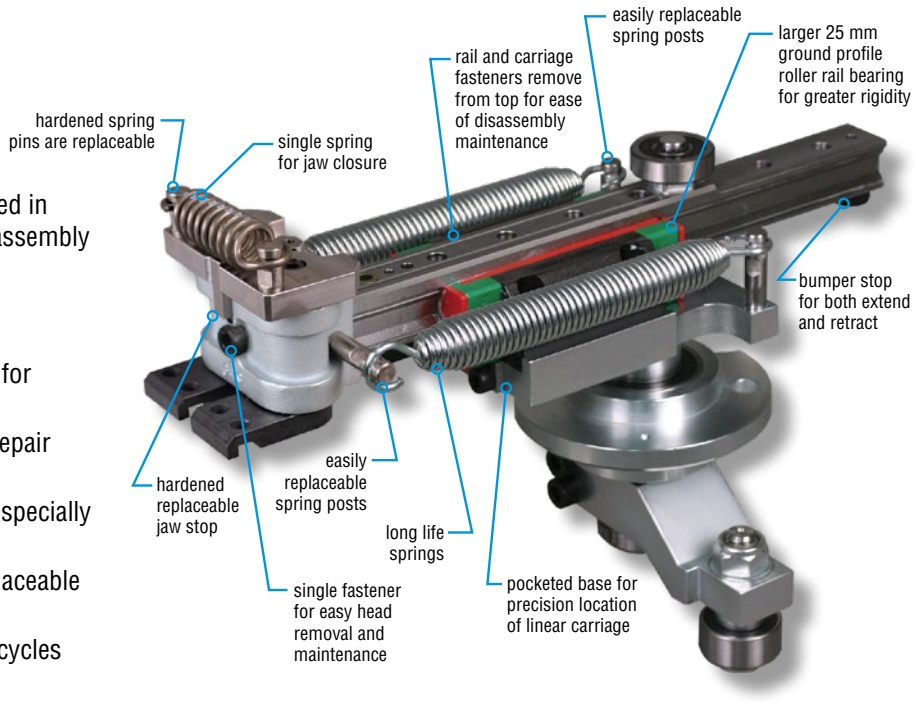
BST1

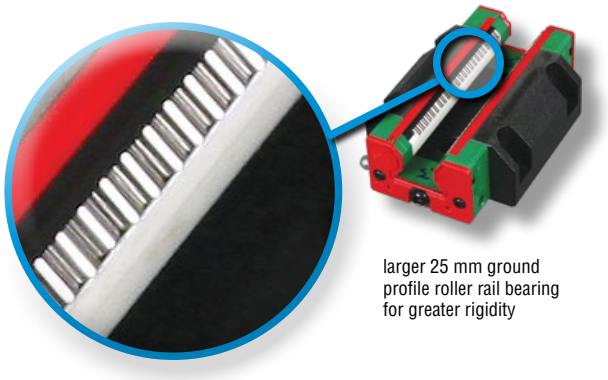
TRANSFER ARM

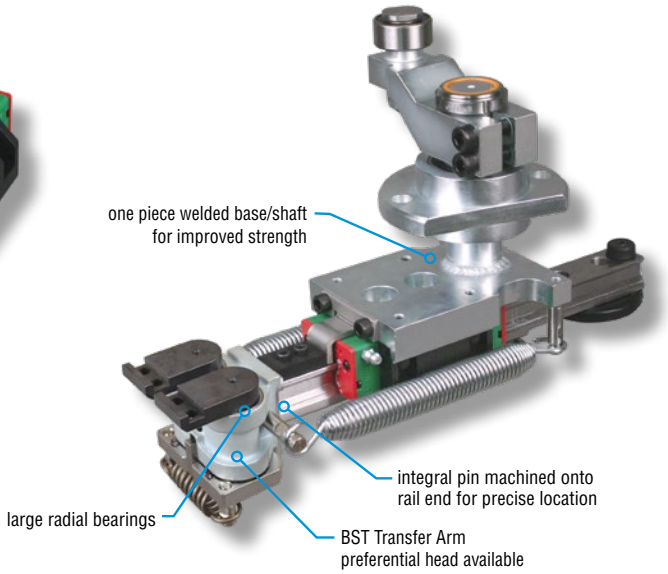
Major Benefits

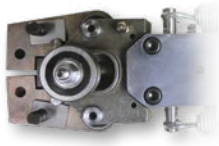
- Linear rail and carriage bearing has increased in size and upgraded to a roller bearing style assembly when compared to PHD's previous design
- Base and shaft have been incorporated into a weldment
- Head is designed with large radial bearings for increased rigidity and long life
- Hardened replaceable jaw stop for ease of repair and cost considerations
- Jaw and retract springs are manufactured especially for PHD, providing greater life
- All spring return pins are hardened and replaceable for ease of repair and cost considerations
- Unit is designed to operate over 20 million cycles
- Lighter in overall weight than OEM arm



100°/180° JAW OPENING







ORDERING DATA: SERIES BST1 TRANSFER ARM

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

PRODUCT LINE
B - Blow Mold

TYPE
T - Transfer Arm

PROCESS
S - CSD
D - HR

DESIGN NO.
6 - Metric

JAW OPENING
100 - Non-Locking (100°)
180 - Locking (180°)

B S T 1 S 1 - 6 - 1 x 180 - Q9

SERIES
S - Slide

MACHINE NO.
1 - Series1

CAM BEARING
1 - Standard (Linear)
4 - Twin Cam (Linear/4040)
5 - Twin Cam (Linear/2426)

HEAD DESIGN
1 - Removable

OPTIONS
Q9 - Pivot Arm Alignment Key
H1100 - Head Assembly Only with Spring Attached (Requires Full Unit Description)
H8000 - Slide Assembly Only (Requires Full Unit Description)

RECOMMENDATIONS

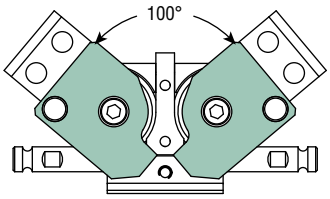
Care must be taken with the newer style preforms to ensure that the fingers match the profile of the finish being processed.

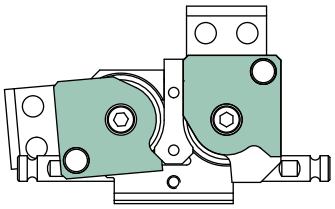
100° JAW OPENING (NON-LOCKING)

The gripper head utilizes an external extension spring and has a maximum opening angle of 100°. This head design is non-locking in the full open position. The unit can be converted to a 190° locking design simply by replacing the left and right jaws.

180° JAW OPENING (LOCKING)

The gripper head utilizes an external extension spring and has a maximum opening angle of 190°. This head design will cause the jaws to lock open once they are rotated past 180°. This jaw design can make performing maintenance easier by allowing the jaw to stay open while manually rotating the transfer arm table. The unit can be converted to a 100° non-locking design simply by replacing the left and right jaws.





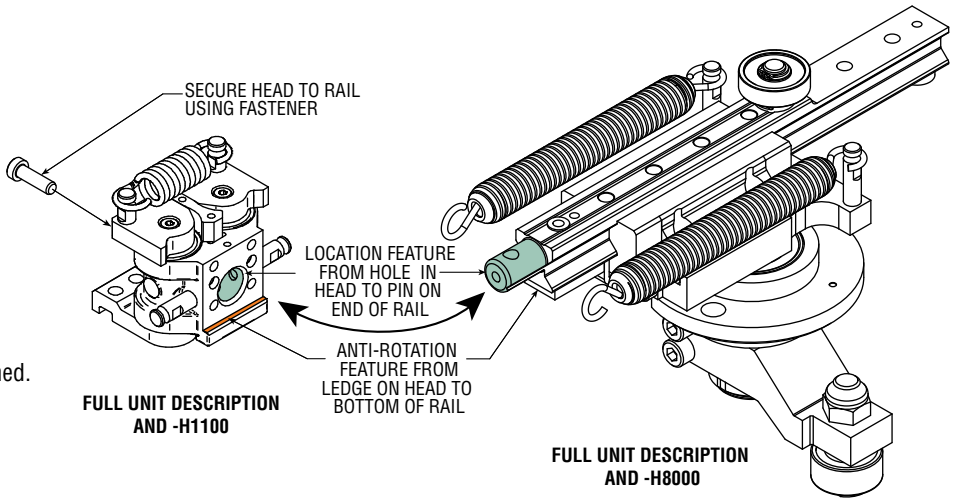
WARNING: See maximum open length on page 63. Jaws may be rotated only until the spring reaches the maximum open length. Exceeding this length will weaken or damage the spring.

REMOVABLE HEAD DESIGN HEAD TO ARM POSITIONING

The BST1xx1-6 head to rail arm design consists of a precision rail arm dowel pin that interfaces with and accurately positions the transfer arm head axially onto the rail arm assembly.

A locating edge on the bottom of the head radially orients and keeps it from rotating.

This quick head change feature allows the head and arm to be easily and quickly maintained.



SPECIFICATIONS	IMPERIAL	METRIC
SERIES	'S' Style Series1 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*		
CSD	6.7 lb	29.8 N
HR	11.9 lb	52.9 N
EXTENSION SPRING FORCE**		
FULL RETRACT	20 lb	89.0 N
FULL EXTEND	47.4 lb	210.9 N
WEIGHT	11.4 lb	4.3 kg
STROKE	3.576 in	90.0 mm

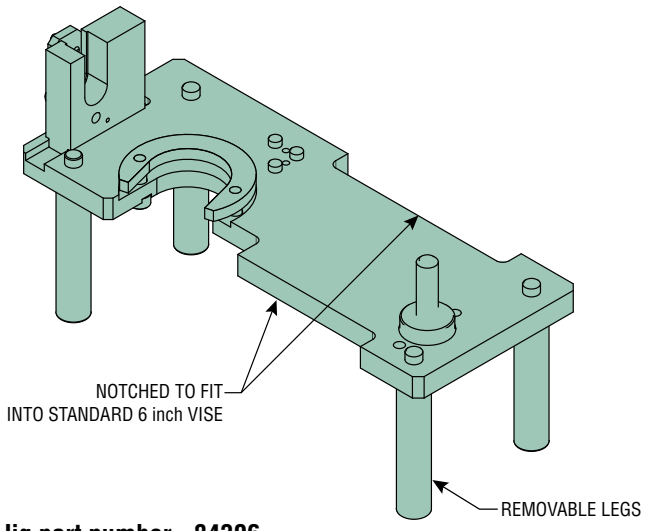
*See page 63 for alternate grip force springs.
**Each spring provides 1/2 of total retract force.

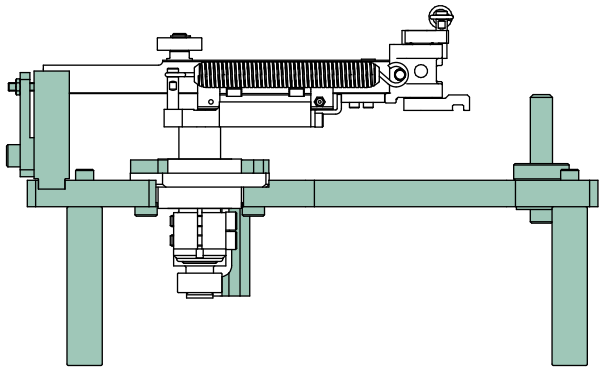
LIFE EXPECTANCY
Series BST Transfer Arms are designed for over 20 million trouble-free cycles with proper maintenance.

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

LUBRICATION
The Series BST1 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.

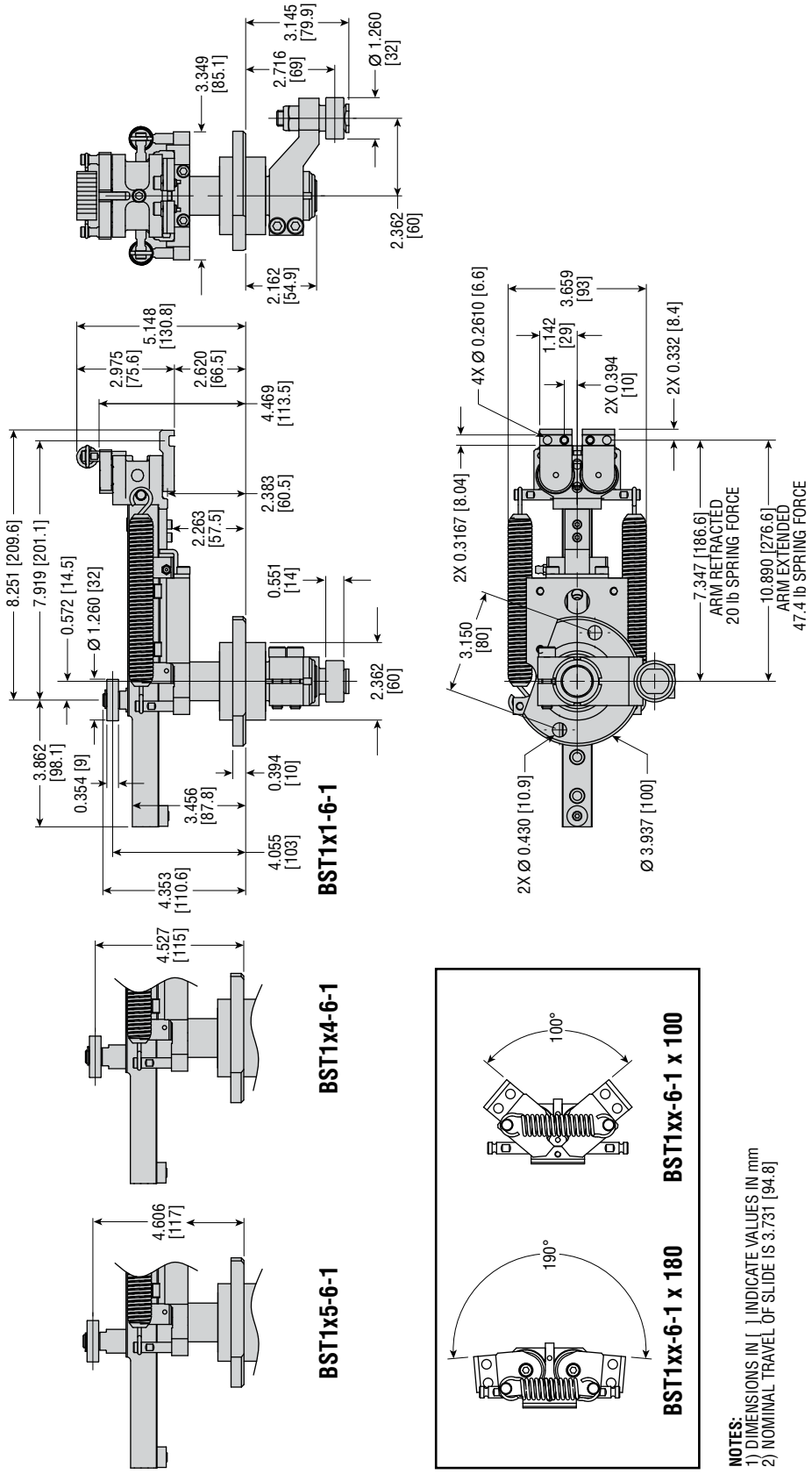
SETUP TOOLING
Optional jig kits are available to verify and re-align transfer arms as needed in the field.





Jig part number - 84306

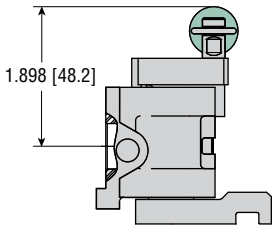
Retrofit Jig part number - 85306
Allows updating Design 5 jig to work with Design 6 transfer arms.



All dimensions are reference only unless specifically toleranced.

S COLD SET (CSD) PROCESS

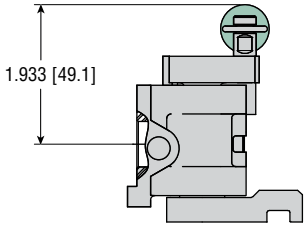
100°/180° JAW OPENING
External extension springs provide the necessary grip force for Cold Set (CSD) bottle processes.



For forces, see engineering data page or alternate head spring at bottom of page.

D HEAT RESISTANT (HR) PROCESS

100°/180° JAW OPENING
External extension springs with heavier spring force provide the necessary grip force for HR bottle processes.



For forces, see engineering data page or alternate head spring at bottom of page.

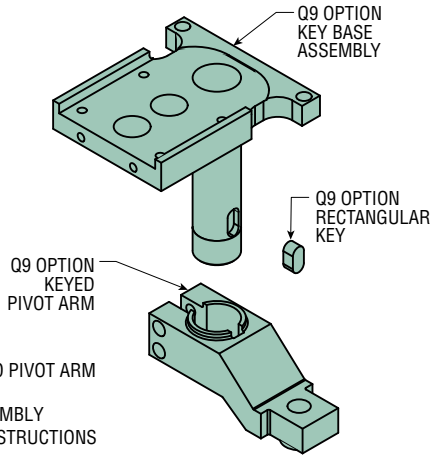
Q9 FACTORY INSTALLED PIVOT ARM ALIGNMENT KEY

Factory installation of the key provides locking of pivot arm.

WARNING: Pivot arm alignment key is for alignment purposes only and is not intended as a safety shear coupling. If the 'S' style machine's torque limiter is set incorrectly, damage to the transfer arm may occur if the arm is contacted during machine operation.

NOTE:
KEYWAY IS NOT PROVIDED AS STANDARD. IF -Q9 OPTION IS NOT ORDERED, THE TRANSFER ARM MUST BE JIG SET. THE KIT CAN BE ORDERED SEPARATELY FOR FIELD RETROFIT IF REQUIRED. SEE "KIT INCLUDES" FOR COMPONENTS.

* KIT 84505 INCLUDES: 1 - RECTANGULAR KEY - SHAFT TO PIVOT ARM
1 - KEYED PIVOT ARM
1 - KEYED BASE WELDMENT ASSEMBLY
1 - DISASSEMBLY / ASSEMBLY INSTRUCTIONS



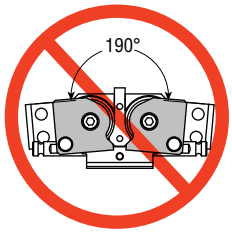
ALTERNATE HEAD SPRINGS

Listed in the chart below are alternative PHD designed springs for BST1xx-6 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 for ease of identification with NSF registered DYKEM®.

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 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 that shown, grip force will vary from the list given.

Consult PHD for grip force other than listed.



WARNING: See maximum open length "A" in chart below. Jaws may be rotated only until the spring reaches the maximum open length "A". Exceeding this length will weaken or damage the spring.

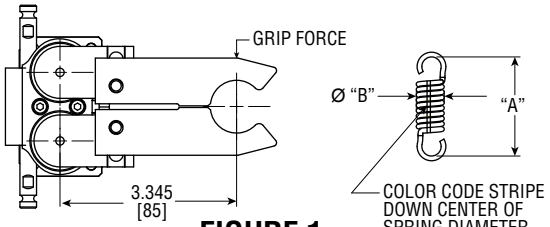


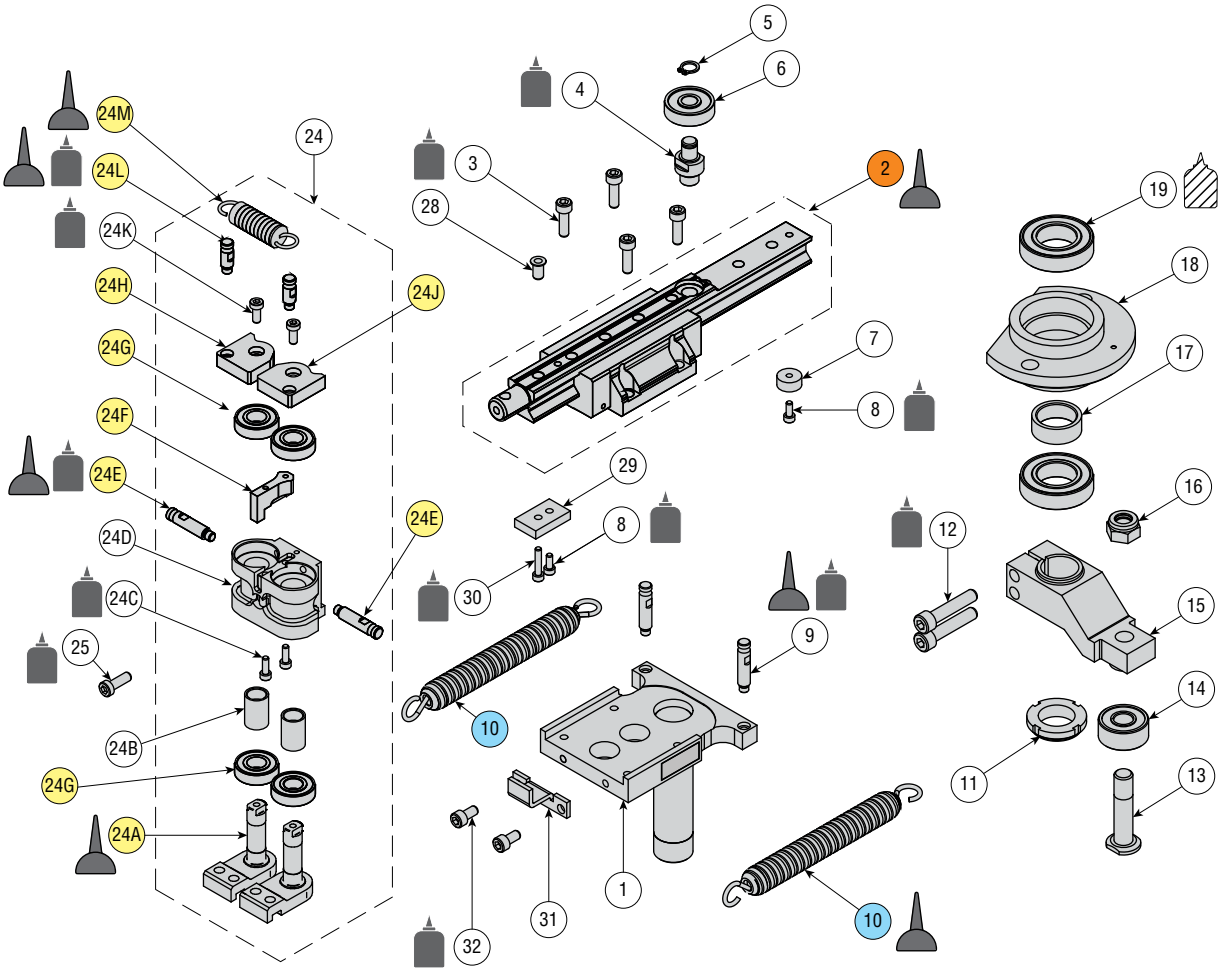
FIGURE 1

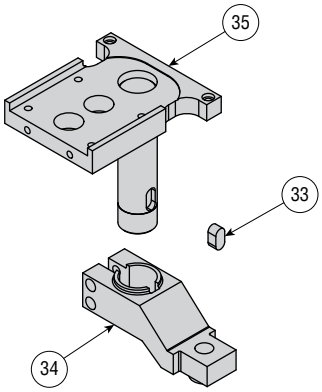
PHD PART #	GRIP FORCE lbs	GRIP FORCE N	STRIPE COLOR	STRIPE QTY	STANDARD PHD USE	FREE STATE DIMENSION "A" in	FREE STATE DIMENSION "A" mm	MAXIMUM OPEN LENGTH "A" in	MAXIMUM OPEN LENGTH "A" mm	DIMENSION "Ø B" in	DIMENSION "Ø B" mm
83884	3.4	15.1	Yellow	1	–	2.179	55.3	2.450	62.2	0.748	19.0
76655	5.1	22.7	Green	2	–	1.935	49.1	2.684	68.2	0.554	14.1
77602	6.7	29.8	White	1	BST1 CSD	1.721	43.7	2.935	74.6	0.600	15.2
84491	9.4	41.8	Yellow	2	–	2.061	52.3	2.450	62.2	0.663	16.8
77603	11.9	52.9	White	2	BST1 HR	1.855	47.1	2.935	74.6	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.

All dimensions are reference only unless specifically toleranced.

EXPLODED VIEW: SERIES BST1 TRANSFER ARM





= LOCTITE 262 THREAD LOCKER

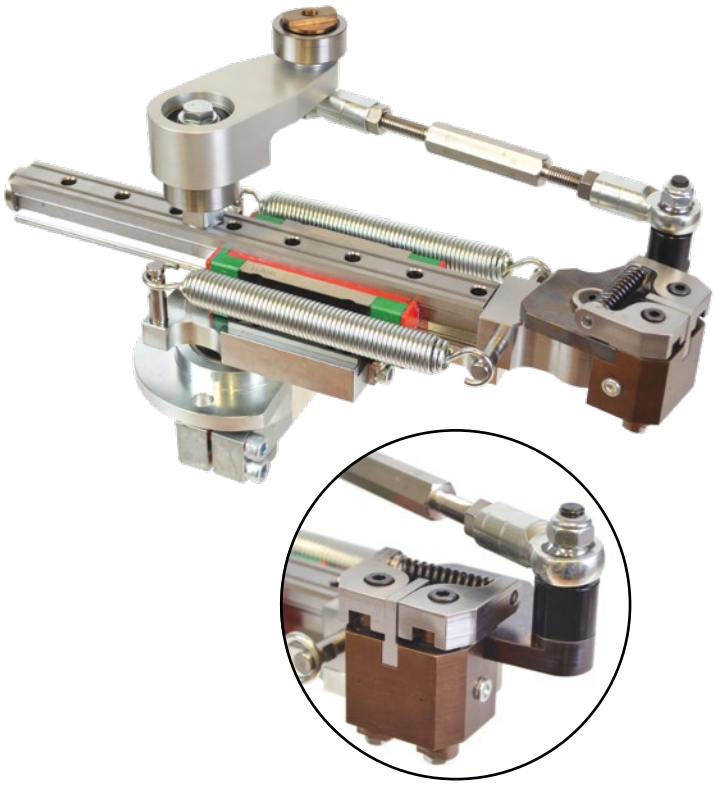
= LOCTITE R/C 680

= LUBRICANT PER FDA REGULATION 21CFR 178.3570

KIT DESCRIPTION	KIT NO.	COLOR CODE
Pivot Arm Alignment Key Kit	84505 (See page 63)	
Jig Kit	84306 (See page 61)	
Rail & Carriage Assembly Repair Kit	84307	
Head Repair Kit - Cold Set (CSD), 180°	84308-01	
Head Repair Kit - Heat Resistant (HD), 180°	84308-02	
Head Repair Kit - Cold Set (CSD), 100°	84308-03	
Head Repair Kit - Heat Resistant (HD), 100°	84308-04	
Spring Extension Spring Kit	77304	
Cam Shaft Bearing Replacement Kit	84311	
Twin Cam Shaft Bearing Replacement Kit (4040)	84312	
Twin Cam Shaft Bearing Replacement Kit (2426)	84700	
Jig Conversion Kit	85306	

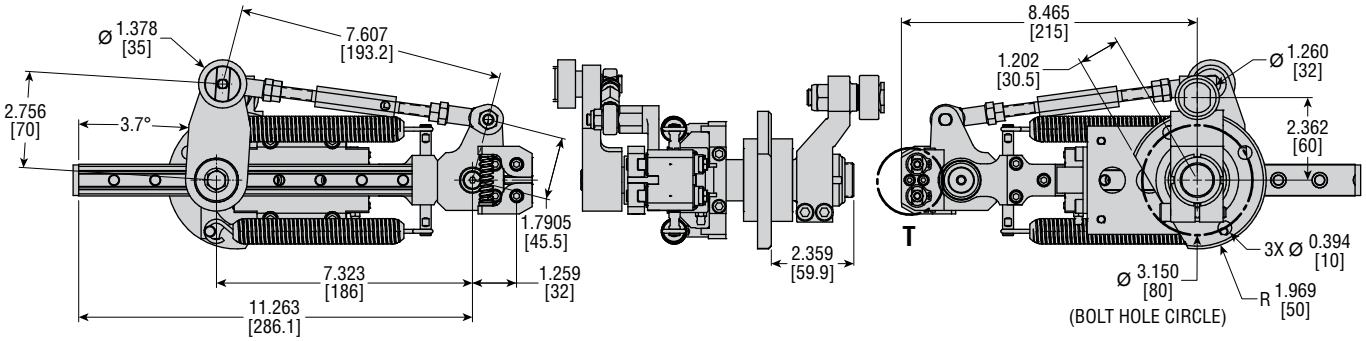
KEY	PART DESCRIPTION	PART NO.		
		BST1x1-6	BST1x4-6	BST1x5-6
1	Weldment Base Assembly	83780		
2	Rail & Carriage Assembly	Sold as part of Rail & Carriage Assembly Repair Kit		
3	Carriage to Base SHCS	14308-118		
4	Bearing Mounting Shaft	83783	84313	84686
5	Retaining Ring	63462-008		
6	Upper Cam Bearing	2334-047		
7	Bumper	83796		
8	Bumper to Carriage Rail SHCS	14308-019		
9	Spring Holder Pin	83784		
10	Extension Spring	Sold as part of Extension Spring Kit		
11	Lock Nut	75556		
12	Pivot Arm SHCS	14308-031		
13	Lower Cam Bearing Shaft	75552		
14	Lower Cam Bearing	2334-041		
15	Pivot Arm	85004		
16	Nylon Insert Locking Nut	65759-007		
17	Bearing Spacer	75548		
18	Mounting Flange	75544		
19	Mounting Flange Bearing	2334-013		
24	Head Assembly	Full unit description required followed by -H1100		
24A	Jaw Shaft	89323		
24B	Bearing Spacer	81393		
24C	Body to Tang SHCS	14308-019		
24D	Body	83789		
24E	Body Spring Holder Pin	86120		
24F	Jaw Stop	83794		
24G	Jaw Bearing	2334-050-01		
24H	Left Jaw	Full unit description required followed by -H1100		
24J	Right Jaw	Full unit description required followed by -H1100		
24K	Left / Right Jaw to Shaft LHCS	59716-009		
24L	Jaw Spring Holder Pin	83795		
24M	Jaw Extension Spring	Full unit description required follow ed by -H1610		
25	Head to Rail LHCS	14308-436		
28	Metric Rivit Nut	84771		
29	Shock Pad	84772		
30	SHCS	14308-091		
31	Shock Pad Stop Bracket	84773		
32	SHCS	14308-115		
33	Shaft Key	Sold as part of Pivot Arm Alignment Kit		
34	Keyed Pivot Arm	85511		
35	Keyed Weldment Base Assembly	84504		

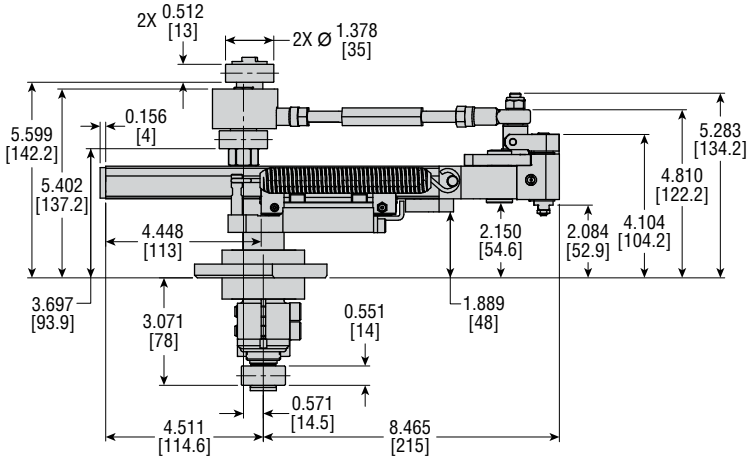
ML315189

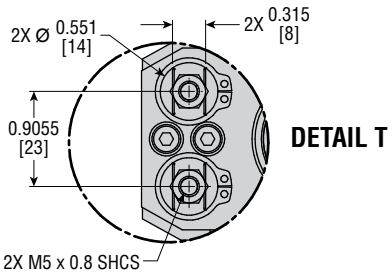


Major Benefits

- Design is based on PHD BST1x1-6 transfer arm assembly
- Linear rail and carriage bearing increased in size from 'S' style design
- Linear rail and carriage bearing is of a roller bearing design
- Base and shaft have been incorporated into a weldment
- Jaw closure spring is compression vs. extension thus eliminating overstretch of spring
- Head is hardened tool steel with lubrication ports
- Head incorporates removable jaw stop for easy field repair and cost savings
- Head is easily removed from the arm via two fasteners and two dowel pins







DETAIL T

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