

phd[®] START-UP & INFORMATION SHEET: SERIES BST2 TRANSFER ARM

IMPORTANT INFORMATION DO NOT DISCARD!

Use this information sheet to assist with cylinder installation and setup.
File with maintenance or machine documentation.

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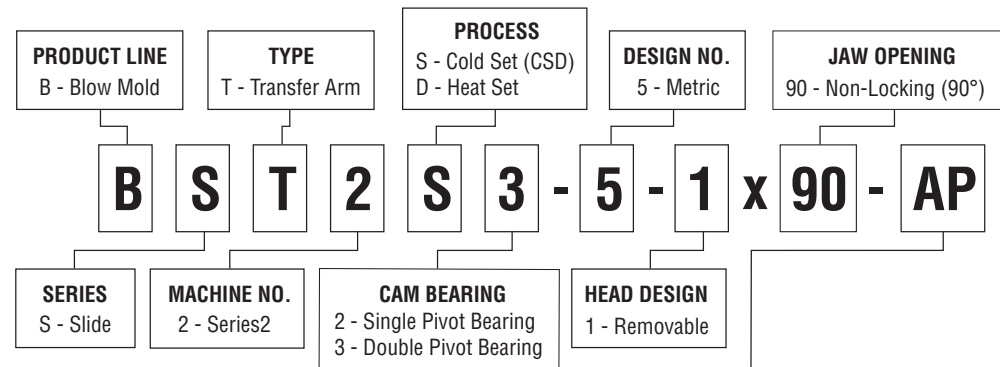
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TO ORDER SPECIFY:

Product Line, Series, Type, Machine No., Process, Cam Bearing, Design No., Head Design, Jaw Opening and Options if required.



NOTE: Standard BST2 Transfer Arms are not designed for Sidel SBO4-SBO8 or SBO28 machines. See "Replacement Reference Chart" on page 4 of main catalog or contact PHD for specific machines.

OPTIONS

AP - Threaded Vertical Height Adjustment
 KS - Shim Height Adjustment Installed
 H110 - Head Assembly with Spring Installed, No Clamp (Requires Full Unit Description)
 H115 - Head Assembly with Spring and Clamp Installed (Requires Full Unit Description)
 H116 - Head Assembly Only, No Spring, No Clamp (Requires Full Unit Description)
 H117 - Head Assembly with Clamp Installed, No Spring (Requires Full Unit Description)
 H800 - Slide Assembly Only (Requires Full Unit Description)

SPECIFICATIONS	IMPERIAL	METRIC
SERIES	Sidel [®] Series2 Replacement	
OPERATION	Cam Operated, Spring Return	
LINEAR BEARING SYSTEM	Steel Ground Profile Rail with Recirculating Roller Bearings	
LUBRICATION	FDA Regulation 21CFR 178.3570	
AMBIENT TEMPERATURE	-20° to 180° F	-29° to 82° C
GRIP FORCE AT TOOLING*	3.4 to 9.4 lb	15.1 to 41.8 N
EXTENSION SPRING FORCE		
FULL RETRACT	14 lb	62.3 N
FULL EXTEND	45 lb	200.2 N
WEIGHT - STANDARD UNIT	13.1 lb	4.9 kg
WEIGHT - AP ADJUSTABLE UNIT	13.8 lb	5.2 kg
STROKE	3.543 +.472/- .551 in	90 +12/-14 mm

*See page 5 for alternate grip force springs.

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phd[®] START-UP PROCEDURE: SERIES BST2xx-5 TRANSFER ARM

LIFE EXPECTANCY

Series BST Transfer Arms are designed for over 20 million trouble-free cycles with proper maintenance.

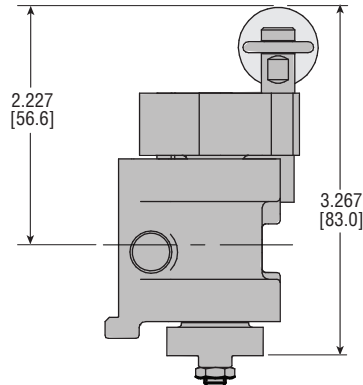
MAINTENANCE

As with most PHD products, these transfer arms are field repairable. Repair kits and main structural components are available as needed for extended service.

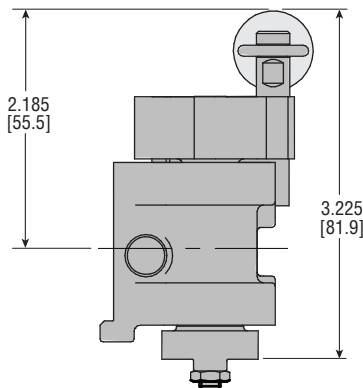
LUBRICATION

The Series BST Transfer Arm bearing systems are factory lubricated and designed to use lubrication per FDA Regulation 21CFR 178.3570 and may not need further lubrication for the life of the unit depending on the duty cycle of the machine. However, lubrication of the bearing system every six months is recommended. Also the application of anti-seize to the Weldment Base Assembly (-AP option only) every 4-6 months will provide extended life and keep adjustment components working properly.

When installing PHD Series BST Transfer Arms for the first time, the clearance of the top external jaw closing springs should be confirmed for your particular machine. The heights of the Cold Set and Heat Set gripper option units are shown below. Clearance should be confirmed on all internal structures of the machine.



**BST2Sx-5-1
COLD SET (CSD) PROCESS**

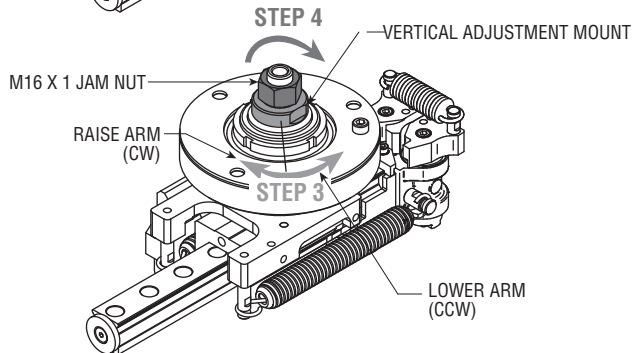
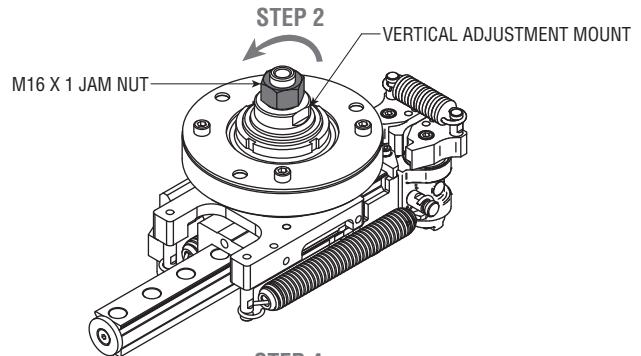
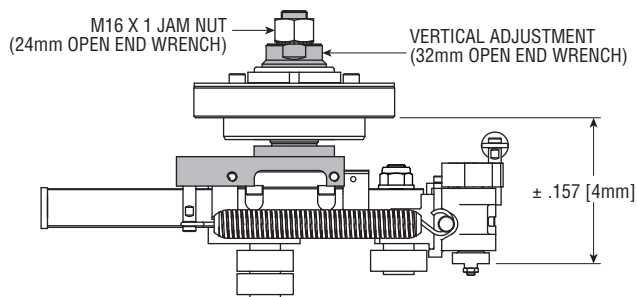


**BST2Dx-5-1
HEAT SET PROCESS**

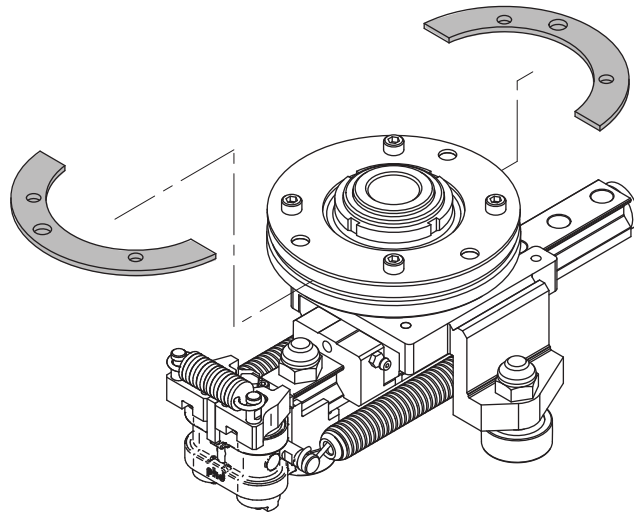
phd[®] -AP OPTION ADJUSTMENT: SERIES BST2 TRANSFER ARM

HEIGHT ADJUSTMENT PROCEDURES

- 1) Install the arm into the machine.
- 2) Using a 24mm box end wrench, loosen the locking nut.
- 3) Using a 32mm open end wrench, rotate the vertical adjustment mount to adjust the arm height until the jaw fingers are at the proper height over the mold. Clockwise (CW) movement will raise the arm, counterclockwise (CCW) will lower the arm. The arm has a range of $\pm .157$ [4mm].
- 4) Tighten the lock nut while holding the vertical adjustment mount stationary to ensure that the height does not change. Torque lock nut to 250 in-lb [28.2 Nm]



-KS OPTION: SERIES BST2 TRANSFER ARM



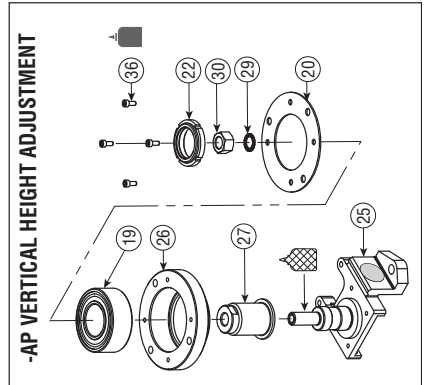
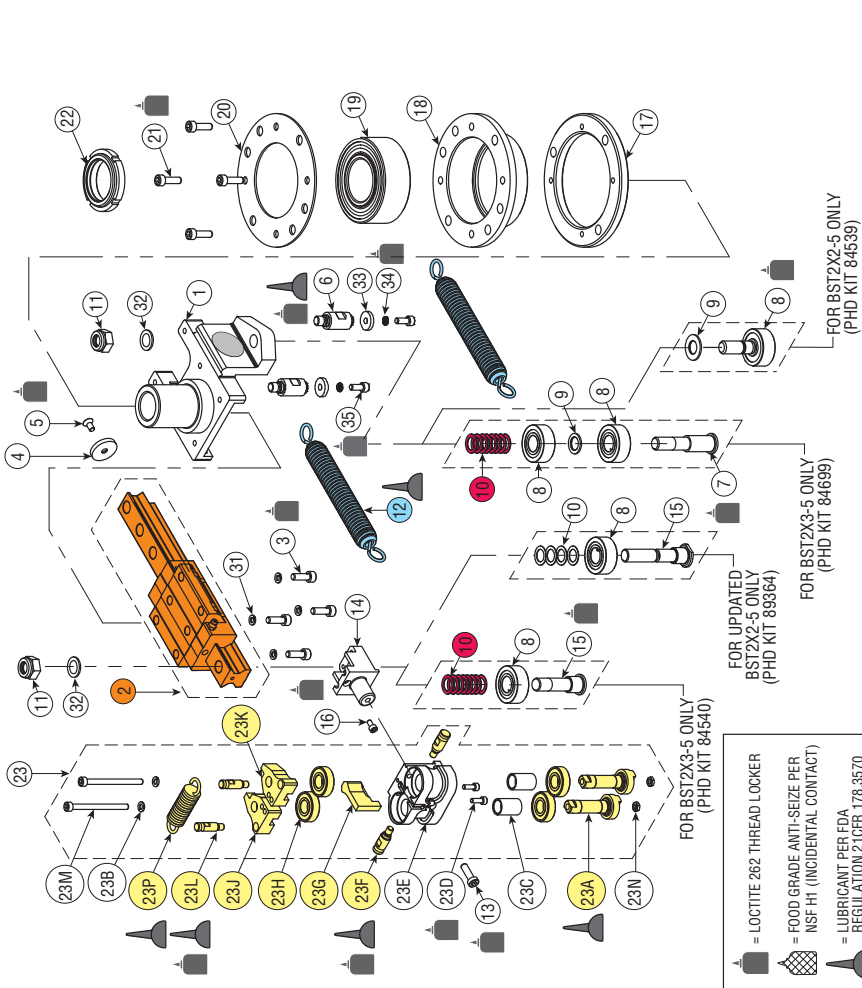
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EXPLODED VIEW: SERIES BST2 TRANSFER ARM

KEY	PART DESCRIPTION	Part #	
		BST2x3-5	BST2x2-5
1	Weldment Base Assembly	83000	BST2x2-5
2	Rail & Carriage Assembly	Sold as Part of Rail Repair Kit	
3	Carriage to Base SHCS	14308-117	
4	Extend Stop	83867	
5	Extend Stop SHCS	14308-584	
6	Spring Holder Body Pin	85291	
7	Pivot Cam Bearing Shaft	82889	
8	Bearing (Linear Cam)	2334-052-02	
9	Bearing (Pivot Cam)	84536-01	
10	Bearing to Bearing Spacer	83714	
11	Commercial Shim Washer	77430-05-004-0	
12	Nylon insert Lock Nut (Linear / Pivot Cam)	65759-007	
13	Nylon insert Lock Nut (Pivot Cam)	65759-013	
14	Extension Spring	Sold as Part of Extension Spring Kit	
15	Head to Arm SHCS	14308-436	
16	Arm Mount	82858	
17	Bearing Mount	83713	
18	Mounting Arm to Rail SHCS	14308-401	
19	Lower Bearing Ring Mnt	82888	
20	Mid Bearing Ring Mnt	82884	
21	Bearing	2334-051-01	
22	Upper Bearing Ring Mnt	82885	
23	Upper Bearing Ring Mnt SHCS	61054-117	
24	Locking Nut	82887	
25	Total Head Assembly	Full Unit Description followed by -H11x	
26	Shaft	81388-01 or Sold as Part of Head Assembly	
27	Split Lock Washer	61745-008 or Sold as Part of Head Assembly	
28	Bearing Spacer	81393 or Sold as Part of Head Assembly	
29	Body to Tang SHCS	14308-019 or Sold as Part of Head Assembly	
30	Body	81332 or Sold as Part of Head Assembly	
31	Body Sprint Holder Pin	84683 or Sold as Part of Head Assembly	
32	Tang	81394 or Sold as Part of Head Assembly	
33	Bearing	2334-050-01 or Sold as Part of Head Assembly	
34	Left Jaw	84475 or Sold as Part of Head Assembly	
35	Right Jaw	84476 or Sold as Part of Head Assembly	
36	Jaw Spring Holder Pin	82883 or Sold as Part of Head Assembly	
37	Jaw to Nut SHCS	14308-111 or Sold as Part of Head Assembly	
38	Metric Nut	3204-023 or Sold as Part of Head Assembly	
39	Jaw Extension Spring	Full Unit description followed by -H1600 or Sold as Part of Head Assembly	
40	Weldment Base Assembly	84301	
41	Mid Bearing Ring Mnt	83990	
42	Vertical Adjustment Mnt	83871	
43	Serrated Washer	84141-017	
44	Metric Nut	3204-083-1	
45	Serrated Washer	84141-008	
46	Flat Metric Washer	64398-11-1-02	
47	Spring Base Washer	85290	
48	Serrated Washer	84141-007	
49	Washer to Spring Post SHCS	61054-099	
50	Upper Bearing Ring Mount SHCS	61054-115	



KIT DESCRIPTION	BST2x3-5	BST2x2-5	KIT NO.
Rail & Carriage Assembly Repair Kit	84317	85895	85895
Head Repair Kit - Heat Resistant (HR)	84318-01		
Head Repair Kit - Cold Set (CSD)	84318-02		
Spring Extension Spring Kit	84319		
BST2x2 Pivot Cam Bearing Replacement Kit	84539		
BST2x2 Linear Cam Bearing Replacement Kit	89364		
BST2x3 Linear Cam Bearing Replacement Kit	84699		
Flange Base Shim Kit	84916		
Cam Bearing Shim Kit	84917		

phd ACCESSORIES & KITS: SERIES BST2 TRANSFER ARM

ALTERNATE HEAD SPRINGS

Listed are alternative PHD designed springs for BST2 jaws. This list provides the customer with a variety of differing force springs that fit onto the posts of the transfer arm head. The springs are color coded with NSF registered DYKEM® per the chart below for ease of identification.

NOTE: PHD highly recommends the application of lubrication applied to the inside of the spring hooks and the post grooves for maximum life.

Forces are calculated based on the dimension from the center of the shafts to the center of the preform/bottle as shown in **Figure 1**. If tooling is longer or shorter than what is shown, the grip force will vary from the list given.

Consult PHD for grip force adjustments other than listed.

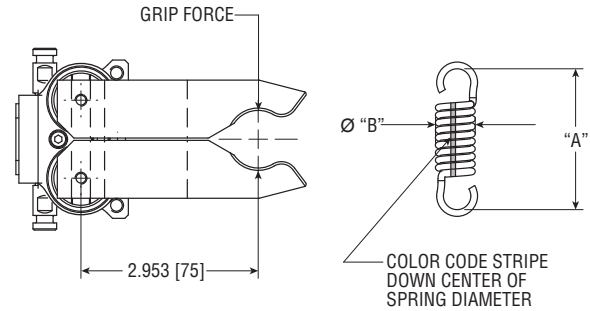


FIGURE 1

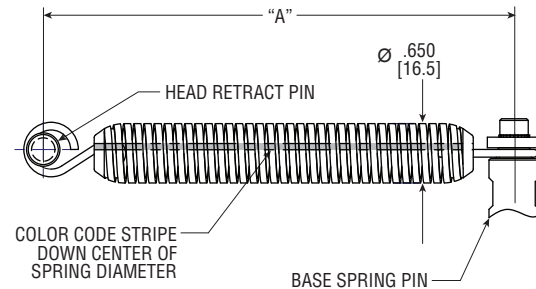
PHD Part #	Grip Force		Stripe Color	Stripe Qty	Standard PHD Use	Free State Dimension "A"		Dimension "Ø B"	
	lb	N				Inch	mm	Inch	mm
83884	3.4	15.1	Yellow	1	BST2 Cold Set	2.179	55.3	0.748	19.0
76655	5.1	22.7	Green	2	—	1.935	49.1	0.554	14.1
77602	6.7	29.8	White	1	—	1.721	43.7	0.600	15.2
84491	9.4	41.8	Yellow	2	BST2 Heat Set	2.061	52.3	0.663	16.8
77603	11.9	52.9	White	2	—	1.855	47.1	0.670	17.0

NOTE: Pull out forces are related to grip forces but will vary depending on finger tooling design. PHD springs will allow process refinement for both bottle and preform transfer.

ALTERNATE RETRACT SPRINGS

Listed are alternative PHD designed springs for BST2 retraction. This list provides the customer with alternative force spring that fit onto the posts of both the head and base spring pins. The springs are color coded with NSF registered DYKEM® per the chart below for ease of identification.

NOTE: PHD highly recommends the application of lubrication applied to the inside of the spring hooks and the post grooves for maximum life.



PHD Part #	Stripe Color	Stripe Qty	Standard PHD Use	Dimension "A"		Total Force (lbs)		Dimension "A"		Total Force (lbs)		Dimension "A"		Total Force (lbs)	
				Arm On Stop Inch	mm	Arm On Stop lb	N	Arm Out Min Inch	mm	Arm Out Min lb	N	Arm Out Max Inch	mm	Arm Out Min lb	N
85051	Yellow	1	BST2	5.591	142.0	3.2	14.2	6.142	156.0	5.4	24.0	9.685	246.0	18.0	80.1
82892	Yellow	2	—	5.591	142.0	3.4	15.1	6.142	156.0	5.0	22.2	9.685	246.0	15.1	67.2

NOTES:

- 1) Pull out forces are related to grip forces, but will vary depending on finger tooling design. These spring options allow process refinement for both bottle and preform transfer.
- 2) Total retract forces are two times the above charted forces, as two springs are required per unit.

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