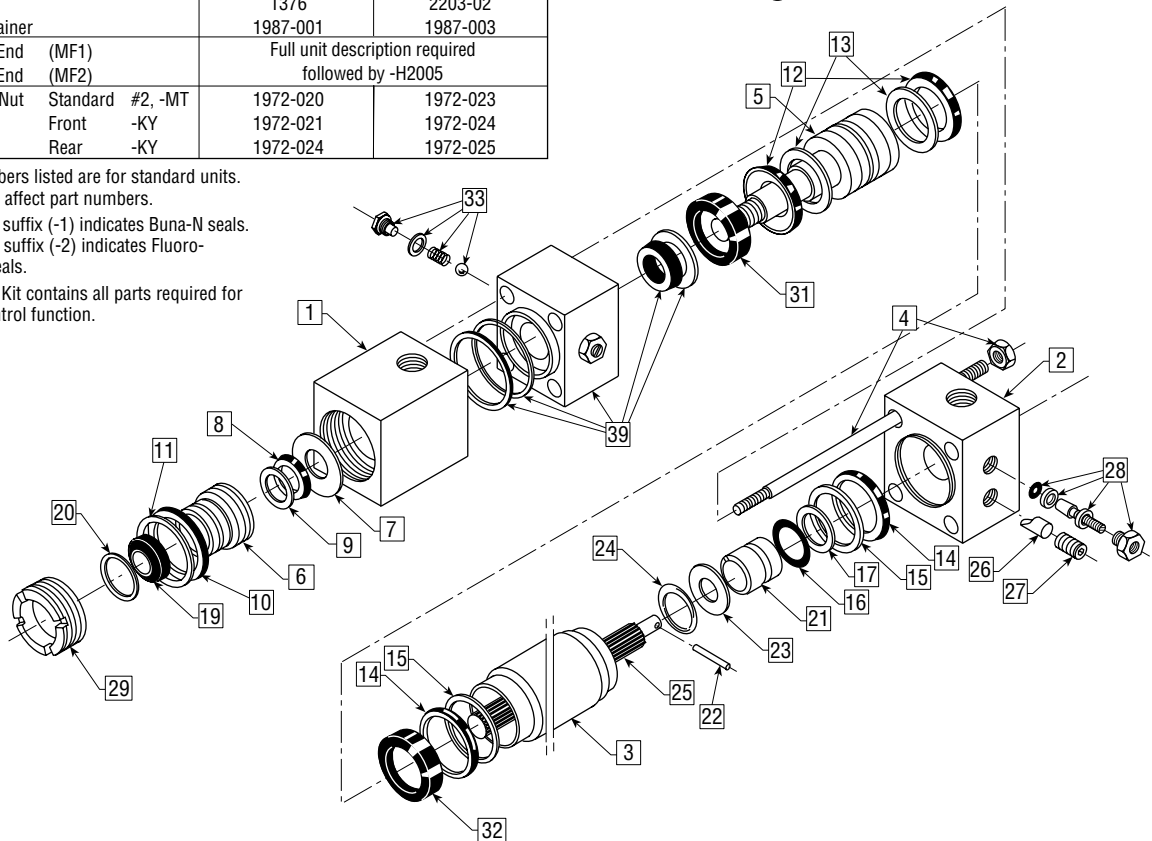




# SERIES NEAG, NEHG NON-ROTATING ROD CYLINDERS 1-1/8" & 1-3/8" BORE PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	1-1/8" BORE	1-3/8" BORE
1	Head	Consult factory	
2	Cap	factory	
3	Tube	Full unit description required followed by -H1300	
4	Tierod & Nut Assembly	Full unit description required followed by -H1410	
5	Piston & Rod Assembly	Full unit description required followed by -H1000	
6	Rod Bushing	Air	
6A	Rod Bushing Front	Hyd.	
6B	Rod Bushing Rear	Hyd.	
7	Rod Seal Retainer		
8	Rod Seal		
9	Rod Seal Backup Ring		
10	Bushing Seal	Sold as part of Seal Kit or Repair Kit only	
11	Bushing Seal Backup Ring		
12	Piston Seal		
13	Piston Seal Backup Ring		
14	Tube Seal		
15	Tube Seal Backup Ring (Hyd only)		
16	Spline Holder Seal		
17	Spline Holder Seal Backup		
19	Rod Wiper		
20	Rod Wiper Retainer		
21	Spline Holder	3233	3233
22	Spline Pin	3244	3244
23	Spline Washer	3234	3234
24	Spline Holder Retainer	1980-021	1980-021
25	Spline Bar Assembly	Full unit description required followed by -H2200	
26	Cam Lock Pin	3237	3237
27	Cam Lock Screw	3188-0010	3188-0010
28	Port Control Kit*	NEA 3406-05-x NEH 3406-05-x	3406-06-x 3406-08-x
29	Rod Bushing Retainer	2251-02	2251-03
31	Shock Pad Rod End without Cushion	2677-01	2677-02
32	Shock Pad Spline End without Cushion	2677-01	2677-02
33	Cushion Control Kit	NEA 3406-05-x NEH 3406-05-x	3406-06-x 3406-08-x
—	Clevis Pin	1376	2203-02
—	Clevis Pin Retainer	1987-001	1987-003
—	Flange Rod End (MF1) Cap End (MF2)	Full unit description required followed by -H2005	
—	Rod End Jam Nut	Standard #2, -MT 1972-020 Front -KY 1972-021 Rear -KY 1972-024	1972-023 1972-024 1972-025

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers. Part number suffix (-1) indicates Buna-N seals. Part number suffix (-2) indicates Fluoro-Elastomer seals. \* Port Control Kit contains all parts required for one flow control function.



## REPAIR KITS

Full unit description required followed by -H9010

## SEAL KITS

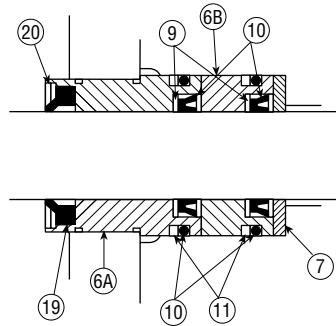
Full unit description required followed by -H9000

## KITS - ITEM #39

KIT DESCRIPTION			1-1/8" BORE	1-3/8" BORE
Cushion Component Kit (without Block)	NEAG Air		3407-08-x	3407-09-x
	NEHG Hyd		3408-08-x	3408-09-x
Cushion Block Kit (with Block)	NEAG Air		3409-04-1-x	3409-05-1-x
	NEHG Hyd		3409-04-2-x	3409-05-2-x

**NOTE:** Part number suffix (-1) indicates Buna-N seals. Part number suffix (-2) indicates Fluoro-Elastomer seals. Cushion Component Kit contains parts for one cushion control function. Cushion Block Kit contains parts for one cushion control function plus block.

## HYDRAULIC BUSHING ASSEMBLY DETAIL





# SERIES NPG, NHG NON-ROTATING ROD CYLINDERS 1-1/8, 1-3/8" BORE PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	1-1/8" BORE	1-3/8" BORE
1	Head	Consult factory	
2	Cap	Consult factory	
3	Tube	Full unit description required followed by -H1300	
4	Tierod & Nut Assembly	Full unit description required followed by -H1410	
5	Piston & Rod Assembly	Full unit description required followed by -H1000	
6	Rod Bushing	Sold as part of Seal Kit or Repair Kit only	
7	Rod Seal Retainer		
8	Rod Bushing Retainer		
9	Rod Seal		
10	Rod Seal Backup		
11	Bushing Seal		
12	Bushing Seal Backup (Hyd only)		
13	Piston Seal		
14	Piston Seal Backup (Hyd only)		
15	Tube Seal		
16	Spline Holder Seal		
17	Spline Holder	3233	3233
18	Spline Pin	3244	3244
19	Spline Washer	3234	3234
20	Spline Holder Retainer	1980-021	1980-021
21	Spline Bar Assembly	Full unit description required followed by -H2200	
22	Cam Lock Pin	3237	3237
23	Cam Lock Screw	3188-0010	3188-0010
24	Port Control Kit*	3406-02-x	3406-02-x
25	Shock Pad Rod End	2677-01	2677-02
26	Shock Pad Spline End	2677-03	2677-04
—	Clevis Pin	1376	2203-02
—	Clevis Pin Retainer	1987-001	1987-003
—	Flange Rod End (MF1) Cap End (MF2)	Full unit description required followed by -H2005	
—	Rod End Jam Nut	Standard #2, -MT	
		Front -KY	1972-021
		Rear -KY	1972-024
			1972-023
			1972-024
			1972-025

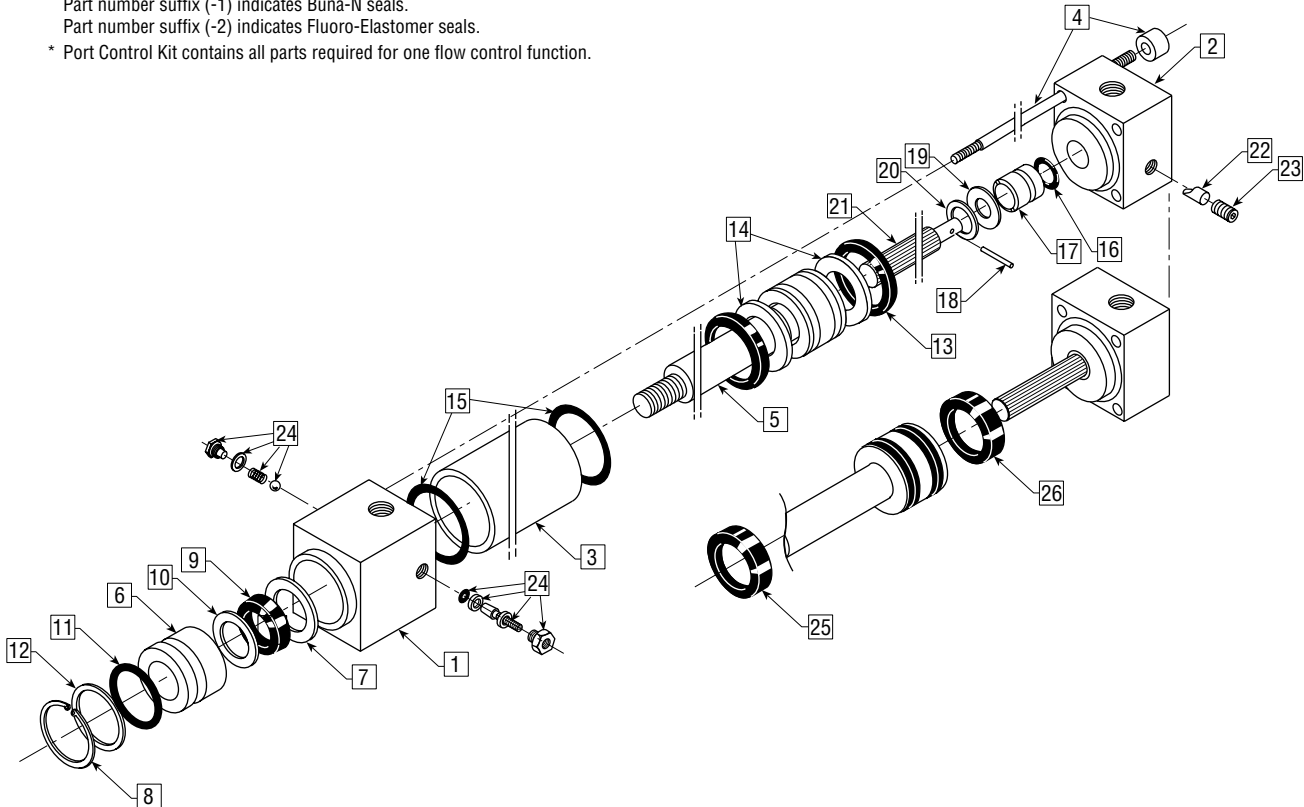
## REPAIR KITS

Full unit description required followed by -H9010  
**NOTE:** Repair Kit contains parts to repair one cylinder.

## SEAL KITS

Full unit description required followed by -H9000  
**NOTE:** Seal Kit contains all seals, wiper seal, and backup rings.

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
 Part number suffix (-1) indicates Buna-N seals.  
 Part number suffix (-2) indicates Fluoro-Elastomer seals.  
 \* Port Control Kit contains all parts required for one flow control function.





# SERIES O COMPACT CYLINDERS: MODELS COA & COC PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	3/4" / 20 mm Bore	1" / 26 mm Bore	1-1/4" / 32 mm Bore
1	Tierod Screw	Full unit description required followed by -H1410		
2	Rod Seal	Sold as part of		
3	Tube Seal	Seal Kit or		
4	Rod Bushing	Repair Kit only		
5	Piston Rod Stud	Full unit description required		
6	Piston Rod	followed by -H1000		
7	Piston			
8	Piston Stud			
9	Tube	Full unit description required followed by -H1300		
10	Head	Consult		
11	Cap	factory		

## REPAIR KITS

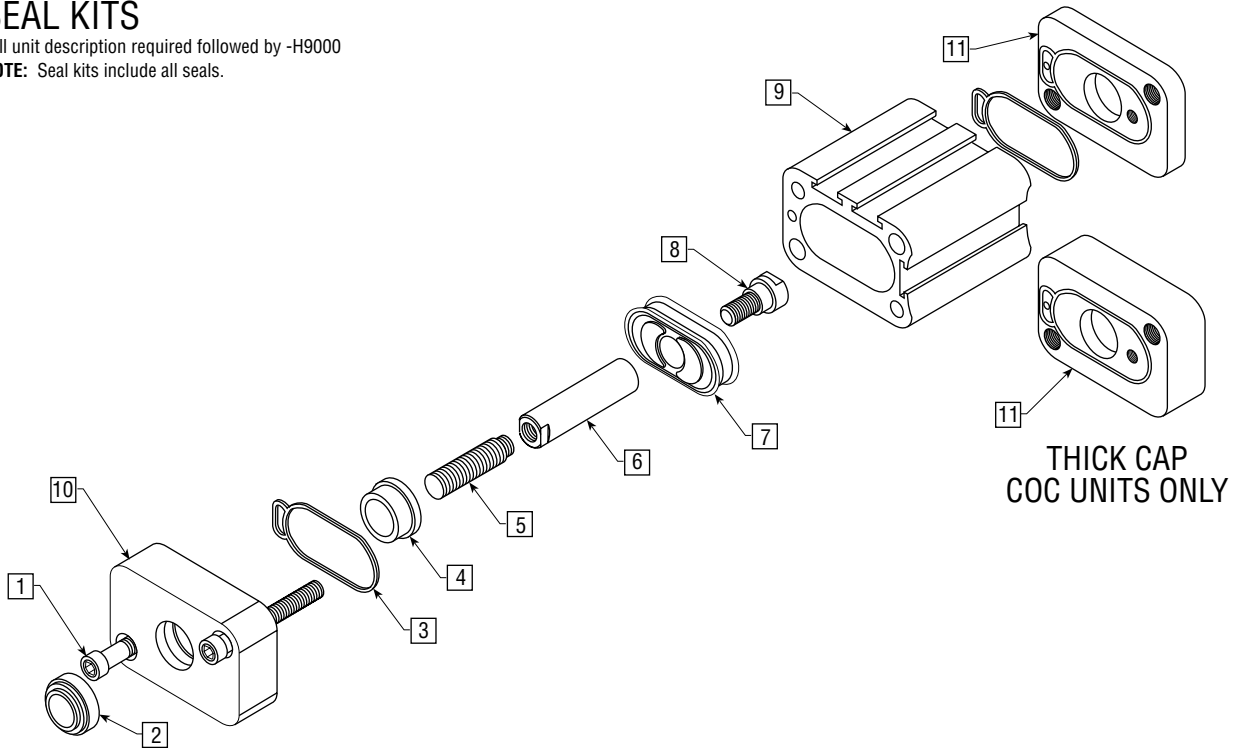
Full unit description required followed by -H9010

**NOTE:** Repair kits include all seals and bushings.

## SEAL KITS

Full unit description required followed by -H9000

**NOTE:** Seal kits include all seals.





# SERIES O COMPACT CYLINDERS: MODELS COB & COD PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	3/4" / 20 mm Bore	1" / 26 mm Bore	1-1/4" / 32 mm Bore
1	Tierod Screw	Full unit description required followed by -H1410		
2	Rod Seal	Sold as part of		
3	Tube Seal	Seal Kit or		
4	Rod Bushing	Repair Kit only		
5	Piston Rod Stud	Full unit description required followed by -H1000		
6	Piston Rod			
7	Piston			
8	Piston Stud			
10	Magnet Holder			
11	Spacer	Full unit description required followed by -H1300		
12	Tube			
13	Head	Consult		
14	Cap	factory		

## REPAIR KITS

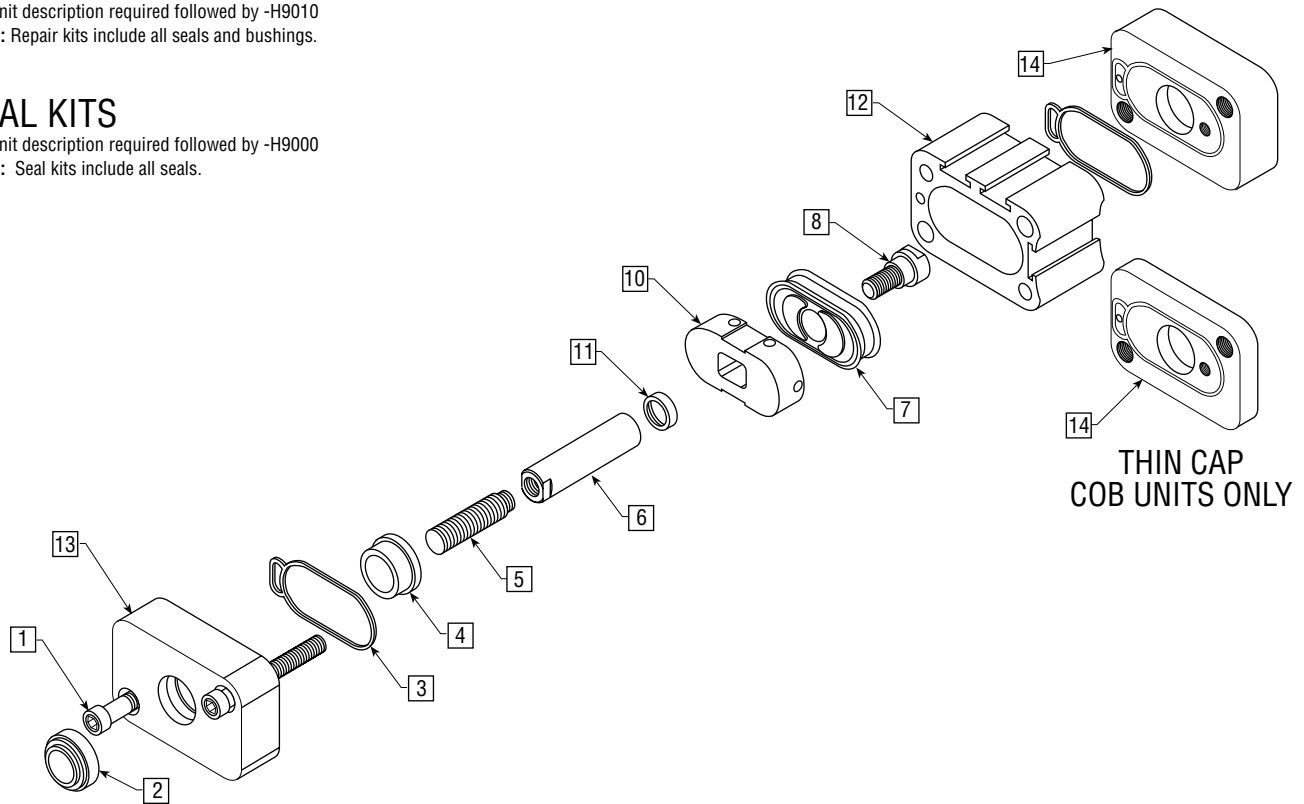
Full unit description required followed by -H9010

**NOTE:** Repair kits include all seals and bushings.

## SEAL KITS

Full unit description required followed by -H9000

**NOTE:** Seal kits include all seals.





# SERIES 160 ESCAPEMENTS DESIGN #2 PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	16002-2	16003-2	16010-2	16011-2	16012-2	16013-2	16014-2	16015-2
1	Body Assembly	59491		59708-1		59526		59708-2	
2A	Rod	Consult factory							
2B	Rod (Switch Option 1)								
3	Rod Seal	Sold as part of Seal Kit only							
4	Rod Bushing								
5	Piston	59495		59530		59530		59530	
6	Piston Seal	Sold as part of Seal Kit only							
7	Piston Screw	14308-015		64218		64218		64218	
8	Cap Seal	Sold as part of Seal Kit only							
9A	Cap-Plain	59497-1-2	59497-2-2	59531-1-2	59531-2-2	59531-1-2	59531-2-2	59531-1-2	59531-2-2
9B	Cap-Stroke Adjustment	—		59552-01-1	59552-02-1	59552-01-1	59552-02-1	59552-01-1	59552-02-1
9C	Cap-Stroke Adjustment/Port Control	—		59553-01-1	59553-02-1	59553-01-1	59553-02-1	59553-01-1	59553-02-1
9D	Stroke Adjustment Screw	—		Sold as part of Cap Assembly or Stroke Adjustment Kit only					
9E	Stroke Adjustment Seal	—							
9F	Nut	—							
9G	Washer	—							
9H	Port Control Assembly	—		Sold as part of Port Control Kit					
10A	Cap Screw (Plain)	Sold as part of Fastener Kit							
10B	Cap Screw	—		Sold as part of Fastener Kit					
11	Sequence Pin	59513		15852		15852		15852	
12A	Cover	59511		59515		59547		59515	
12B	Cover (Switch Options)	59512		59516		59548		59516	
13	Cover Screw	Sold as part of Fastener Kit							

KEY	PART DESCRIPTION	16020-2	16021-2	16022-2	16023-2	16024-2	16025-2	16042-2	16043-2
1	Body Assembly	59710-1		59561		59710-2		59596	
2A	Rod	Consult factory							
2B	Rod (Switch Option 1)								
3	Rod Seal	Sold as part of Seal Kit only							
4	Rod Bushing								
5	Piston	59565		59565		59565		59600	
6	Piston Seal	Sold as part of Seal Kit only							
7	Piston Screw	14308-099		14308-099		14308-099		14308-137	
8	Cap Seal	Sold as part of Seal Kit only							
9A	Cap-Plain	59570-1-2	59570-2-2	59570-1-2	59570-2-2	59570-1-2	59570-2-2	59602-1-2	59602-2-2
9B	Cap-Stroke Adjustment	59554-01-1	59554-02-1	59554-01-1	59554-02-1	59605-01-1	59605-02-1	59605-01-1	59605-02-1
9C	Cap-Stroke Adjustment/Port Control	59555-01-1	59555-02-1	59555-01-1	59555-02-1	59655-01-1	59655-02-1	59606-01-1	59606-02-1
9D	Stroke Adjustment Screw	Sold as part of Cap Assembly or Stroke Adjustment Kit only							
9E	Stroke Adjustment Seal								
9F	Nut								
9G	Washer								
9H	Port Control Assembly	Sold as part of Port Control Kit							
10A	Cap Screw (Plain)	Sold as part of Fastener Kit							
10B	Cap Screw	Sold as part of Fastener Kit							
11	Sequence Pin	15878		15878		15878		59621	
12A	Cover	59556		59577		59556		59618	
12B	Cover (Switch Options)	59557		59578		59557		59619	
13	Cover Screw	Sold as part of Fastener Kit							

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

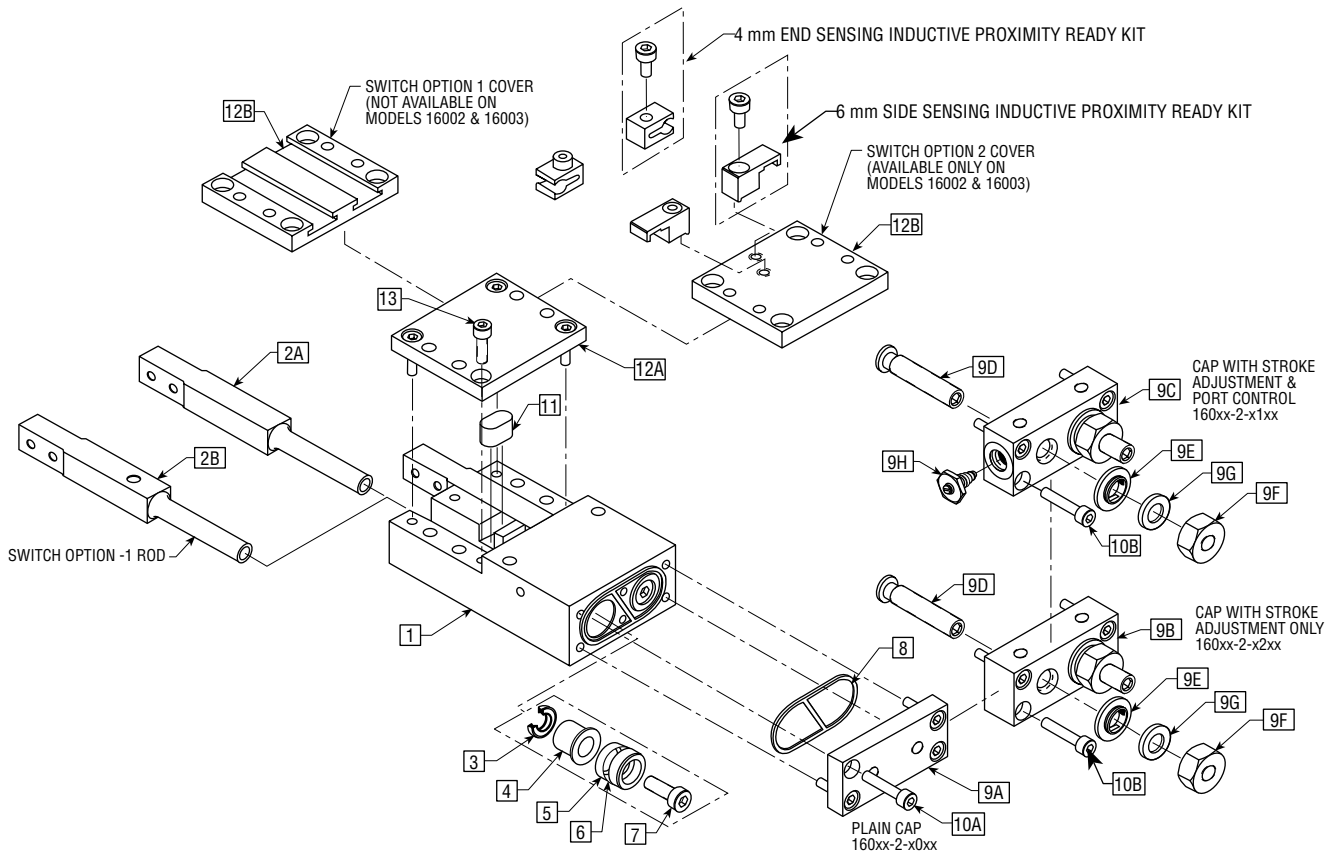
## KITS

KIT DESCRIPTION	1600x-2	1601x-2	1602x-2	1604x-2
Seal Kit	Full unit description required followed by -H9000			
Stroke Adjustment Kit	Full unit description required followed by -H9030			
Fastener Kit	Full unit description required followed by -H9020			
Port Control Kit	—	54376-x	54377-x	54377-x
4 mm Proximity Ready, End Sensing	57879	—	—	—
6 mm Proximity Ready, Side Sensing	57880	—	—	—

**NOTE:** Stroke adjustment kits not offered with Fluoro-Elastomer Seal composition and electroless nickel plating.  
Part number suffix (-1) indicates Buna-N seal. Part number suffix (-2) indicates Fluoro-Elastomer seal.  
Seal Kit contains all seals.



# SERIES 160 ESCAPEMENTS DESIGN #2 EXPLODED VIEW



# phd SERIES LC ESCAPEMENTS PARTS LIST AND REPAIR KITS

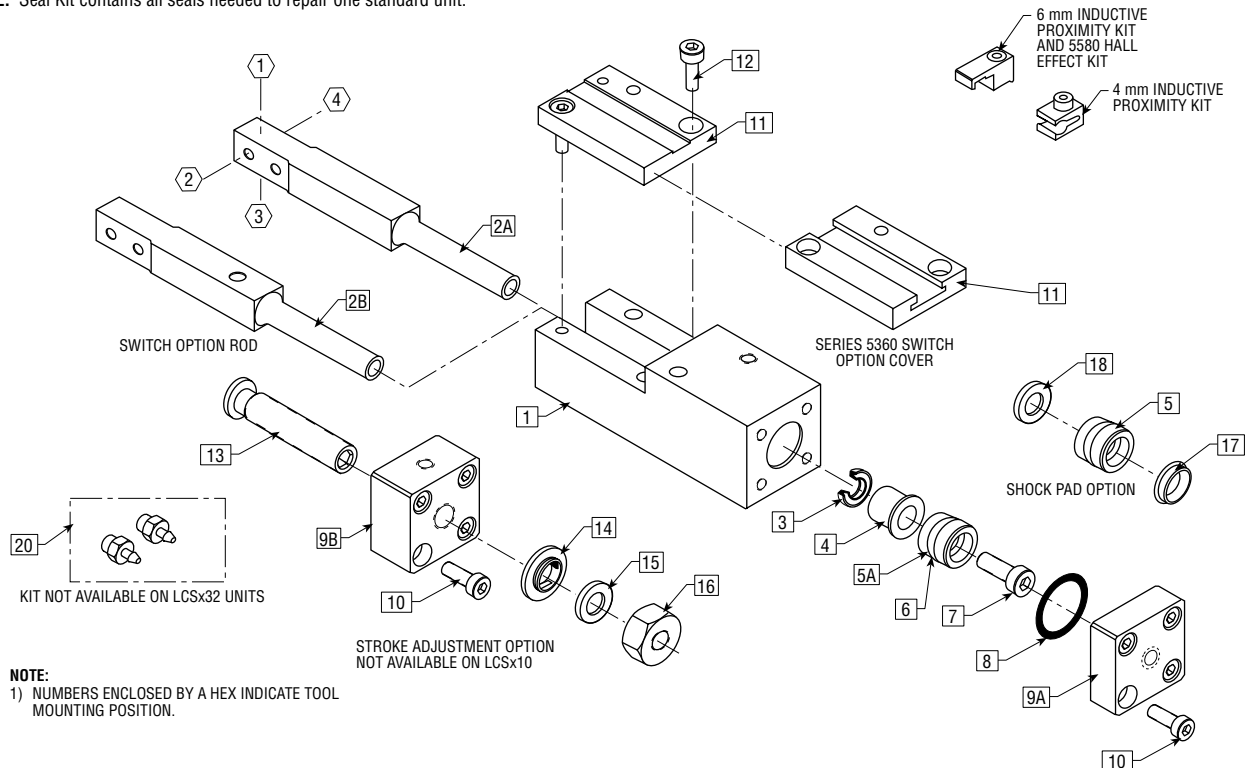
KEY	PART DESCRIPTION	IMPERIAL				METRIC			
		LCS110x10	LCS112x12	LCS120x20	LCS132x32	LCS510x10	LCS512x12	LCS520x20	LCS532x32
1	Body	61790-01	61791-01	61792-01	61793-01	61990-02	61791-02	61792-02	61793-02
2A	Rod	Consult factory							
2B	Rod: Switch								
3	Rod Seal	Sold as part of Seal Kit only							
4	Rod Bushing	Sold as part of Seal Kit only							
5A	Piston	59495	59530	59565	59600	59495	59530	59565	59600
5B	Shock Pad Piston	61806	61807	61808	61809	61806	61807	61808	61809
6	Piston Seal	Sold as part of Seal Kit only							
7	Piston Screw	Sold as part of Fastener Kit							
8	Cap Seal	Sold as part of Seal Kit only							
9A	Cap	61805-01	59384-1	59386-1	59388-1	61805-2	59384-2	59386-2	59388-2
9B	Stroke Adjustment Cap	—	59400-11	59402-11	59404-11	—	59400-21	59402-21	59404-21
9C	Shock Pad Cap (10 mm only)	61798-01	—	—	—	61798-02	—	—	—
10	Cap Screw (Plain or Shock Pad)	Sold as part of Fastener Kit							
	Cap Screw (Stroke Adjustment)	Sold as part of Fastener Kit							
11	Cover	61794-00	61795-00	61796-00	61797-00	61794-00	61795-00	61796-00	61797-00
	Cover (Switch Options)	61794-01	61795-01	61796-01	61797-01	61794-01	61795-01	61796-01	61797-01
12	Cover Screw	Sold as part of Fastener Kit							
13	Stroke Adjustment Screw	Sold as part of Stroke Adjustment Kit							
14	Stroke Adjustment Seal								
15	Stroke Adjustment Washer								
16	Stroke Adjustment Nut								
17	Shock Pad (Retract)	54600-01	54600-01	54600-06	54600-03	54600-01	54600-01	54600-06	54600-03
18	Shock Pad (Extend)	52010	52011	54600-06	54600-03	52010	52011	54600-06	54600-03
20	Barb Fitting Kit	53398	53398	53398	—	54232	54232	54232	—

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

QTY	KIT DESCRIPTION	LCSx10x10	LCSx12x12	LCSx20x20	LCSx32x32
1	Seal Kit	Full unit description required followed by -H9000			
1	Stroke Adjustment Kit	Full unit description required followed by -H9030			
1	Fastener Kit	Full unit description required followed by -H9020			
1	4 mm Proximity Ready, End Sensing	57879			
1	6 mm Proximity Ready, Side Sensing and 5580 Bracket Kit	57880			

**NOTE:** Seal Kit contains all seals needed to repair one standard unit.





# phd SERIES 190 ANGULAR GRIPPERS

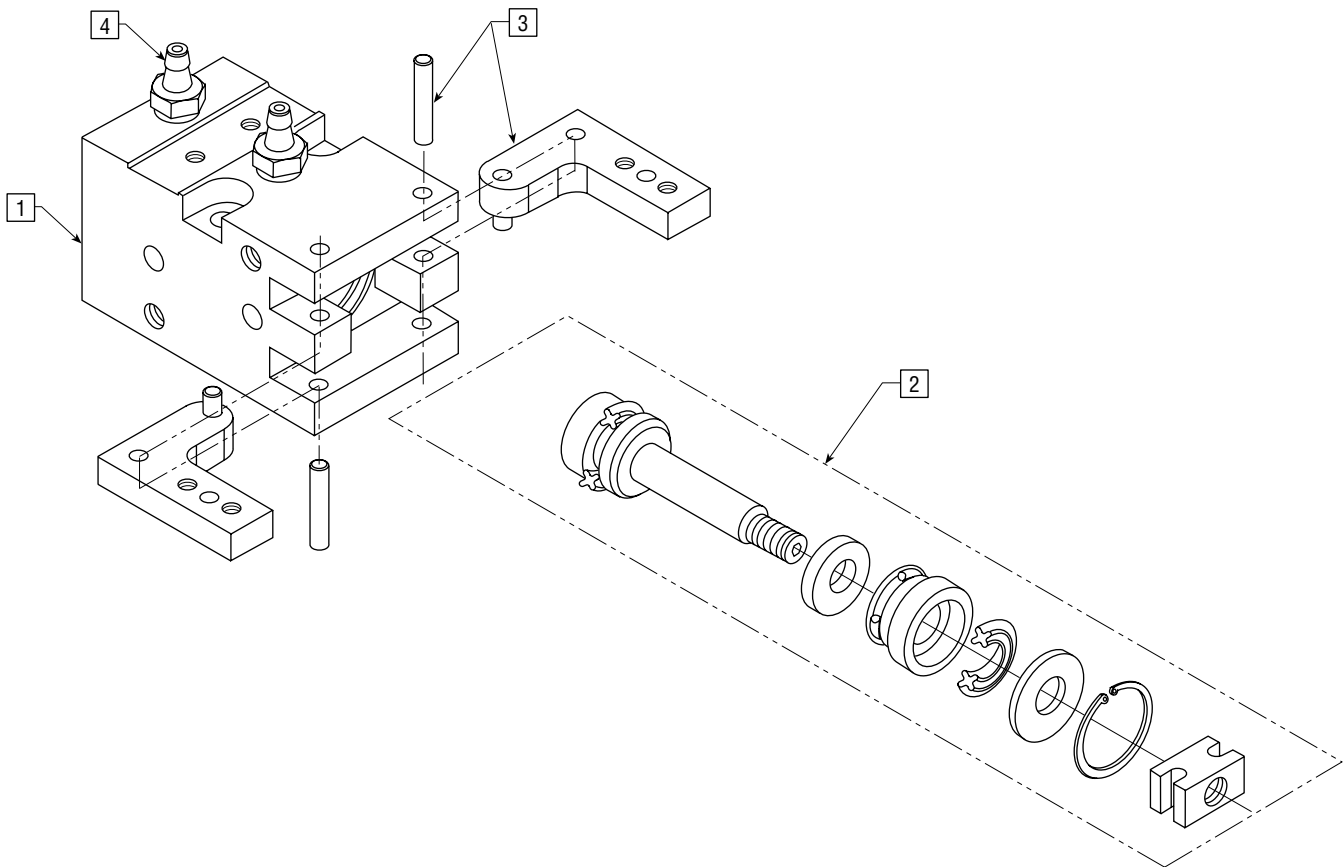
## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	19002	19012	19022	19032
1	Body	17620	17621	17622	17628
2	Piston & Rod Assembly	Full unit description required followed by -H1090			
3	Jaw Kit	18121	18122	18123	18124
4	Fitting Kit	54231	54231	54232	54232

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by -H9000



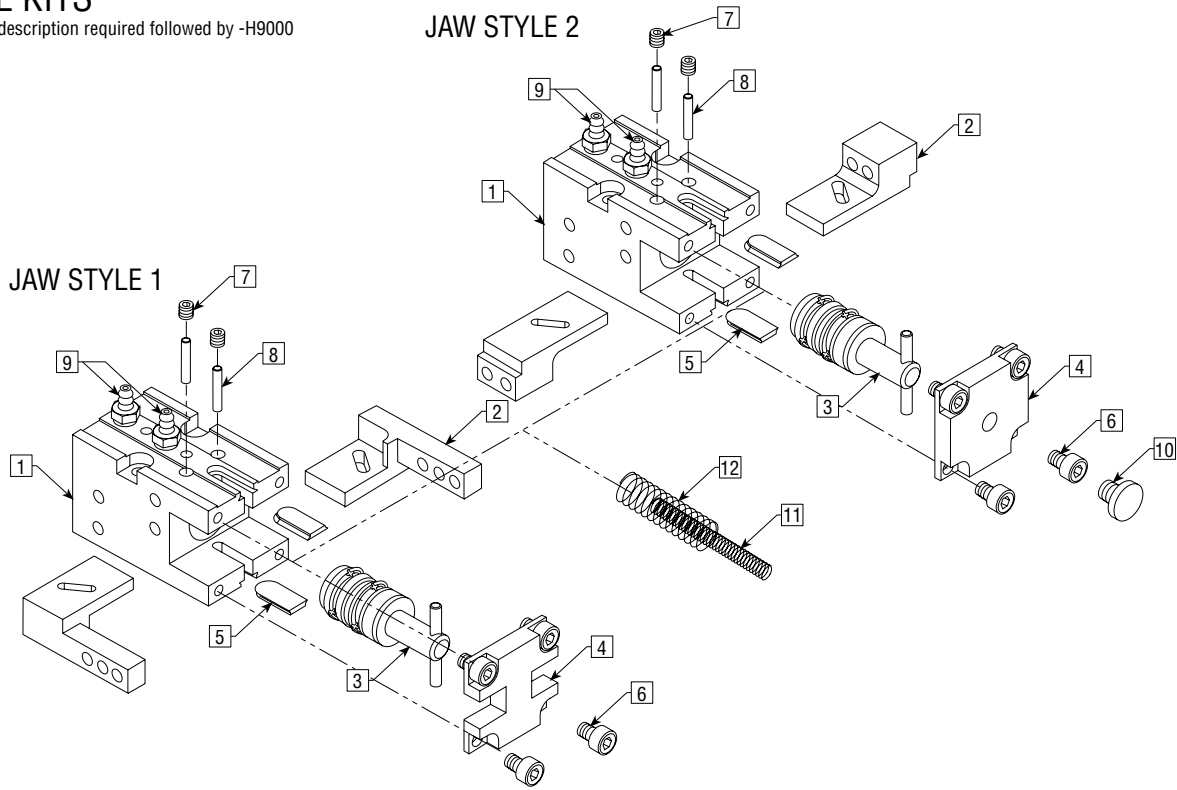
# phd SERIES 190/191 MINIATURE PARALLEL GRIPPERS PARTS LIST

KEY	PART DESCRIPTION	19x6x		19x7x		19x8x		19x9x		
		IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	
1	Body 190xx 191xx	59778-02 59778-01	59774-02 59774-01	59779-02 59779-01	59775-02 59775-01	59780-02 59780-01	59776-02 59776-01	59781-02 59781-01	59777-02 59777-01	
2	Jaws Style 1 19xx0 & 19xx5 Style 2 19xx1 & 19xx6 Style 2 19xx2 & 19xx7	18670 18647 18651	18224 18647 18651	18671 18648 64052	18225 18221 64054	18672 18649 64053	18226 18222 64055	18673 18650 18654	18227 18223 18380	
3	Piston Assembly	Full unit description required followed by -H1090								
—	Piston	Sold as part of Piston Assembly only								
—	Bushing									
—	Seal Retainer									
—	Shock Pad									
—	Dowel Pin									
—	Magnet									
—	Spring									
—	Piston Seal	Sold as part of Piston Assembly or Seal Kit only								
—	Bushing Seal									
—	Rod Seal									
4	Cap 19xx0 19xx1, 19xx2	18212 59769-01	18212 59769-01	18213 59770-01	18213 59770-01	18214 59771-01	18214 59771-01	18215 59772-01	18215 59772-01	
5	Cover	18290	18290	18291	18291	18292	18292	18293	18293	
6	Screw	14308-014	14308-014	14308-005	14308-005	14308-018	14308-018	14308-099	14308-099	
7	Set Screw	17424-016	17424-016	17424-016	17424-016	17424-009	17424-009	17424-010	17424-010	
8	Dowel Pin	17831-011	17831-011	17831-004	17831-004	17831-016	17831-016	17831-013	17831-013	
9	Barb Fitting Kit	53398	54231	53398	54231	53398	54232	53398	54232	
10	Cap Plug	18555	18555	18556	18556	18557	18557	18558	18558	
11	Spring - Inner	—	—	Consult factory						
12	Spring - Outer	—	—							

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## SEAL KITS

Full unit description required followed by -H9000





# SERIES 5300 ANGULAR OVAL PISTON GRIPPERS DESIGN #1

## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION	1532x	1533x	1534x	1535x
1	Body	15419	15420	15421	15422
2	Piston	15431	15433	15435	15437
3	Piston Seal	Sold as part of Seal Kit only			
4	Piston Rod	15411	15413	15415	15417
5	Piston to Rod Seal	Sold as part of Seal Kit only			
6	Piston Rod Nut	1972-059	1972-060	1972-061	1972-062
7	Piston Rod Seal	Sold as part of Seal Kit only			
8	Piston Rod Seal Retainer	Sold as part of Seal Kit only			
9	Communication Seal	Sold as part of Seal Kit only			
10	Cap Seal	Sold as part of Seal Kit only			
11	Cap	15423	15425	15427	15429
12	Dog Retainer	7590	7433	7444	7605
13	Dog Seal	7598	7438	7452	7613
21	Cap Mounting Screw	2809-050	2809-074	2809-062	2809-315
22	Bushing Block Mounting Screw	2809-050	2809-074	2809-062	2809-097
26	Alignment Pin	3696-023	3696-021	3696-045	3696-014

### UNITS WITHOUT SENSOR (-0xxx)

14	Jaw Assembly 153x0 models	7591-02	7434-02	7445-02	7606-02
	153x1 models	7529-02	7530-02	7531-02	7532-02
16	Bushing Block Assembly	7595	7428	7449	7610

### UNITS WITH SENSOR (-3xxx & -4xxx)

14	Jaw Assembly 153x0 models (Non-sensor side)	7591-02	7434-02	7445-02	7606-02
	153x1 models	7529-02	7530-02	7531-02	7532-02
15	Jaw Assembly 153x0 models (Sensor side)	10409-02	10410-02	10411-02	10412-02
	153x1 models	10413-02	10414-02	10415-02	10416-02
16	Bushing Block Assembly (Non-sensor side)	7595	7428	7449	7610
17	Bushing Block Assembly (Sensor side)	7595-02	7428-02	7449-02	7610-02
—	Sensor Ready Kit: to convert -xx4x units to -xx3x	17750	17750	17750	17750

### UNITS WITH SPRING (-xx3x & -xx4x)

27	Spring Kit, light	15618	15619	15620	15621
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### UNITS WITH SPRING (-xx5x & -xx6x)

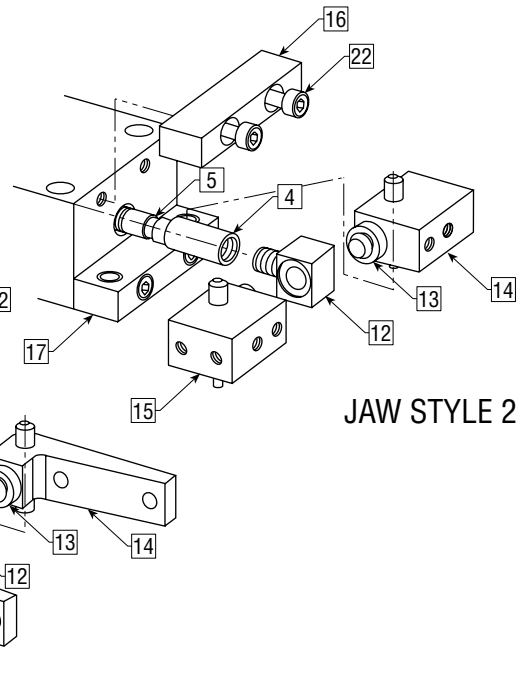
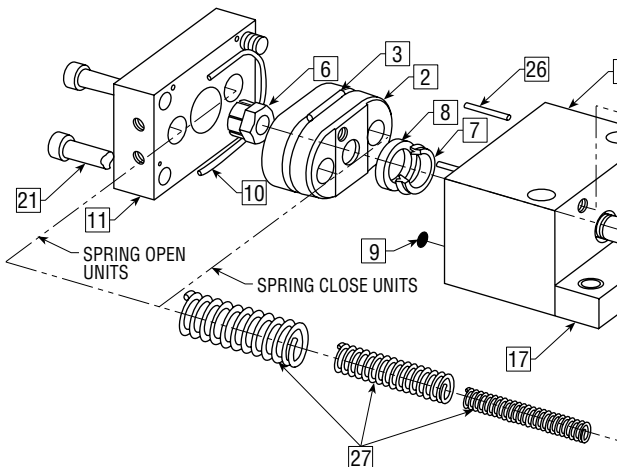
27	Spring Kit, heavy	15622	15623	15624	15625
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**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## SEAL KITS

Full unit description required followed by -H9000

### JAW STYLE 1



JAW STYLE 2



# SERIES 5300 PARALLEL OVAL PISTON GRIPPERS DESIGN #1

## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION	15360	15370	15380	15390
1	Body	15419	15420	15421	15422
2	Piston	15432	15434	15436	15438
3	Piston Seal	Sold as part of Seal Kit only			
4	Piston Rod	15412	15414	15416	15418
5	Piston to Rod Seal	Sold as part of Seal Kit only			
6	Piston Rod Nut	1972-059	1972-060	1972-061	1972-062
7	Rod Seal	Sold as part of Seal Kit only			
8	Rod Seal Retainer				
9	Communication Seal				
10	Cap Seal				
11	Cap	15423	15425	15427	15429
12	Cam Bar	5997	5998	5999	6000
13	Cam Bar Pins	8172	8183	8194	8227
14	Jaw	9230	9231	9232	9233
15	Jaw Guide Bar	9269	9270	9271	9272
16	Jaw Guide Block	9273	9274	9275	9276
17	Pipe Plug	5733-002	5733-002	5733-002	5733-002
18	Guide Bar Clamp Screw	2809-046	2809-130	2809-159	2809-158
19	Guide Bar Screw	2809-226	2809-227	2809-228	2809-229
20	Guide Block Screw	2809-159	2809-162	2809-161	2809-160
21	Cap Mounting Screw	2809-050	2809-074	2809-062	2809-315
26	Alignment Pin	3696-023	3696-021	3696-045	3696-014

### UNITS WITH SPRING (-xx3x & -xx4x)

27	Spring Kit light	15618	15619	15620	15621
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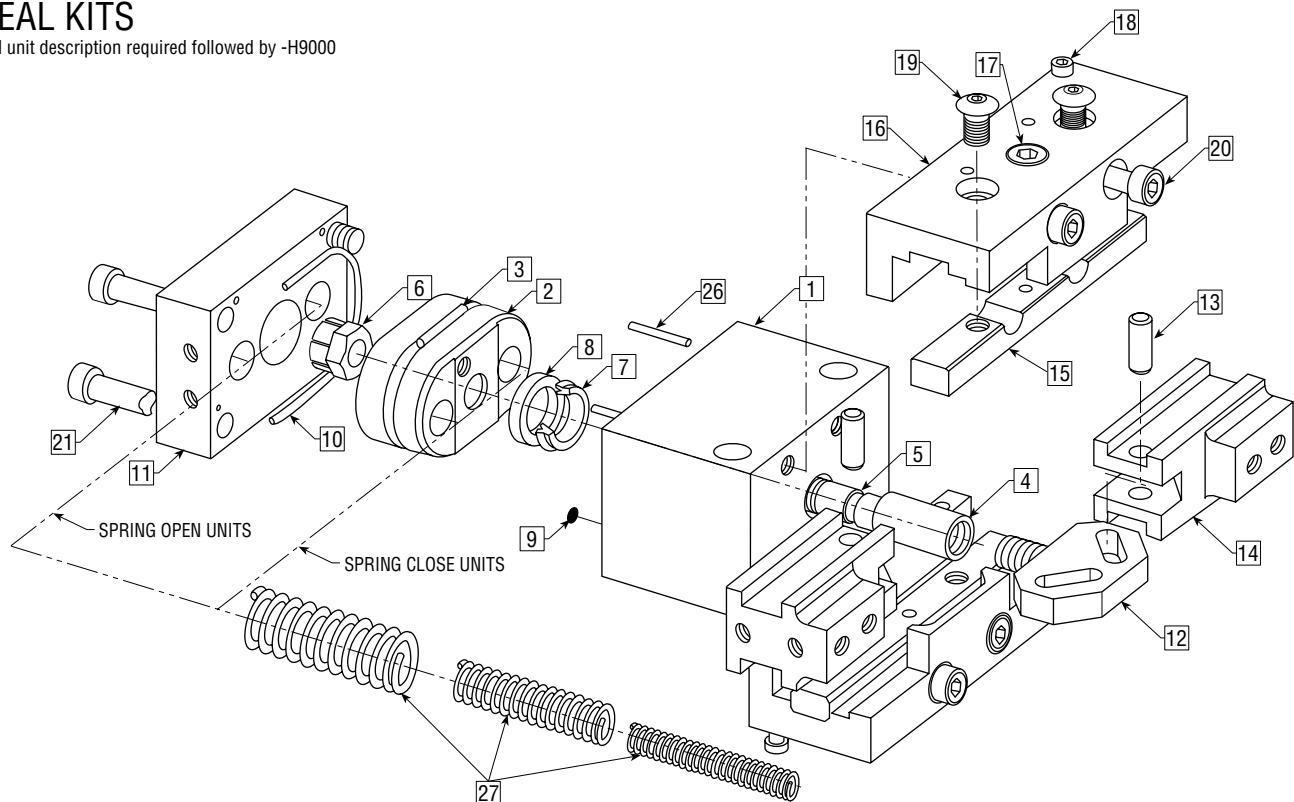
### UNITS WITH SPRING (-xx5x & -xx6x)

27	Spring Kit heavy	15622	15623	15624	15625
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**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## SEAL KITS

Full unit description required followed by -H9000





# SERIES 7900 ANGULAR GRIPPERS DESIGN #2

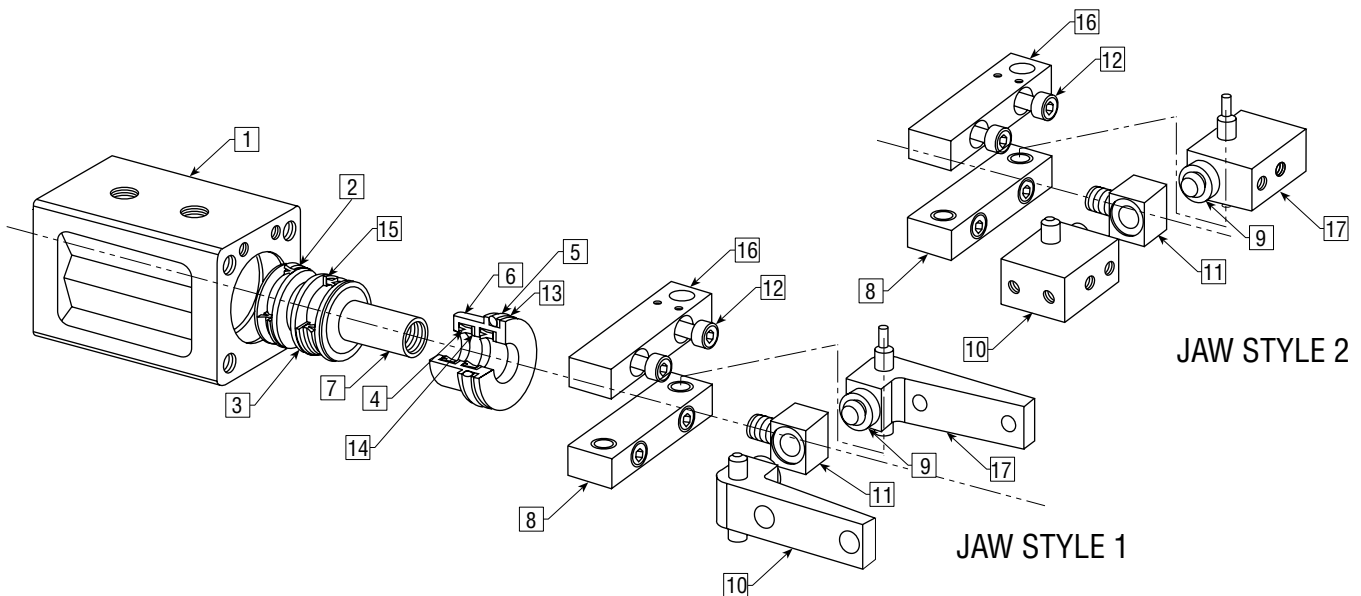
## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION	792x	793x	794x	795x
1	Body with NPT Port with SAE Port	10640-01 10648-01	10641-01 10649-01	10642-01 10650-01	10643-01 10651-01
2	Piston Seal	Sold as part of Seal or Repair Kit only			
3	Piston No magnet with Reed magnet with Hall magnet	7587 8100 8391	7430 8102 8386	7441 8104 8387	7602 8106 8388
4	Rod Seal	Sold as part of			
5	Bushing Seal	Seal or Repair Kit only			
6	Bushing	7588	7431	7442	7603
7	Rod	7589	7432	7443	7604
8	Bushing Block Assembly	7595	7428	7449	7610
9	Dog Seal	7598	7438	7452	7613
10	Jaw Assembly Jaw Style 1 (79x0) Jaw Style 2 (79x1)	7591-02 7529-02	7434-02 7530-02	7445-02 7531-02	7606-02 7532-02
11	Dog Retainer	7590	7433	7444	7605
12	Bushing Block Mounting Screw	2809-050	2809-074	2809-062	2809-097
13	Bushing Seal Backup	Sold as part of Seal or Repair Kit only			
14	Rod Seal Backup				
15	Piston Seal Backup				
16	Bushing Block Assembly with Sensor	7595-02	7428-02	7449-02	7610-02
17	Jaw Assembly w/Sensor Jaw Style 1 (79x0) Jaw Style 2 (79x1)	10409-02 10413-02	10410-02 10414-02	10411-02 10415-02	10412-02 10416-02
—	Mounting Screws	2809-236	2809-236	2809-236	2809-236
—	Sensor, Cable, & Housing Assembly	10688-2-12	10688-2-12	10688-2-12	10688-2-12
—	Magnet	10021	10021	10021	10021

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by -H9000





# SERIES 7900 3-JAW GRIPPERS DESIGN #1

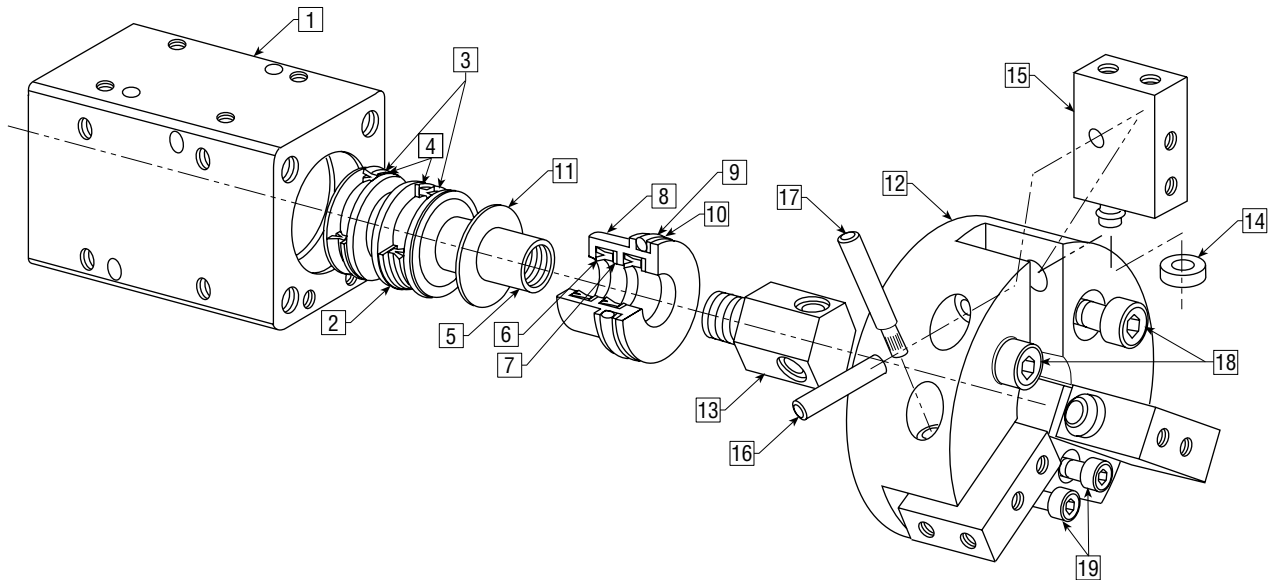
## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION	7924	7934	7944	7954	
1	Body	10640-01	10641-01	10642-01	10643-01	
	SAE Ports	10648-01	10649-01	10650-01	10651-01	
2	Piston					
	No Magnet	7587	7430	7441	7602	
	with Reed Magnet	8100	8102	8104	8106	
	with Hall Magnet	8391	8386	8387	8388	
3	Piston Seal	Sold as part of				
4	Piston Seal Backup	Seal Kit only				
5	Piston Rod	7589	7432	7443	7604	
6	Rod Seal	Sold as part of				
7	Rod Seal Backup	Seal Kit only				
8	Rod Bushing	7588	7431	7442	7603	
9	Bushing Seal	Sold as part of				
10	Bushing Seal Backup	Seal Kit only				
11	Spacer	13685	13780	13653	13658	
12	Housing Assembly	13644	13667	13665	13666	
13	Dog Retainer	13641	13651	13652	13657	
14	Dog Seal	13664	7598	7438	7452	
15	Jaw Assembly	13645-02	13689-02	13690-02	13691-02	
16	Pivot Pin	No Sensor	3696-010	7594	7437	7448
17	Pivot Pin	with Sensor	13640	10403	10404	10405
18	Housing Mounting Screw	2809-073	2809-150	2809-062	2809-097	
19	Housing Mounting Screw	2809-130	2809-218	2809-159	2809-213	
—	Sensor Option (-3xxx) Add-on					
	Cable and Housing Assembly	10688-2-12	10688-2-12	10688-2-12	10688-2-12	
	Housing Blank	15834	15834	15834	15834	
	Sensor Mounting Screws	2809-236	2809-236	2809-236	2809-236	
	Sensor Magnet	10021	10021	10021	10021	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## SEAL KITS

Full unit description required followed by -H9000





# SERIES 7900 PARALLEL GRIPPERS DESIGN #3

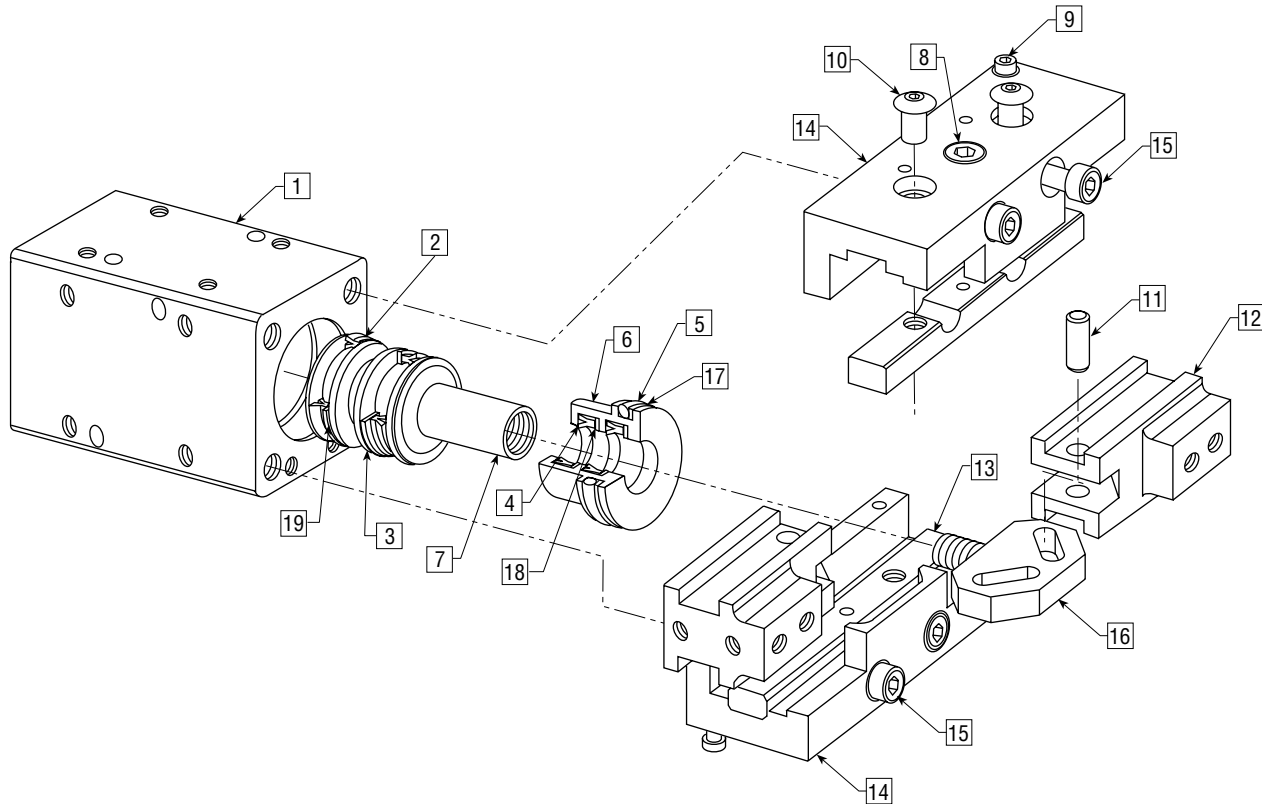
## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION	7960	7970	7980	7990
1	Body	10640-01	10641-01	10642-01	10643-01
	NPT Port	10648-01	10649-01	10650-01	10651-01
2	Piston Seal	Sold as part of Seal Kit only			
3	Piston	8170	8181	8192	8225
	no magnet	8101	8103	8105	8107
	with Reed magnet	8121	6289	6290	6291
4	Rod Seal	Sold as part of			
5	Bushing Seal	Seal Kit only			
6	Bushing	7588	7431	7442	7603
7	Rod	8171	8182	8193	8226
8	Pipe Plug	5733-002	5733-002	5733-002	5733-002
9	Guide Block Clamp Screws	2809-046	2809-130	2809-159	2809-158
10	Guide Bar Mounting Screws	2809-226	2809-227	2809-228	2809-229
11	Pin	8172	8183	8194	8227
12	Jaw	9230	9231	9232	9233
13	Guide Bar	9269	9270	9271	9272
14	Guide Block	9273	9274	9275	9276
15	Guide Block Mounting Screws	2809-159	2809-162	2809-161	2809-160
16	Cam Bar	5997	5998	5999	6000
17	Bushing Seal Backup	Sold as			
18	Rod Seal Backup	part of			
19	Piston Seal Backup	Seal Kit only			

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by -H9000





# SERIES 8400 ANGULAR GRIPPERS DESIGN #2

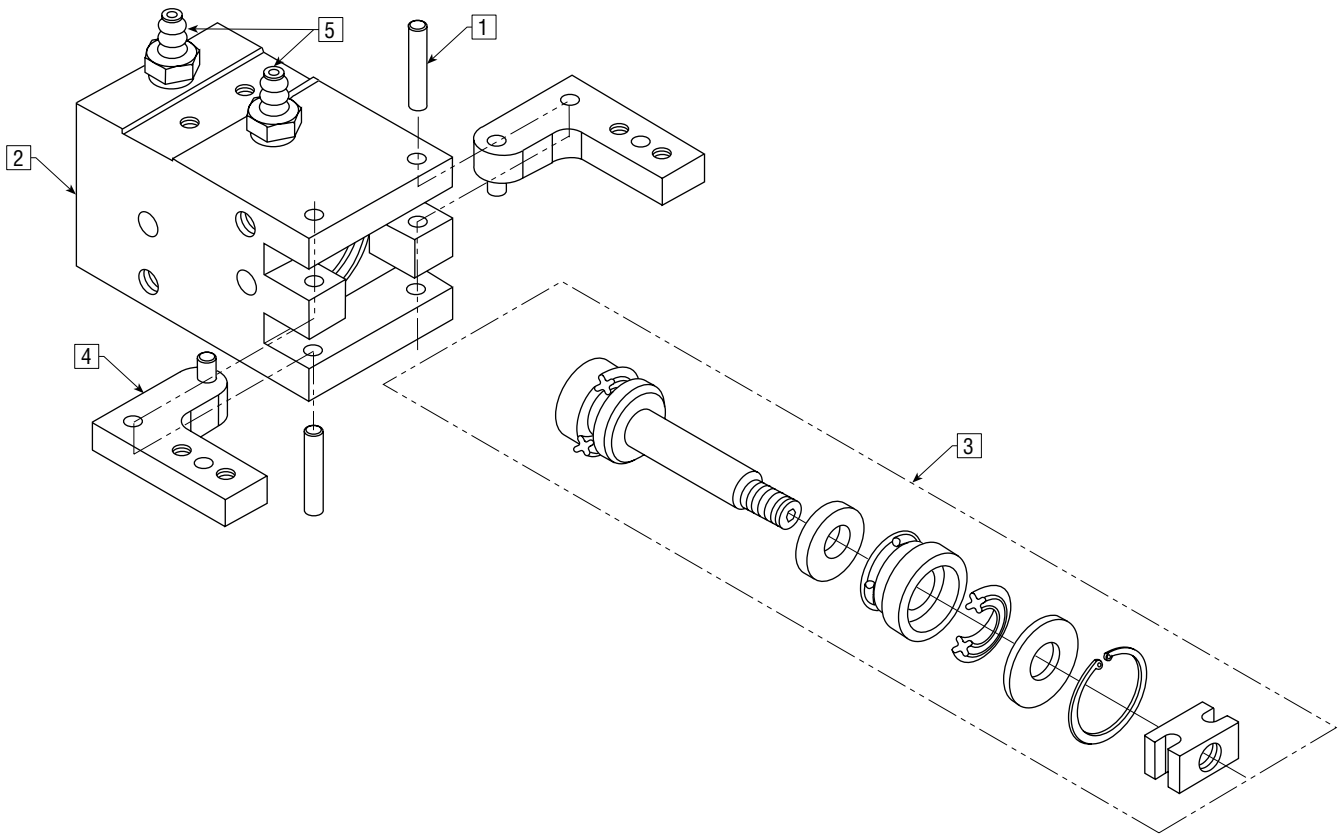
## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	8400	8410	8420	8430
1	Jaw Pivot Pin Standard w/Proximity Switch	3696-036 —	3696-037 19749	3696-038 19748	3696-010 18731
2	Body	8302	8314	8327	18608
3	Piston & Rod Assembly	Full unit description required followed by -H1090			
4	Jaw Assembly	8310-02	8323-02	8336-02	18610
5	Fitting Kit	54233	53398	53398	—
—	Hall Sensor Replacement	10906-12	10907-12	10908-12	18686-04

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by -H9000







# SERIES 8600 ANGULAR GRIPPERS DESIGN #1

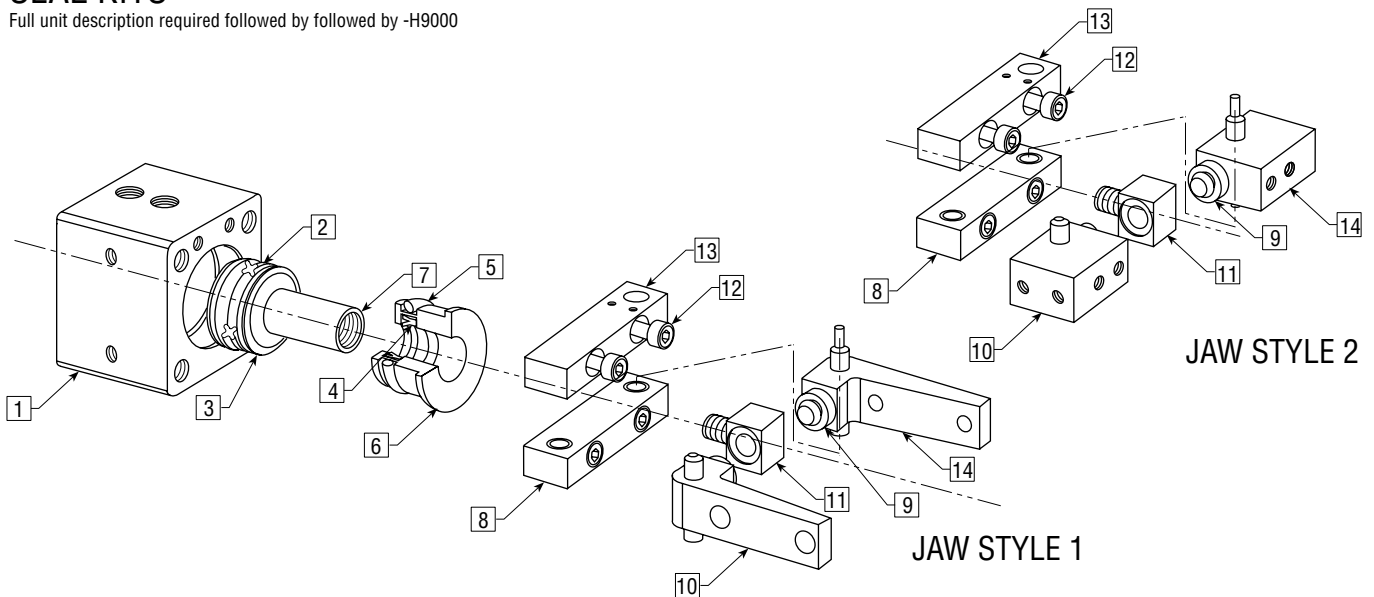
## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION		862x	863x	864x	865x
1	Body	Imperial	10608	10609	10610	10611
		Metric	10612	10613	10614	10615
2	Piston Seal		Sold as part of Seal Kit only			
3	Piston		8357	8358	8359	8360
4	Rod Seal		Sold as part of Seal Kit only			
5	Bushing Seal					
6	Bushing Assembly		8353	8372	8373	8374
7	Rod		8566	8567	8568	8569
8	Bushing Block Assembly		7595	7428	7449	7610
9	Dog Seal		7598	7438	7452	7613
10	Jaw Assembly	Style 1 (86x0) Imperial & Metric	7591-01	7434-01	7445-01	7606-01
		Style 2 (86x1) Imperial	7529-01	7530-01	7531-01	7532-01
		Style 2 (86x1) Metric	7529-03	7530-03	7531-03	7532-03
11	Dog Retainer		7590	7433	7444	7605
12	Bushing Block Mounting Screw		2809-050	2809-074	2809-62	2809-97
13	Bushing Block Assembly with Sensor	Imperial	7595-02	7428-02	7449-02	7610-02
		Metric	7595-03	7428-03	7449-03	77610-03
14	Jaw Assembly with Sensor	Style 1 (86x0) Imperial & Metric	10409-01	10410-01	10411-01	10412-01
		Style 2 (86x1) Imperial	10413-01	10414-01	10415-01	10416-01
		Style 2 (86x1) Metric	10413-03	10414-03	10415-03	10416-03

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by followed by -H9000



# phd SERIES 8600 3-JAW GRIPPERS DESIGN #1

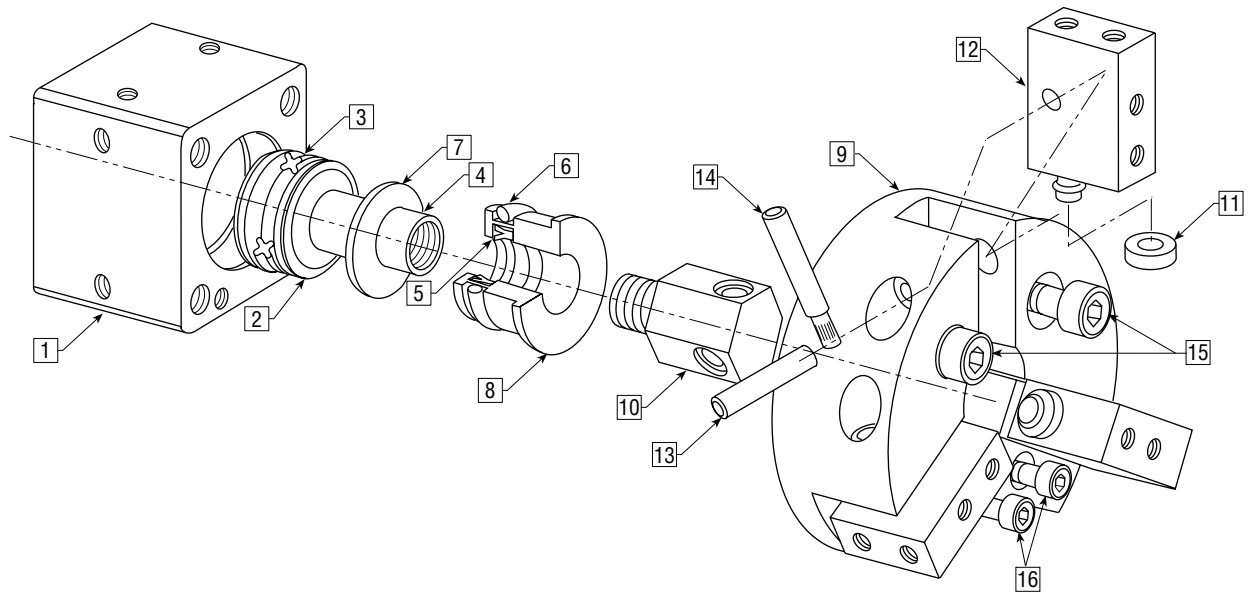
## PARTS LIST AND SEAL KITS

KEY	PART DESCRIPTION	8624	8634	8644	8654	
1	Body	Imperial	10608	10609	10610	10611
		Metric	10612	10613	10614	10615
2	Piston	8357	8358	8359	8360	
3	Piston Seal	Sold as part of Seal Kit only				
4	Piston Rod	8566	8567	8568	8569	
5	Piston Rod Seal	Sold as part of Seal Kit only				
6	Bushing Seal	Sold as part of Seal Kit only				
7	Spacer	13685	13647	13653	13658	
8	Bushing Assembly	8353	8372	8373	8374	
9	Housing Assembly	Imperial	13644	13667	13665	13666
		Metric	13644-02	13667-02	13665-02	13666-02
10	Dog Retainer	59132	13651	13652	13657	
11	Dog Seal	13664	7598	7438	7452	
12	Jaw Assembly	Imperial	13645-01	13689-01	13690-01	59131-01
		Metric	13645-03	13689-03	13690-03	59131-03
13	Pivot Pin	No Sensor	3696-010	7594	7437	7448
		with Sensor	13640	10403	10404	10405
15	Housing Mounting Screw	2809-073	2809-150	2809-062	2809-097	
16	Housing Mounting Screw	2809-130	2809-218	2809-159	2809-213	
—	Sensor Option (-3xxx) Add-on Cable and Housing Assembly		10688-2-12	10688-2-12	10688-2-12	10688-2-12
		Housing Blank	15834	15834	15834	15834
—	Sensor Mounting Screws	Imperial	2809-236	2809-236	2809-236	2809-236
		Metric	14308-511	14308-511	14308-511	14308-511
—	Sensor Magnet	10021	10021	10021	10021	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by -H9000



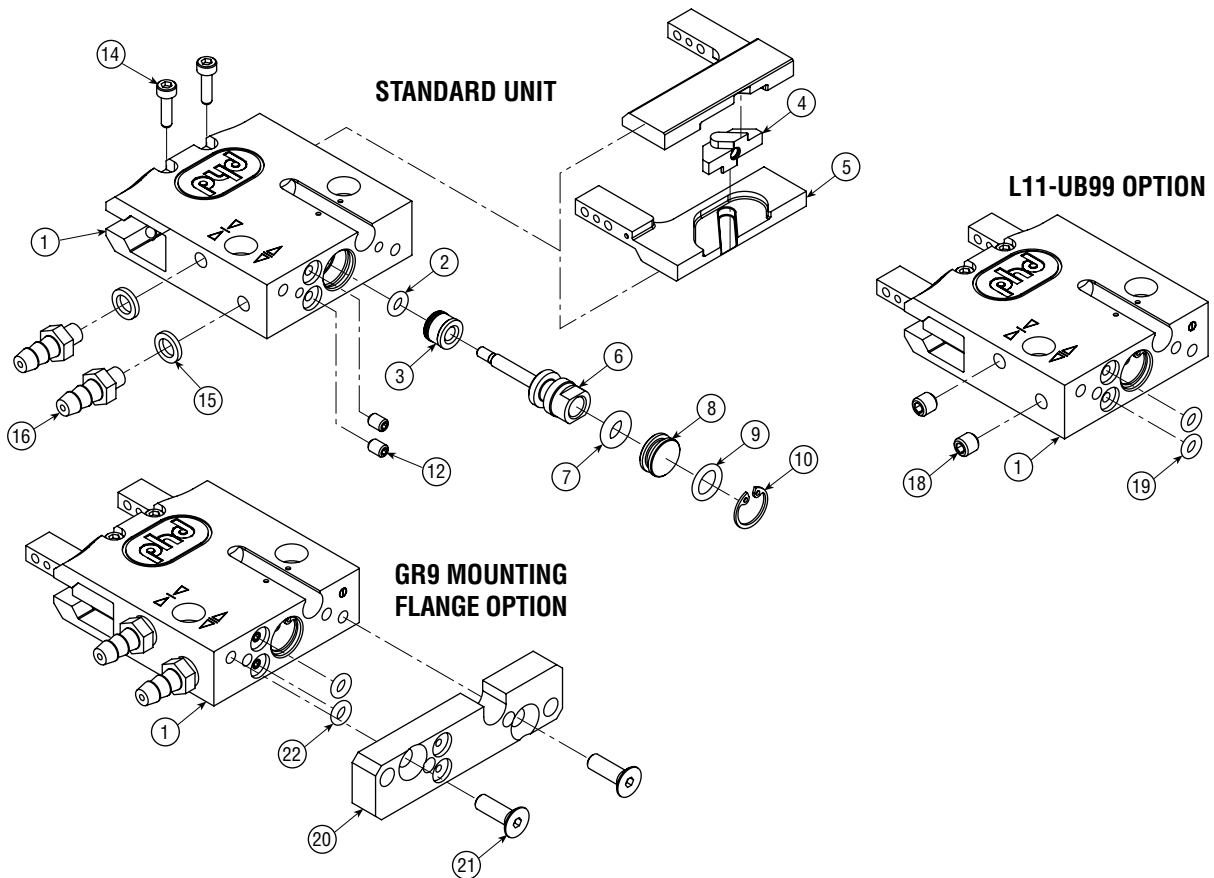
# phd SERIES GRA GRIPPERS PARTS LIST AND REPAIR KITS

KEY	DESCRIPTION	GRA-5-6x4	GRA-5-10x5	GRA-5-16x9	GRA-5-20x13
1	Body	—	—	—	—
2	Rod Seal	Sold as part of seal kit only -H9000			
3	Rod Seal Retainer	Sold as part of seal kit only -H9000			
4	Driver	-H5610			
5	Jaw	—	—	—	—
6	Piston & Rod Assembly	-H1000			
7	Piston Seal	Sold as part of seal kit only -H9000			
8	Bore Plug	-H3100			
9	Bore Plug Seal	Sold as part of seal kit only -H9000			
10	Retaining Ring	Sold as part of seal kit only -H9000			
12	Set Screw (Manifold Plug)	17424-101			
14	SHCS (Spacer)	14308-789	—	—	—
15	Barb Fitting Washer	Part of -H2800 (1 fitting)			
16	Barb Fitting	Part of -H2800 (1 washer)			
18	Set Screw (Port Plug)	Sold as part of manifold conversion kit only -H9091			
19	O-Ring Seal (Manifold)	Sold as part of manifold kits -H9090 or -H9091			
20	GR9 Mounting Flange	Sold as part of GR9 mounting flange kit only -H9055			
21	SFHCS (GR9 Mounting)				
22	O-Ring Seal (Manifold)				

## KITS

DESCRIPTION	GRA-5-6x4	GRA-5-10x5	GRA-5-16x9	GRA-5-20x13
Seal Kit	Seal Kit -H9000			
Manifold Conversion Kit	Manifold Conversion Kit -H9091			
Manifold Seal Replacement Kit	Manifold Seal Kit -H9090			
Flange Mounting Kit	Flange Mounting Kit -H9055			

**NOTE:** -H codes must be used with full unit description. Example: GRA-5-10x5-V1-GR9-H1000.  
This ensures the correct configuration of components is provided.





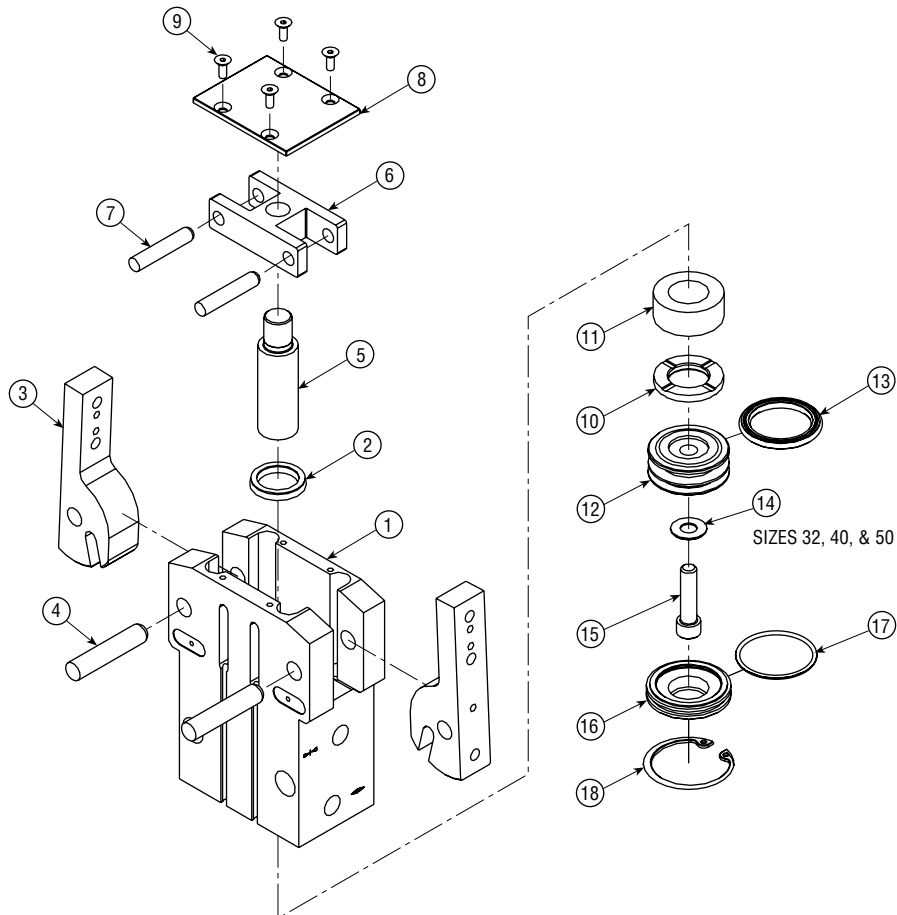
# SERIES GRB 180° ANGULAR GRIPPERS DESIGN #2

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 12	SIZE 16	SIZE 20	SIZE 32	SIZE 40	SIZE 50
1	Body Assembly	Full unit description required followed by -H2400					
3	Jaw	Full unit description required followed by -H2600					
4	Pivot Pin For Jaws	Full unit description required followed by -H2621					
5	Rod	Full unit description required followed by -H5810					
6	Jaw Driver	Full unit description required followed by -H5610					
7	Pivot Pin For Jaw Driver	Full unit description required followed by -H2622					
8	Jaw Slot Cover	Full unit description required followed by -H1200					
9	Jaw Slot Cover Assembly Fasteners	Full unit description required followed by -H1440 for all fasteners, -H1441 for one fastener					
11	Angle Limiting Spacer	Full unit description required followed by -H2100					
12	Piston	Full unit description required followed by -H1005					
14	Washer (Sizes 32, 40, & 50)	—	—	—	6273-017	6273-015	6273-015
15	Piston Assembly Fastener	Full unit description required followed by -H2050					
16	Bore Plug	Full unit description required followed by -H3100					
18	Bore Plug Retainer	Full unit description required followed by -H7101					
2	Rod Seal	Sold as part of Seal Kit					
10	Shock Pad	Sold as part of Seal Kit or separately as Full unit description required followed by -H1800					
13	Piston Seal	Sold as part of Seal Kit					
17	Bore Plug Seal	Sold as part of Seal Kit					

### KITS

KIT DESCRIPTION	SIZE 12		SIZE 16		SIZE 20		SIZE 32		SIZE 40		SIZE 50	
	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
Seal Kit	Full unit description required followed by -H9000											
Port Control Kit	70695-01	70696-01	70695-01	70696-01	70695-01	70696-01	70695-03	70696-03	70695-03	70696-03	70695-03	70696-03
Proximity Switch Mounting Kit	18074		18090		18075		18091		18091		18091	

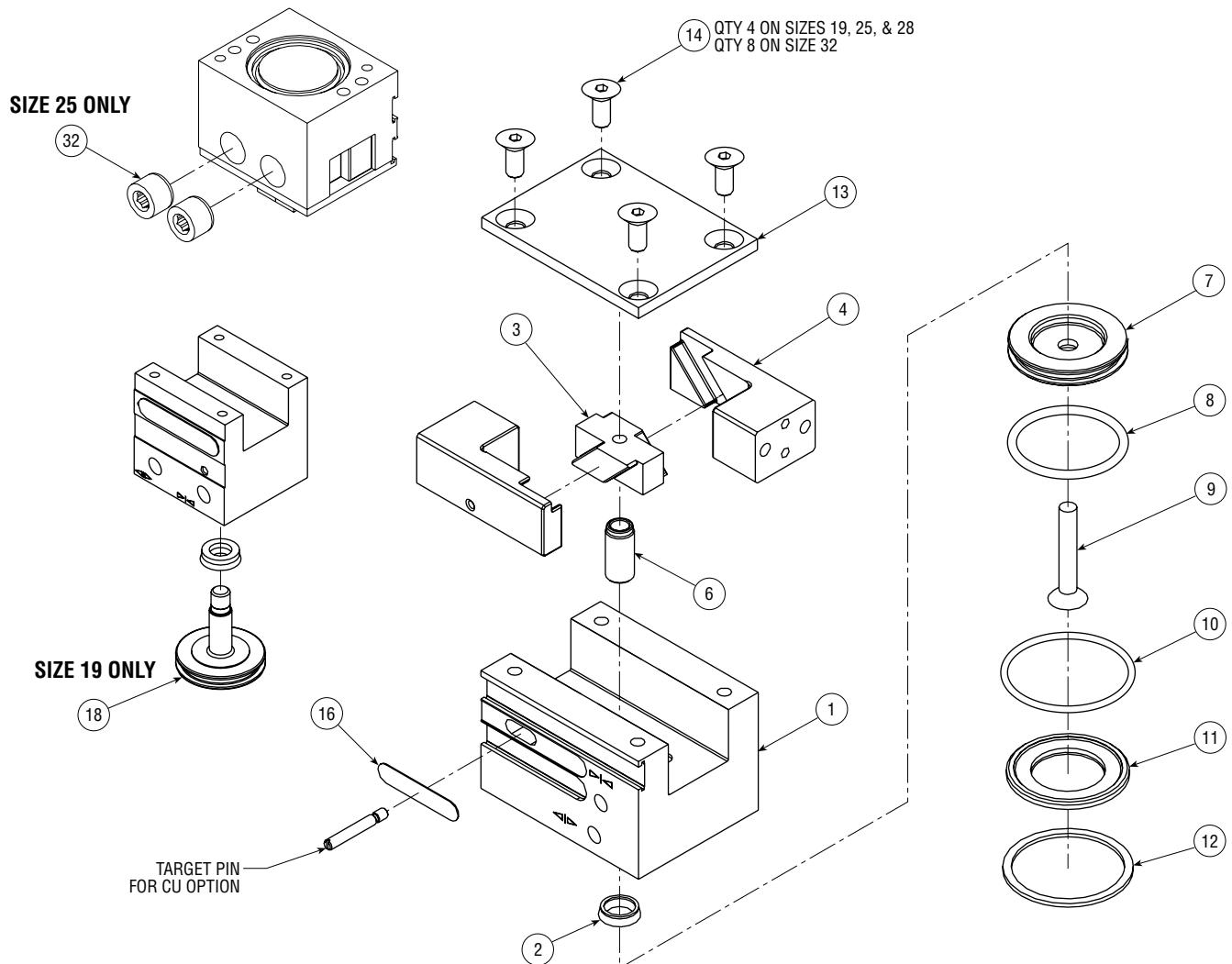


# phd SERIES GRF GRIPPERS

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 19	SIZE 25	SIZE 28	SIZE 32
1	Body Assembly	Full unit description required followed by -H2400			
3	Jaw Driver	Full unit description required followed by -H5610			
4	Jaw	Full unit description required followed by -H2600			
18	Piston and Rod (19x4.5)	-H5810*	—	—	—
6	Rod	—	Full unit description required followed by -H5810		
7	Piston	—	Full unit description required followed by -H1005		
9	Piston Fastener	—	Full unit description required followed by -H2050		
11	Bore Plug	Full unit description required followed by -H3100			
12	Bore Plug Retainer	Full unit description required followed by -H7101			
13	Jaw Cover	Full unit description required followed by -H1200			
14	Jaw Cover Fasteners	Full unit description required followed by -H1441 (one), -H1440 (all)			
32	Bearing Plug (25x6.5)	—	73730	—	—
2	Rod Seal	Full unit description required followed by -H9000			
8	Piston Seal				
10	Bore Plug Seal				
—	Target Pin Replacement	70171			
16	Sensor Slot Cover	6441-445			

**NOTE:** \* Full unit description required followed by -Hxxxx option code  
 All part numbers listed are for standard units. Options may affect part numbers.  
 Unless otherwise specified, -Hxxxx option code provides one replacement part.





# SERIES GRC PARALLEL GRIPPERS DESIGN #2 PARTS LIST AND REPAIR KITS

## STANDARD & SHURGRIP UNITS

KEY	PART DESCRIPTION	GRCx3x	GRCx4x	GRCx5x	GRCx6x
1	Body Assembly	Consult factory			
2A	Raised Jaw Assembly	Consult factory			
2B	Flat Jaw	Consult factory			
5	Thrust Washer	52083	52063	50950	52045
6	Jaw Cover	60506	60507	60508	60509
7	Cover Mounting Socket Head Cap Screw	Sold as part of Fastener Kit only			
8	Piston & Rack	52073-3	52053-3	52047-3	52035-3
	Piston & Rack Assembly	52307-05	52307-06	52307-07	52307-08
9	Piston & Rack Seal	Sold as part of Seal Kit only			
10	Cap Seal	Sold as part of Seal Kit only			
11	Cap	52082	52062	50939	52044
12	Cap Retaining Ring	Sold as part of Seal Kit or Fastener Kit only			
13	Pinion Seal	Sold as part of Seal Kit only			
14	Pinion Seal	Sold as part of Seal Kit only			
16A	Spring Cap	Not available as replacement parts.			
16B	Spring Cap	Must be returned for replacement, consult PHD.			
17	Spring Plug	60467	60468	60469	60470
18	Plug Seal	Sold as part of Seal Kit only			
19	Spring Cup	60496	60497	60498	60499
20	Spring Washer	60479	60480	60481	60482
21	Outer Spring	60471	60472	60473	60474
22	Inner Spring	60475	60476	60477	60478
23	Spring Cap Button Head Cap Screw	Not available as replacement parts.			
27	Tamper Proof Button Head Cap Screw	Must be returned for replacement, consult PHD.			

## STANDARD UNITS ONLY (GRCxx1 OR GRCxx3)

KEY	PART DESCRIPTION	GRCx3x	GRCx4x	GRCx5x	GRCx6x
3	Pinion Assembly	52274-01-11	52274-02-11	52274-03-11	52274-04-11

## SHURGRIP UNITS ONLY (GRCxx2 OR GRCxx4)

KEY	PART DESCRIPTION	GRCx3x	GRCx4x	GRCx5x	GRCx6x
3	Locking Pinion	52074-2	60449-2	50940-2	52036-2
4	Jaw Guide Assembly	60443-01	60443-03	60443-05	60443-07
25	Cavity Cover	52155	52154	52185	52153
26	Cavity Cover Socket Head Cap Screw	Sold as part of Fastener Kit only			

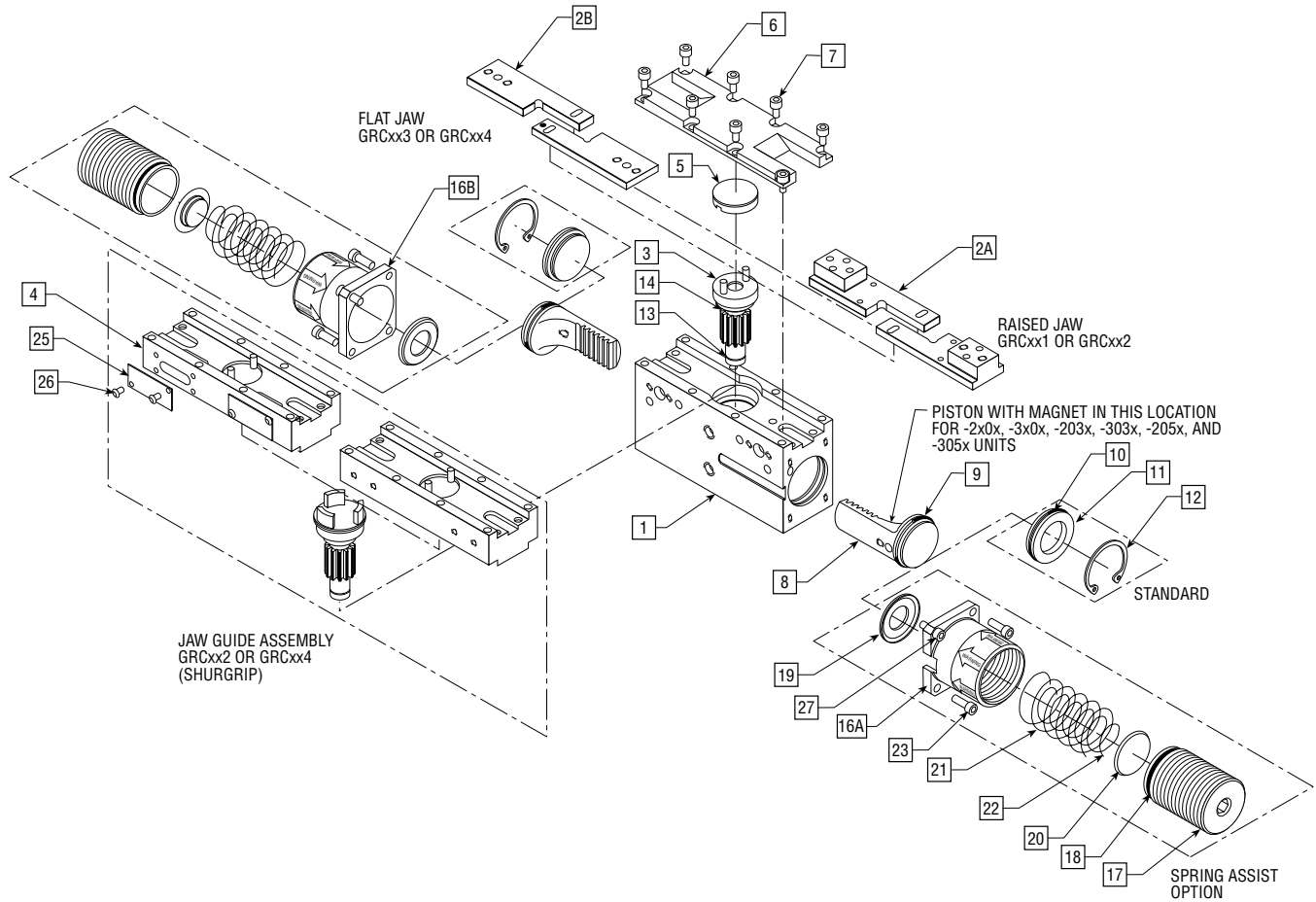
## KITS

KIT DESCRIPTION	GRCx3x	GRCx4x	GRCx5x	GRCx6x
Seal Kit	Full unit description required followed by -H9000			
Internal Proximity Switch Mounting Kit	52309-02	52309-04	52309-06	52309-08
External Proximity Switch Mounting Kit	60512	60512	60512	60512
8 mm Reed Switch Mounting Kit	60513	60513	60513	60513
Fastener Kit	Full unit description required followed by -H9020			

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.



# SERIES GRC PARALLEL GRIPPERS DESIGN #2 EXPLODED VIEW



# phd SERIES GRD PARALLEL GRIPPERS PARTS LIST AND REPAIR KITS

## STANDARD UNITS

KEY	PART DESCRIPTION			GRDx31	GRDx41	GRDx5x	GRDx6x
1	Body	Full Mtg	Imperial	61431-11	61432-11	61433-11	61434-11
			Metric	61431-21	61432-21	61433-21	61434-21
		Bottom Mtg	Imperial	61431-10	61432-10	61433-10	61434-10
			Metric	61431-20	61432-20	61433-20	61434-20
2	Jaw	GRDxx1	Imperial	18648	64052	18649	18650
			Metric	18221	64054	18222	18223
		GRDxx2	Imperial	—	—	64053	18654
			Metric	—	—	64055	18380
3	Jaw Driver	GRDxx1	61443	61444	61445	61447	
		GRDxx2	—	—	61446	61448	
4	Jaw Cover	GRDxx1, GRDxx2	61449	61450	61451	61452	
5	Jaw Cover Socket Head Cap Screw	Sold as part of Fastener Kit only					
6	Rod Seal	Sold as part of Seal Kit only					
7	Piston & Rod	Full unit description required followed by -H1090					
8	Piston Seal	Sold as part of Seal Kit only					
9	Piston Socket Flat Head Cap Screw	Sold as part of Fastener Kit only					
10	Bore Plug		61465	61466	61467	61468	
11	Bore Plug Seal	Sold as part of Seal Kit only					
12	Plug Retaining Ring	Sold as part of Fastener Kit only					
13	Driver Cover		18291	18291	18292	18293	
20	Fitting Kit	Imperial	53398	53398	53398	53398	
		Metric	54232	54232	54232	54232	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## OPTIONS

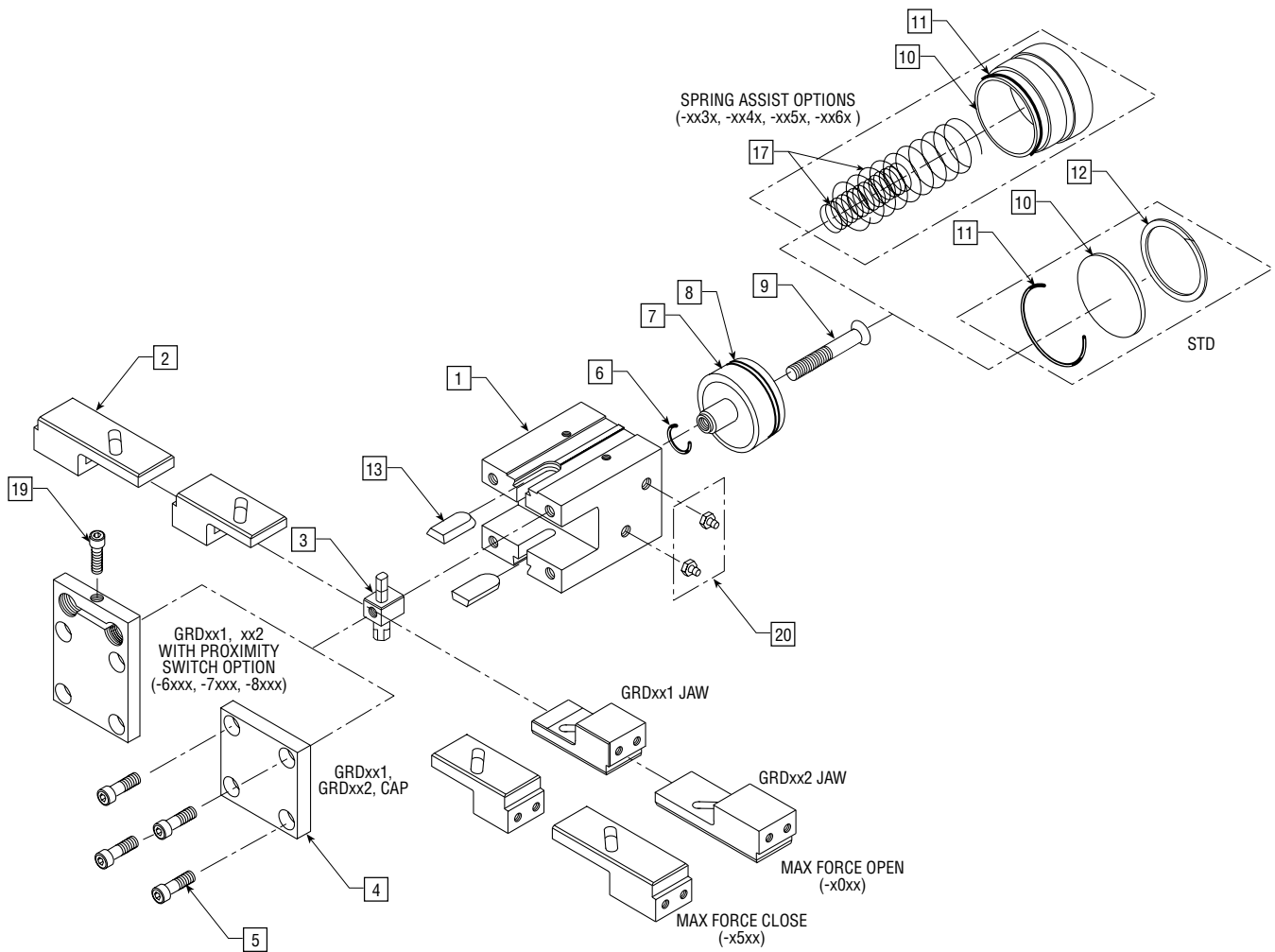
OPTION	KEY	PART DESCRIPTION			GRDx31	GRDx41	GRDx5x	GRDx6x
-6xxx	4	Proximity Jaw Cover	GRDxx1, GRDxx2		61497	61498	61499	61500
	19	Proximity Clamp Socket Head Cap Screw	Sold as part of Fastener Kit only					
-7xxx	4	Proximity Jaw Cover	GRDxx1, GRDxx2		61453	61454	61501	61502
	19	Proximity Clamp Socket Head Cap Screw	Sold as part of Fastener Kit only					
-8xxx	4	Proximity Jaw Cover	GRDxx1, GRDxx2		—	—	61455	61456
	19	Proximity Clamp Socket Head Cap Screw	Sold as part of Fastener Kit only					
-xx3x	1	Body	Full Mtg Imperial	61435-11	61436-11	61437-11	61438-11	
			Metric	61435-21	61436-21	61437-21	61438-21	
-xx4x	10	Spring Bore Plug		61469	61470	61471	61472	
-xx5x	11	Spring Bore Plug Seal	Sold as part of Seal Kit only					
-xx6x	17	Medium Spring Kit		61481	61482	61483	61484	
		Heavy Spring Kit		61487	61509	61510	61511	

## KITS

KIT DESCRIPTION	GRDx31	GRDx41	GRDx5x	GRDx6x
Seal Kit	Full unit description required followed by -H9000			
Fastener Kit	Full unit description required followed by -H9020			
Switch Mounting Kit	61494	61494	61494	61494



# phd SERIES GRD PARALLEL GRIPPERS EXPLODED VIEW



# phd SERIES GRR GRIPPERS PARTS LIST AND REPAIR KITS

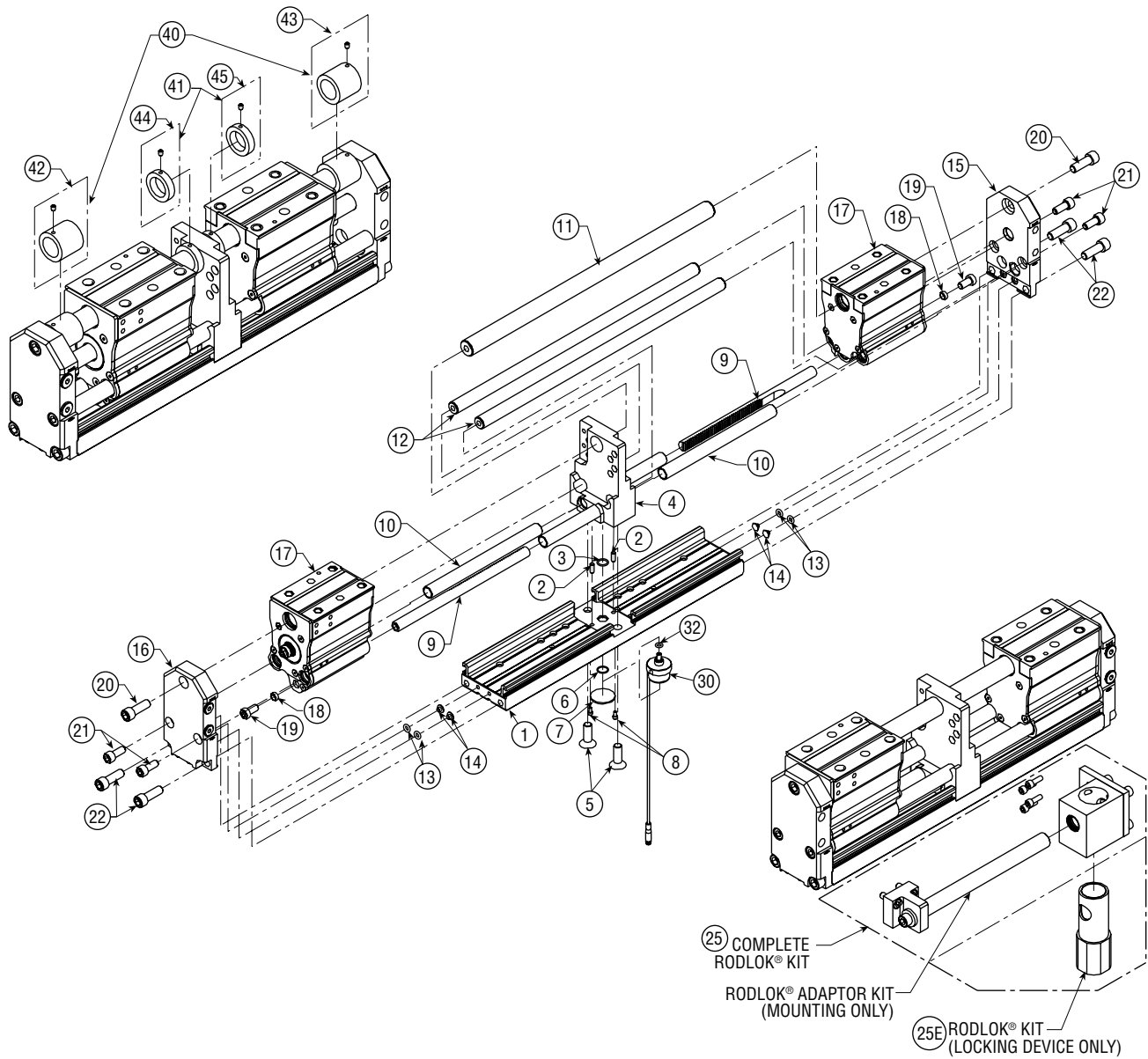
KEY	PART DESCRIPTION	PART NUMBER
1	Base Plate Assembly	Full unit description required followed by -H6100
2	Dowel Pin	17831-095
3	O-ring Seal	Sold as part of seal kit only
4	Center Plate Assembly	Full unit description required followed by -H4810
5	FHCS	Full unit description required followed by -H2000
6	O-ring Seal	Sold as part of seal kit only
7	Jaw Position Sensor Cover	74221
8	SHCS	Full unit description required followed by -H2040
9	Rack	Full unit description required followed by -H3310
10	Rack Cover Tube	Full unit description required followed by -H1300
11	Large Jaw Guide	Full unit description required followed by -H4720
12	Small Jaw Guide	Full unit description required followed by -H4710
13	O-ring Seal	Sold as part of seal kit only
14	End Plate Communication Plug	74213
15	End Plate Assembly (location 48)	Full unit description required followed by -H6210
16	End Plate Assembly (location 26)	Full unit description required followed by -H6220
17	Jaw Assembly	Full unit description required followed by -H2605
18	Rack Mounting Spacer	75038
19	LHCS	Full unit description required followed by -H2020
20	SHCS	Full unit description required followed by -H4740
21	SHCS	Full unit description required followed by -H4740
22	SHCS	Full unit description required followed by -H2030
25	Complete Rodlok Kit (per jaw)	Full unit description required followed by -H9110
25E	Rodlok Kit (per jaw)	Full unit description required followed by -H9100
30	Jaw Position Sensor Assembly	Sold as part of jaw position sensor kit 74209-xx
32	O-ring Seal Coupling	Sold as part of seal kit and as part of jaw position sensor kit 74209-xx
40	-ANxxx Travel Limiting Tubes (2 Stop same length)	Full unit description required followed by -H1705
41	-ATxxx Travel Limiting Tubes (2 Stop same length)	Full unit description required followed by -H1715
42	-APxxx Travel Limiting Tube (1 Tube - N/A/ on GRR12)	Full unit description required followed by -H1725
43	-AQxxx Travel Limiting Tube (1 Tube - N/A/ on GRR12)	Full unit description required followed by -H1735
44	-ARxxx Travel Limiting Tube (1 Tube - N/A/ on GRR12)	Full unit description required followed by -H1745
45	-AUxxx Travel Limiting Tube (1 Tube - N/A/ on GRR12)	Full unit description required followed by -H1755

**NOTE:** All part numbers are for standard units. Options may affect part numbers.  
\* Seal kit does not include Rodlok seals. Rodlok seals sold in Rodlok seal kit only.

## KITS

DESCRIPTION	PART NUMBER
Complete Rodlok Kit (per jaw)	Full unit description required followed by -H9110
Rodlok Kit (per jaw)	Full unit description required followed by -H9100
Rodlok Adaptor Kit (per jaw)	Full unit description required followed by -H9105
Rodlok Seal Kit (per jaw)	Full unit description required followed by -H9115
Seal Kit	Full unit description required followed by -H9000

# phd SERIES GRR GRIPPERS EXPLODED VIEW



# phd SERIES GRL GRIPPERS

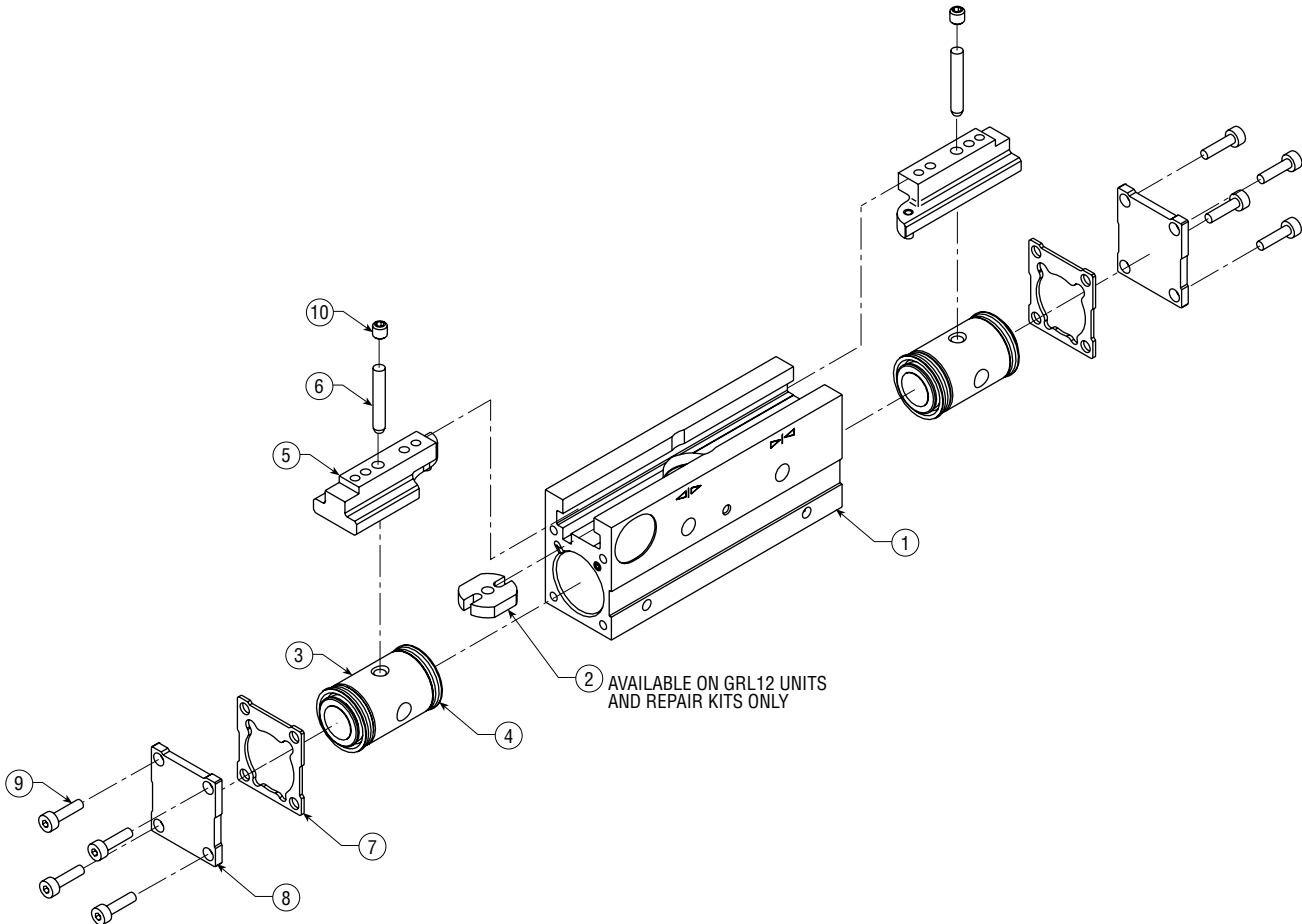
## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	GRLx2-x-14x7		GRLx2-x-14x13		GRLx2-x-16x20		GRLx2-x-16x26	
		IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
1	Body Assembly	Full unit description required followed by -H2400							
2	Synchronizing Disk (GRL12 units only)	65737		65737		65739		65739	
3	Piston	68174		65716		68182		65965	
	Piston with Magnet (units with -E)	68179		65731		68187		65972	
4	Piston Seal	Sold as part of Seal Kit only							
5	Style 2 Jaw Assembly	68178-1-0	68178-2-0	65730-1-0	65730-2-0	68186-1-0	68186-2-0	65971-1-0	65971-2-0
6	Jaw Driver	17831-072		17831-072		17831-018		17831-018	
7	Bore Gasket	Sold as part of Seal Kit only							
8	Bore Cover	65728		65728		65970		65970	
9	Socket Head Cap Screw	14308-014		14308-014		14308-014		14308-014	
10	Set Screw	17424-100		17424-100		17424-102		17424-102	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### KITS

KIT DESCRIPTION	GRLx2-x-14x7		GRLx2-x-14x13		GRLx2-x-16x20		GRLx2-x-16x26	
	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
Seal Kit	Full unit description required followed by -H9000							
Synchronized Repair Kit	Full unit description required followed by -H9010							
Manifold Replacement Parts Kit	68221-14-1-1	68221-14-5-1	68221-14-1-1	68221-14-5-1	68221-16-1-1	68221-16-5-1	68221-16-1-1	68221-16-5-1

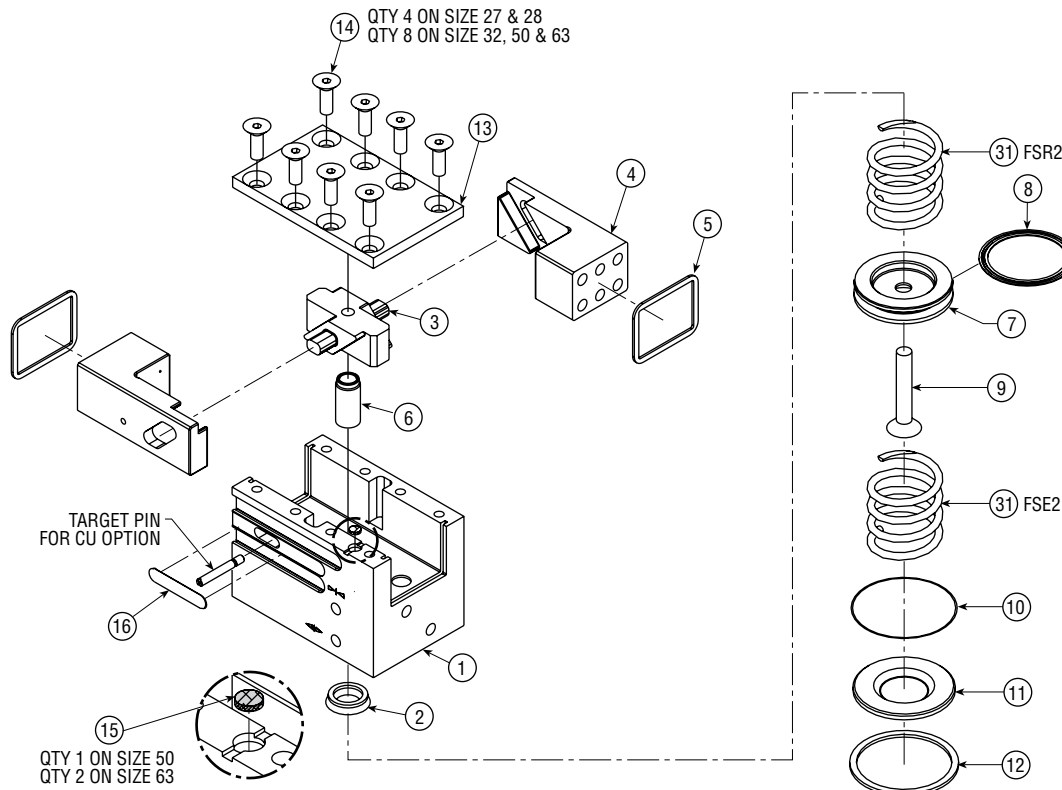


# phd SERIES GRS GRIPPERS

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 27	SIZE 28	SIZE 32	SIZE 50	SIZE 63
1	Body Assembly		Full unit description required followed by -H2400			
3	Jaw Driver		Full unit description required followed by -H5610			
4	Jaw		Full unit description required followed by -H2600			
6	Rod		Full unit description required followed by -H5810			
7	Piston		Full unit description required followed by -H1005			
9	Piston Assembly Fastener		Full unit description required followed by -H2050			
11	Bore Plug		Full unit description required followed by -H3100			
12	Bore Plug Retainer		Full unit description required followed by -H7101			
13	Jaw Cover		Full unit description required followed by -H1200			
14	Jaw Cover Assembly Fasteners	Full unit description required followed by -H1441 (for one fastener)				
2	Rod Seal	Full unit description required followed by -H9000				
5	Jaw Seal					
8	Piston Seal					
10	Bore Plug Seal					
15	Air Filter					
-	Target Pin Replacement	70171	70171	70171	70176	70176
16	Sensor Slot Cover	6441-445	6441-445	6441-445	6441-446	6441-446
31	Straight Compression Spring	Full unit description required followed by -H1600				

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
Unless otherwise specified, -Hxxxx option code provides one replacement part.





# SERIES GRT GRIPPERS DESIGN #2

## PARTS LIST

KEY	PART DESCRIPTION	GRT112	GRT512	GRT122	GRT522	GRT132	GRT532	GRT142	GRT542
1	Standard Body	64530-01	64530-02	61534-01	61534-02	61535-01	61535-02	61536-01	61536-02
1A	Spring Assist/Part Ejector Body	—	—	61534-01-110	61534-02-110	61535-01-110	61535-02-110	61536-01-110	61536-02-110
2	Standard Travel Jaw	64540-01	64540-02	61562-01	61562-02	61563-01	61563-02	61564-01	61564-02
3	Standard Travel Cam	64532		61575		61569		61570	
4	Shock Pad	—		62644		62645		62646	
4A	Spring Assist Open Shock Pad	—		62644		62645		—	
4B	Spring Assist Closed Shock Pad	—		—		—		62646	
5	Standard Piston	64538		61583		61584		61585	
5A	Spring Assist Open Piston	—		63881		63882		63883	
5B	Spring Assist Closed Piston	—		63888		63889		63890	
6	Bore Plug (Std & Ejector Plate units)	64534		61597		61598		61599	
6A	Spring Assist Cap	—		63874		63875		63876	
7	Jaw Cover	64536		61611		61612		61613	
8	Rod Seal	Sold as part of Seal Kit only							
9	Piston Seal								
10	Bore Plug Seal								
11	Retaining Ring	Sold as part of Fastener Kit only							
12	Piston Mounting Screw								
13	Cover Mounting Screw								
14	Orifice Set Screw								
17	Proximity Switch Sleeve (Optional)	61549-01		61549-01		61549-01		61549-01	
19	Part Ejector Plate	Sold as part of Part Ejector Kit only							
20	Part Ejector Spring								
21	Part Ejector Fastener								
22	Sleeve (GRTx2 & GRTx3)								
23	Spring Assist Spring(s)	Sold as part of Spring Assist Replacement Kit only							
23A	Spring Assist Spring Outer								
23B	Spring Assist Spring Inner								
24	Spring Assist Cap Mtg. Screws	Sold as part of Fastener Kit only							
25	Spring Assist Manifold Seal	Sold as part of Seal Kit only							
26	Spring Assist Manifold Set Screw	Sold as part of Seal Kit only							

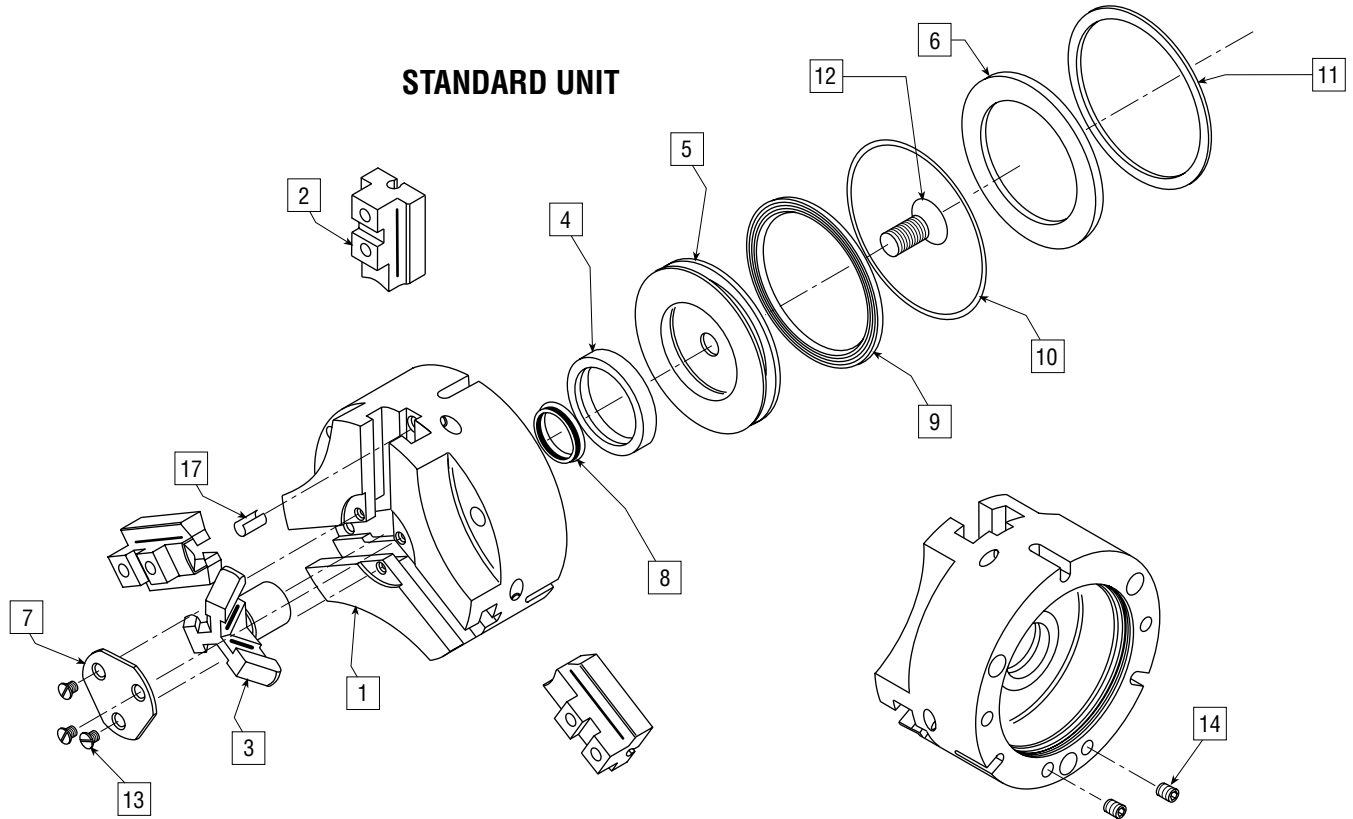
KEY	PART DESCRIPTION	GRT152	GRT552	GRT162	GRT562	GRT172	GRT572	GRT182	GRT582
1	Standard Body	61537-01	61537-02	61538-01	61538-02	61539-01	61539-02	61540-01	61540-02
1A	Spring Assist/Part Ejector Body	61537-01-110	61537-02-110	61538-01-110	61538-02-110	61539-01-110	61539-02-110	61540-01-110	61540-02-110
2	Standard Travel Jaw	61565-01	61565-02	61566-01	61566-02	61567-01	61567-02	61568-01	61568-02
3	Standard Travel Cam	61571		61572		61573		61574	
4	Shock Pad	62647		62648		62649		62650	
4A	Spring Assist Open Shock Pad	—		—		62649		62650	
4B	Spring Assist Closed Shock Pad	—		—		62649		62650	
5	Standard Piston	61586		61587		61588		61589	
5A	Spring Assist Open Piston	63884		63885		63886		63887	
5B	Spring Assist Closed Piston	63891		63892		63893		63894	
6	Bore Plug (Std & Ejector Plate units)	61600		61601		61602		61603	
6A	Spring Assist Cap	63877		63878		63879		63880	
7	Jaw Cover	61614		61615		61616		61617	
8	Rod Seal	Sold as part of Seal Kit only							
9	Piston Seal								
10	Bore Plug Seal								
11	Retaining Ring	Sold as part of Fastener Kit only							
12	Piston Mounting Screw								
13	Cover Mounting Screw								
14	Orifice Set Screw								
17	Proximity Switch Sleeve (Optional)	61549-01		61549-02		61549-02		61549-02	
19	Part Ejector Plate	Sold as part of Part Ejector Kit only							
20	Part Ejector Spring								
21	Part Ejector Fastener								
22	Sleeve (GRTx2 & GRTx3)								
23	Spring Assist Spring(s)	Sold as part of Spring Assist Replacement Kit only							
23A	Spring Assist Spring Outer								
23B	Spring Assist Spring Inner								
24	Spring Assist Cap Mtg. Screws	Sold as part of Fastener Kit only							
25	Spring Assist Manifold Seal	Sold as part of Seal Kit only							
26	Spring Assist Manifold Set Screw	Sold as part of Seal Kit only							

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

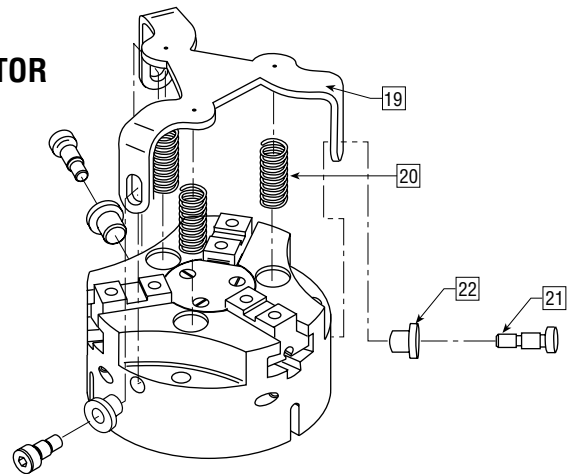


# SERIES GRT GRIPPERS DESIGN #2 EXPLODED VIEWS

## STANDARD UNIT



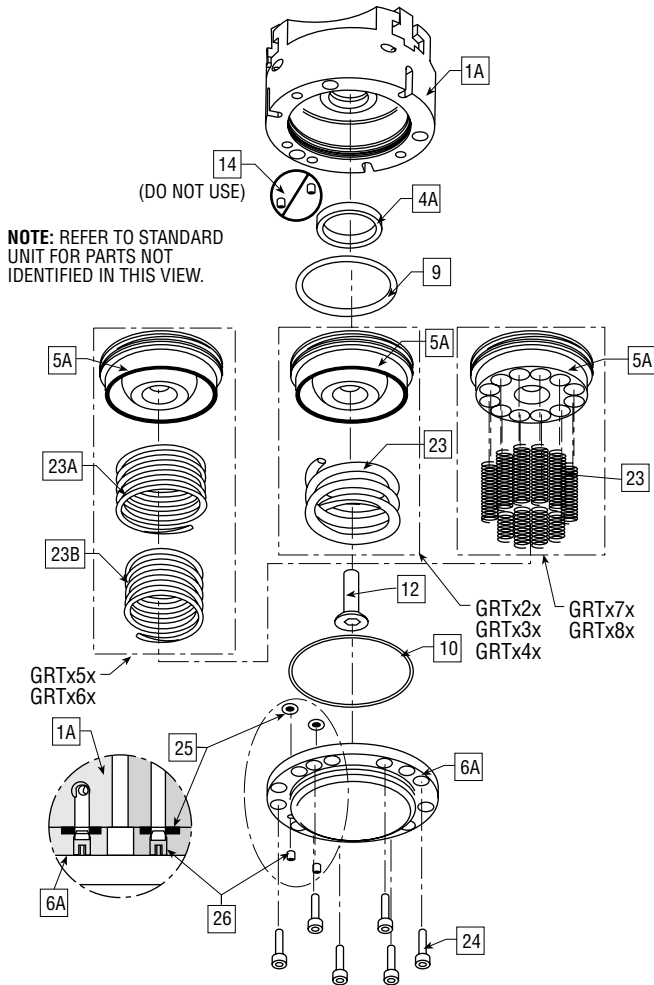
## PART EJECTOR



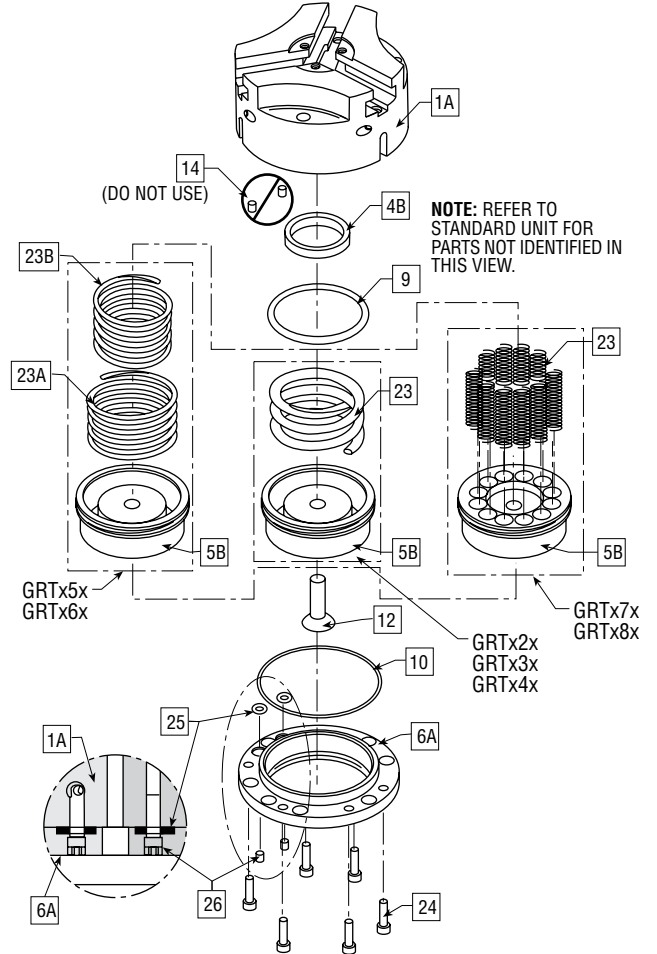
# phd SERIES GRT GRIPPERS DESIGN #2

## EXPLODED VIEW - SPRING ASSIST

### SPRING ASSIST OPEN OPTION



### SPRING ASSIST CLOSED OPTION







# SERIES GRT GRIPPERS DESIGN #2 REPAIR KITS

## KITS

PART DESCRIPTION	GRT112	GRT512	GRT122	GRT522	GRT132	GRT532	GRT142	GRT542
Standard								
Mounting Kit	61620-01	62813-01	61620-02	62813-02	61620-03	62813-03	61620-04	62813-04
Manifold Kit	61553-01-x	61553-05-x	61553-01-x	61553-05-x	61553-01-x	61553-05-x	61553-02-x	61553-06-x
Seal Kit	Full unit description required followed by -H9000							
Fastener Kit	Full unit description required followed by -H9020							
Part Ejector								
Replacement Kit	64125-01		64125-02		64125-03		64125-04	
Spring Replacement Kit	64174-01		64174-02		64174-03		64174-04	
Spring Assist								
Mounting Kit	—		64128-02	64129-02	64128-03	64129-03	64128-04	64129-04
Seal Kit	—	Full unit description required followed by -H9000						
Spring Replacement Kit	—	64126-02			64126-03		64126-04	
Fastener Kit	—	Full unit description required followed by -H9020						
Finger Blank Kit	62890-01	62890-11	62890-02	62890-12	62890-03	62890-13	62890-04	62890-14

PART DESCRIPTION	GRT152	GRT552	GRT162	GRT562	GRT172	GRT572	GRT182	GRT582
Standard								
Mounting Kit	61620-05	62813-05	61620-06	62813-06	61620-07	62813-07	61620-08	62813-08
Manifold Kit	61553-03-x	61553-07-x	61553-04-x	61553-08-x	61553-04-x	61553-08-x	61553-04-x	61553-08-x
Seal Kit	Full unit description required followed by -H9000							
Fastener Kit	Full unit description required followed by -H9020							
Part Ejector								
Replacement Kit	64125-05		64125-06		64125-07		64125-08	
Spring Replacement Kit	64174-05		64174-06		64174-07		64174-08	
Spring Assist								
Mounting Kit	64128-05	64129-05	64128-06	64129-06	64128-07	64129-07	64128-08	64129-08
Seal Kit	Full unit description required followed by -H9000							
Spring Replacement Kit	64126-05		64126-06		64126-07		64126-08	
Fastener Kit	Full unit description required followed by -H9020							
Finger Blank Kit	62890-05	62890-15	62890-06	62890-16	62890-07	62890-17	62890-08	62890-18

# phd SERIES GRW PARALLEL GRIPPERS PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 16		SIZE 25		SIZE 32		SIZE 40		SIZE 50	
		IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
1	Body Assembly	Full unit description required followed by -H2400									
3	Piston and Rod	65702		66007		65987		68199		68459	
6	Rod Bushing Assembly	60733-03-1-1		55475-08-1-1		68215-1		60733-03-1-1		68461-1	
7	Retaining Ring	60430-007		1987-068		1987-072		1987-052		1987-085	
8	Non-synchronized Jaw Guide	65694-1		65999-1		65979-1		68192-1		68204-1	
9	Synchronized Jaw Guide	65693-1		65998-1		65978-1		68191-1		68203-1	
11	Style 3 Jaw	65692-12	65692-22	65997-12	65997-22	65977-12	65977-22	68190-12	68190-22	68202-12	68202-22
12	SHCS (piston and rod to jaw)	14308-572		14308-101		14308-601		14308-612		14308-624	
13	SHCS (jaw guide to jaw)	14308-572		14308-101		14308-011		14308-624		14308-638	
14	Synchronizer Disc Assembly	65706		66010		65990		68193		68205	
15	Synchronizer Pin	17831-022		17831-035		17831-103		68455		70240	
17	Synchronizer Disc Plug	65698		66003		65983		68196		68208	
18	Retaining Ring (synchronizer disc plug)	1980-014		1980-056		1980-141		57618-069		57618-082	
2	O-Ring (size 16 only)	Sold as part of Seal Kit									
4	Shock Pad (size 16 only)										
5	Piston Seal										
6A	Rod Seal										
6B	O-Ring										
6C	Shock Pad (size 25, 32, 40, & 50)										
10	Shock Pad										
16	O-Ring										

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KIT DESCRIPTION	SIZE 16		SIZE 25		SIZE 32		SIZE 40		SIZE 50	
	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
Seal Kit	Full unit description required followed by -H9000									
Repair Kit	Full unit description required followed by -H9010									
Manifold Replacement Parts Kit	65709-16-1-1	65709-16-5-1	65709-25-1-1	65709-25-5-1	65709-32-1-1	65709-32-5-1	65709-40-1-1	65709-40-5-1	65709-50-1-1	65709-50-5-1

# phd SERIES GRW PARALLEL GRIPPERS EXPLODED VIEW

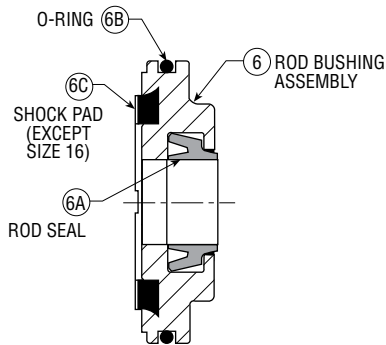
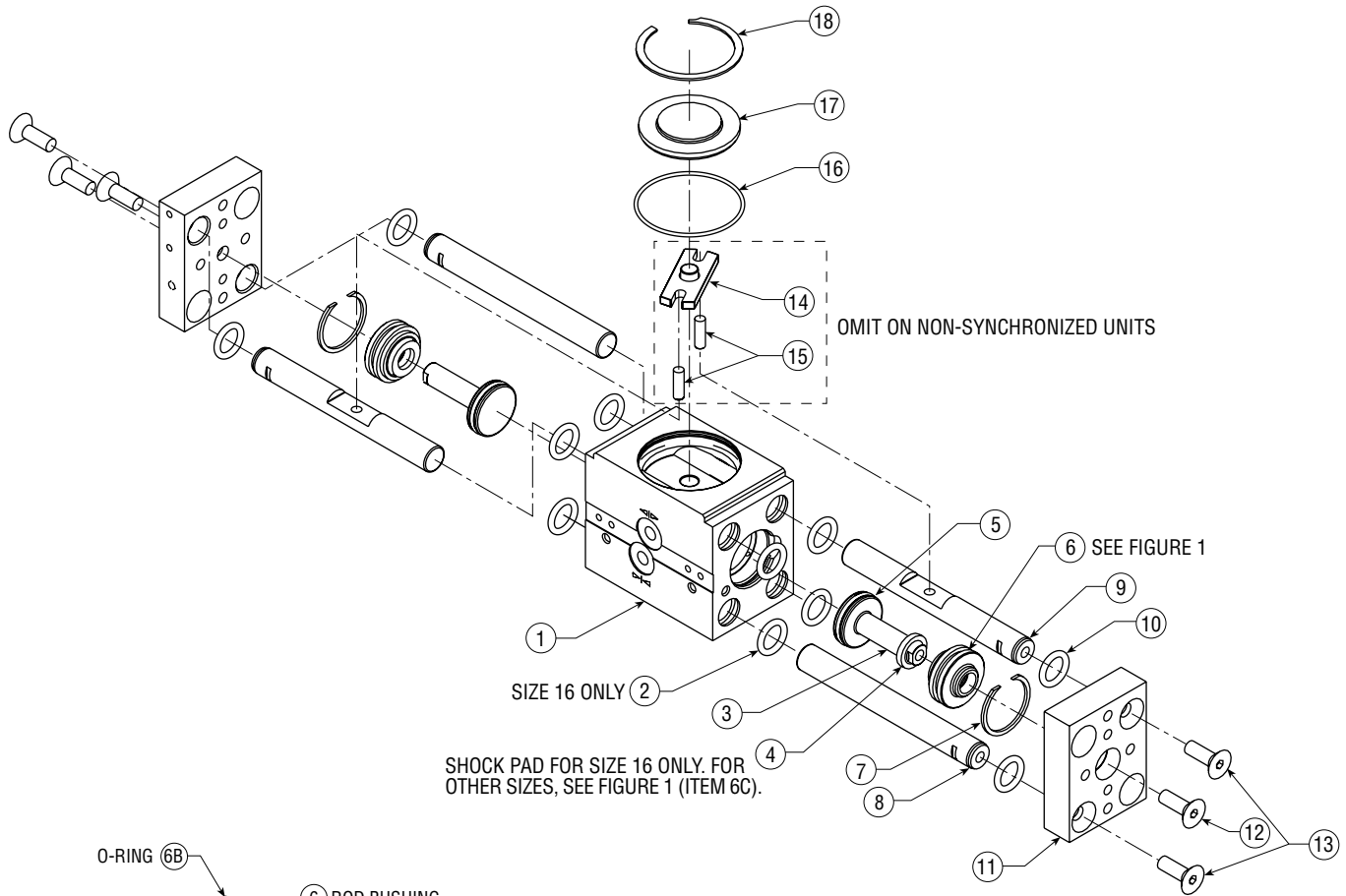


FIGURE 1

# phd SERIES 1000-8000 MULTI-MOTION ACTUATORS

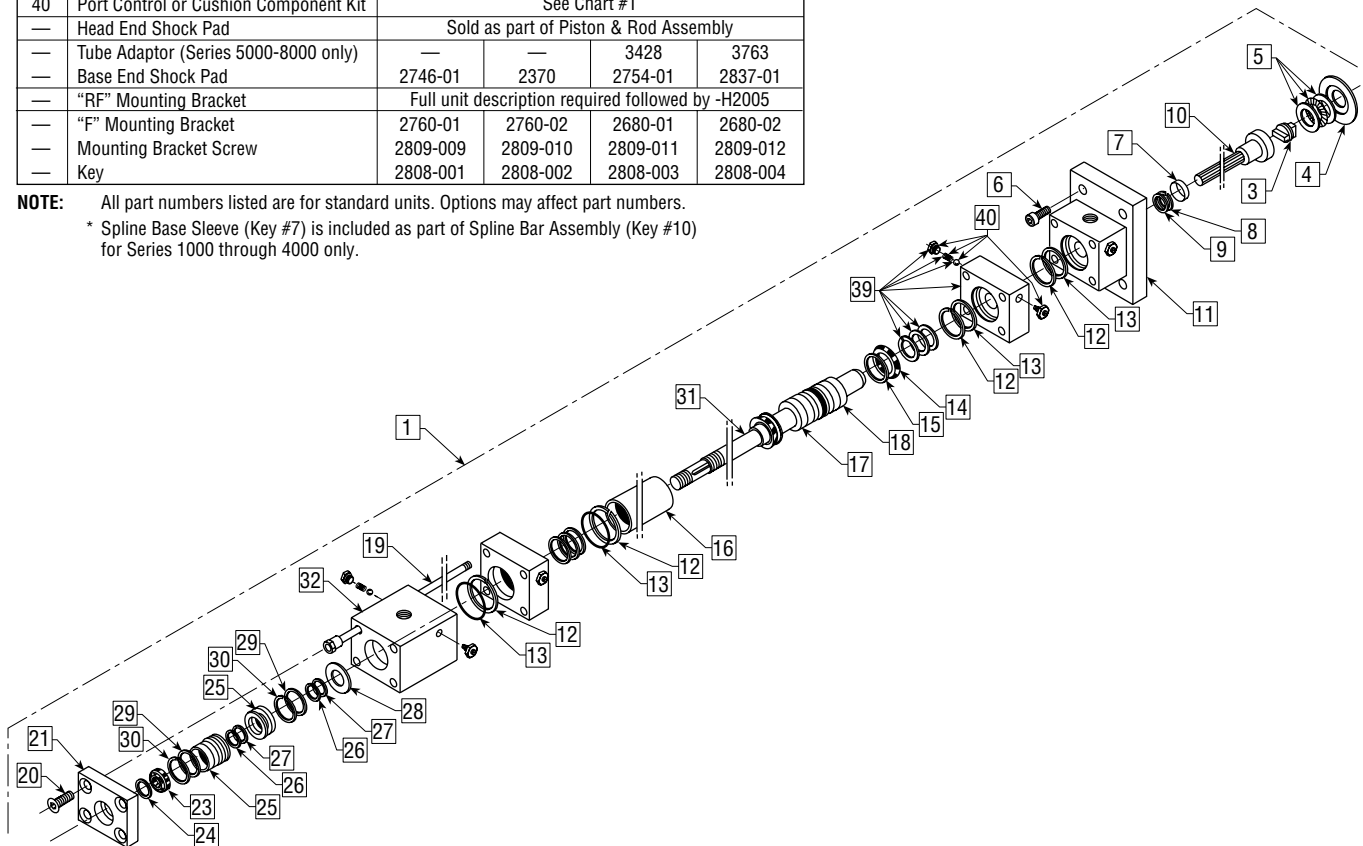
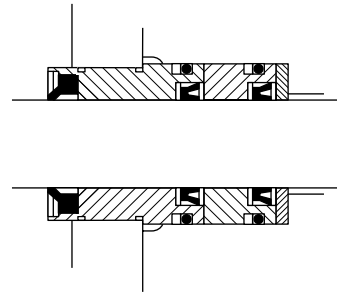
## LINEAR SECTION PARTS LIST

KEY	PART DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000				
1	Linear Section	Full unit description required followed by -H17							
2	Rotary Section	Full unit description required followed by -H18							
3	Coupling	3114	3122	3130	3142				
4	Pilot Ring	3116	3124	3132	3144				
5	Thrust Bearing Kit	2774-01	2774-02	2774-03	2774-04				
6	Cylinder Base Retaining Screw	2809-076	2809-002	2809-005	2809-021				
7	Spline Base Sleeve*	3115	3123	3131	3143				
8	Spline Seal Backup	Sold as part of Seal Kit only See Chart #2							
9	Spline Base Seal								
10	Spline Bar Assembly	Full unit description required followed by -H2200							
11	Cylinder Base Assembly	Consult factory							
12	Tube Seal Backup	Sold as part of Seal Kit or Repair Kit only See Chart #2							
13	Tube Seal								
14	Piston Seal								
15	Piston Seal Backup	See Chart #2							
16	Tube	Full unit description required followed by -H1380							
17	Head Slip Ring	Sold as part of Piston & Rod Assembly							
18	Base Slip Ring without cushion	2741-01	2742-01	2744-01	2745-01				
18	Base Slip Ring with cushion	Sold as part of Piston & Rod Assembly							
19	Tierod & Nut Assembly	Full unit description required followed by -H1410							
20	Flange Retaining Screw	2809-003	2809-004	2809-020	2809-021				
21	Bushing Retainer	2756-01	2756-02	2640	2661				
23	Rod Wiper	Sold as part of Seal Kit or Repair Kit only See Chart #2							
24	Rod Wiper Retaining Ring								
25	Bushing								
26	Rod Seal Backup								
27	Rod Seal								
28	Rod Seal Retainer								
29	Bushing Seal								
30	Bushing Seal Backup								
31	Piston & Rod Assembly					Full unit description required followed by -H1000			
32	Head (Assembly)					Consult factory			
39	Cushion Block Kit	See Chart #3							
40	Port Control or Cushion Component Kit	See Chart #1							
—	Head End Shock Pad	Sold as part of Piston & Rod Assembly							
—	Tube Adaptor (Series 5000-8000 only)	—	—	3428	3763				
—	Base End Shock Pad	2746-01	2370	2754-01	2837-01				
—	"RF" Mounting Bracket	Full unit description required followed by -H2005							
—	"F" Mounting Bracket	2760-01	2760-02	2680-01	2680-02				
—	Mounting Bracket Screw	2809-009	2809-010	2809-011	2809-012				
—	Key	2808-001	2808-002	2808-003	2808-004				

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
\* Spline Base Sleeve (Key #7) is included as part of Spline Bar Assembly (Key #10) for Series 1000 through 4000 only.

### HYDRAULIC BUSHING ASSEMBLY DETAIL

See Chart #2



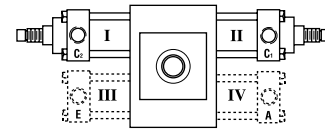


# SERIES 1000-8000 MULTI-MOTION ACTUATORS ROTARY SECTION PARTS LIST

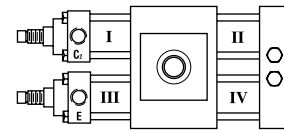
KEY	PART DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
42	Cap Assembly	See Chart #4			
43	Tube Seal	Sold as part of Seal Kit only See Chart #2			
44	Rack	Full unit description required followed by -H3310			
45	Pinion Shaft Standard Standard w/aux ext Preload w/aux ext with Hall Sensor	Full unit description required followed by -H3800			
46	Bearing	2334-001	2334-002	2334-003	2334-004
47	Bearing Retainer	1987-006	1987-007	1987-008	1980-657
48	Tube	Full unit description required followed by -H1300 I Full unit description required followed by -H1310 II Full unit description required followed by -H1320 III Full unit description required followed by -H1330 IV Full unit description required followed by -H1340 V Full unit description required followed by -H1350 VI Full unit description required followed by -H1360 VII Full unit description required followed by -H1370 VIII			
50	Tierod & Nut Assembly Tube #1 or #1 & 5 #2 or #2 & 7 #3 or #3 & 6 #4 or #4 & 8	Full unit description required followed by -H1450 Full unit description required followed by -H1460 Full unit description required followed by -H1470 Full unit description required followed by -H1480			
53	Port Plug	5733-002	5733-002	5733-002	5733-002
54	Angle Adjustment Screw Retaining Ring	1987-014	1987-015	1987-015	1987-016
55	Angle Adjustment Screw Nut	1972-019	1972-021	1972-021	1972-026
56	Angle Adjustment Screw Seal Backup	Sold as part of Seal or Repair Kit only			
57	Angle Adjustment Screw Seal	See Chart #2			
58	Angle Adjustment Screw	Sold as part of Cap Assembly only. See Chart #4			
59	Piston Seal	Sold as part of Seal Kit or Repair Kit only			
60	Piston Seal Backup	See Chart #2			
61	Piston	See Chart #5			
62	Sensor Transition Plate	12514	12515	12516	12517
63	Sensor Cable and Housing Assembly	10832-1-1-12	10832-1-1-12	10832-1-1-12	10832-1-1-12
64	Sensor Mounting Screw	2809-015	2809-152	2809-164	2809-188
	Sensor Mounting Screw ("CF" Mtg only)	2809-138	2809-151	2809-221	2809-222
66	Body Single Rack	12652	2339	2340	2373-1F
	Double Rack	12653	2209	2312	2373-2F
	Tandem	12653	2209	2312	8298
67	Reservoir & Tubing Assembly	13459-03-2	13459-03-2	13459-03-2	13459-02-2
68	Thread Insert	—	—	—	3405-1
—	Cushion Block Assembly	See Chart #6			
—	CF Mounting Kit	13759	13760	13761	13762

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

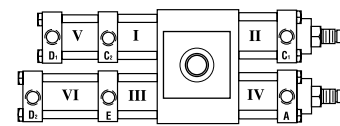
STANDARD & 3 POSITION DETAIL



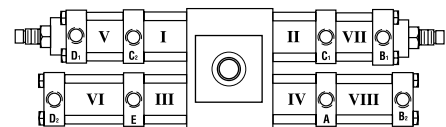
TANDEM DETAIL



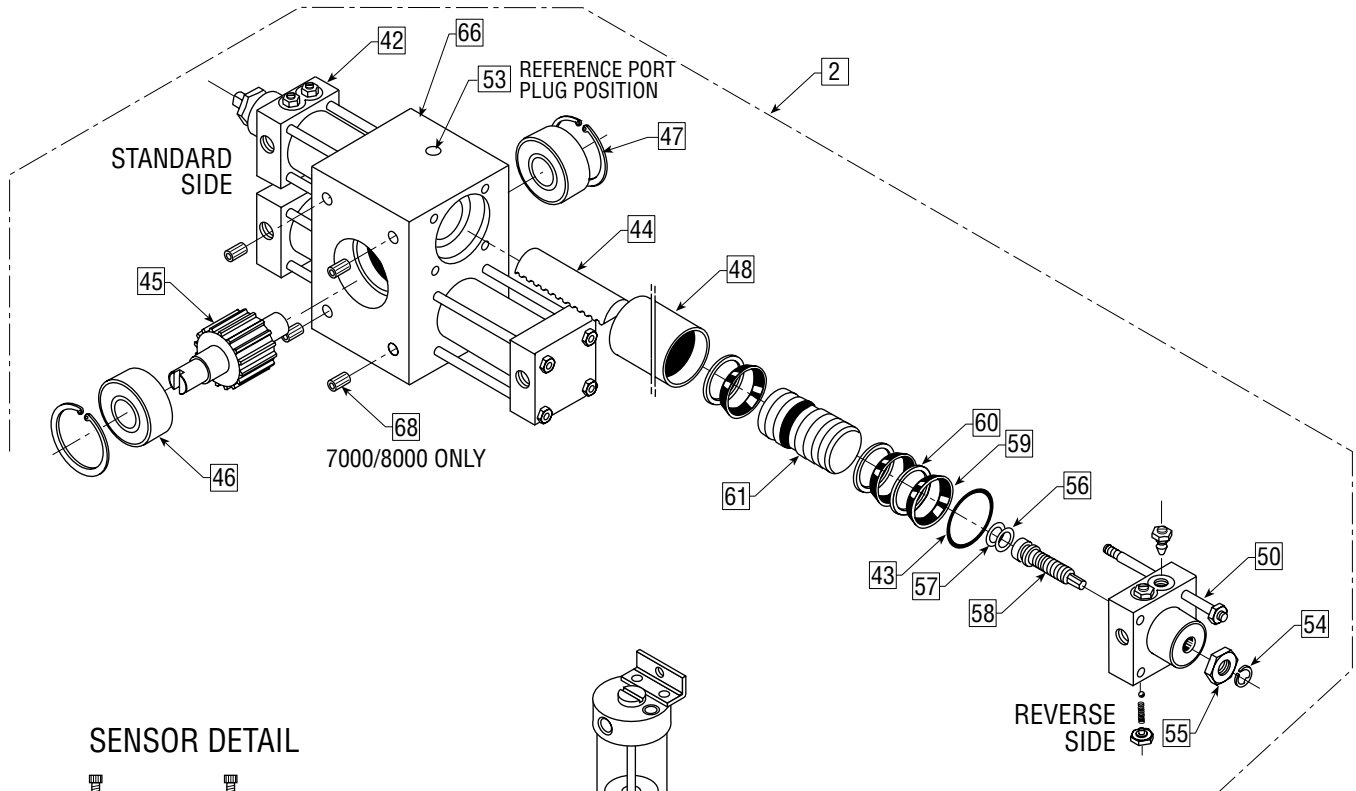
4 POSITION DETAIL



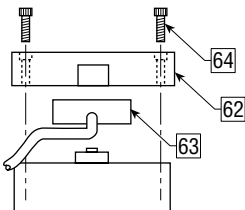
5 POSITION DETAIL



# phd SERIES 1000-8000 MULTI-MOTION ACTUATORS ROTARY SECTION EXPLODED VIEW



## SENSOR DETAIL



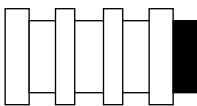
## RESERVOIR & TUBING ASSEMBLY

67

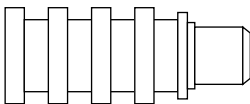
## PISTON DETAIL

See Chart #5

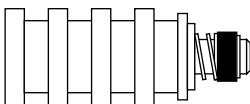
### SHOCK PAD



1000 & 2000 CUSHION



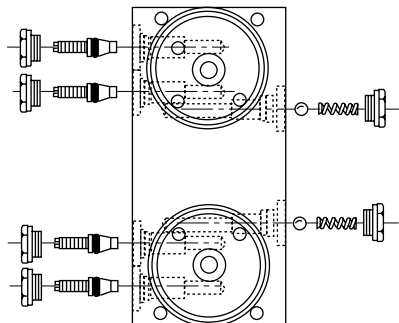
3000-8000 CUSHION



## TANDEM CAP ASSEMBLY

See Chart #4

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# phd SERIES 1000-8000 MULTI-MOTION ACTUATORS KITS AND ASSEMBLIES

## CHART #1 PORT CONTROL® AND CUSHION CONTROL KITS

KIT DESCRIPTION			1000/2000	3000/4000	5000/6000	7000/8000
Port Control Kit	Linear Section	Air	51602-02-x	51602-03-x	—	—
	Linear Section	Hyd	51602-02-x	51602-04-x	—	—
Port Control Kit	Rotary Section		51601-02-x	51601-04-x	51601-04-x	51601-06-x
	Rotary Section	Tandem (only)	51537-02-x	51537-04-x	51537-06-x	51537-06-x
Cushion Control Kit	Rotary Section	Tandem (only)	51538-02-x	51538-04-x	51538-06-x	51538-06-x

**NOTE:** 1-4000 Linear Sections (only) and all sizes (1-8000) Rotary Sections come standard with Port Controls.  
Each kit contains components for both directions (-PR, -PC, -P1, -P2).

## CHART #2 SEAL AND REPAIR KITS

KIT DESCRIPTION		1000	2000	3000	4000	5000	6000	7000	8000
Seal Kit	Combined Linear and Rotary Sections								Full unit description required followed by -H9000
Seal Kit	Linear Section (only)								Full unit description required followed by -H9001
Seal Kit	Rotary Section (only)								Full unit description required followed by -H9002
Repair Kit	Combined Linear and Rotary Sections								Full unit description required followed by -H9010
Repair Kit	Linear Section (only)								Full unit description required followed by -H9011

## CHART #3 LINEAR CUSHION BLOCK COMPONENT KIT (with Block)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Air	3409-04-1-x	3409-05-1-x	3409-06-1-x	3409-07-1-x
Hydraulic	3409-04-2-x	3409-05-2-x	3409-06-2-x	3409-07-2-x

**NOTE:** Each kit contains one cushion block and all components for one cushion control function (-DR or -DC).

## LINEAR CUSHION COMPONENT KIT (without Block)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Air	3407-08-x	3407-09-x	3407-10-x	3407-11-x
Hydraulic	3408-08-x	3408-09-x	3408-10-x	3408-11-x

**NOTE:** Each kit contains parts for one cushion control function only (-DR or -DC).

## CHART #4 CAP ASSEMBLY (STANDARD)

CAP DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Plain	4146	4767	4846	4856
-A	5676-0-x	5678-0-x	5682-0-x	5686-0-x
-P	5695-1-x	5696-1-x	5697-1-x	5698-1-x
-P, -D	5695-1-x	5709-1-x	5692-1-x	5694-1-x
-P, -A	5677-1-x	5679-1-x	5683-1-x	5687-1-x
-P, -D, -A	6776-1-x	5681-1-x	5685-1-x	5689-1-x
Tandem -A	5676-0-x	5678-0-x	5682-0-x	5686-0-x

**NOTE:** Full description of unit required when ordering cap assemblies. Port Controls are standard on Rotary Sections but are included in above descriptions for clarification.

## CHART #4 CAP ASSEMBLY (REVERSE)

CAP DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Plain	4146	4767	4846	4856
-A	5676-0-x	5678-0-x	5682-0-x	5686-0-x
-P	5695-2-x	5696-2-x	5697-2-x	5698-2-x
-P, -D	5695-2-x	5709-2-x	5692-2-x	5694-2-x
-P, -A	5677-2-x	5679-2-x	5683-2-x	5687-2-x
-P, -D, -A	6776-2-x	5681-2-x	5685-2-x	5689-2-x
Tandem -P, -D	8844-x	8845-x	8846-x	8847-x
-P	8887-x	8888-x	8890-x	8891-x

**NOTE:** Full description of unit required when ordering cap assemblies. Port Controls are standard on Rotary Sections but are included in above descriptions for clarification.

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
Part number suffix (-1) indicates Buna-N seals.  
Part number suffix (-2) indicates Fluoro-Elastomer seals.



# SERIES 1000-8000 MULTI-MOTION ACTUATORS KITS AND ASSEMBLIES

## CHART #5 PISTON ASSEMBLY

PISTON DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Plain	3377-01-x	3377-02-x	3377-03-x	3377-04-x
-M	3380-01-x	3380-02-x	3380-03-x	3380-04-x
-E	7318-x	7322-x	7548-x	7553-x
Cushion Air	3387-x	3384-01-x	3384-02-x	3384-03-x
Air, -M	3382-x	3386-01-x	3386-02-x	3386-03-x
Air, -E	7320-x	7325-x	7549-x	7554-x
Cushion Hyd	6780-x	3385-01-x	3385-02-x	3385-03-x
Hyd, -M	6781-x	3383-01-x	3383-02-x	3383-03-x
Hyd, -E	7321-x	7326-x	7550-x	7555-x
Shock Pad	5284-01-x	5286-02-x	5286-03-x	5286-04-x
-M	5283-01-x	5285-02-x	5285-03-x	5285-04-x
-E	7319-x	7323-x	7551-x	7556-x
-A	5284-01-x	5284-02-x	5284-03-x	5284-04-x
-A, -M	5283-01-x	5283-02-x	5283-03-x	5283-04-x
-A, -E	7319-x	7324-x	7552-x	7557-x
PVA	10895-x	10896-x	—	—
Cushion	10899-x	10900-x	—	—
Shock Pad	10700-x	10702-x	—	—
Shock Pad, -A	10700-x	10701-x	—	—

## CHART #6 ROTARY CUSHION BLOCK COMPONENT KIT

(with Block and Piston Components)

KIT DESCRIPTION	1000/2000
Air	54399-x
Hydraulic	6816-x

**NOTE:** Each kit contains one cushion block and all components for one cushion control function (-D1 or -D2).

## ROTARY CUSHION COMPONENT KIT (without Block)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Air	55052-x	3391-04-x	3391-04-x	3391-06-x
Hydraulic	3406-02-x	3392-04-x	3392-04-x	3392-06-x

**NOTE:** Each kit contains parts for one cushion control function only (-D1 or -D2).

## COMPLETE ROTARY TANDEM CUSHION REBUILD KIT

(Air/Oil Tandem Units only)

KIT DESCRIPTION	2000	4000	6000	8000
Tandem	51540-02-x	51540-04-x	51540-06-x	51540-06-x

**NOTE:** Each kit contains parts for both cushion control functions (-D1, -D2).

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
Part number suffix (-1) indicates Buna-N seals.  
Part number suffix (-2) indicates Fluoro-Elastomer seals.



# phd SERIES Bx03, Bx04, Bx06, Bx08 SLIDES

## PARTS LIST AND REPAIR KITS

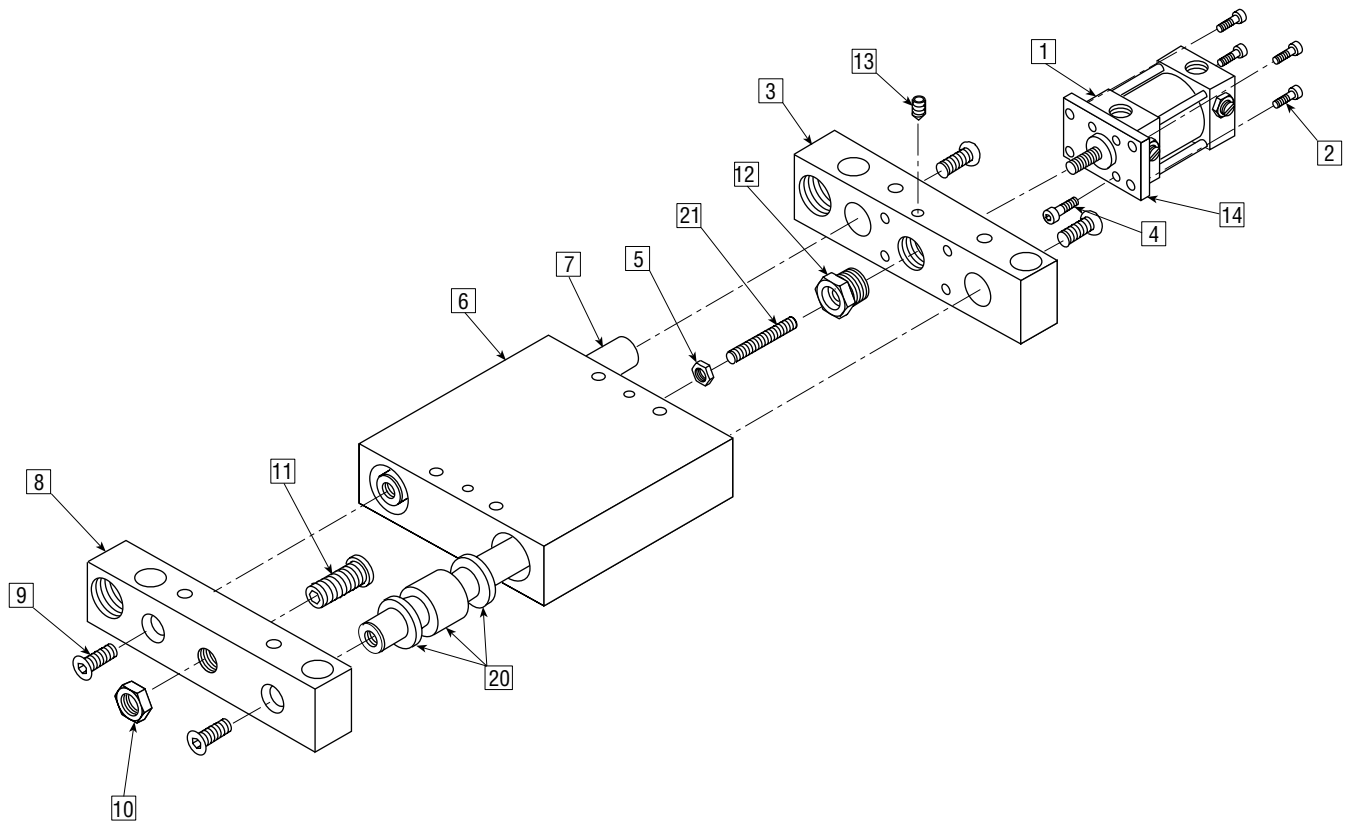
KEY	PART DESCRIPTION	Bx031	Bx041	Bx061	Bx081
1	Cylinder Assembly	Full unit description required followed by -H4			
2	Cylinder Mounting Screw	2809-131	2809-049	2809-050	2809-050
3	End Block (Cylinder End)	13632	12325	12326	12327
4	Cylinder Flange Mounting Screw	—	—	—	2809-149
5	Cylinder Jam Nut	1972-015	1972-019	1972-019	1972-020
6	Saddle Assembly	Full unit description required followed by -H4800			
7	Guide Shaft	Full unit description required followed by -H4710			
8	End Block (Non-Cylinder End)	13633	12328	12329	12330
9	Shaft Mounting Screw	2809-168	2809-444	2809-169	2809-121
10	Stroke Adjustment Jam Nut	1972-019	1972-021	1972-024	1972-024
11	Stroke Adjustment Screw (Non-Cylinder End)	2409-01	2409-04	12334	12335
12	Stroke Adjustment Screw (Cylinder End)	13631	12319	12320	12321
13	Nylon Tip Set Screw	3188-0068	3188-0060	3188-0060	3188-0060
14	Cylinder Mounting Flange	—	—	—	13706
21	Piston Rod Stud	—	—	—	12336

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### KITS

KEY	KIT DESCRIPTION	Bx031	Bx041	Bx061	Bx081
20	Bearing & Shaft Seal Kit*	Full unit description required followed by -H3420			
—	Repair Kit	Full unit description required followed by -H9010			

**NOTE:** \*One kit required for each shaft



# phd SERIES BS10 AND BS12 SLIDES PARTS LIST AND REPAIR KITS

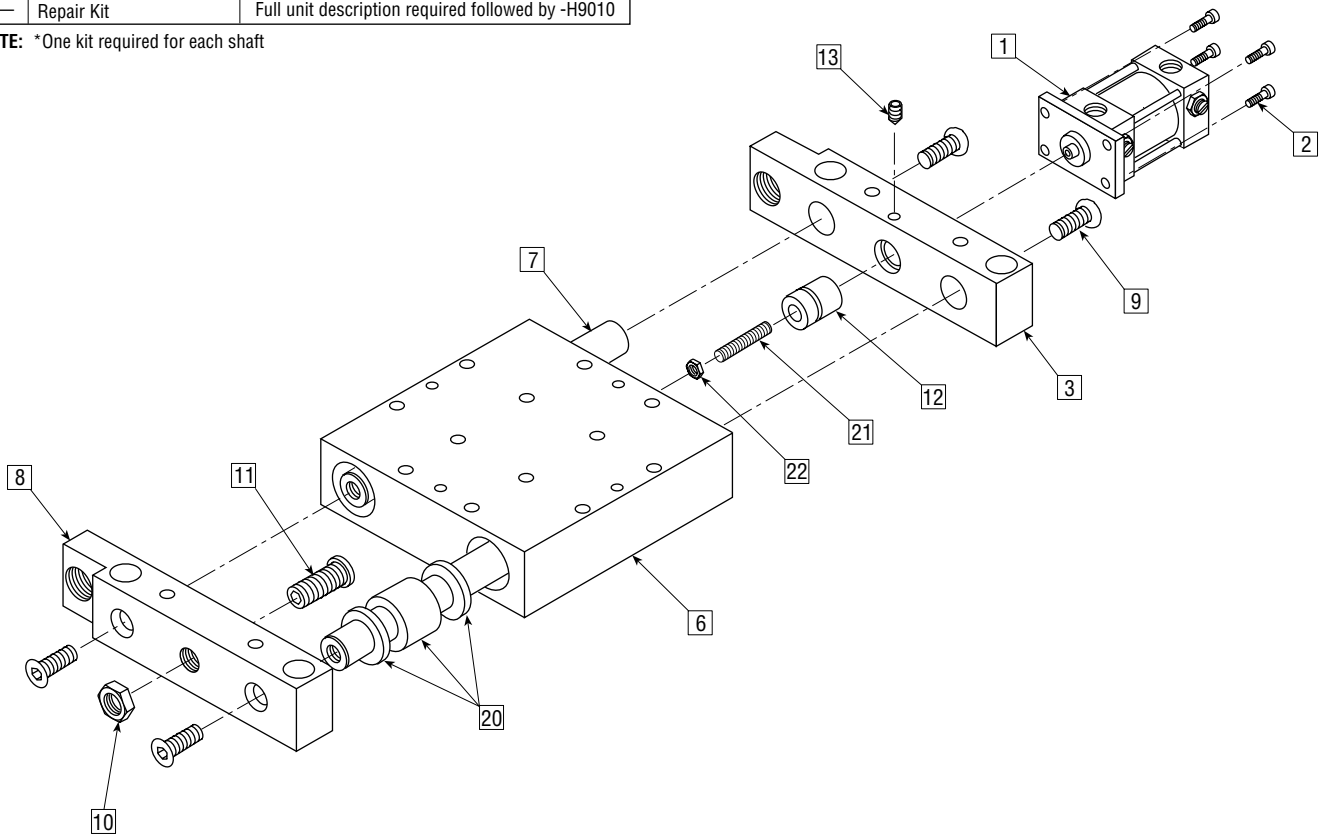
KEY	PART DESCRIPTION	BS101	BS121
1	Cylinder Assembly	Full unit description required followed by -H4	
2	Cylinder Mounting Screw	2809-074	2809-074
3	End Block (Cylinder End)	13729	13158
6	Saddle Assembly	Full unit description required followed by -H4800	
7	Guide Shaft	Full unit description required followed by -H4710	
8	End Block (Non-Cylinder End)	13730	13359
9	Shaft Mounting Screw	2809-121	2809-473
10	Stroke Adjustment Jam Nut	1972-025	1972-025
11	Stroke Adjustment Screw (Non-Cylinder End)	13743	13751
12	Stroke Adjustment Screw (Cylinder End)	13753	13753
13	Nylon Tip Set Screw	3188-0069	3188-0069
21	Piston Rod Stud	13748	13752
22	Stud Jam Nut	1972-020	1972-020

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KEY	KIT DESCRIPTION	BS101	BS121
20	Bearing & Shaft Seal Kit*	Full unit description required followed by -H3420	
—	Repair Kit	Full unit description required followed by -H9010	

**NOTE:** \*One kit required for each shaft



# phd SERIES M SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	MS022		MT032	MS032	
		STANDARD AIR	AIR W/-C	TANDEM	STANDARD AIR	AIR W/-C
1	Rod Mounting Screws	2809-126	2809-126	2809-088	2809-088	2809-088
2	Stroke Adjustment Screws	11312	11312	2409-08	2409-08	2409-08
3	Left End Block	11322	11322	11320	11320	11320
4	Saddle Assembly	Full unit description required followed by -H4800				
5	Guide Shaft Set Screws	3188-0035	3188-0035	3188-0036	3188-0036	3188-0036
6	Right End Block	11321	11321	11319	11319	11319
7	Barb Fitting	—	5786	5786	—	5786
8	Rod Snap Ring	1987-043	1987-043	1987-046	1987-046	1987-046
9	Bushing Retainer Ring	1980-028	1980-028	1980-029	1980-029	1980-029
10	Bushing Assembly Cyl. A	51677	51677	51681	51681	51681
11	Piston and Rod Assembly Cyl. A	Full unit description required followed by -H1090				
12	Piston Seal Cyl. A	Sold as part of Seal Kit or Repair Kit only				
13	Bushing Seal					
14	Rod Seal					
15	Piston and Rod Assembly Cyl. B	Full unit description required followed by -H1092				
16	Bushing Assembly Cyl. B	51677	51677	51681	51681	51681
19	Piston Seal Cyl. B	Sold as part of Seal Kit or Repair Kit only				
21	Stroke Adjustment Nut	12134	12134	1972-017	1972-017	1972-017

KEY	PART DESCRIPTION	MS042		MT042	MS062		MT062
		STANDARD AIR	AIR W/-C	TANDEM	STANDARD AIR	AIR W/-C	TANDEM
1	Rod Mounting Screws	2809-128	2809-128	2809-128	2809-185	2809-185	2809-185
2	Stroke Adjustment Screws	2409-01	2409-01	2409-01	2409-02	2409-02	2409-02
3	Left End Block	11318	11318	11318	11316	11316	11316
4	Saddle Assembly	Full unit description required followed by -H4800					
5	Guide Shaft Set Screws	3188-0037	3188-0037	3188-0037	3188-0055	3188-0055	3188-0055
6	Right End Block	11317	11317	11317	11315	11315	11315
7	Barb Fitting	—	—	—	—	—	—
8	Rod Snap Ring	1987-001	1987-001	1987-001	1987-013	1987-013	1987-013
9	Bushing Retainer Ring	1980-030	1980-030	1980-030	1980-031	1980-031	1980-031
10	Bushing Assembly Cyl. A	51687	51687	51687	51696	51696	51696
11	Piston and Rod Assembly Cyl. A	Full unit description required followed by -H1090					
12	Piston Seal Cyl. A	Sold as part of Seal Kit or Repair Kit only					
13	Bushing Seal						
14	Rod Seal						
15	Piston and Rod Assembly Cyl. B	Full unit description required followed by -H1092					
16	Bushing Assembly Cyl. B	51687	51687	51690	51696	51696	51699
19	Piston Seal Cyl. B	Sold as part of Seal Kit or Repair Kit only					
21	Stroke Adjustment Nut	1972-019	1972-019	1972-019	1972-021	1972-021	1972-021

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers

## REPAIR KITS

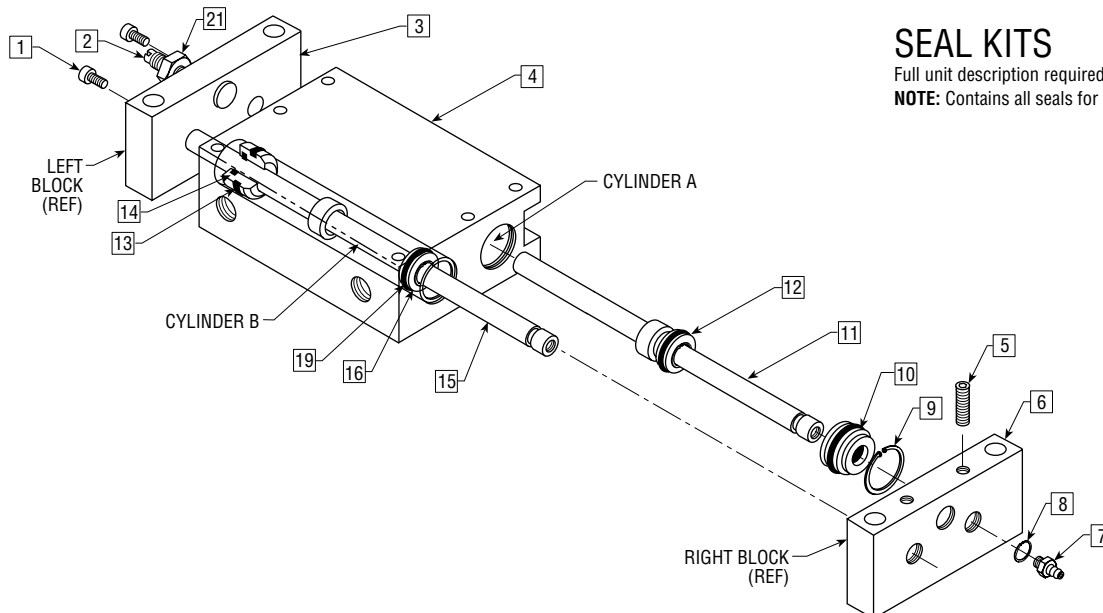
Full unit description required followed by -H9010

**NOTE:** Contains all seals and bushings for unit.

## SEAL KITS

Full unit description required followed by -H9000

**NOTE:** Contains all seals for unit.



# phd SERIES N SLIDES PARTS LIST

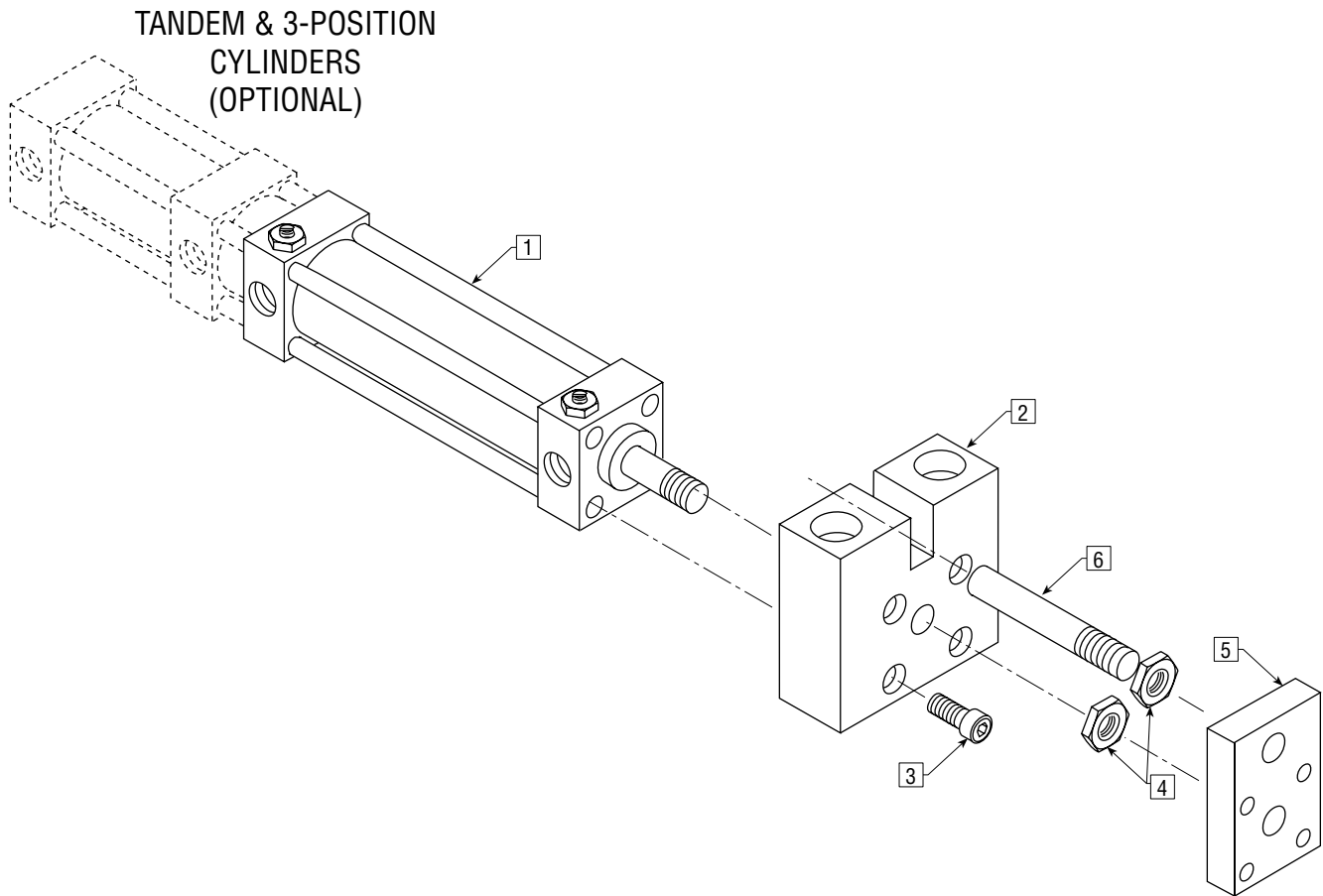
KEY	PART DESCRIPTION	3/4" BORE	1-1/8" BORE
1	Cylinder Assembly	Full unit description required followed by -H4	
2	Cylinder Mounting Bracket Assembly	Full unit description required followed by -H4800	
3	Cylinder Mounting Screw	2809-108	2809-110
4	Jam Nut	1972-015	1972-019
5	Tool Plate	Full unit description required followed by -H6400	
6	Non-Rotating Rod	Full unit description required followed by -H4710	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KIT DESCRIPTION	3/4" BORE	1-1/8" BORE
Cylinder Repair Kit	Full unit description required followed by -H9010	

**NOTE:** Repair kits include all seals and bushing.



# phd SERIES Rx03 SLIDES PARTS LIST

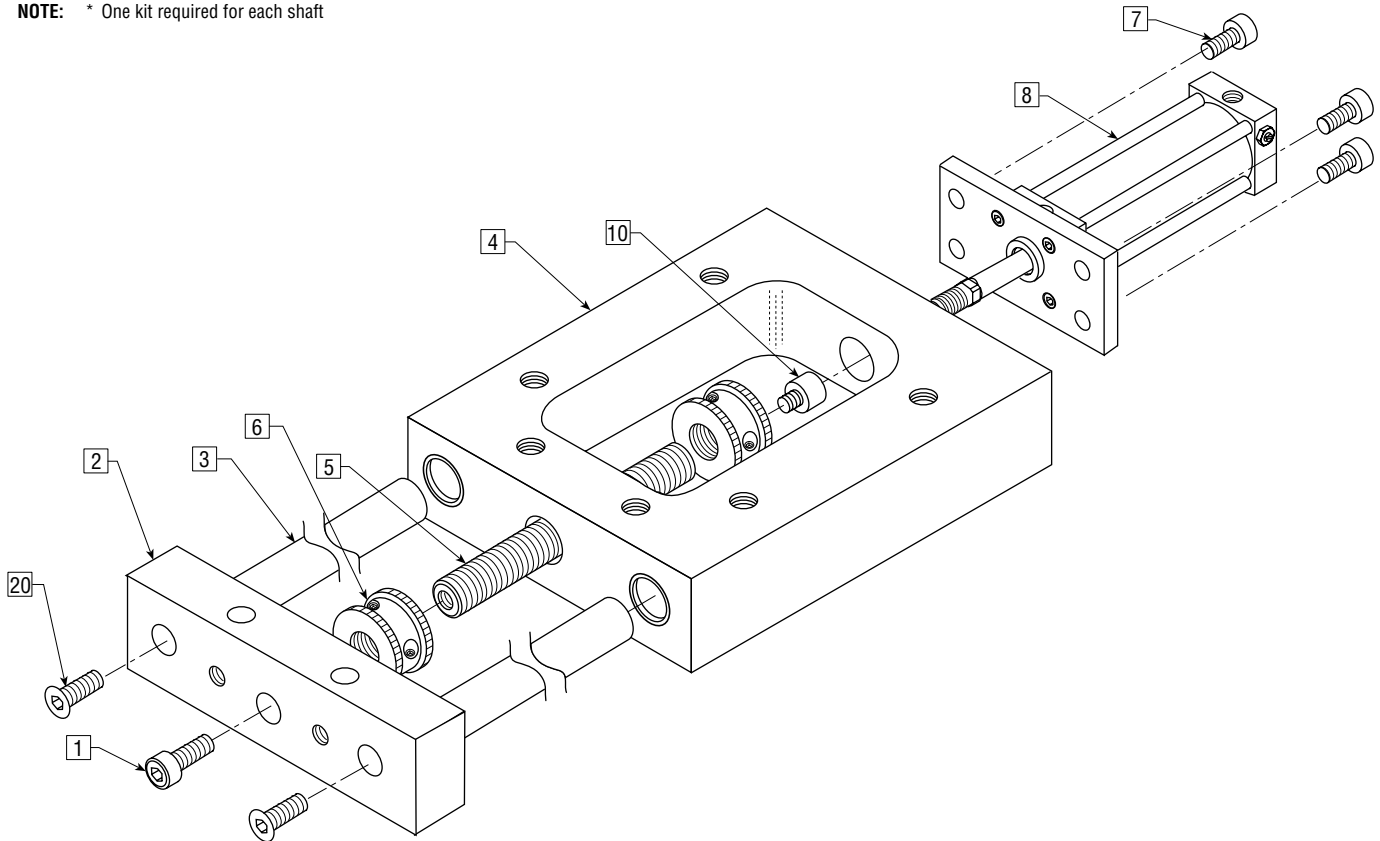
KEY	PART DESCRIPTION	Rx033
1	Rod Mounting Screw	2809-039
2	Tool Plate	Full unit description required followed by -H6400
3	Guide Shaft	Full unit description required followed by -H4710
4	Slide Body Assembly	Full unit description required followed by -H4800
5	Stop Rod	Full unit description required followed by -H4900
6	Stop Nut Assembly	11042-01
7	Cylinder Mounting Screw	2809-131
8	Cylinder Assembly	Full unit description required followed by -H4
10	Coupling	16639
20	Shaft Mounting Screw	2809-168

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KIT DESCRIPTION	Rx033
Repair Kit	Full unit description required followed by -H9010
Shaft Bearing Kit*	Full unit description required followed by -H3420

**NOTE:** \* One kit required for each shaft



# phd SERIES Rx04 SLIDES PARTS LIST

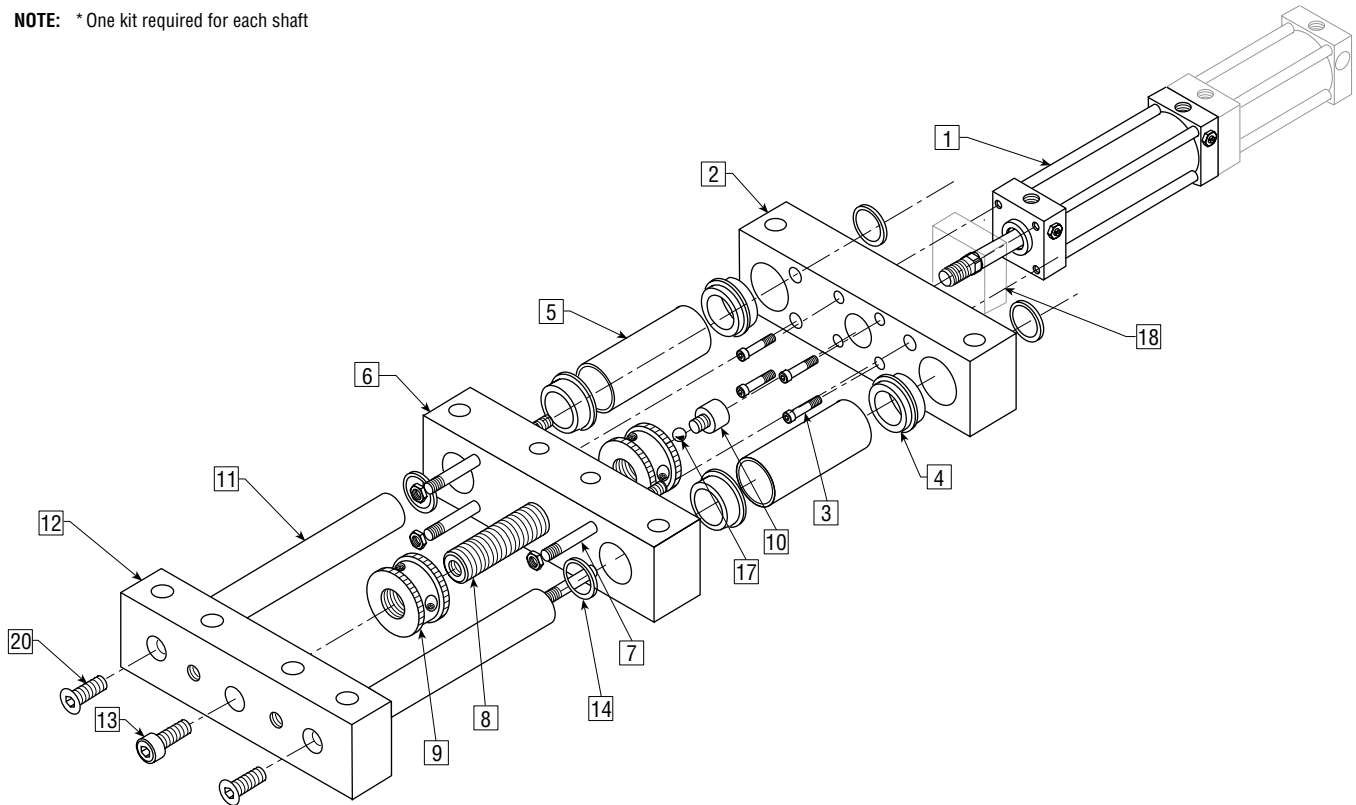
KEY	PART DESCRIPTION	RS 042 & RT042	RH042
1	Cylinder Assembly	Full unit description required followed by -H4	
2	Rear Block	Full unit description required followed by -H6220	
3	Cylinder Mounting Screw	2809-115	2809-029
4	Bushing Assembly	11104	11104
5	Spacer Tube Assembly	Full unit description required followed by -H5110	
6	Front Block	Full unit description required followed by -H6210	
7	Tierod & Nut Assembly	Full unit description required followed by -H5010	
8	Stop Rod	Full unit description required followed by -H4900	
9	Stop Nut Assembly	11043-01	11043-01
10	Rod Coupling	11046	11046
11	Guide Shaft	Full unit description required followed by -H4710	
12	Tool Plate	Full unit description required followed by -H6400	
13	Rod Mounting Screw	2809-177	2809-177
14	Shaft Seal	6176-008	6176-008
17	Ball	1976-009	1976-009
18	Spacer - RH model only	12191	12191
20	Shaft Mounting Screw	2809-444	2809-444

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KIT DESCRIPTION	RS042	RH042	RT042
Repair Kit	Full unit description required followed by -H9010		—
Shaft Bearing Kit*	Full unit description required followed by -H3420		

**NOTE:** \* One kit required for each shaft



# phd SERIES Rx06 SLIDES PARTS LIST

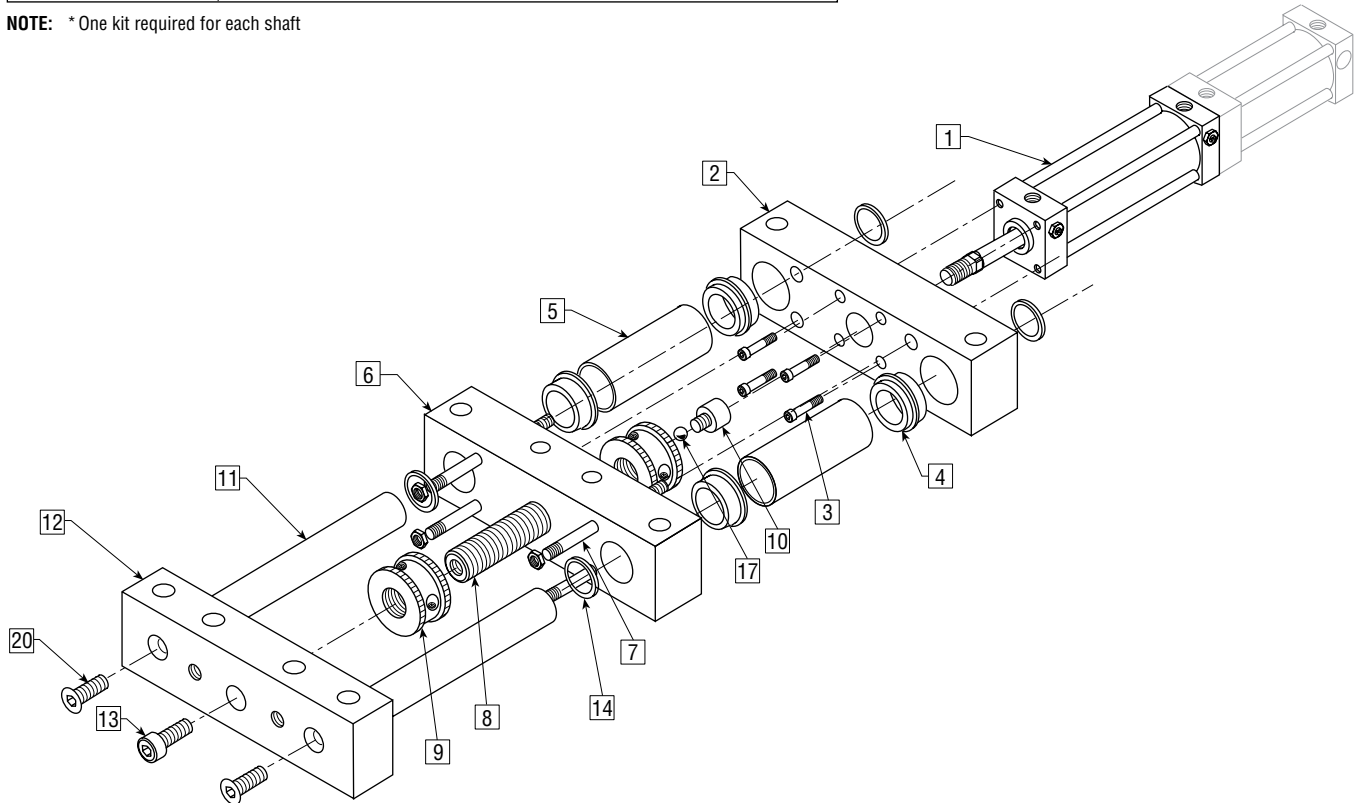
KEY	PART DESCRIPTION	Rx062
1	Cylinder Assembly	Full unit description required followed by -H4
2	Rear Block	Full unit description required followed by -H6220
3	Cylinder Mounting Screw	2809-030
4	Bushing Assembly	11105
5	Spacer Tube Assembly	Full unit description required followed by -H5110
6	Front Block	Full unit description required followed by -H6210
7	Tierod & Nut Assembly	Full unit description required followed by -H5010
8	Stop Rod	Full unit description required followed by -H4900
9	Stop Nut Assembly	11043-01
10	Rod Coupling	11046
11	Guide Shaft	Full unit description required followed by -H4710
12	Tool Plate	Full unit description required followed by -H6400
13	Rod Mounting Screw	2809-177
14	Shaft Seal	6176-012
17	Ball	1976-009
20	Shaft Mounting Screw	2809-169

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers

## KITS

KIT DESCRIPTION	RS062	RH062	RT062
Repair Kit	Full unit description required followed by -H9010		N/A
Shaft Bearing Kit*	Full unit description required followed by -H3420		

**NOTE:** \* One kit required for each shaft



# phd SERIES Rx08 SLIDES PARTS LIST

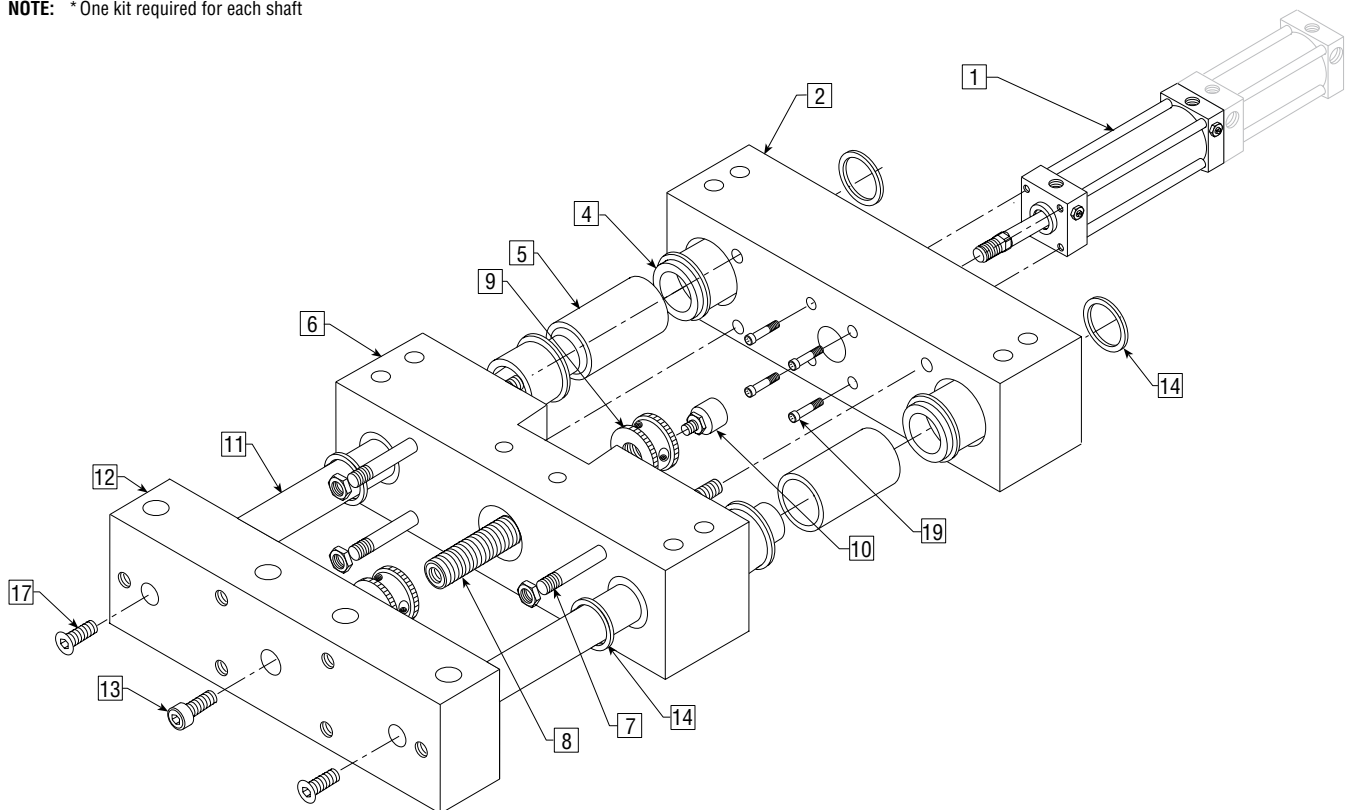
KEY	PART DESCRIPTION	Rx082
1	Cylinder Assembly	Full unit description required followed by -H4
2	Rear Block	Full unit description required followed by -H6220
4	Bushing Assembly	11174
5	Spacer Tube Assembly	Full unit description required followed by -H5110
6	Front Block	Full unit description required followed by -H6210
7	Tierod & Nut Assembly	Full unit description required followed by -H5010
8	Stop Rod	Full unit description required followed by -H4900
9	Stop Nut Assembly	11171-01
10	Rod Coupling	437
11	Guide Shaft	Full unit description required followed by -H4710
12	Tool Plate	Full unit description required followed by -H6400
13	Rod Mounting Screw	2809-064
14	Shaft Seal	6176-016
17	Shaft Mounting Screw	2809-458
19	Cylinder Mounting Screws	2809-075

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KIT DESCRIPTION	RS082	RH082	RT082
Repair Kit	Full unit description required followed by -H9010		—
Shaft Bearing Kit*	Full unit description required followed by -H3420		

**NOTE:** \* One kit required for each shaft





# phd SERIES Rx10 SLIDES PARTS LIST

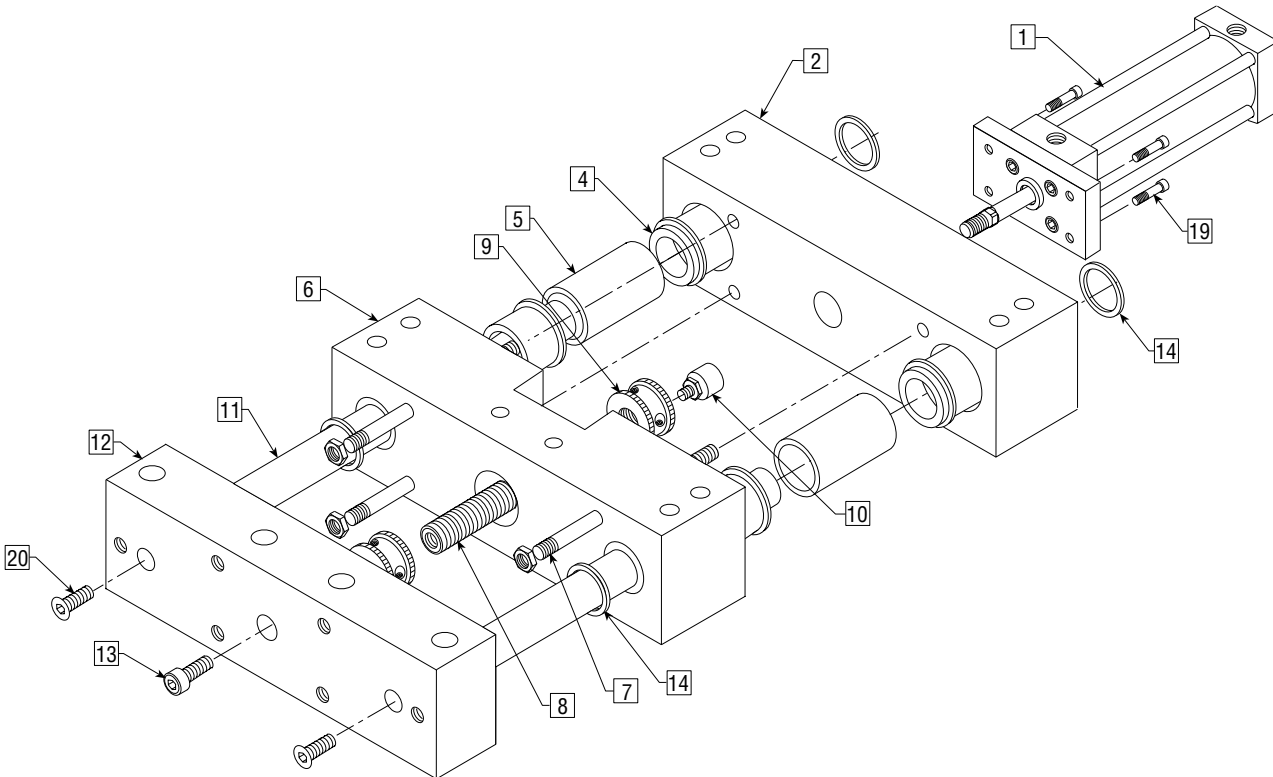
KEY	PART DESCRIPTION	Rx10
1	Cylinder Assembly	Full unit description required followed by -H4
2	Rear Block	Full unit description required followed by -H6220
4	Bushing Assembly	11175
5	Spacer Tube Assembly	Full unit description required followed by -H5110
6	Front Block	Full unit description required followed by -H6210
7	Tierod & Nut Assembly	Full unit description required followed by -H5010
8	Stop Rod	Full unit description required followed by -H4900
9	Stop Nut Assembly	11171-01
10	Rod Coupling	437
11	Guide Shaft	Full unit description required followed by -H4710
12	Tool Plate	Full unit description required followed by -H6400
13	Rod Mounting Screw	2809-192
14	Shaft Seal	6176-020
19	Cylinder Mounting Screw	2809-170
20	Shaft Mounting Screw	2809-121
	Repair Kit	Full unit description required followed by -H9010
	Shaft Bearing Kit	Full unit description required followed by -H3420

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## KITS

KIT DESCRIPTION	Rx10
Repair Kit	Full unit description required followed by -H9010
Shaft Bearing Kit*	Full unit description required followed by -H3420

**NOTE:** \*One kit required for each shaft



# phd SERIES Rx12 SLIDES PARTS LIST

KEY	PART DESCRIPTION	Rx12
1	Cylinder Assembly	Full unit description required followed by -H4
2	Rear Block	Full unit description required followed by -H6220
3	Cylinder Mounting Screw	2809-170
4	Bushing Assembly	11176
5	Spacer Tube Assembly	Full unit description required followed by -H5110
6	Front Block	Full unit description required followed by -H6210
7	Tierod & Nut Assembly	Full unit description required followed by -H5010
8	Stop Rod	Full unit description required followed by -H4900
9	Stop Nut Assembly	11171-01
10	Rod Coupling	437
11	Guide Shaft	Full unit description required followed by -H4710
12	Tool Plate	Full unit description required followed by -H6400
13	Rod Mounting Screw	2809-193
14	Shaft Seal	6176-024
20	Shaft Mounting Screw	2809-473

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

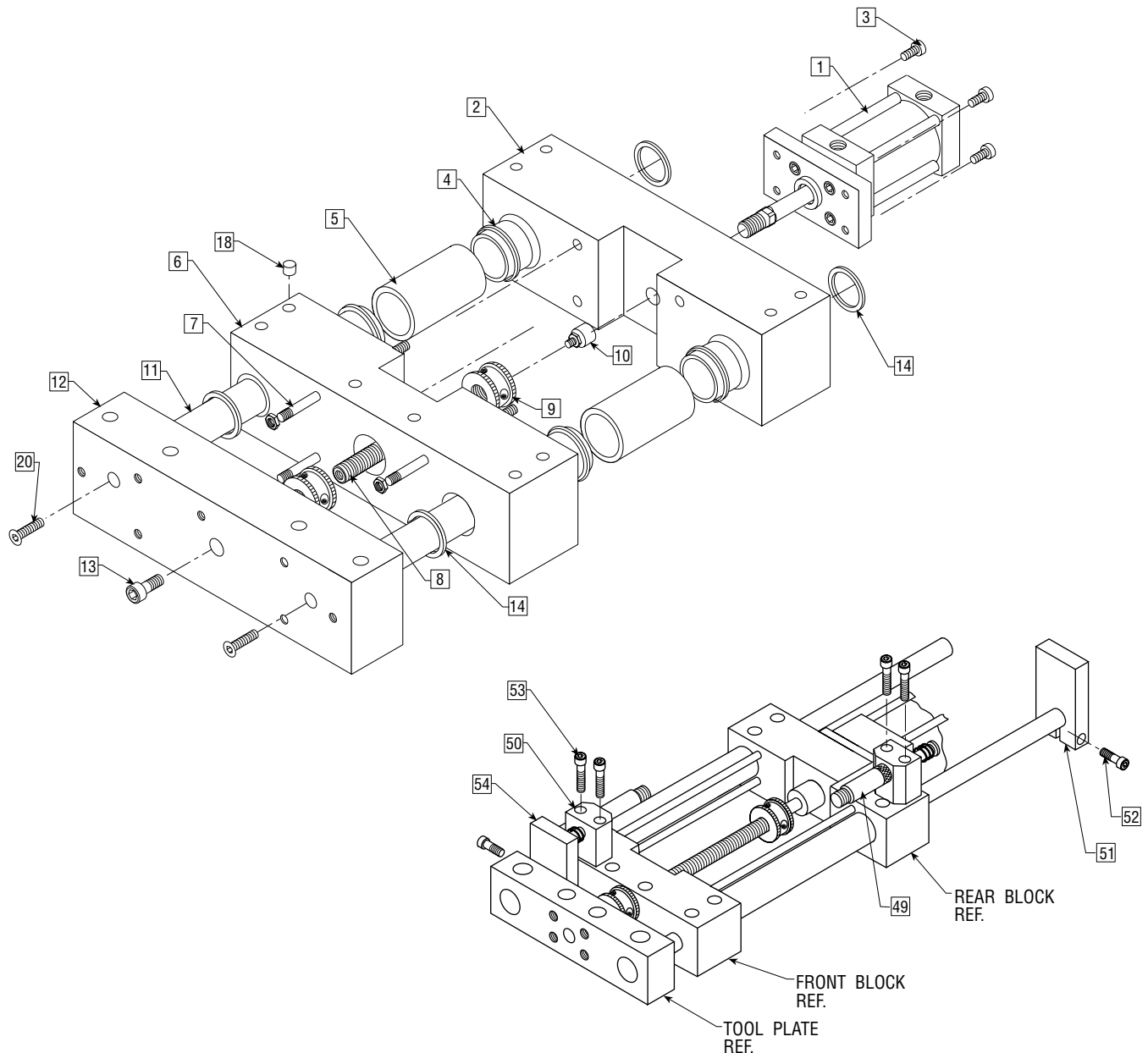
## KITS

KIT DESCRIPTION	Rx12
Repair Kit	Full unit description required followed by -H9010
Shaft Bearing Kit*	Full unit description required followed by -H3420

**NOTE:** \*One kit required for each shaft

## SHOCK ABSORBER KIT

KEY	PART DESCRIPTION	Rx12
49	Shock Absorber	11036-002
50	Shock Mounting Block	11135
51	Clamp Block	55291
52	Clamp Block Screw	2809-062
53	Shock Block Screw	2809-178
54	Striker Plate	55289



# phd SERIES SCV SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SCVxx
1	Housing Assembly	Full unit description required followed by -H4800
1A	Housing	Sold as part of Housing Assembly
1B	Bushing	Sold as part of Bushing Kit, Repair Kit, or Housing Assembly
2	Tool Plate	Full unit description required followed by -H6400
3	Series CV Cylinder Assembly	Full unit description required followed by -H4
4	Guide Shaft	Full unit description required followed by -H4710
5	Shaft Mounting Screws	Sold as part of fastener mounting kit
6	Cylinder Mounting Screws	Sold as part of travel adjustment collar kit only
7	Stop Collar	
8	Shock Pad	

**NOTES:** All part numbers listed are for standard units.

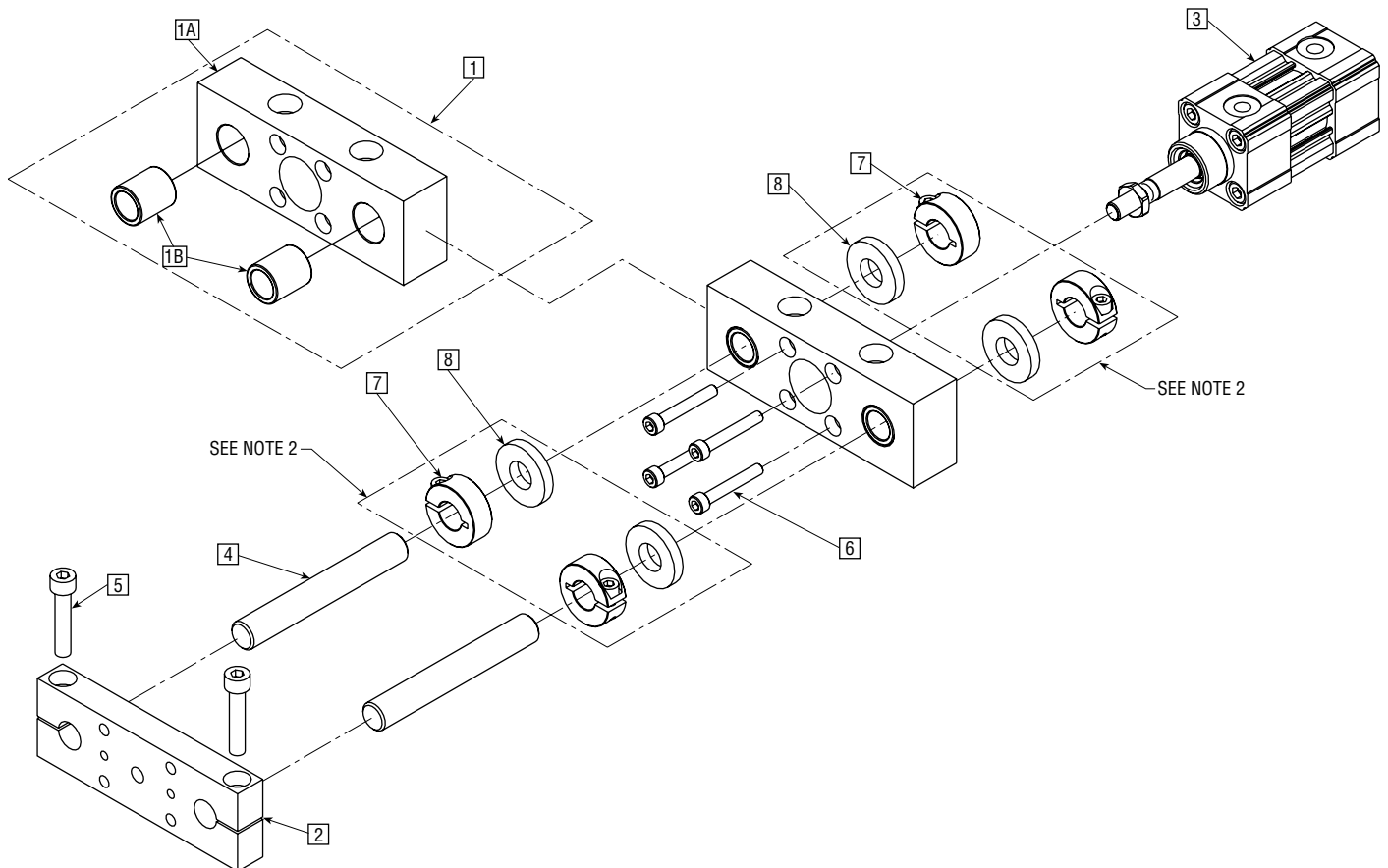
## KITS

KIT DESCRIPTION	SCVx2	SCVx3	SCVx4	SCVx5	SCVx6	SCVx7	SCVx8	SCVx9
Mounting Fastener Kit	Full unit description required followed by -H9020							
Repair Kit	Full unit description required followed by -H9010							
Seal Kit	Full unit description required followed by -H9000							
Travel Adjustment Collar Kit -AE or -AR option	58068-08	58068-01	58068-02	58068-03	58068-04	58068-04	58068-05	58068-05
Bushing Kit	64585-01	64585-02	64585-03	64585-04	64585-05	64585-05	64585-06	64585-06

**NOTES:** Collar kits contain all parts for one end only.

Seal kits contain all seals needed to repair one standard unit.

Repair kits contain all seals, bearings, and wear rings to repair one standard unit.



# phd SERIES SxL/SxH SLIDES

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 08	SIZE 10	SIZE 14	SIZE 20	SIZE 32
1	Housing Assembly	Full unit description required followed by -H4800				
2	Piston & Rod Assembly Standard Magnet	Full unit description required followed by -H1000				
3	Piston Seal	Sold as part of Seal Kit				
4	Rod Seal	Sold as part of Seal Kit				
5	Guide Shaft SxL SxH	Full unit description required followed by -H4710				
6	Cartridge/Cap Seal	Sold as part of Seal Kit				
7	Cap	72487	72497	72517	72527	72537
8	Tool Plate SAx SBx	Full unit description required followed by -H6400				
9	Cartridge/Cap Retainer	Full unit description required followed by -H7100				
10	Internal Shock Pad	68093	18683	18684	70843	53759
11	External Shock Pad	18683	18684	60569	67130	72541
12	Tool Plate to Guide Shaft Screws	Full unit description required followed by -H4750				
13	Cartridge	Full unit description required followed by -H3410				
14	Tool Plate to Piston Rod Screw	Full unit description required followed by -H3600				
<b>OPTIONAL PARTS</b>						
19	Collar	Sold as part of Extend Travel Adjustment Kit				
20	Shock Pad					
21	SHCS					

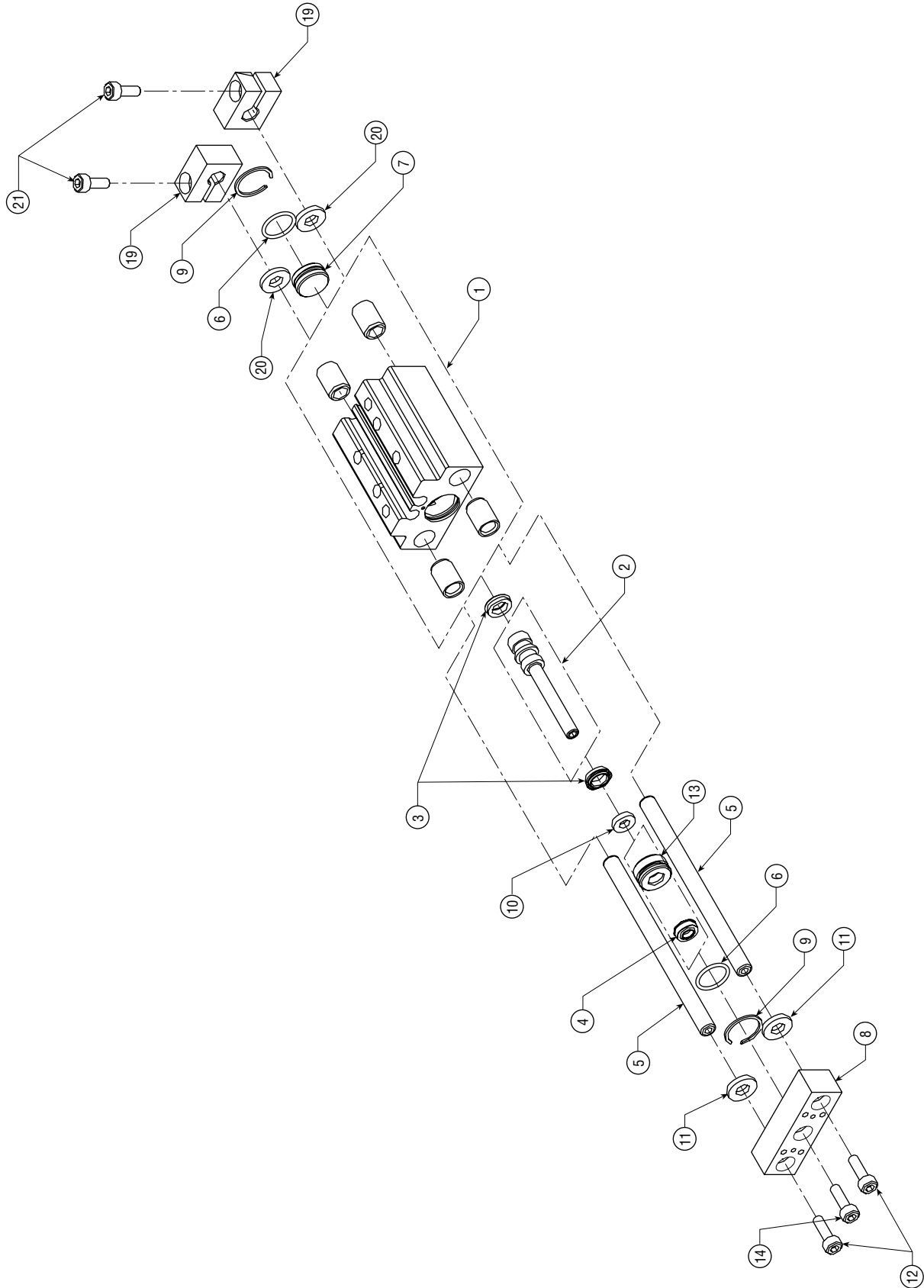
### KITS

KIT DESCRIPTION	SIZE 08	SIZE 10	SIZE 14	SIZE 20	SIZE 32
Seal Kit	Full unit description required followed by -H9000				
Extend Travel Adjustment Kit	Full unit description required followed by -H9031 (2 collars, 2 screws, & 2 shock pads per kit)				
SxL Guide Shaft Bearing Kit	Full unit description required followed by -H3450 (4 bearings per kit) (Not available for SxH)				

**NOTE:** Seal kits contain piston, rod, and cartridge/cap seals for one unit.  
Unless otherwise specified, -Hxxxx option code provides one replacement part or assembly.

# phd SERIES SxL/SxH SLIDES

## EXPLODED VIEW



# phd SERIES SD/SE SLIDES DESIGN #2

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	Sxx22	Sxx23	Sxx24	Sxx25	Sxx26
1	Cylinder Assembly	Full unit description required followed by -H4				
2	Housing Assembly	Consult factory				
3	Tool Plate	Full unit description required followed by -H6400				
4	Guide Shaft	Full unit description required followed by -H4710				
5	Tool Plate Clamp Screw	2809-131	2809-133	2809-095	2809-062	2809-085
6	Jam Screw	3188-0034	3188-0010	3188-0017	3188-0017	3188-0100
7	Bearing Retainer	Sold as Part of Bearing Kit				
8	Bearing					
9	Wick					

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

### SEAL KITS

Full unit description required followed by -H9000

**NOTE:** Each kit includes all seals to repair cylinder.

### REPAIR KITS

Full unit description required followed by -H9010

**NOTE:** Each kit includes all components to repair cylinder.

### BEARING KITS

Full unit description required followed by -H3450

**NOTE:** Each kit includes parts for both shafts.

### PORT CONTROL® COMPONENT KITS

MODEL	PART NO.
SDx22, SEx22	54390-x
SDx23, SEx23	54391-x
SDx24, SEx24	54391-x
SDx25, SEx25	54392-x
SDx26, SEx26	54393-x

Each kit includes components to repair one control function (-PR or -PC).

### AIR CUSHION COMPONENT REPAIR KITS

MODEL	PART NO.
SDx22, SEx22	54401-x
SDx23, SEx23	54402-x
SDx24, SEx24	54403-x
SDx25, SEx25	54404-x
SDx26, SEx26 Head End	54396-x
SDx26, SEx26 Cap End	54397-x

Each kit includes component to repair one cushion function (-DR or -DC).

### AIR CUSHION BLOCK & COMPONENT REPAIR KITS

MODEL	PART NO.
SDx22, SEx22	54398-x
SDx23, SEx23	54399-x
SDx24, SEx24	54400-x
SDx25, SEx25	54395-x
SDx26, SEx26	—

Each kit includes block and components to repair one cushion function (-DR or -DC).

**NOTE:** Part number suffix (-1) indicates Buna-N seals.  
Part number suffix (-2) indicates Fluoro-Elastomer seals.

### TRAVEL ADJUSTMENT COLLAR KIT (-AR or -AE)

MODEL	PART NO.
SxB22, SxC22	59737-01
SxD22	59737-02
SxB23, SxC23	59737-03
SxD23	59737-04
SxB24, SxC24	59737-05
SxD24	59737-06
SxB25, SxC25	59737-07
SxD25	59737-08
SxB26, SxC26	59737-09
SxD26	59737-10

### PROXIMITY COLLAR KIT (-GG or -GH)

MODEL	PART NO.
SxB22, SxC22	59745-01
SxD22	59745-02
SxB23, SxC23	59745-03
SxD23	59745-04
SxB24, SxC24	59745-05
SxD24	59745-06
SxB25, SxC25	59745-07
SxD25	59745-08
SxB26, SxC26	59745-09
SxD26	59745-10

### SHOCK STOP COLLAR KIT (-GM, -GN, -G3, -G13, -G4 OR -G14)

MODEL	PART NO.
SxB22, SxC22	59746-01
SxD22	59746-02
SxB23, SxC23	59746-03
SxD23	59746-04
SxB24, SxC24	59746-05
SxD24	59746-06
SxB25, SxC25	59746-07
SxD25	59746-08
SxB26, SxC26	59746-09
SxD26	59746-10

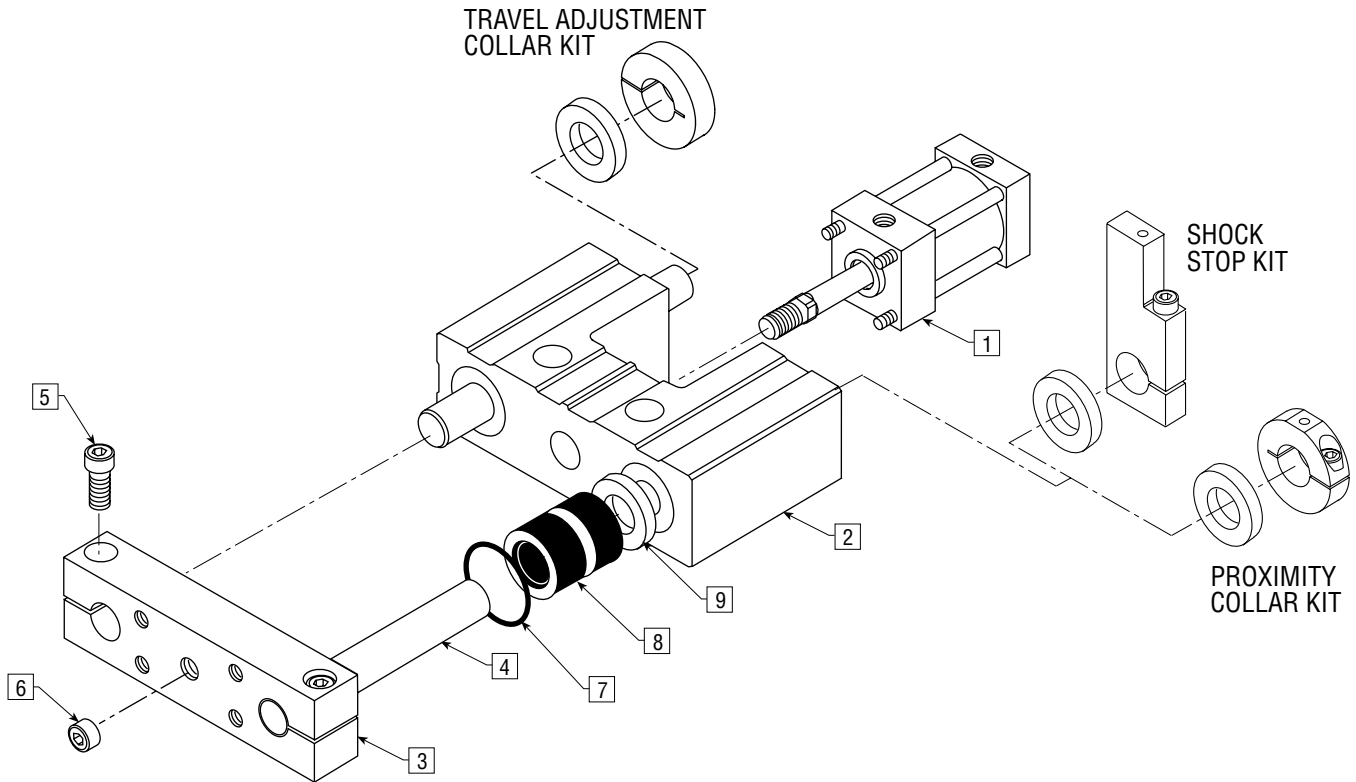
### PROXIMITY & TARGET MOUNTING KIT

MODEL	(8 mm Prox)		(12 mm Prox)	
	PART NO.		PART NO.	
Sxx22	53101-01-1		63998-01-1	
Sxx23	53101-01-1		63998-01-1	
Sxx24	53101-02-1		63998-02-1	
Sxx25	53101-02-1		63998-02-1	
Sxx26	53101-03-1		63998-03-1	

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

# phd SERIES SD/SE SLIDES DESIGN #2

## EXPLODED VIEW

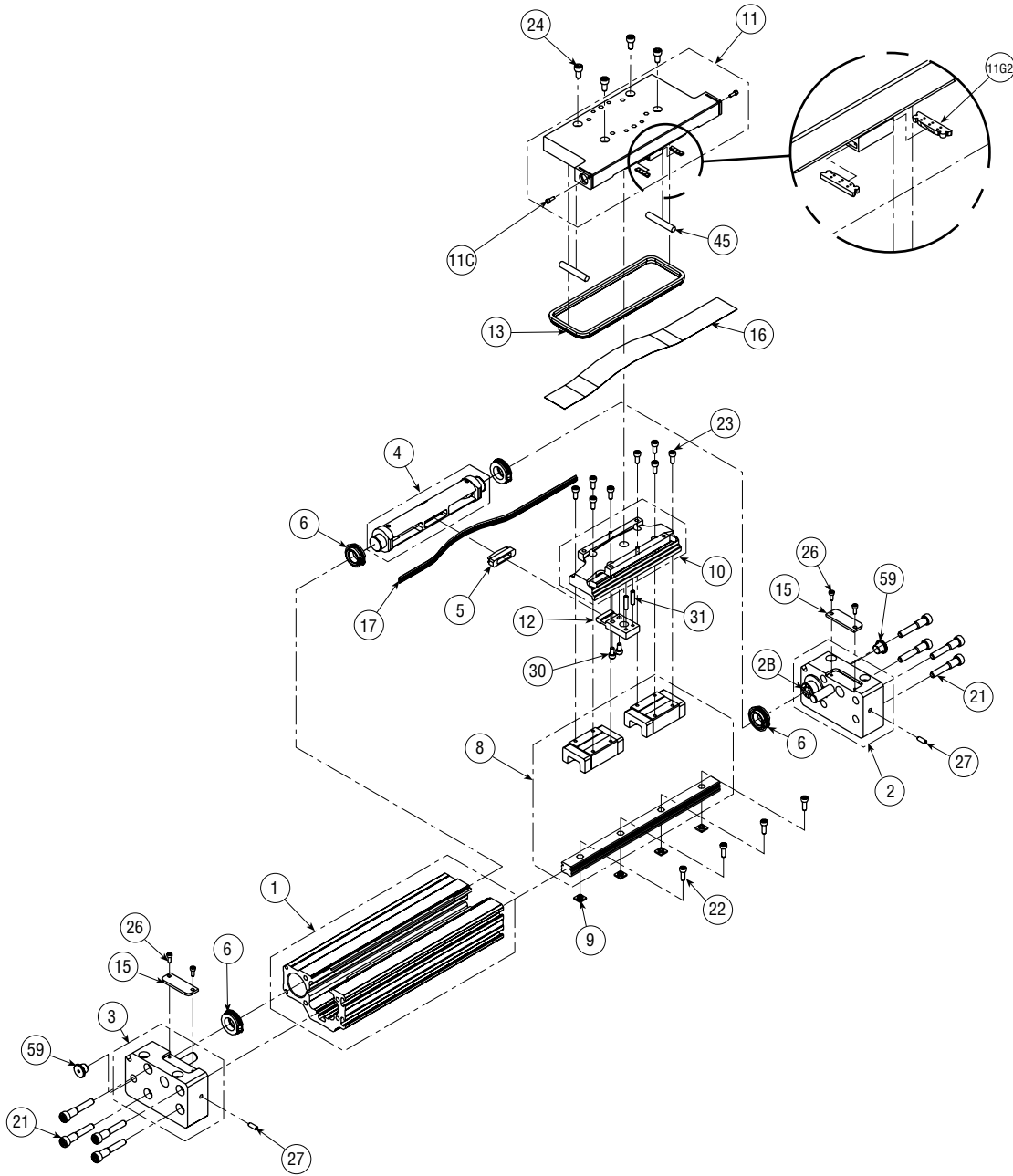


# phd SERIES SFM SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SFM527	SFM540
1	Tube Assembly	Full unit description required followed by -H1300	
2	Right Cap Assembly	Full unit description required followed by -H1200	
3	Left Cap Assembly	Full unit description required followed by -H1210	
4	Piston Carriage Assembly	Full unit description required followed by -H6300	
5	Grommet	Full unit description required followed by -H3150	
6	Piston Seal For Slide	Sold as part of Slide Seal Kit -H9000	
8	Slide / Rail Assembly	Full unit description required followed by -H7000	
9	T-Nut	Full unit description required followed by -H2000	
10	Transmission Carriage	Full unit description required followed by -H6310	
11	Saddle Assembly	Full unit description required followed by -H4800	
11C	SHCS	Sold as part of Saddle Fastener Kit -H9040	
11G2	Shock Pad	77047	77048
		(Also Sold as part of Saddle Assembly -H9040)	
12	Arm	Full unit description required followed by -H5610	
13	Scraper	Full unit description required followed by -H0005	
15	Band Clamp	Full unit description required followed by -H5900	
16	Outer Band	Full unit description required followed by -H5310	
17	Linear Seal	Sold as part of Slide Seal Kit -H9000	
21	Shoulder Bolt	Sold as part of Slide Fastener Kit -H9020	
22	Rail To T-Nut SHCS	Sold as part of Slide Fastener Kit -H9020	
23	Transmission Carriage To Slide / Rail Assembly SHCS	Sold as part of Slide Fastener Kit -H9020	
24	Saddle To Transmission Carriage SHCS	Sold as part of Slide Fastener Kit -H9020 (Also Sold as part of Saddle Fastener Kit -H9040)	
26	Band Clamp To Cap SHCS	Sold as part of Slide Fastener Kit -H9020	
27	Socket Set Screw	Sold as part of Slide Fastener Kit -H9020	
30	Arm To Transmission Carriage SHCS	Sold as part of Slide Fastener Kit -H9020	
31	Spring Pin	Full unit description required followed by -H9041	
45	Roller Pin	Full unit description required followed by -H2662	
59	Port Plug	Full unit description required followed by -H3120	



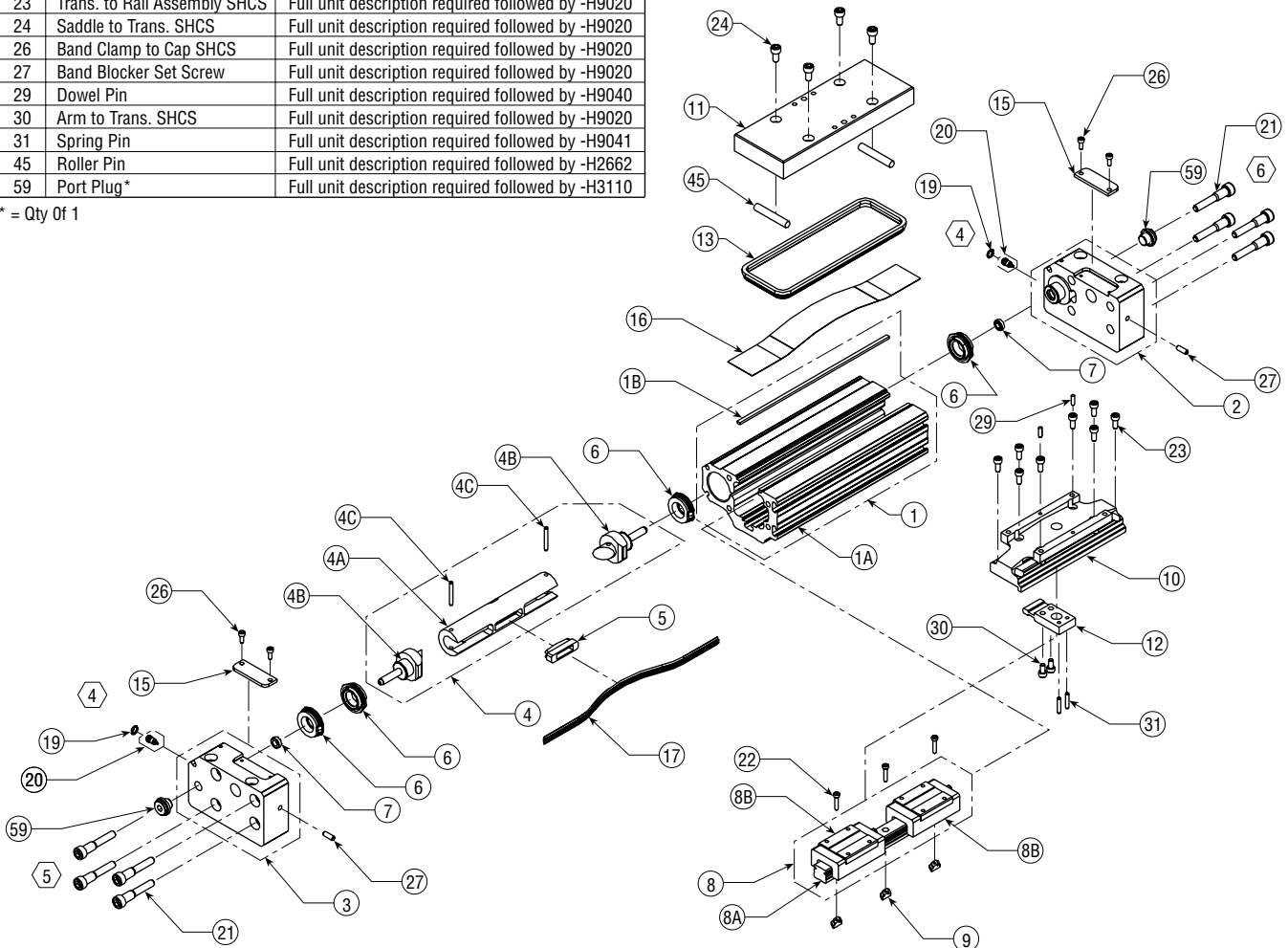
# phd SERIES SFM SLIDES EXPLODED VIEW



# phd SERIES SFP SLIDES PARTS LIST

KEY	PART DESCRIPTION	SFPxx27	SFPxx40
1	Tube Assembly	Full unit description required followed by -H1300	
1A	Finished Tube	Part of Tube Assembly	
1B	Finished Magnetic Strip	Part of Tube Assembly	
2	Right Cap Assembly	Full unit description required followed by -H1200	
3	Left Cap Assembly	Full unit description required followed by -H1210	
4	Piston Carriage Assembly	Full unit description required followed by -H6300	
4A	Piston Carriage	Part of Piston Carriage Assembly	
4B	Piston	Part of Piston Carriage Assembly	
4C	Spring Pin	Part of Piston Carriage Assembly	
5	Grommet	Full unit description required followed by -H3150	
6	Piston Seal	Full unit description required followed by -H9000	
7	Cushion Seal	Full unit description required followed by -H9000	
8	Slide/Rail Assembly	Full unit description required followed by -H7000	
8A	Rail	Part of Slide/Rail Assembly	
8B	Linear Way Slide	Part of Slide/Rail Assembly	
9	T-Nut	Full unit description required followed by -H2000	
10	Transmission Carriage	Full unit description required followed by -H6310	
11	Saddle	Full unit description required followed by -H4800	
12	Arm	Full unit description required followed by -H5610	
13	Scraper	Full unit description required followed by -H0005	
15	Band Clamp	Full unit description required followed by -H5900	
16	Outer Band	Full unit description required followed by -H5310	
17	Linear Seal	Full unit description required followed by -H9000	
19	Snap Ring Retainer	Part of Cushion Control Kit	
20	Cushion Needle Assembly	Part of Cushion Control Kit	
21	Self Tapping Screw	Full unit description required followed by -H9020	
22	Rail to Tube SHCS	Full unit description required followed by -H9020	
23	Trans. to Rail Assembly SHCS	Full unit description required followed by -H9020	
24	Saddle to Trans. SHCS	Full unit description required followed by -H9020	
26	Band Clamp to Cap SHCS	Full unit description required followed by -H9020	
27	Band Blocker Set Screw	Full unit description required followed by -H9020	
29	Dowel Pin	Full unit description required followed by -H9040	
30	Arm to Trans. SHCS	Full unit description required followed by -H9020	
31	Spring Pin	Full unit description required followed by -H9041	
45	Roller Pin	Full unit description required followed by -H2662	
59	Port Plug*	Full unit description required followed by -H3110	

\* = Qty Of 1



# phd SERIES SGxM SLIDE WITH RODLESS CYLINDER

## PARTS LIST

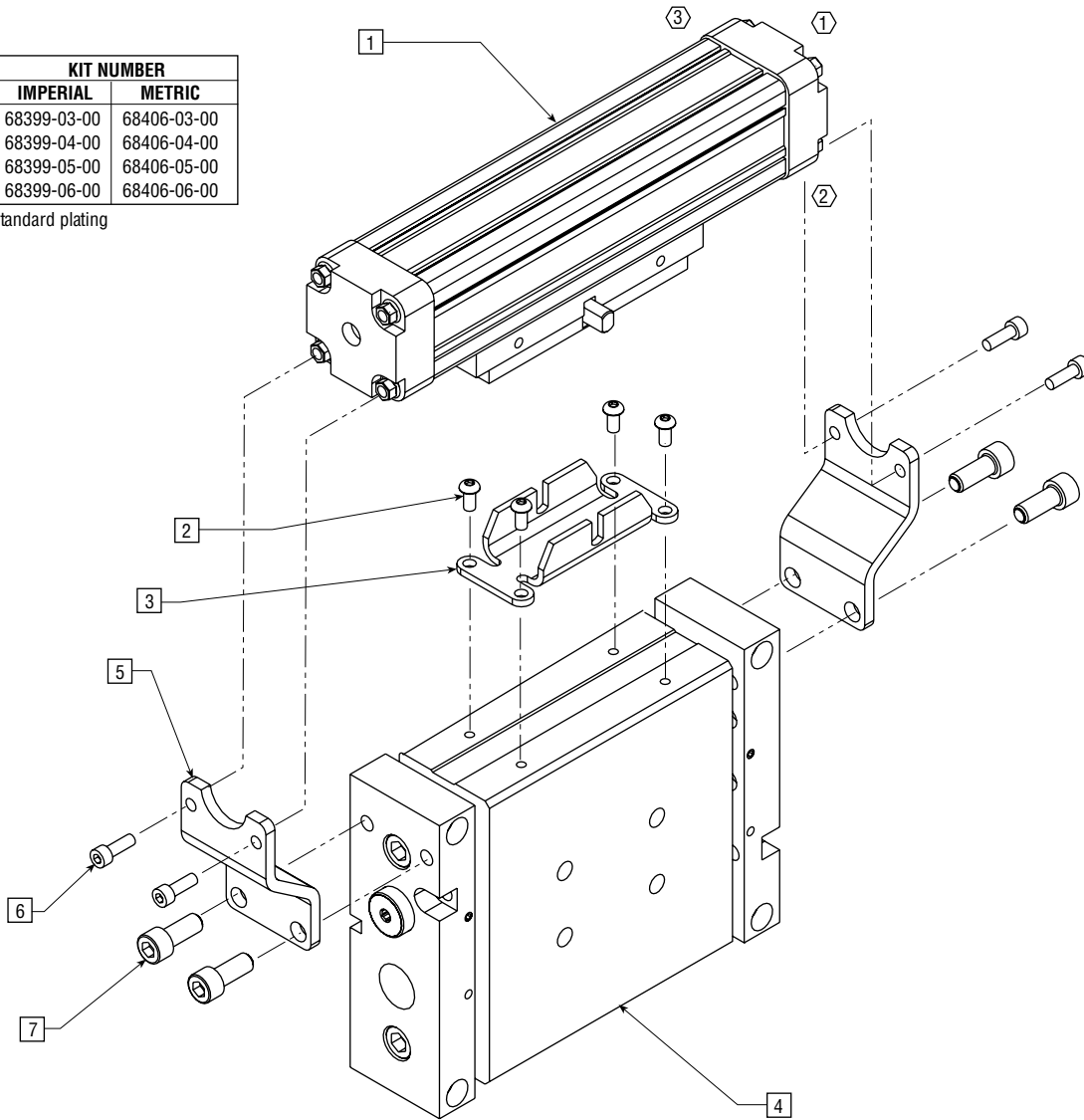
KEY	PART DESCRIPTION
1	Rodless Cylinder
2*	Button Head Cap Screw
3*	Rodless Cylinder to SG Bracket
4	Series SG Slide
5*	Rodless Cylinder to SG Z Bracket
6*	Socket Head Cap Screw
7*	Socket Head Cap Screw

\*Parts included in kit

### KITS

KIT DESCRIPTION	KIT NUMBER	
	IMPERIAL	METRIC
SGxxx3	68399-03-00	68406-03-00
SGxxx4	68399-04-00	68406-04-00
SGxxx5	68399-05-00	68406-05-00
SGxxx6	68399-06-00	68406-06-00

Note: -00 is for standard plating



# phd SERIES SG SLIDES WITH CYLINDER PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SGxx1	SGxx2	SGxx3	SGxx4	SGxx5	SGxx6
1A	Saddle Assembly	Consult factory					
1B	Bushing	Sold as part of Bearing Kit					
1C	Oil Wick						
1D	Retaining Ring						
1E	Proximity Switch Target	Sold as part of Proximity Switch Kit					
1F	Shock Pad	Sold as part of Shock Pad Kit					
2	Guide Shaft	Full unit description required followed by -H4710					
3	Cylinder End Block	Consult factory					
4	Shaft Mounting Screw	Sold as part of Fastener Kit					
5	Cylinder Assembly	Full unit description required followed by -H4					
6	Cylinder Mounting Screw	Sold as part of Fastener Kit					
7	Cylinder Jam Nut						
8	Non-Cylinder End Block	Consult factory					
9	Cylinder End Stop	57783-4	57783-4	57953-4	57250-4	57250-4	57250-4
10	Non-Cylinder End Stop	57801-4	57801-4	57780-4	57276-4	57276-4	57276-4
11	Set Screw	Sold as part of Fastener Kit					
12	Cylinder Spacer	57883	65788	65789	65790	65791	65792
13	Locking Pad	Sold as part of Fastener Kit					
23	Coupler Flange	Sold as part of Coupling Kit					
24	Tee-nut Coupler						
25	VDMA/ISO Spacer Block	Sold as part of ISO Cylinder Mounting Kit					
26	Coupler Spacer	Sold as part of Coupling Kit					

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

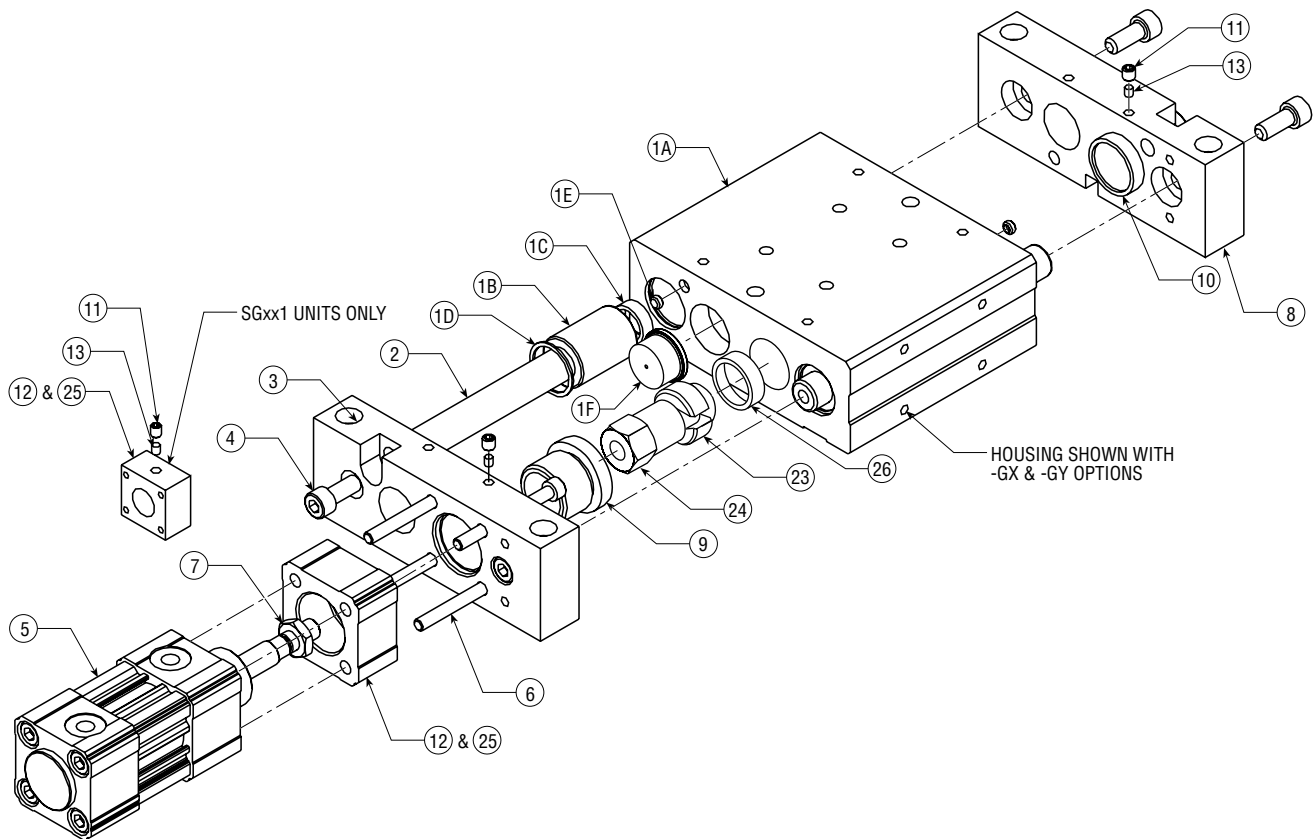
## KITS

KIT DESCRIPTION		SHAFT SIZE OR OPTION	SGxx1	SGxx2	SGxx3	SGxx4	SGxx5	SGxx6	
Cylinder Repair Kit		All	Full unit description required followed by -H9010						
Bearing Kit*		All	Full unit description required followed by -H3420						
Proximity Kit		-CB Option	SGx	57833	57833	57833	57833	57833	
Plain SGx Coupling Kit		ISO	-H12	57864-07-1	57864-08-1	57864-01-1	—	—	
		VDMA	-H11	—	—	57864-02-1	57864-03-1	57864-03-1	
ISO Cylinder Mounting Kit		ISO	-H12	57865-07-1	72250-02-1	72250-03-1	—	—	
		VDMA	-H11	—	—	72250-04-1	72250-05-1	72250-06-1	
Shock Absorber			All	57858-07-x	57858-07-x	57858-01-x	57858-02-x	57858-02-x	
Shock Pad Kit		-Retract	All	57860-07-1	57860-07-1	57860-01-1	57860-02-1	57860-02-1	
		-BR Option	All	57867-07	57867-07	57867-01	57867-02	57867-02	
		-Extend	All	57867-07	57867-07	57867-01	57867-02	57867-02	
Fastener Kit			All	Full unit description required followed by -H9020					

**NOTE:** Part number suffix (-1) indicates Buna-N seals. Part number suffix (-2) indicates Fluoro-Elastomer seals.

\* 1 kit required per shaft

# phd SERIES SG SLIDES WITH CYLINDER EXPLODED VIEW

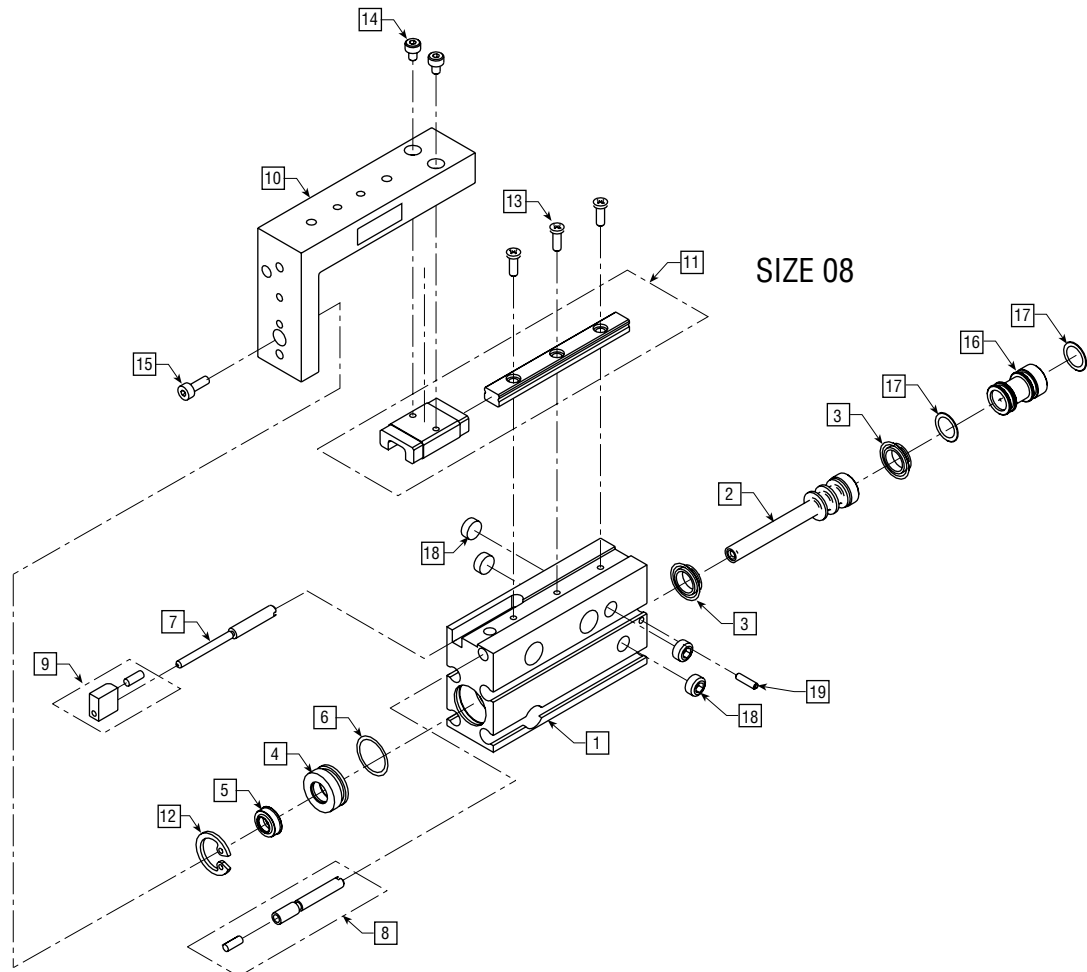


# phd SERIES SHP SLIDES PARTS LIST AND REPAIR KITS

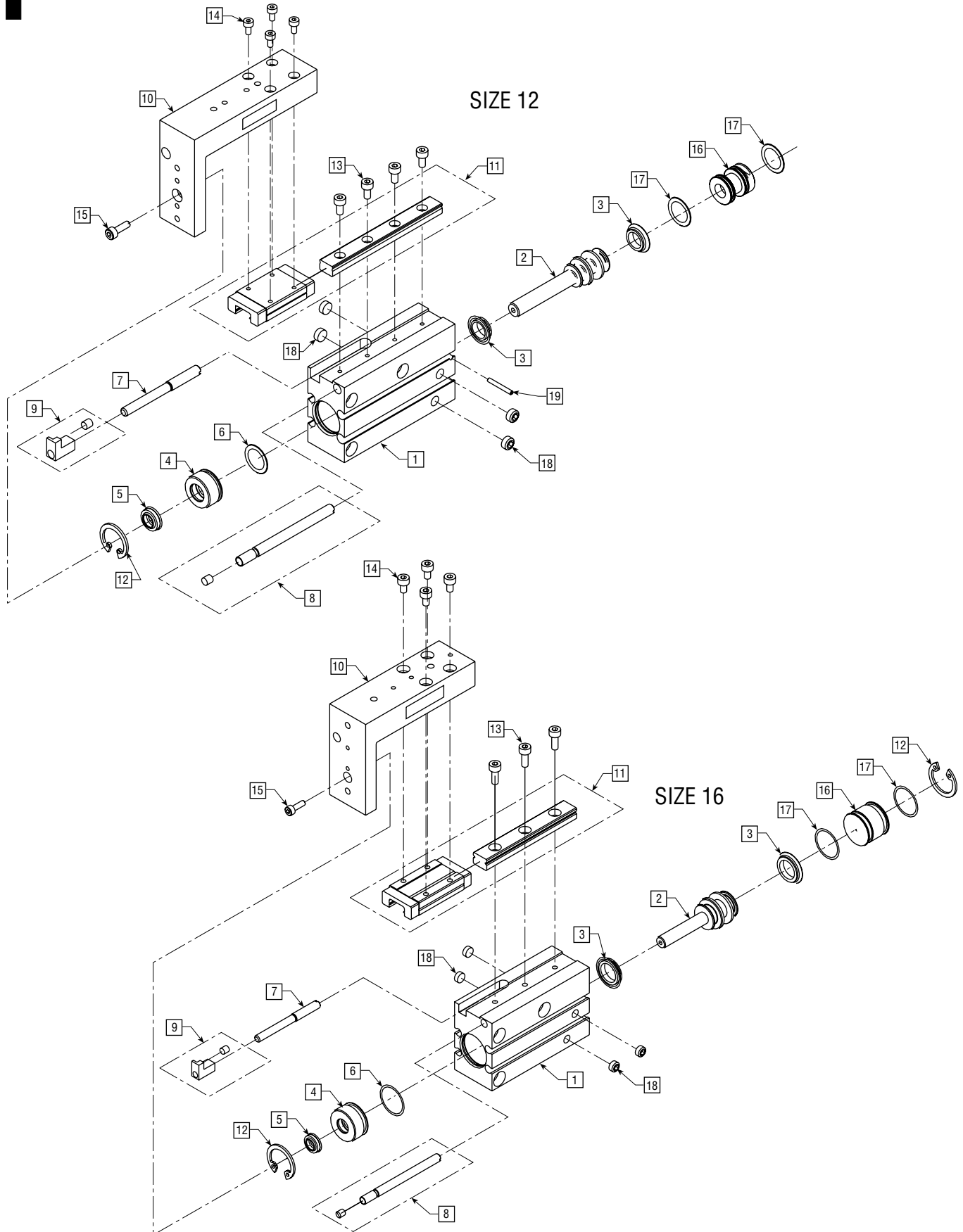
KEY	PART DESCRIPTION	SIZE 08	SIZE 12	SIZE 16
1	Body Assembly	Full unit description required followed by -H2400		
2	Piston & Rod Assembly	Full unit description required followed by -H1000		
3	Piston Seal	Sold as part of Seal Kit		
4	Rod Cartridge	Full unit description required followed by -H3410		
5	Rod Seal	Sold as part		
6	Cartridge Seal	of Seal Kit		
7	Extend Travel Adjustment Screw	Sold as part of Travel Adjustment Extend Kit		
8	Retract Travel Adjustment Screw Assembly	Sold as part of Travel Adjustment Retract Kit		
9	Stop Assembly	Sold as part of Travel Adjustment Extend Kit		
10	Tool Plate	Full unit description required followed by -H6400		
11	Rail & Carriage Assembly	Sold as part of Bearing Kit		
12	Retainer Ring	Sold as part of Seal or Fastener Kit		
13	Rail Mounting Screw	Sold as part of Bearing Kit or Fastener Kit		
14	Tool Plate to Carriage SHCS	Sold as part of Bearing Kit or Fastener Kit		
15	Tool Plate to Rod SHCS	Sold as part of Bearing Kit or Fastener Kit		
16	Bore Plug	69593	69584	69585
17	Plug Seal	Sold as part of Seal Kit		
18	Port Plug	3188-0359	3188-0359	3188-0359
19	Spring Pin	Sold as part of Seal or Fastener Kit		

## KITS

KIT DESCRIPTION	SIZE 08	SIZE 12	SIZE 16
Seal Kit	Full unit description required followed by -H9000		
Travel Adjustment Extend Kit	Full unit description required followed by -H9031		
Travel Adjustment Retract Kit	Full unit description required followed by -H9032		
Fastener Kit	Full unit description required followed by -H9020		
Bearing Kit	Full unit description required followed by -H7000		



# phd SERIES SHP SLIDES EXPLODED VIEWS



# phd SERIES SIP SLIDES PARTS LIST AND REPAIR KITS

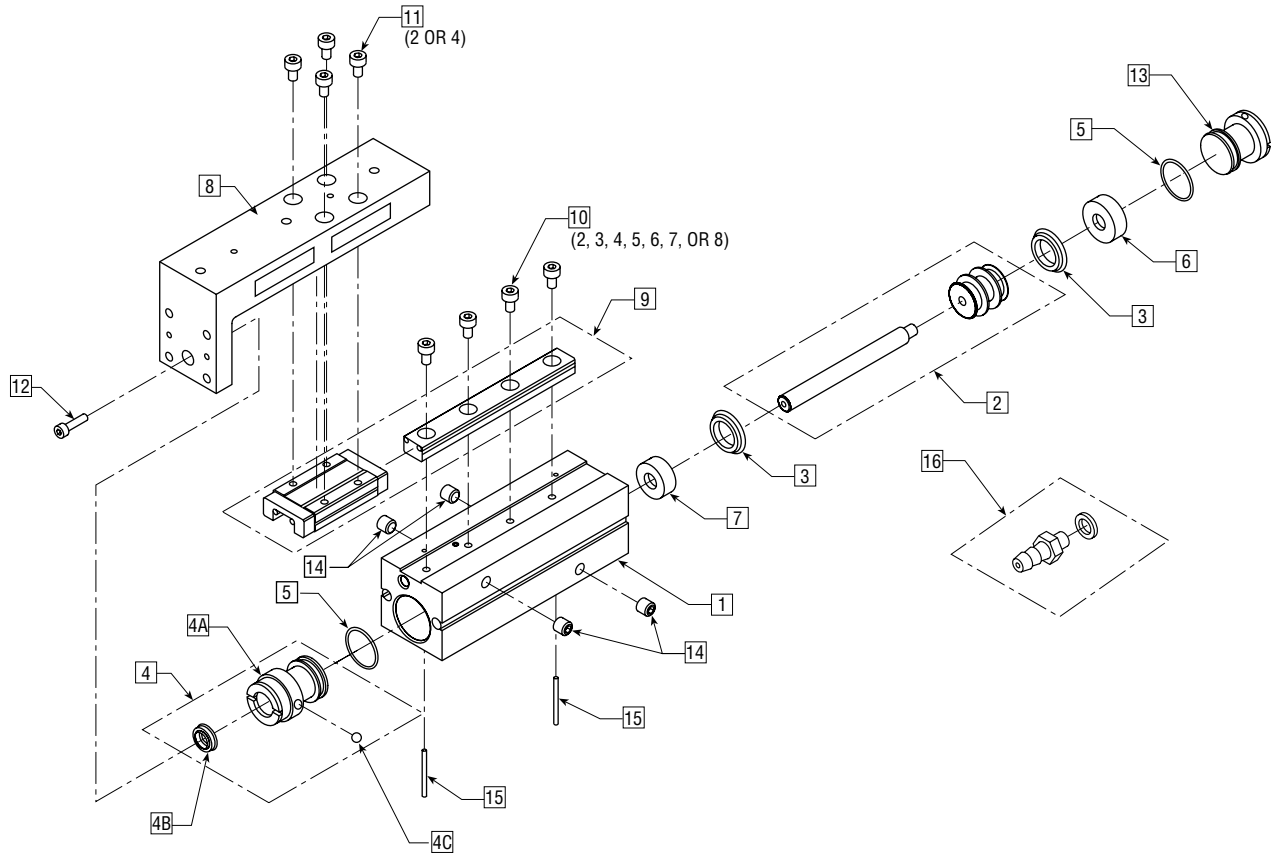
KEY	PART DESCRIPTION	SIP 12	SIP 16	SIP 20
1	Body Assembly	Full unit description required followed by -H2400		
2	Piston & Rod Assembly	Full unit description required followed by -H1000		
3	Piston Seal	Sold as part of Seal Kit		
4	Cartridge Assembly	Full unit description required followed by -H3410		
4A	Rod Cartridge	Sold as part of Cartridge Assembly or Seal Kit		
4B	Rod Seal			
4C	Locking Ball (-AE Option)			
5	Cartridge/Plug Seal	Sold as part of Seal Kit		
6	Retract Shock Pad	71665	71765	72052
7	Extend Shock Pad	71664	71764	72053
8	Tool Plate	Full unit description required followed by -H6400		
9	Rail & Carriage Assembly	Sold as part of Bearing Kit		
10	Rail Mounting Screw	Sold as part of Bearing or Fastener Kit		
11	Tool Plate to Carriage Socket Head Cap Screw			
12	Tool Plate to Rod Socket Head Cap Screw			
13	Bore Plug	Standard 71682	71782	72064
		-AR 72063-02	72063-03	72063-04
14	Port Plug	17424-100	17424-085	17424-085
15	Coiled Spring Pin (-AE, -AR options only)	Sold as part of Seal Kit		
16	Fitting Assembly	18056	—	

## KITS

KIT DESCRIPTION	SIZE 12	SIZE 16	SIZE 20
Seal Kit	Full unit description required followed by -H9000		
Fastener Kit	Full unit description required followed by -H9020		
Bearing Kit	Full unit description required followed by -H7000		



# phd SERIES SIP SLIDES EXPLODED VIEW



# phd SERIES SK/SL SLIDES PARTS LIST

KEY	PART DESCRIPTION	Sxx81	Sxx82	Sxx83	Sxx84	Sxx85	Sxx86
1A	Housing	Consult factory					
1B	Bearing	Sold as part of Bearing Kit					
1C	Wick						
1D	Bearing Retainer						
2	Shaft	Full unit description required followed by -H4710					
3	Tool Plate	Full unit description required followed by -H6400					
4	Rod Mounting Screw	Sold as part of Fastener Kit					
5	Shaft Mounting Screws						
6	Cylinder Assembly	Full unit description required followed by -H4					
7	Cylinder Mounting Screws	—	—	—	Sold as part of Fastener Kit		
8	Jam Nut - SLx Units Only	Sold as part of Coupling Kit					
9	Coupling Flange						
10	Tee-nut						
11	Rod Adaptor - SLx Units Only						
12	Coupling Flange Screws	Sold as part of Fastener or Coupling Kit					
14	Shock Pad SxB, SxC	17280	55874-017	55874-009	55874-010	55874-012	55874-015
	SxD	55874-017	55874-009	55874-010	55874-012	55874-015	55874-015
	SxE	—	—	—	—	—	55874-016
15	Stop Collar	Sold as part of Travel Adjustment Collar Kit					
16	Proximity Target Collar	Sold as part of Proximity Collar Kit					
17	Shock Stop Assembly	Sold as part of Shock Stop Collar Kit					
19	Cylinder Mounting Nut SK SL	58428-01-4	58444-01-4	58444-01-4	—	—	—
		58428-02-4	58444-02-4	58444-03-4	—	—	—

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

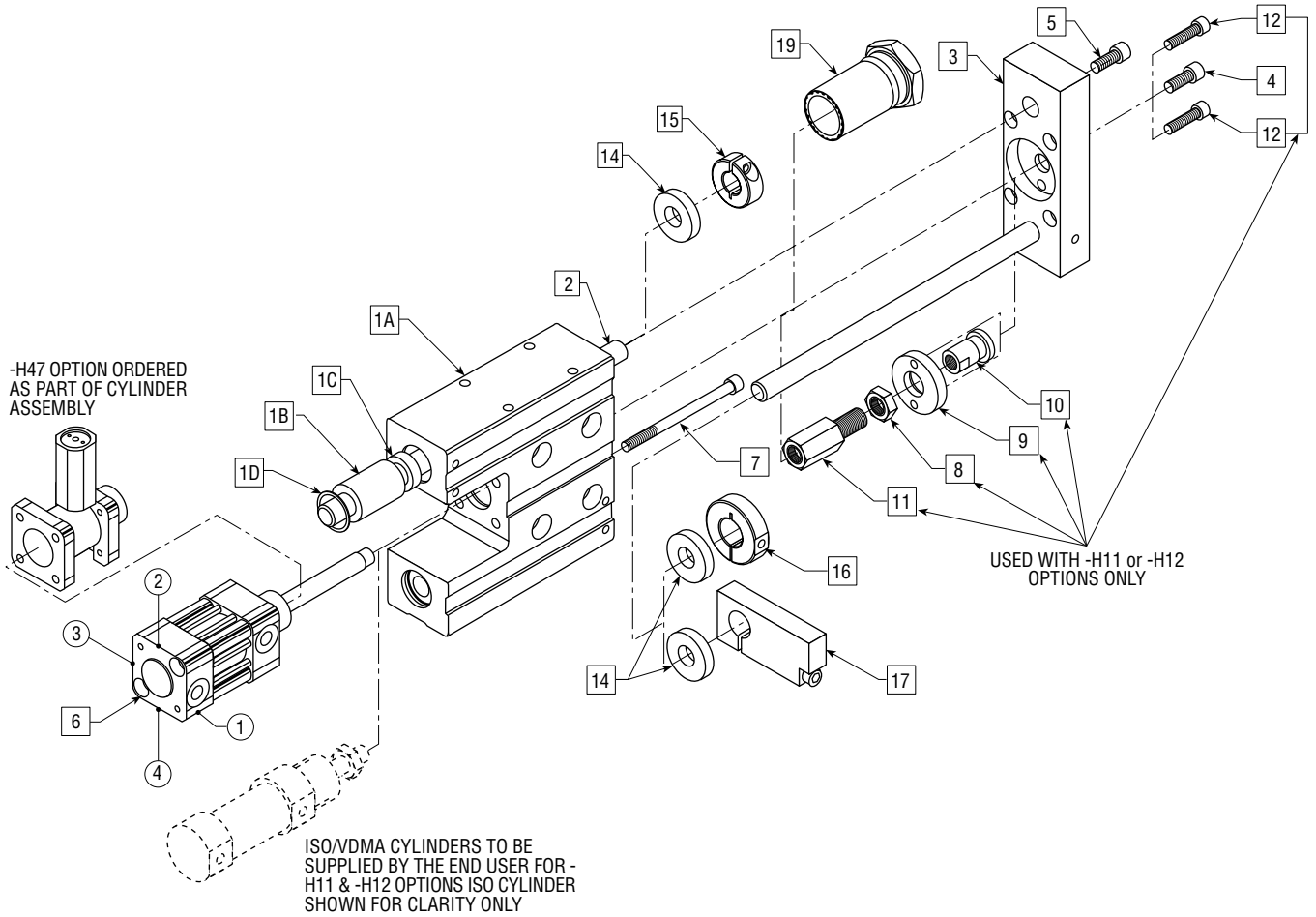
## KITS

KIT DESCRIPTION	SHAFT SIZE OR OPTION	Sxx81	Sxx82	Sxx83	Sxx84	Sxx85	Sxx86
Cylinder Repair	ALL	Full unit description required followed by -H9010					
Bearing	ALL	Full unit description required followed by -H3420					
Plain SKx Coupling Kit							
ISO	H12	58073-11	58073-13	58073-09	—	—	—
VDMA	H11	—	—	—	58073-03	58073-05	58073-07
Plain SLx Coupling Kit							
ISO	H12	58073-12	58073-14	58073-10	—	—	—
VDMA	H11	—	—	—	58073-04	58073-06	58073-08
Option SKx Coupling Kit							
ISO	H12	58074-11	58074-13	58074-09	—	—	—
VDMA	H11	—	—	—	58074-03	58074-05	58074-07
Option SLx Coupling Kit							
ISO	H12	58074-12	58074-14	58074-10	—	—	—
VDMA	H11	—	—	—	58074-04	58074-06	58074-08
Travel Adjustment Collar* -AR or -AE	SxB, SxC SxD SxE	58068-07 58068-08 —	58068-09 58068-01 —	58068-01 58068-02 —	58068-02 58068-03 —	58068-03 58068-04 —	58068-04 58068-05 58068-06
Proximity Collar* -GG or -GH	SxB, SxC SxD SxE	58069-07 58069-08 —	58069-09 58069-01 —	58069-01 58069-02 —	58069-02 58069-03 —	58069-03 58069-04 —	58069-04 58069-05 58069-06
Shock Stop Collar* -GM or -GN	SxB, SxC SxD SxE	58071-10 58071-11 —	58071-12 58071-13 —	58071-01 58071-02 —	58071-03 58071-04 —	58071-05 58071-06 —	58071-07 58071-08 58071-09
Shock Mounting* 8 mm Proximity & Target Mtg* 12 mm Proximity & Target Mtg*	SKx/SLx SKx/SLx SKx/SLx	57034-04 56848-05 —	57034-01 56848-06 65561-02-1	57034-01 56848-01 65561-02-1	57034-02 56848-02 65561-03-1	57034-02 56848-03 65561-03-1	57034-03 56848-04 65561-04-1
Fastener	ALL	Full unit description required followed by -H9020					
Hardware: SK/SL to SK/SL SK/SL to SG		65547-01-1	65547-02-1	65547-03-1	65547-04-1	65547-05-1	65547-06-1
		65578-01-1	65578-02-1	65578-03-1	65578-04-1	65578-05-1	65578-06-1

**NOTES:** All part numbers listed are for standard units. Options may affect part numbers.

\* 1 kit required for each direction desired

# phd SERIES SK/SL SLIDES EXPLODED VIEW



# phd SERIES SM SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 08	SIZE 12	SIZE 16	SIZE 25	SIZE 32
1	Housing Assembly	Full unit description required followed by -H4800				
2A	Piston & Rod Assembly Switch Side	Full unit description required followed by -H1000				
2B	Piston & Rod Assembly Port Side	Full unit description required followed by -H1010				
3A	Dowel End Block	68071-105	71373-105	67966-105	67074-105	71433-105
3B	Slotted Dowel End Block	68072-105	71374-105	67967-105	67075-105	71434-105
5	Cartridge Assembly	Full unit description required followed by -H3410				
5A	Rod Seal Cartridge	Sold as part of Cartridge Assembly				
5B	Rod Seal	Sold as part of Cartridge Assembly and/or Repair Kit				
5C	Bushing	Sold as part of Cartridge Assembly				
6	Piston Retaining Ring	Sold as part of Repair Kit				
7	Cartridge Retaining Ring					
8	Shaft Piston Seal					
9	Piston Seal					
10	Wear Ring					
11	Set Screw					
<b>OPTIONAL PARTS</b>						
12	Travel Adjustment Assembly	Sold as part of Travel Adjustment Kit				
12A	Travel Adjustment Screw					
12B	Shock Pad					
13	Set Screw	Sold as part of Travel Adjustment and Shock Mounting Kit				
14	Locking Material					
17	Shock Holder Assembly	Sold as part of Shock Mounting Kit				
17A	Shock Holder					
17B	Shock Absorber Assembly					
17C	Locking Sleeve					
18	Fitting Adaptor	Imperial —	18056	—	67105-01	71445-01
		Metric —	18056	—	67105-02	71445-02
19	Port Plug	—	53735-001	53735-001	1992-001-03	1992-001-03
20	Set Screw	—	64364-016	64364-010	64364-006	64364-047

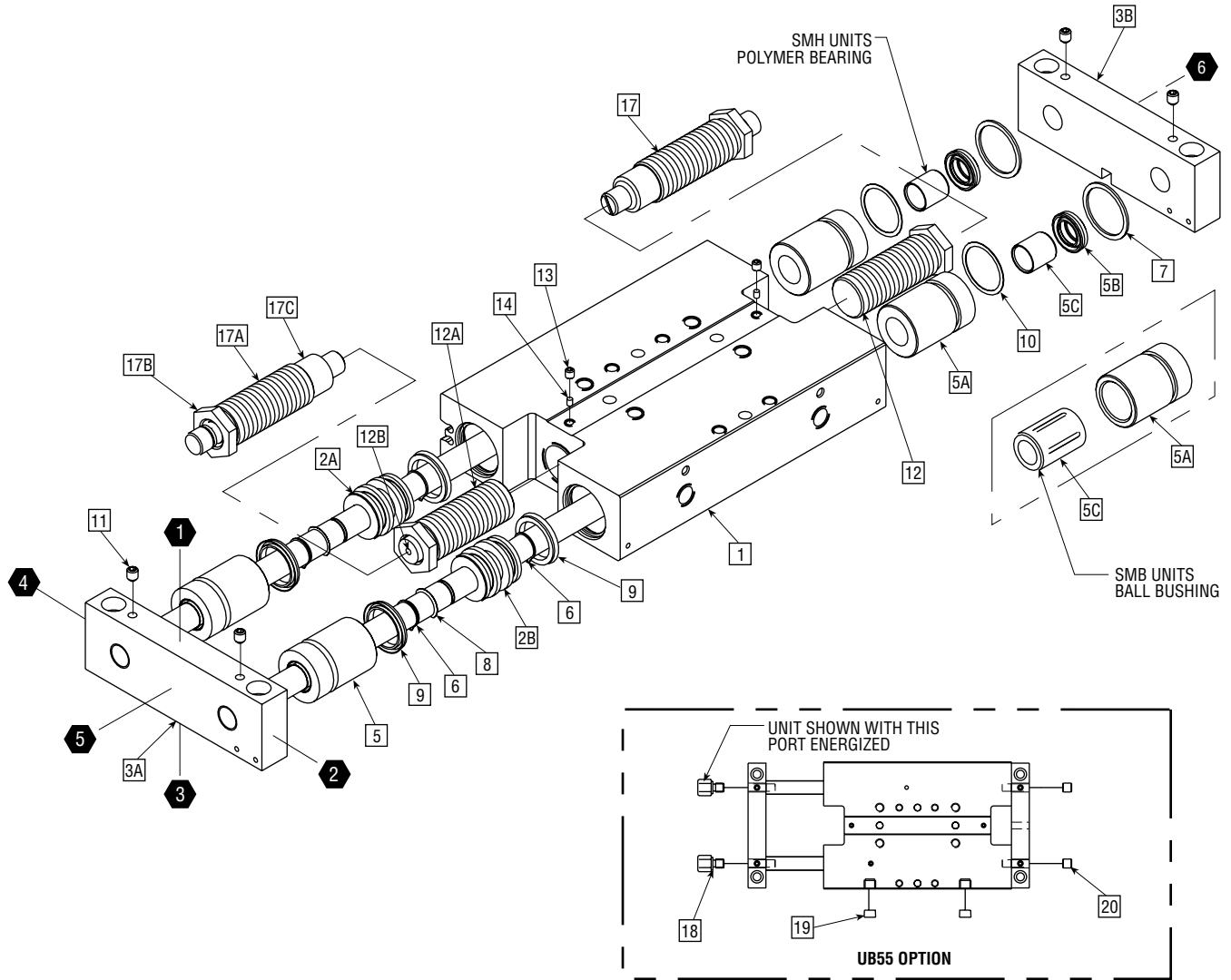
## KITS

KIT DESCRIPTION	SIZE 08	SIZE 12	SIZE 16	SIZE 25	SIZE 32
Repair Kit	Full unit description required followed by -H9010				
8 mm Proximity Kit*	71032	71032	71032	71032	71032
Modular Kit	Imperial 71033	71387	71043	71053	71447
	Metric 71034	71388	71044	71054	71448
Travel Adjustment Kit*	Full unit description required followed by -H9030				
Shock Mounting Kit*	71036-x	71390-x	71046-x	71056-x	71450-x

\* Indicates 1 kit required for each position of adjustment.

x Indicates the dampening constant of the shock absorber (-1, -2, -3, -4).

# phd SERIES SM SLIDES EXPLODED VIEW



# phd SERIES STP SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	SIZE 08	SIZE 12	SIZE 16	SIZE 20	SIZE 25
1	Housing Assembly	Full unit description required followed by -H4800				
2A	Piston & Rod Assembly Switch Side	Full unit description required followed by -H1000				
2B	Piston & Rod Assembly Port Side	Full unit description required followed by -H1010				
3	Tool Plate	Full unit description required followed by -H6400				
5	Cartridge Assembly	Full unit description required followed by -H3410				
5A	Rod Seal Cartridge	Sold as part of Cartridge Assembly				
5B	Rod Seal	Sold as part of Cartridge Assembly and Seal Kit				
6	Bore Plug	68090	70729	67985	70829	67098
7	Carriage	Full unit description required followed by -H6300				
8	Slide/Rail Assembly	Full unit description required followed by -H7000				
9	Ring Retaining Bushing/Plug	Sold as part of Fastener Kit				
10	Wear Ring	Sold as part of Seal Kit				
11	Piston Seal					
12	Plug/Cartridge Seal					
13	Tool Plate Clamp Screw					
14	Tool Plate Carriage Screw	Sold as part of Fastener Kit				
15	Carriage Slide Screw					
16	Piston Screw					
17	Set Screw					
18	External Shock Pad	63306-001	70752	67989	70852	53759
19	Internal Shock Pad	68093	70743	67988	70843	67130
30	Extend Stop	Sold as part of Travel Adjustment and Shock Mounting on Extend Kit				
31A	Extend Travel Adjustment Screw	Sold as part of Travel Adjustment on Extend Kit				
31B	Shock Pad					
33	Carriage Clamp Screw					
34	Stop Screw	Sold as part of Travel Adjustment and Shock Mounting on Extend Kit				
35A	Retract Travel Adjustment Screw	Sold as part of Travel Adjustment on Retract Kit				
35B	Shock Pad					
37	Hollow Jam Screw	Sold as part of Shock Mounting on Retract Kit				
38A	Shock Bracket					
38B	Shock Assembly*	68149-01-x	68149-01-x	68015-01-x	70861-01-x	67127-01-x
38C	Locking Sleeve	Sold as part of Shock Mounting on Retract Kit				
41	Shock Bracket Screw	Sold as part of Shock Mtg. on Retract Kit	—	—	—	—
43	Shock Nut	Sold as part of Shock Mtg. on Retract Kit	—	—	—	—

\* Indicates the dampening constant of the shock absorber (-1, -2, -3, -4).

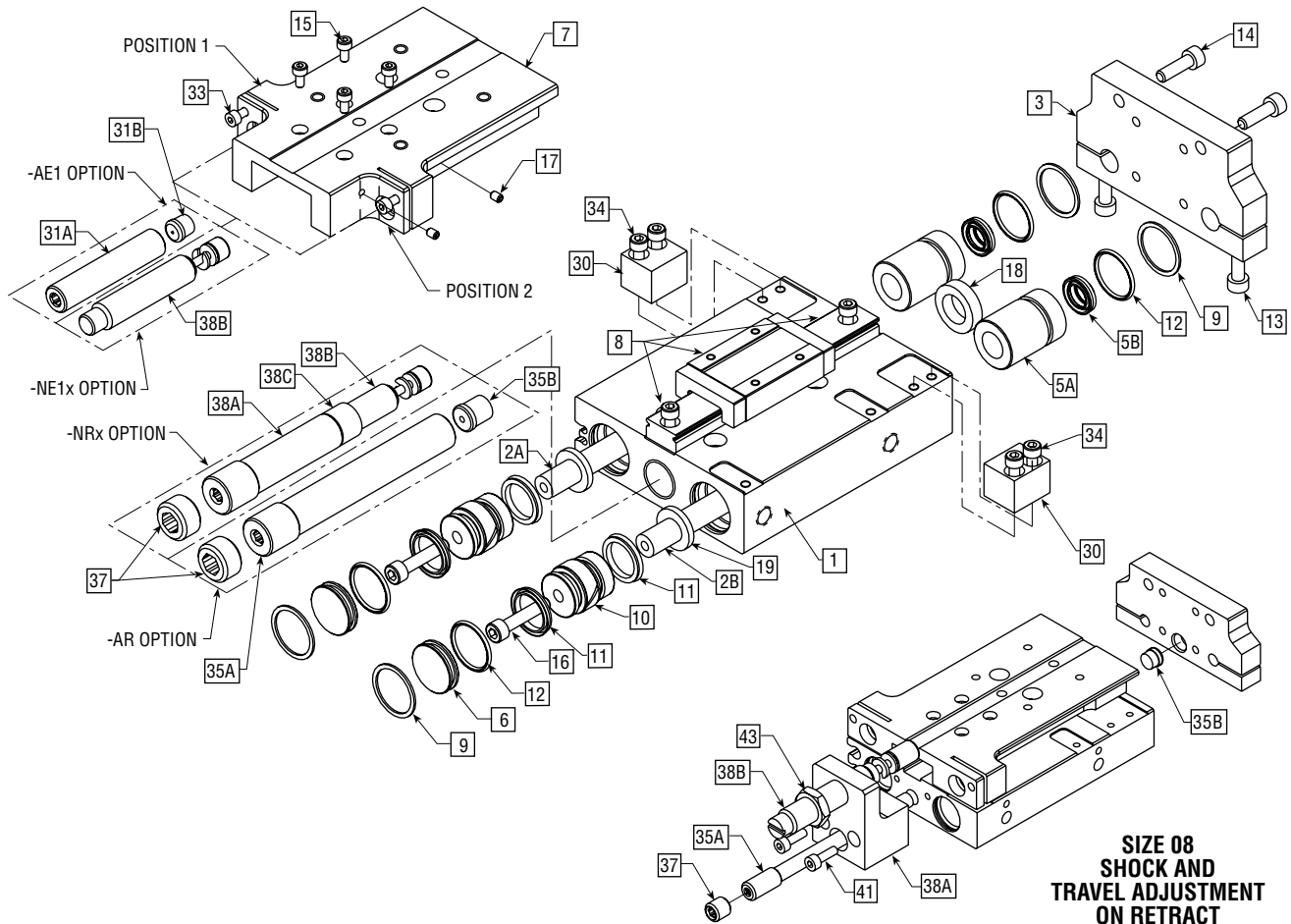
## KITS

KIT DESCRIPTION	SIZE 08	SIZE 12	SIZE 16	SIZE 20	SIZE 25
Seal Kit	Full unit description required followed by -H9000				
Fastener Kit	Full unit description required followed by -H9020				
4 mm Prox Kit	68129	70769	—	70869	—
8 mm Prox Kit	—	—	68052	—	68042
Imperial Modular Kit	68125-01	70770-01	68053-01	70870-01	68043-01
Metric Modular Kit	68125-02	70770-02	68053-02	70870-02	68043-02
Travel Adjustment on Retract (Travel Length A) Kit	68126-01	70771-01	68054-01	70871-01	68044-01
Travel Adjustment on Retract (Travel Length B) Kit	68126-02	70771-02	68054-02	70871-02	68044-02
Travel Adjustment on Retract (Travel Length C) Kit	68126-03	70771-03	68054-03	70871-03	68044-03
Travel Adjustment on Extend (Travel Length A) Kit	68127	70772-01	68055	70872-01	68045
Travel Adjustment on Extend (Travel Length B) Kit	68127	70772-01	68055	70872-01	68045
Travel Adjustment on Extend (Travel Length C) Kit	68127	70772-02	68055	70872-02	68045
Shock Mounting on Retract (Travel Length A) Kit	—	70774-01	68056-01	70874-01	68046-01
Shock Mounting on Retract (Travel Length B) Kit	—	70774-02	68056-02	70874-02	68046-02
Shock Mounting on Retract (Travel Length C) Kit	—	70774-03	68056-03	70874-03	68046-03
Shock Mounting on Extend (Travel Length A) Kit	68119	70773-01	68039	70873-01	68038
Shock Mounting on Extend (Travel Length B) Kit	68119	70773-01	68039	70873-02	68038
Shock Mounting on Extend (Travel Length C) Kit	68119	70773-02	68039	70873-03	68038
Shock Mounting on Retract (STPxx08)	68128-01	—	—	—	—
Shock Mounting on Retract (STPDxx08)	68128-02	—	—	—	—

## TRAVEL LENGTH

TRAVEL LENGTH	SIZE 08 in mm	SIZE 12 in mm	SIZE 16 in mm	SIZE 20 in mm	SIZE 25 in mm
A	1 25	1 25	1.5 38	2 50	2 50
B	2 50	2.5 60	3 75	4 100	4 100
C	3 75	4 100	5 125	6 150	6 150

# phd SERIES STP SLIDES EXPLODED VIEW



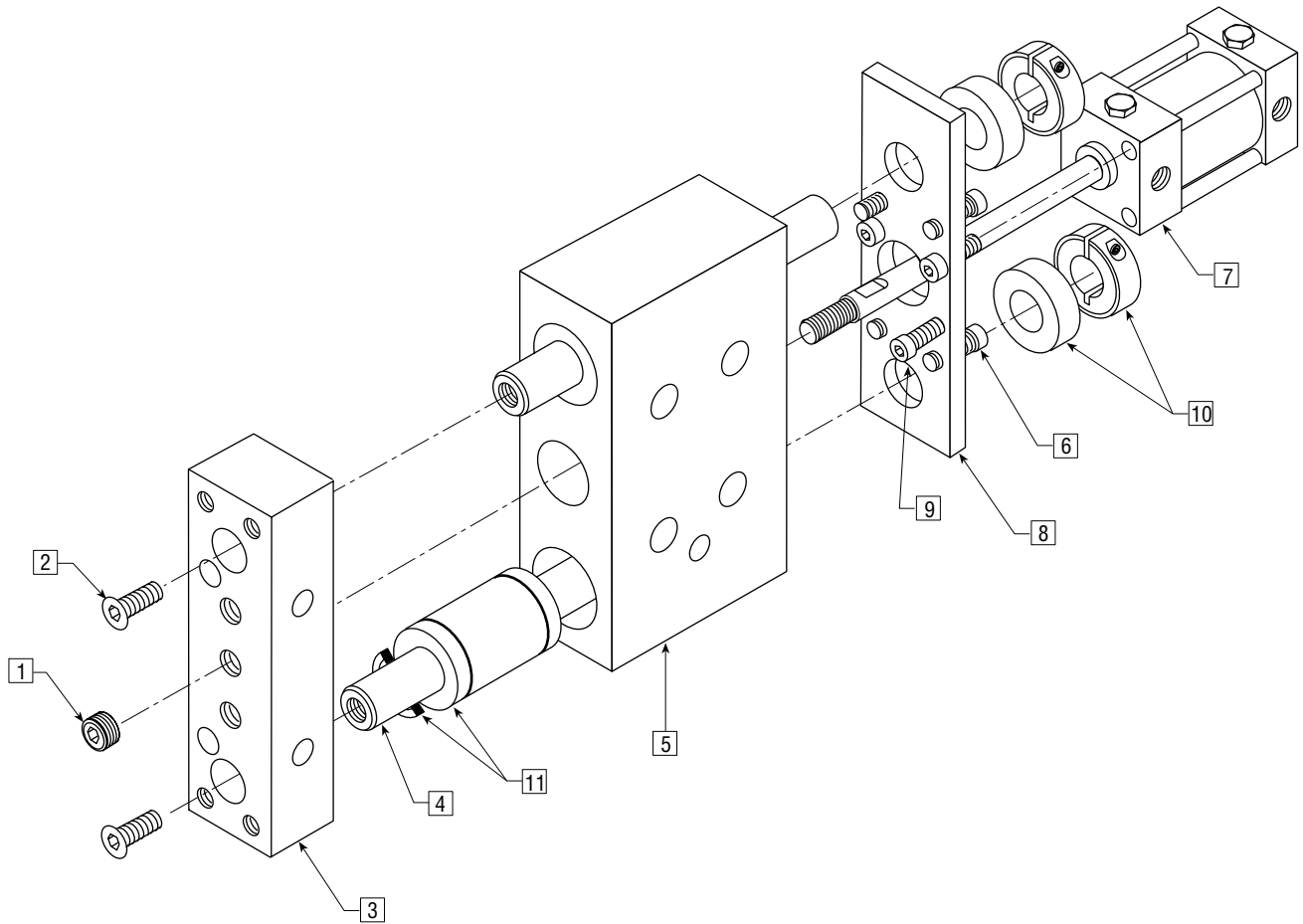
**SIZE 08  
SHOCK AND  
TRAVEL ADJUSTMENT  
ON RETRACT**

# phd SERIES T SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	Tx031	Tx041	Tx061
1	Jam Screw	3188-0034	3188-0017	3188-0017
2	Guide Shaft Set Screw	2809-168	2809-010	2809-169
3	Tool Plate	Full unit description required followed by -H6400		
4	Guide Shaft	Full unit description required followed by -H4710		
5	Housing	Full unit description required followed by -H4800		
6	Cylinder Mounting Flange Screw	2809-131	2809-131	2809-040
7	Cylinder Assembly	Full unit description required followed by -H4		
8	Cylinder Mounting Flange	11258	11259	11260
9	Cylinder Mounting Screw	2809-024	2809-067	2809-149
10	Stroke Adjustment Kit (Extend)	12047	12048	12049
11	Bearing & Shaft Seal Kit*	Full unit description required followed by -H3420		
—	Repair Kit	Full unit description required followed by -H9010		

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

\* Requires one per shaft





# phd SERIES TS082 SLIDES PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	TS082
1	Tool Plate Screw	2809-307
2	Guide Shaft Set Screw	2809-307
3	Tool Plate	Full unit description required followed by -H6400
4	Guide Shaft	Full unit description required followed by -H4710
5	Housing	Full unit description required followed by -H4800
7	Cylinder Assembly	Full unit description required followed by -H4
9	Cylinder Mtg Screw	2809-283
10	Stroke Adjustment Kit (Extend)	18066
11	Bearing & Shaft Seal Kit*	Full unit description required followed by -H3420

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

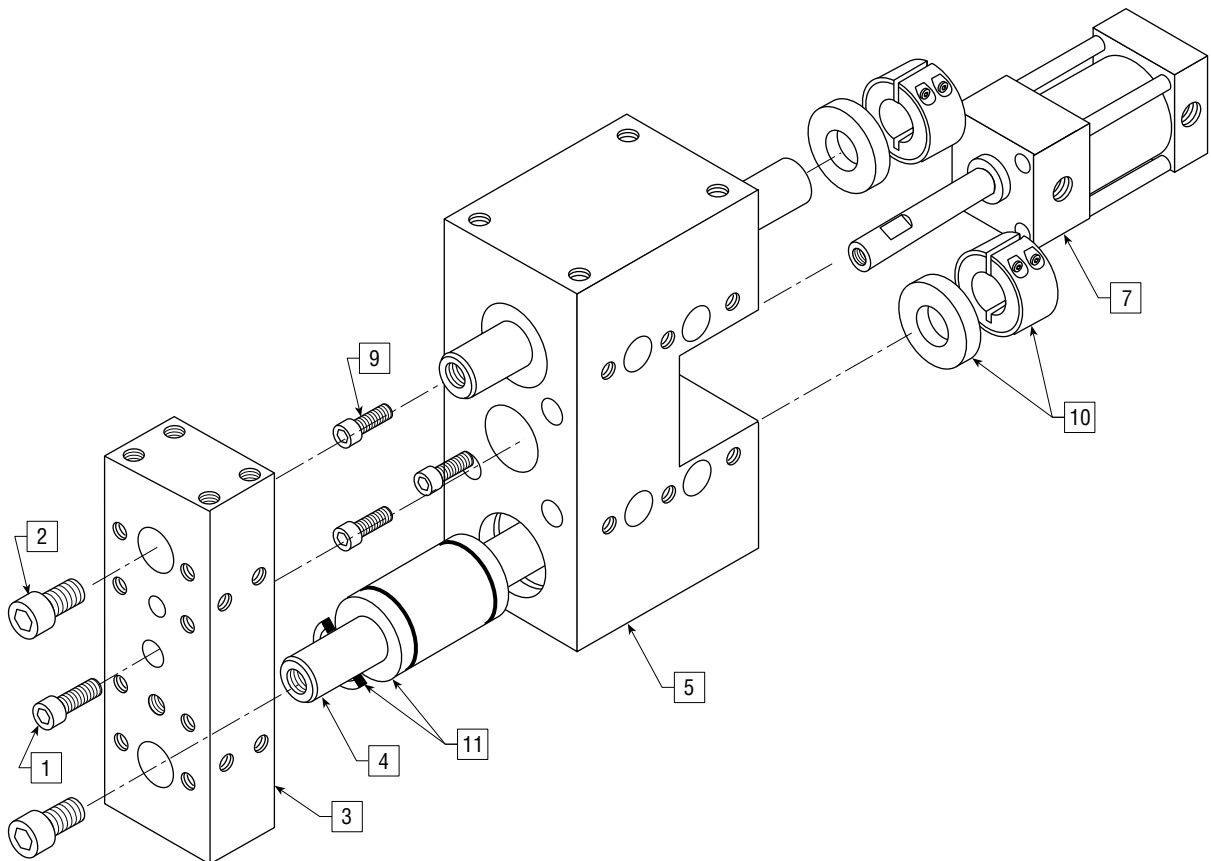
\* Requires one per shaft.

## REPAIR KITS

Full unit description required followed by -H9010

## SEAL KITS

Full unit description required followed by -H9000



# phd SERIES 0180502 ROTARY ACTUATORS PARTS LIST

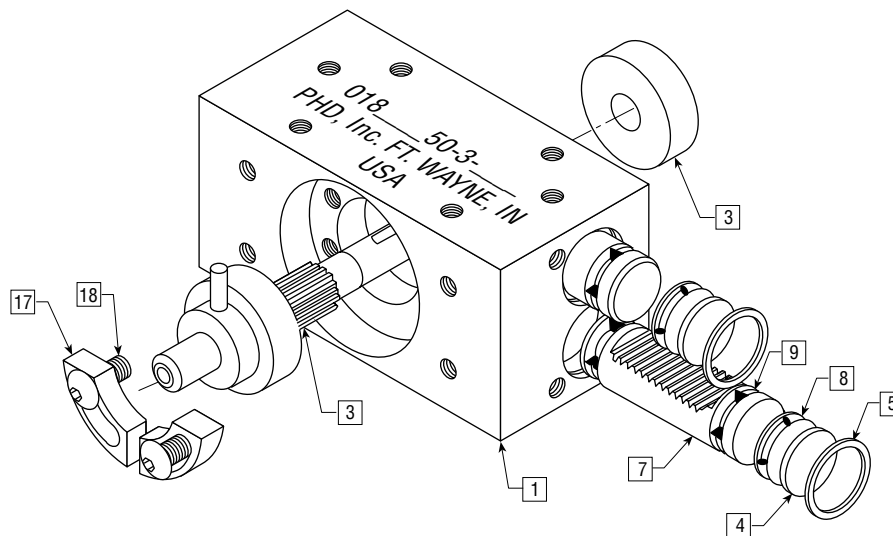
KEY	PART DESCRIPTION	0180502
1	Body Assembly	6813-03
3	Pinion Shaft Assembly (-0x)	7117
	Pinion Shaft Assembly with Magnet (-3x)	61063
4	Plug	12822
5	Plug Retainer Ring	1980-028
7	Rack & Piston	12821
8	Plug Seal	Sold as part of
9	Piston Seal	Seal Kit only
17	Stop Segment	6807
18	Stop Segment Screw	2809-126
—	Cover Mounting Screw	2809-111
—	Barb Fitting	5786
—	Key	57593-01-002
—	Cover	6800
—	Sensor Mounting Screw	2809-024
—	Sensor Transition Plate	10828
—	Sensor Cable & Housing Assembly	10832-1-1-12
—	Sensor Magnet Sleeve	10831
—	Magnet Sensor	10022

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

## SEAL KITS

Full unit description required followed by -H9000

**NOTE:** Seal Kits contain all seals needed to repair one unit.



# phd SERIES 0180751 & 0180752 ROTARY ACTUATORS

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	0180751	0180752
1	Cap Assembly Right	7128-01-2-x	6005-2-x
2	Cap Assembly Left	7128-01-1-x	6005-1-x
3	Pinion Shaft Assembly (-0x)	6386	6386
	Pinion Shaft Assembly with Magnet (-3x)	18749	18749
4	Piston	5894	5894
5	Body	5899	5901
6	Rack	5893	5893
7	Stop Segment	5909	5909
8	Retaining Ring	1987-030	1987-030
9	Segment Screw	2809-024	2809-024
13	Tube Seal	Sold as part of Seal Kit only	
14	Piston Seal		
15	Cap Mounting Screw	60025	2809-082
16	Communication Seal	Sold as part of Seal Kit only	
—	Sensor Mounting Screw	2809-077	2809-077
—	Sensor Transition Plate	10829	10829
—	Sensor Cable & Housing Assembly	10832-1-1-12	10832-1-1-12
—	Magnet	10022	10022
—	Cover Mounting Screw	2809-084	2809-084
—	Cover	5895	5895
—	Key	57593-01-001	57593-01-001

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.

Part number suffix (-1) indicates Buna-N seals.

Part number suffix (-2) indicates Fluoro-Elastomer seals.

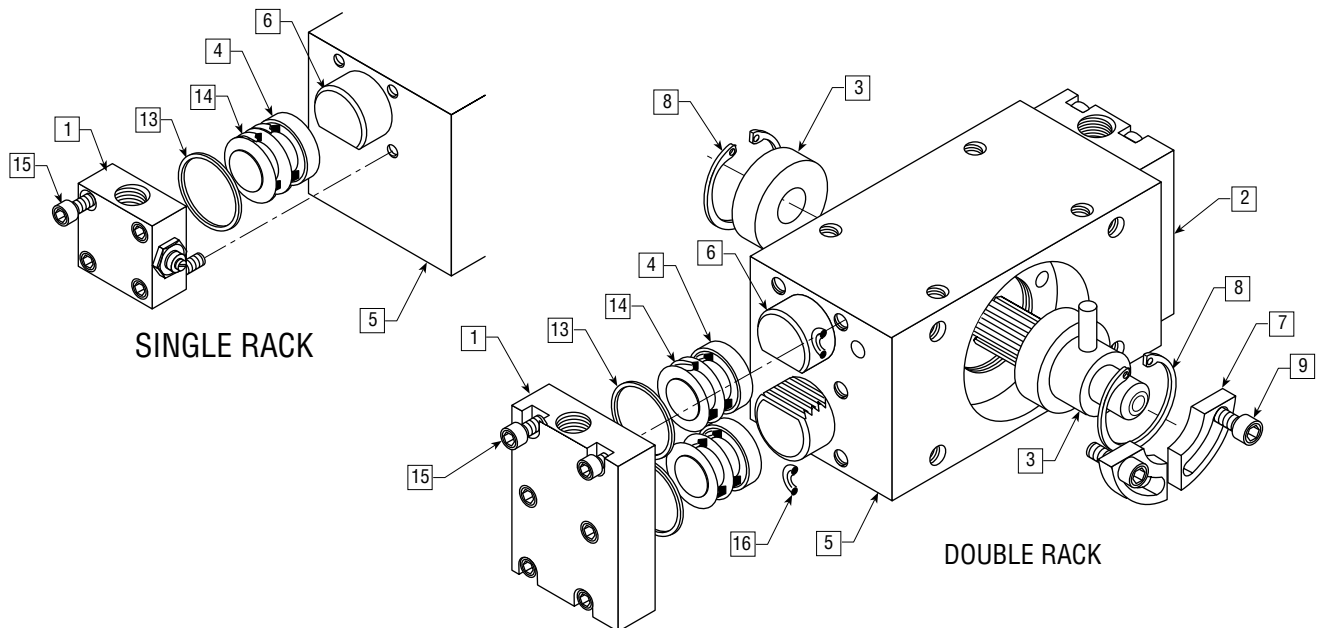
### KITS

KIT DESCRIPTION	0180751	0180752
Port Control Kit	15658-x	12913-x
Seal Kit	Full unit description required followed by -H9000	

**NOTE:** Part number suffix (-1) indicates Buna-N seals.

Part number suffix (-2) indicates Fluoro-Elastomer seals.

Seal Kit contains all seals needed to repair one unit.



# phd SERIES 018075T & 0183752 ROTARY ACTUATORS

## PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	018075T	0183752
1	Cap Assembly Right	6003-x	4427-01-x
2	Cap Assembly Left	4514	4514
3	Pinion Shaft Assembly (-0x)	6386	6386
	Pinion Shaft Assembly with Magnet (-3x)	18749	18749
4	Piston	5894	5894
5	Body	6814	5901
6	Rack	5893	5893
7	Stop Segment	5909	5909
8	Retaining Ring	1987-030	1987-030
9	Segment Screw	2809-024	2809-024
13	Tube Seal	Sold as part of Seal Kit only	
14	Piston Seal		
15	Cap Mounting Screw Right	2809-066	60025
28	Cap Mounting Screw Left	60025	60026
17	Reservoir & Tubing Assembly	6004	-
—	Communication Seal	Sold as part of Seal Kit only	
—	Piston & Rod Assembly	-	8278
—	Adjustment Knob	-	8279
—	Adjustment Knob Screw	-	3188-0064
—	Sensor Mounting Screw	2809-077	2809-077
—	Sensor Transition Plate	10829	10829
—	Sensor Cable & Housing Assembly	10832-1-1-12	10832-1-1-12
—	Cover Mounting Screw	2809-084	2809-084
—	Cover	5895	5895
—	Key	57593-01-001	57593-01-001

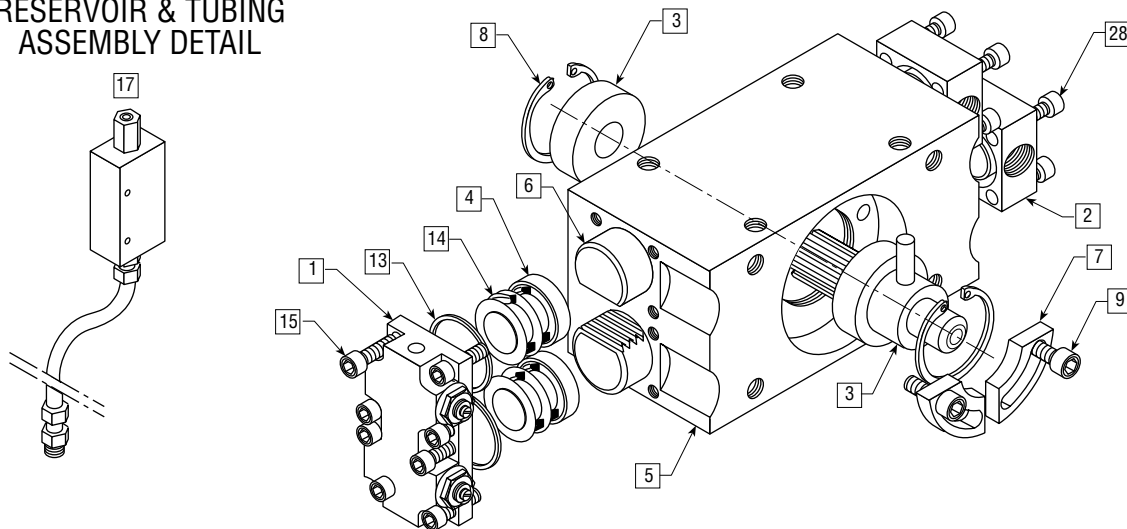
**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
 Part number suffix (-1) indicates Buna-N seals.  
 Part number suffix (-2) indicates Fluoro-Elastomer seals.

### KITS

KIT DESCRIPTION	018075T	0183752
Port Control Kit	15658-x	—
Seal Kit	Full unit description required followed by -H9000*	Full unit description required followed by -H9010**

**NOTE:** Part number suffix (-1) indicates Buna-N seals.  
 Part number suffix (-2) indicates Fluoro-Elastomer seals.  
 \* Seal Kit contains all seals needed to repair one unit.  
 \*\* Seal Kit contains seals, bushing, seal retainer, and wiper.

### RESERVOIR & TUBING ASSEMBLY DETAIL

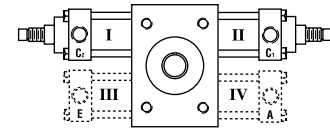




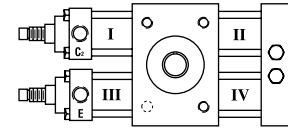
# SERIES 1000-8000 ROTARY ACTUATORS PARTS LIST

KEY	PART DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
1	Body Single Rack	12652	2339	2340	2373-1
	Double Rack	12653	2209	2312	2373-2
	(with shaft Tandem seal cover)	12653	2209	2312	8298
	Single Rack (-G)	3314-01-01	3314-02-03	3314-03-05	3314-04-07
	Double Rack (-G)	3314-01-02	3314-02-04	3314-03-06	3314-04-08
	Tandem (-G)	3314-01-02	3314-02-04	3314-03-06	3314-04-09
2	Rack	Full unit description required followed by -H3310			
3	Tube I	Full unit description required followed by -H1300			
	II	Full unit description required followed by -H1310			
	III	Full unit description required followed by -H1320			
	IV	Full unit description required followed by -H1330			
	V	Full unit description required followed by -H1340			
	VI	Full unit description required followed by -H1350			
	VII	Full unit description required followed by -H1360			
	VIII	Full unit description required followed by -H1370			
4	Tierod & Nut Assembly Tube #1 or #1 & 5	Full unit description required followed by -H1450			
	#2 or #2 & 7	Full unit description required followed by -H1460			
	#3 or #3 & 6	Full unit description required followed by -H1470			
	\$4 or #4 & 8	Full unit description required followed by -H1480			
5	Cap Assembly	See Chart #3			
6	Pinion Shaft Single Ext	Full unit description required followed by -H3800			
	Double Ext				
	Crosskey Single Ext (-C)				
	Crosskey Double Ext (-C)				
	Crosskey Both Ends (-C, -C)				
	Preload Single Ext (-K)				
	Preload Double Ext (-K)				
	Preload Both Sides (-K, -K)				
	Hollow (-H)				
	Clutch Single Ext (-L or -R)				
	Clutch Double Ext (-L or -R)				
	Hall Sensor (-J)				
	Hall Sensor with Preload (-J, -K)				
7	Bearing	2334-001	2334-002	2334-003	2334-004
8	Bearing Retainer Ring	1987-006	1987-007	1987-008	1980-657
9	Tube Seal	See Chart #2			
12	Piston Assembly	See Chart #4			
13	Port Control Kit	See Chart #1			
15	Sensor Mounting Screw	2809-015	2809-152	2809-164	2809-188
	(Side Flange Mounting Only)	2809-138	2809-151	2809-221	2809-222
16	Sensor Transition Plate	12514	12515	12516	12517
17	Sensor Cable & Housing Assembly	10832-1-1-12	10832-1-1-12	10832-1-1-12	10832-1-1-12
33	Tandem Cap Assembly	Sold as part of Cap Assembly only			
35	Reservoir & Tubing Assembly	13459-03-2	13459-03-2	13459-03-2	13459-02-2
39	Piston Seal	Sold as part of Piston Assembly or Seal Kit only; See Chart #2 or #4			
40	Piston Seal Backup	Sold as part of Seal or Repair Kit only			
42	Angle Adjustment Screw Retaining Ring	1987-014	1987-015	1987-015	1987-016
43	Angle Adjustment Screw Nut	1972-019	1972-021	1972-021	1972-026
44	Angle Adjustment Screw Seal Backup	Sold as part of Seal or Repair Kit only			
45	Angle Adjustment Screw Seal	See Chart #2			
46	Angle Adjustment Screw	Sold as part of Cap Assembly only. See Chart #3			
—	Body Plug	5733-002	5733-002	5733-002	5733-002
—	Cushion Block Assembly	See Chart #5			
—	Cushion Component Kit	See Chart #1 and #5			
—	Brake Button Retainer Ring	1987-012	1987-011	1987-011	—
—	Brake Button Washer	5482	5483	5483	—
—	Brake Button Spring	2579-010	2579-011	2579-011	—
—	Brake Button	2354-04-01	2354-04-02	2354-04-02	—
—	Clutch Hub	2354-10	2354-10	2354-10	—
—	Clutch	2354-05	2354-05	2354-05	—
—	Clutch & Hub Assembly Left Hand	2354-20-01	2354-20-01	2354-20-01	—
—	Right Hand	2354-20-02	2354-20-02	2354-20-02	—
—	Clutch Sleeve	2354-11	2354-11	2354-11	—
—	Clutch Pinion Shaft	See Key #6 above			
—	Clutch Body	5092	5093	5094	—
—	Clutch Block Mounting Screw	2809-073	2809-074	2809-054	—
—	Side Flange Mounting Kit	13759	13760	13761	13762
—	Bottom Mounting Flange Kit	13756	13757	13758	—
—	Bleed Plug	8162-002-x	8162-002-x	8162-002-x	8162-002-x
—	Key (for Rx1x, Rx5x only)	2808-001	2808-002	2808-005	2808-006
—	Crosskey	5744	5745	5746	5747
—	Preload Shaft Set Screw	3341-01	3341-02	3341-03	3341-04
—	Port Plug	1992-001	1992-001	1992-001	1992-001

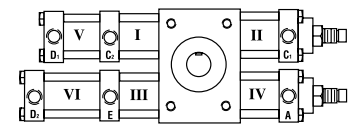
## STANDARD & 3 POSITION DETAIL



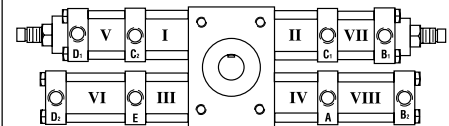
## TANDEM DETAIL



## 4 POSITION DETAIL



## 5 POSITION DETAIL



**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.



# SERIES 1000-8000 ROTARY ACTUATORS KITS AND ASSEMBLIES

## CHART #1 COMPLETE PORT CONTROL® KITS

KIT DESCRIPTION		1000/2000	3000/4000	5000/6000	7000/8000
Port Control Kit*	Standard	51601-02-x	51601-04-x	51601-04-x	51601-06-x
	Tandem	51537-02-x	51537-04-x	51537-06-x	51537-06-x
Port Control Kit**	Standard	3406-02-x	3390-04-x	3390-04-x	3390-06-x
	Tandem	3390-04-x	3390--x	3390-06-x	3390-06-x

**NOTE:** \* Each kit contains parts for both directions (-P).  
 \*\* Each kit contains parts for one direction only (-P1 or -P2).  
 Kits include needles, ball retainers, springs, and balls only.

## CHART #2 SEAL KITS

KIT DESCRIPTION	1000	2000	3000	4000	5000	6000	7000	8000
Seal Kit 2 & 3 pos. Tandem	Full unit description required followed by -H9000							

For 3 position tandems and 4 and 5 position standard units, order 2 kits for that series.

## CHART #3 CAP ASSEMBLY (STANDARD)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Plain	4146	4767	4846	4856
-P	5695-1-x	5696-1-x	5697-1-x	5698-1-x
-D	4146	5690-1-x	5691-1-x	5693-1-x
-P, -D	5695-1-x	5709-1-x	5692-1-x	5694-1-x
-A	5676-0-x	5678-0-x	5682-0-x	5686-0-x
-P, -A	5677-1-x	5679-1-x	5683-1-x	5687-1-x
-D, -A	6775-0-x	5680-1-x	5684-1-x	5688-1-x
-P, -D, -A	6776-1-x	5681-1-x	5685-1-x	5689-1-x
Tandem -A	5676-0-x	5678-0-x	5682-0-x	5686-0-x

**NOTE:** Full description of unit required when ordering cap assemblies.

## CHART #3 CAP ASSEMBLY (REVERSE)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Plain	4146	4767	4846	4856
-P	5695-2-x	5696-2-x	5697-2-x	5698-2-x
-D	4146	5690-2-x	5691-2-x	5693-2-x
-P, -D	5695-2-x	5709-2-x	5692-2-x	5694-2-x
-A	5676-0-x	5678-0-x	5682-0-x	5686-0-x
-P, -A	5677-2-x	5679-2-x	5683-2-x	5687-2-x
-D, -A	6775-0-x	5680-2-x	5684-2-x	5688-2-x
-P, -D, -A	6776-2-x	5681-2-x	5685-2-x	5689-2-x
Tandem -P, -D	8844-x	8845-x	8846-x	8847-x
-P	8887-x	8888-x	8890-x	8891-x

**NOTE:** Full description of unit required when ordering cap assemblies.

## CHART #5 CUSHION BLOCK COMPONENT KIT (with Block and Piston Component)

KIT DESCRIPTION	1000/2000
Air	54399-x
Hydraulic	6816-x

**NOTE:** Each kit contains parts for one cushion block (-D1 or -D2).

## CUSHION COMPONENT KIT (without Block, all Cap and Piston Components)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Air	55052-x	3391-04-x	3391-05-x	3391-06-x
Hydraulic	3406-02-x	3392-04-x	3392-05-x	3392-06-x
Tandem	51538-02-x	51538-04-x	51538-06-x	51538-06-x

**NOTE:** Each kit contains parts for one cushion control function (-D1 or -D2).

## COMPLETE CUSHION COMPONENT REBUILD KIT (without Block, all Cap and Piston Components)

KIT DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Air	55084-x	55092-04-x	55092-05-x	55092-06-x
Hydraulic	55091-x	55093-04-x	55093-05-x	55093-06-x
Tandem*	51540-02-x	51540-04-x	51540-06-x	51540-06-x

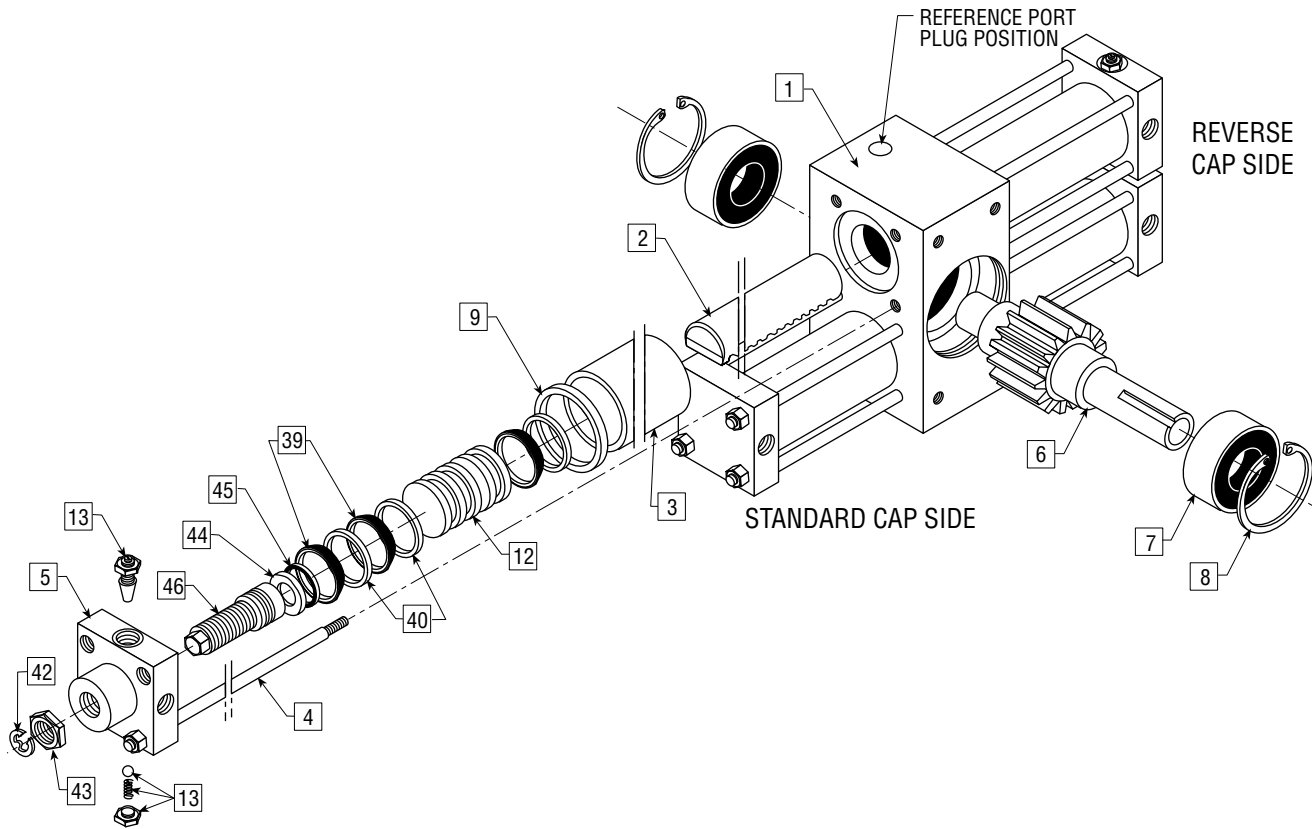
**NOTE:** \* Series 2000, 4000, 6000, 8000 only  
 Each kit contains parts for both directions (-D).

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
 Part number suffix (-1) indicates Buna-N seals.  
 Part number suffix (-2) indicates Fluoro-Elastomer seals.

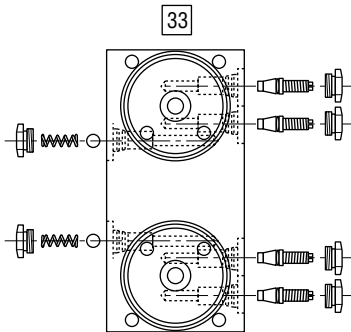
## CHART #4 PISTON ASSEMBLY

PISTON DESCRIPTION	1000/2000	3000/4000	5000/6000	7000/8000
Plain	3377-01-x	3377-02-x	3377-03-x	3377-04-x
	-M	3380-01-x	3380-02-x	3380-03-x
	-E	7318-x	7322-x	7548-x
Cushion Air	3387-x	3384-01-x	3384-02-x	3384-03-x
	-M	3382-x	3386-01-x	3386-02-x
	-E	7320-x	7325-x	7549-x
Cushion Hyd.	6780-x	3385-01-x	3385-02-x	3385-03-x
	-M	6781-x	3383-01-x	3383-02-x
	-E	7321-x	7326-x	7550-x
Shock Pad	5284-01-x	5286-02-x	5286-03-x	5286-04-x
	-M	5283-01-x	5285-02-x	5285-03-x
	-E	7319-x	7323-x	7551-x
	-A	5284-01-x	5284-02-x	5284-03-x
	-A, -M	5283-01-x	5283-02-x	5283-03-x
	-A, -E	7319-x	7324-x	7552-x
PVA	10895-x	10896-x	10897-x	10898-x
	Cushion	10899-x	10900-x	10901-x
	Shock Pad	10700-x	10702-x	10703-x
	Shock Pad -A	10700-x	10701-x	-

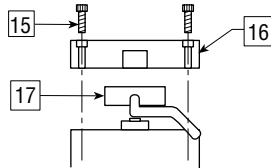
# phd SERIES 1000-8000 ROTARY ACTUATORS EXPLODED VIEW



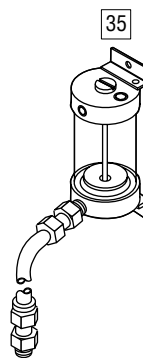
**TANDEM CAP ASSEMBLY**  
See Chart #3



**SENSOR DETAIL**

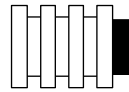


**RESERVOIR & TUBING ASSEMBLY DETAIL**

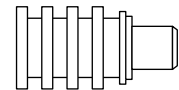


**PISTON DETAIL** 12  
See Chart #4

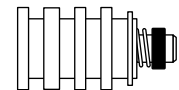
**SHOCK PAD**



**1000 & 2000 CUSHION**



**3000 - 8000 CUSHION**



# phd SERIES RA ROTARY ACTUATORS PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	20 mm	25 mm	32 mm	40 mm	50 mm
1	Body	Consult factory				
2	Key	57593-01-001	6253-016	6253-020	6253-018	6253-019
3	Pinion Standard Keyed imperial metric Hubbed -Q10 Hollow -Q19	Full unit description required followed by -H3800				
4	Stop Cam 45°Rotation 90°Rotation 135°Rotation 180°Rotation	56599 56607 56615 56623	56600 56608 56616 56624	56601 56609 56617 56625	56602 56610 56618 56626	56603 56611 56619 56627
5	Spacer 45°-180° 225°-270°	56378 56386	56379 56387	56380 56388	56381 56389	56382 56390
6	Pinion Shaft O-ring	Sold as part of Seal Kit only				
7	Bearing	Sold as part of				
8	Retaining Ring	Bearing Kit only				
9	Angle Adjustment Screw	Sold as part of				
10	Angle Adjustment Nut	Angle Adjustment Kit only				
11	Upper Rack Assembly	Consult				
12	Piston	factory				
13	Piston Seal	Sold as part of				
14	Cap Seal	Seal Kit only				
15	Cap*	Consult factory				
16	Cap Mounting Screw	Sold as part of Mounting Kit only				
17	Shock Absorber	Sold as part of Shock Kit only				
18	Lower Rack Shoe	56354	56355	56356	56357	56358
19	Lower Rack 45°-90° 135°-180° 225°-270°	56337-1 56337-2 56337-3	56338-1 56338-2 56338-3	56339-1 56339-2 56339-3	56340-1 56340-2 56340-3	56341-1 56341-2 56341-3
20	Socket Head Set Screw, Shoe	17424-009	17424-064	17424-065	17424-066	17424-066

**NOTE:** All part numbers listed are for standard units. Options may affect part numbers.  
\* Caps do not include shock absorber or angle adjustment components. These must be ordered separately.

## KITS

KIT DESCRIPTION	20 mm	25 mm	32 mm	40 mm	50 mm
Bearing Kit	Full unit description required followed by -H3420				
Seal Kit	Full unit description required followed by -H9000				
Angle Adjustment Kit	Full unit description required followed by -H9030				
Shock Kit	56714-01	56714-02	56714-03	56714-04	56714-05
Mounting Kit	Full unit description required followed by -H9020				
Port Control Assembly	58316-01-1	58316-01-1	58316-01-1	58316-02-1	58316-02-1
Cushion Needle Kit	58231-01-1	58231-02-1	58231-02-1	58231-03-1	58231-03-1
Cushion Needle & Port Control Kit	58232-01-1	58232-02-1	58232-02-1	58232-03-1	58232-03-1

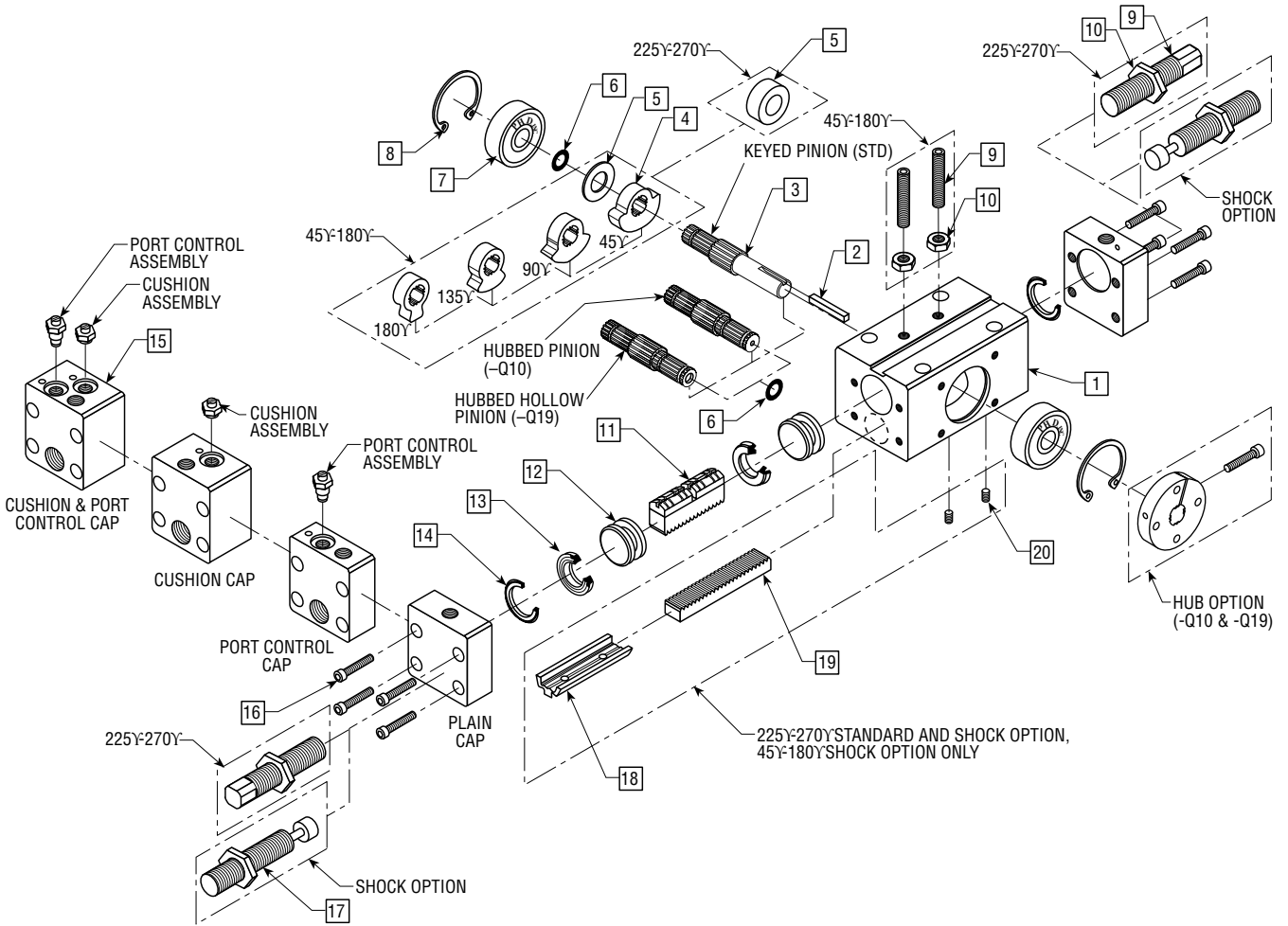
**NOTE:** Part number suffix (-1) indicates Buna-N seals.  
\* One kit required for each direction desired.

## HUB REPLACEMENT KITS

BORE SIZE	FINISHED HUB KIT	
	IMPERIAL	METRIC
20 mm	57651-2721-1	57658-2771-1
25 mm	57652-2731-1	57659-2781-1
32 mm	57653-2741-1	57660-2791-1
40 mm	57654-2751-1	57661-2801-1
50 mm	57655-2761-1	57662-2811-1



# phd SERIES RA ROTARY ACTUATORS EXPLODED VIEW



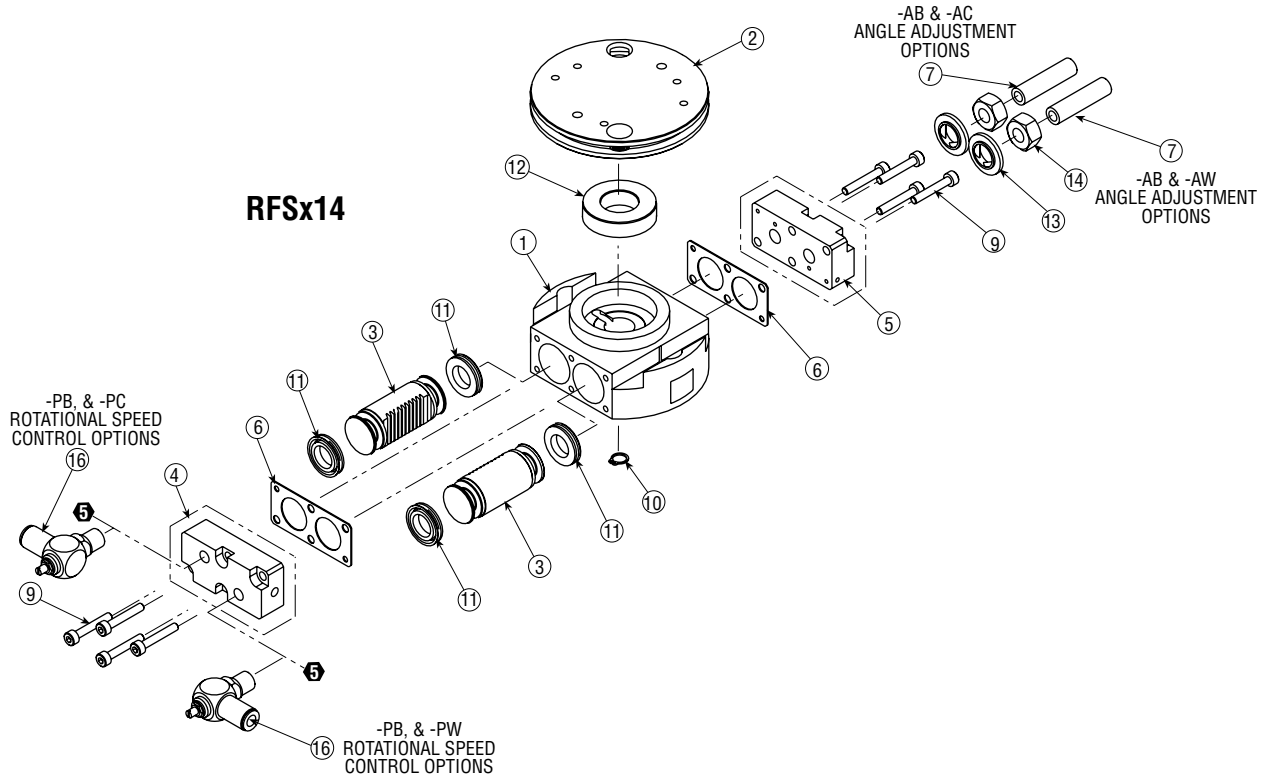
# phd SERIES RF ROTARY ACTUATORS

## PARTS LISTS, REPAIR KITS, AND EXPLODED VIEW

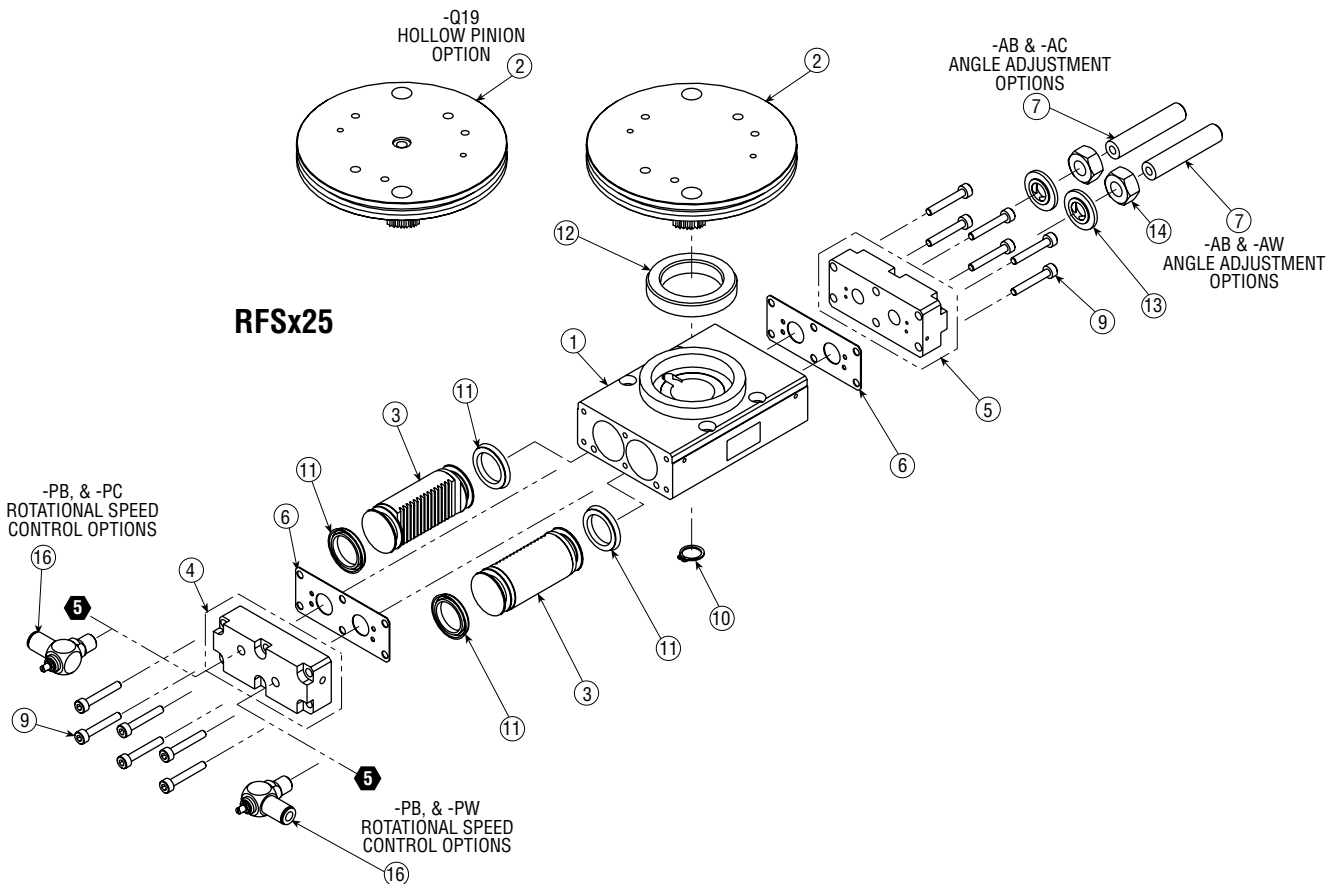
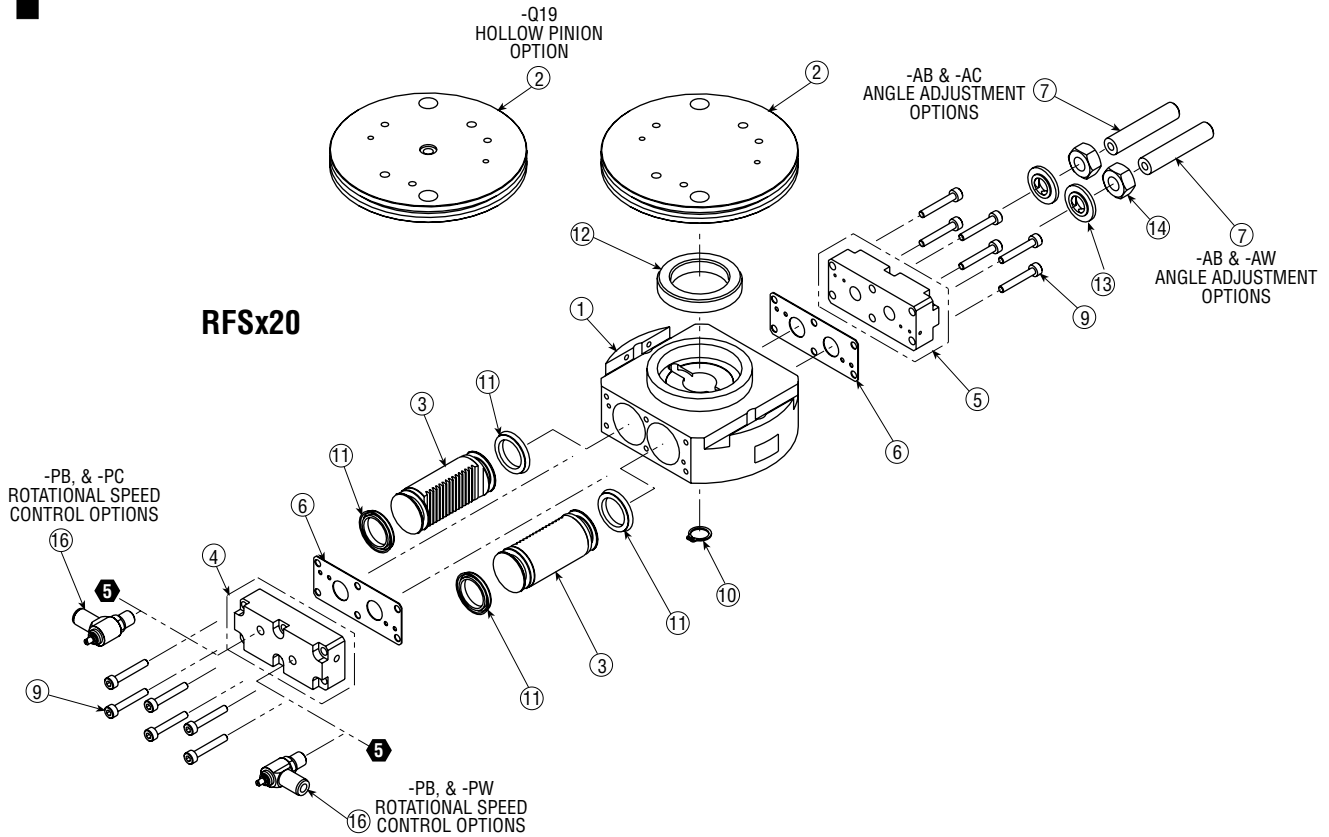
KEY	PART DESCRIPTION	RFS114	RFS514	RFS120	RFS520	RFS125	RFS525
1	Body	Full unit description required followed by -H2400					
2	Pinion	Full unit description required followed by -H3800					
3	Rack	Full unit description required followed by -H3310					
4	Standard Cap Assembly	Consult factory					
5	Reverse Cap Assembly	Consult factory					
6	Gasket	69663-1		69664-1		69665-1	
7	Angle Adjustment Assembly	Sold as part of Angle Adjustment Kit					
9	Socket Head Cap Screw	16095-018		16095-025		16095-036	
10	Retaining Ring	65772-134		65772-138		65772-141	
11	Piston Seal	Sold as part of Rebuild Kit					
12	Ball Bearing	Sold as part of Rebuild Kit					
13	Thread Seal	51535-001-1		51535-002-1		51535-005-1	
14	Nut	65878-045		65878-046		65878-020	
16	Rotational Speed Control	Sold as Part of Rotational Speed Control Kit					

### KITS

KIT DESCRIPTION	RFS114	RFS514	RFS120	RFS520	RFS125	RFS525
Rebuild Kit	Full unit description required followed by -H9010					
Switch Kit	69700			69702		
Angle Adjustment Kit	Full unit description required followed by -H9030					
SHP to RFS Mounting Kit	69703	69706	69704	69707	69705	69708
GRT to RFS Mounting Kit	69726	69741	69727	69742	69728	69743
Blank Transition Plate to RFS Mounting Kit	69729	69732	69730	69733	69731	69734
Hollow Pinion O-Ring	—		3642-059-1		3642-064-1	



# phd SERIES RF ROTARY ACTUATORS EXPLODED VIEW



# phd SERIES RI ROTARY ACTUATORS PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	PART NUMBER					
		RISxx25	RIDxx25	RISxx32	RIDxx32	RISxx50	RIDxx50
1	Finished Body	68893-1	68893-2	68894-1	68894-2	68896-1	68896-2
2	Pinion	Full unit description required followed by -H3800					
3	Coupling Assembly*	70250-01		70250-02		70250-03	
4A	Left Single Rack Cap	Consult factory					
4B	Left Double Rack Cap						
4E	3-Position Cap Assembly						
5A	Right Single Rack Cap	Consult factory					
5B	Right Double Rack Cap						
7	Cap Bearing Assembly - Series RI - Series RIxH	70253-1	70253-2	70254-1	70254-2	69014-1	69014-2
		71796		71797		71799	
11	Rear Rack Assembly	68969-1	—	68970-1	—	68972-1	—
(11)	Rear Rack with Assembly Magnet	68969-2	—	68970-2	—	68972-2	—
11	Rear Rack Assembly	—	69400-1	—	68977-1	—	69403-1
(11)	Rear Rack with Assembly Magnet	—	69400-2	—	68977-2	—	69403-2
12	Front Rack Assembly	68976-1	—	68977-1	—	68979-1	—
(12)	Front Rack with Assembly Magnet	68976-2	—	68977-2	—	68979-2	—
13	Piston	55356		55357		55359	
14	Piston Seal	Sold as part of Seal Kit					
16	Locating Seal	Sold as part of Seal Kit					
17	Upper Bearing	Sold as part of Bearing Kit					
18	Lower Bearing	Sold as part of Bearing Kit					
19	Cap Screw	Sold as part of Fastener Kit					
20	Cap Screw	Sold as part of Fastener Kit					
21	Bearing Cap Screw	Sold as part of Fastener Kit					
22	Bottom Coupling Cap Screw*	Sold as part of Fastener Kit					
23	Ring Coupling Cap Screw*	Sold as part of Fastener Kit					
24	O-Ring Bearing Cap Seal	Sold as part of Seal Kit					
25	Gasket*	Sold as part of Seal Kit					
27	O-Ring Coupling Seal*	Sold as part of Seal Kit					
29	Retaining Ring	1980-547		1980-553		1980-556	
30	Port Plug	53735-001	62808	6444-01	69699-003	6444-01	69699-003
32	Shock Absorber	Sold as part of Shock Kit					
33	Shock Angle Adjustment Nut	Sold as part of Shock and Angle Adjustment Kit					
36	Angle Adjustment Screw Assembly	Sold as part of Angle Adjustment Kit					
40	Thread Seal	Sold as part of Thread Seal Kit					
41	Thread Seal Washer	or Angle Adjustment Kit					
42	Flow Control	Sold as part of Flow Control Kit					
43	3-Position P & R (Short) Assembly	—	68949-1	—	68950-1	—	68952-1
46	3-Position Body Assembly	Consult factory					

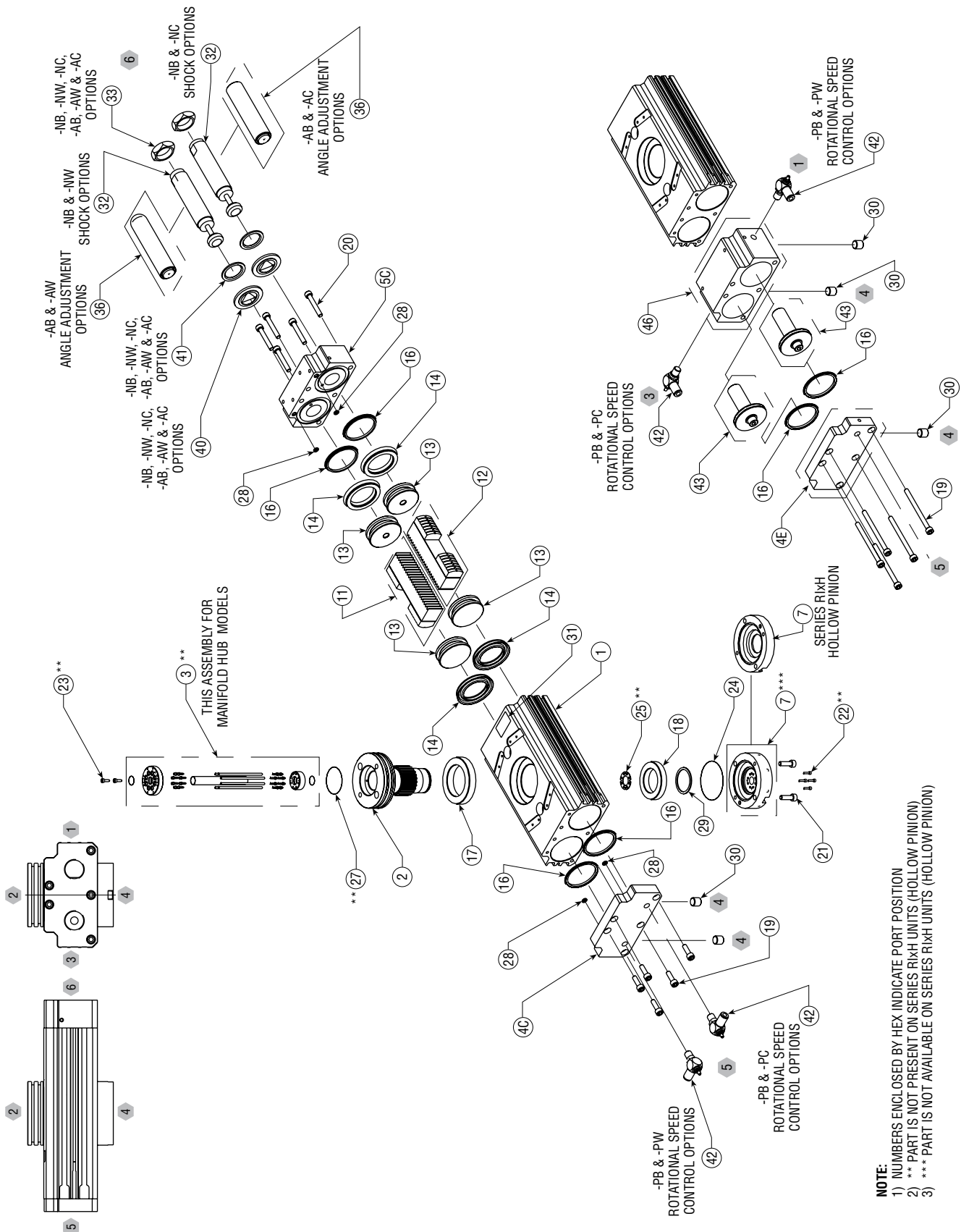
**NOTE:** \* Part of Coupling Assembly. This is not available on Series RIxH units (Hollow Pinion).

## KITS

KIT DESCRIPTION	PART NUMBER											
	RISxx25		RIDxx25		RISxx32		RIDxx32		RISxx50		RIDxx50	
	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC
Seal Kit	Full unit description required followed by -H9000											
Bearing Kit	Full unit description required followed by -H3440											
Fastener Kit	Full unit description required followed by -H9020											
Thread Seal Kit*	—	—	70296	70296	—	—	70297	70297	—	—	70298	70298
Customer Porting Plate Kit	71972	71997	71972	71997	71973	71998	71973	71998	71975	72000	71975	72000
Coupling Assembly Kit	69750	69750	69750	69750	69751	69751	69751	69751	69752	69752	69752	69752
Angle Adjustment Kit, Both Directions	Full unit description required followed by -H9030											
Angle Adjustment Kit, -CW Direction	Full unit description required followed by -H9031											
Angle Adjustment Kit, -CCW Direction	Full unit description required followed by -H9032											

**NOTE:** \* Indicates 1 kit for each position of adjustment.

# phd SERIES RID DOUBLE RACK ROTARY ACTUATORS EXPLODED VIEW



**NOTE:**  
 1) NUMBERS ENCLOSED BY HEX INDICATE PORT POSITION  
 2) \*\* PART IS NOT PRESENT ON SERIES R1XH UNITS (HOLLOW PINION)  
 3) \*\*\* PART IS NOT AVAILABLE ON SERIES R1XH UNITS (HOLLOW PINION)



# phd SERIES RL ROTARY ACTUATORS PARTS LIST AND REPAIR KITS

KEY	PART DESCRIPTION	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
1	Body	See Chart #1							
2	Standard Keyed Pinion Metric Keyed Pinion Double Keyed Pinion -Q13 Double Metric Keyed Pinion -Q13	Full unit description required followed by -H3800							
3	Key Metric Key	— 56717-006	57593-01-002 56717-007	57593-01-001 56717-007	57593-01-001 56717-008	6253-009 56717-009	6253-012 56717-010	6253-020 56717-011	6253-015 59871-001
4	Bearing	Sold as part of							
5	Retaining Ring	Bearing Kit only							
6	Rack & Shoe Assembly	See							
7	Piston	Chart #1							
8	Piston Seal	Sold as part of							
9	Cap Seal	Seal Kit only							
10	Cap*	See Chart #1							
11	Cap Socket Head Cap Screw	Sold as part of Mounting Kit only							
12	Thread Seal	Sold as part of							
13	Cover Washer	Thread Sealing Kit only							
14	Angle Adjustment Screw	Sold as part of							
15	Angle Adjustment Nut	Angle Adjustment Kit only							
16	Shock Pad	—	54600-01	54600-01	54600-01	54600-06	54600-03	54600-03	54600-03
18	Shock Absorber	Sold as part of Shock Absorber Kit only							

**NOTE:** All part numbers listed are for standard units. Options may affect part number.  
\* Caps do not include shock absorber or angle adjustment components. These must be ordered separately.

## CHART #1

KEY	PART DESCRIPTION	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm	
1	Body Assembly Imperial	45Y-90Y	59336-1-1	59337-1-1	59338-1-1	59339-1-1	59340-1-1	59341-1-1	59342-1-1	59343-1-1
		135Y-180Y	59336-2-1	59337-2-1	59338-2-1	59339-2-1	59340-2-1	59341-2-1	59342-2-1	59343-2-1
		225Y-270Y	59336-3-1	59337-3-1	59338-3-1	59339-3-1	59340-3-1	59341-3-1	59342-3-1	59343-3-1
	Metric	45Y-90Y	59336-1-2	59337-1-2	59338-1-2	59339-1-2	59340-1-2	59341-1-2	59342-1-2	59343-1-2
		135Y-180Y	59336-2-2	59337-2-2	59338-2-2	59339-2-2	59340-2-2	59341-2-2	59342-2-2	59343-2-2
		225Y-270Y	59336-3-2	59337-3-2	59338-3-2	59339-3-2	59340-3-2	59341-3-2	59342-3-2	59343-3-2
6	Rack & Shoe Assembly Standard	45Y-90Y	59315-016-0	59316-018-0	59317-022-0	59318-026-0	59319-022-0	59320-020-0	59321-020-0	59322-020-0
		135Y-180Y	59315-020-0	59316-022-0	59317-022-0	59318-026-0	59319-026-0	59320-024-0	59321-024-0	59322-024-0
		225Y-270Y	59315-024-0	59316-024-0	59317-026-0	59318-032-0	59319-032-0	59320-030-0	59321-030-0	59322-030-0
	w/Magnet*	45Y-90Y	59315-016-3	59316-018-3	59317-022-**	59318-026-**	59319-022-**	59320-020-**	59321-020-**	59322-020-**
		135Y-180Y	59315-020-3	59316-022-***	59317-022-**	59318-026-**	59319-026-**	59320-024-**	59321-024-**	59322-024-**
		225Y-270Y	59315-024-3	59316-024-***	59317-026-**	59318-032-**	59319-032-**	59320-030-**	59321-030-**	59322-030-**
7	Piston Assembly Standard	90Y-180Y-270Y	59408	59409	55355	55356	55357	55358	55359	55360
		45Y-135Y-225Y	59410	59411	59412	59413	59414	59415	59416	59417
		w/Cushion 90Y-180Y-270Y	59418	59419	55363	55364	55365	55366	55367	55368
	w/Shock Pad	45Y-135Y-225Y	59420	59421	59422	59423	59424	59425	59426	59427
		90Y-180Y-270Y	—	59429	59430	59431	59432	59433	59434	59435
		45Y-135Y-225Y	—	59437	59438	59439	59440	59441	59442	59443
10	Cap**** Imperial	Standard	59384-1	59385-1	59386-1	59387-1	59388-1	59389-1	59390-1	59391-1
		w/Cushion	59392-1	59393-1	59394-1	59395-1	59396-1	59397-1	59398-1	59399-1
		w/Shock	—	—	—	59403-11	59404-11	59405-11	59406-11	59407-11
		w/Angle Adj.	59400-11	59401-11	59402-11	59403-11	59404-11	59405-11	59406-11	59407-11
		Standard	59384-2	59385-2	59386-2	59387-2	59388-2	59389-2	59390-2	59391-2
		w/Cushion	59392-2	59393-2	59394-2	59395-2	59396-2	59397-2	59398-2	59399-2
	Metric	w/Shock	—	—	—	59403-21	59404-21	59405-21	59406-21	59407-21
		w/Angle Adj.	59400-21	59401-21	59402-21	59403-21	59404-21	59405-21	59406-21	59407-21

**NOTE:** \* Rack & Shoe Assembly w/Magnet option part number suffix:  
 (-1) indicates -E Hall Effect Switch option (-2) indicates -M Reed Switch option (-3) indicates -I Magneto-resistive Switch option  
 \*\* (-1) Hall Switch option or (-2) Reed Switch option is available.  
 \*\*\* (-2) Reed Switch option or (-3) Magneto-resistive Switch option is available.  
 \*\*\*\* Caps do not include shock absorber or angle adjustment components. These must be ordered separately.

## KITS

KIT DESCRIPTION	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
Bearing Kit	Full unit description required followed by -H3420							
Seal Kit	Full unit description required followed by -H9000							
Angle Adjustment Kit*	Full unit description required followed by -H9030							
Thread Sealing Kit*	60334-01-1	60334-02-1	60334-03-1	60334-04-1	60334-05-1	60334-06-1	60334-06-1	60334-06-1
Shock Absorber Kit*	—	—	—	60335-04	60335-05	60335-06	60335-06	60335-07
Cushion Needle Kit*	60567-01-1	60567-01-1	60567-02-1	60567-03-1	60567-04-1	60567-04-1	60567-04-1	60567-05-1
Mounting Kit	Full unit description required followed by -H9020							

**NOTE:** Part number suffix (-1) indicates Buna-N seals. \* One kit required for each direction desired.

# phd SERIES RL ROTARY ACTUATORS EXPLODED VIEW

