

## Shot Pin Assemblies



including  
Side-By-Side  
Pins

## ADVANTAGES

1. Welker Shot Pins utilize a full contact Rulon® bearing surface that does not require lubrication.
2. Welker Shot Pins are resistant to corrosion and weld spatter.
3. Shot Pins are available in L-Block or In-Line ram models.
4. Construction of steel & high strength aluminum is structurally strong yet light-weight.

### SHOT PIN CONSTRUCTION

- Rulon® Lined aluminum body
- Moly impregnated urethane wiper
- Ram treated to provide corrosion & weld spatter resistance
- Hardened steel coupler
- Rigid adapter (optional)
- Lubrication free Welker cylinder
- NAAMS standard L-Block or in-line mounting provided

### APPLICATIONS

Retractable Locating Pins  
Part Stops  
Probe Slides  
Wedge Locks  
Escapements  
Part Assembly Tools  
Metering Devices  
Pick & Place  
Backups  
Ejectors  
Straight Acting Clamps



Download CAD drawings @ [www.welkerbearing.com](http://www.welkerbearing.com)

# WELKER SHOT PIN TECHNICAL INFORMATION

## MOUNTING

### UNIT MOUNTING

WPA and SBS units are mounted by using SHCS through the package at the six locations provided. When this is convenient, use the six tapped holes provided for bolting through a mounting plate. Protruding mounting dowels are provided press fit into the body.

Square ram packages are high precision full contact plane bearing units and therefore must be mounted to a flat surface. Mounting to surfaces that are not flat within .002 (.95mm) may cause a twisting effect that can bind in the bearing box.

Shot Pin mounting shims or sub-plates must have minimal clearance holes.

### RAM MOUNTING

WPA and SBS shot pin packages use a standard NAAMS L-Block pattern with 15mm spacing. Spacing allows mounting of 3 and 4 hole pin retainers to the ram. 11mm thru holes can be tapped and fitted with standard thread inserts (M-10 x 1.5 threads.) To order tapped hole option, add **-TAP** to the part number. (Example: WPA-40-23-TAP.)

## SHROUDS

Stainless steel shrouds are provided for additional protection. Shrouds prevent undesirable buildups of contamination from welding and machining applications. Welker specifically recommends shroud usage in mig, tig, and arc welding applications. Shrouds should be removed if clearance problems exist and conditions permit. WPA shot pins come standard with shrouds, if the shroud is not desired the unit must be ordered using a suffix of NS. (Example: WPA-40-23-NS)

## WIPERS

The wiper is the only maintenance item on Welker pin packages. It is a custom molded moly impregnated urethane (with a stainless steel retainer on 40mm units.) Welker recommends changing the wiper yearly. Specific applications may require more or less frequent wiper service.

<b>EXTEND AND RETRACT FORCE FOR ALL WELKER SHOT PINS</b>				
<b>SHOT PIN MODEL</b>	<b>60 PSI PUSH</b>	<b>60 PSI PULL</b>	<b>80 PSI PUSH</b>	<b>80 PSI PULL</b>
<b>24 MM</b>	80 LB	66 LB	105 LB	88 LB
<b>S0090</b>	220 LB	185 LB	295 LB	248 LB
<b>40 MM</b>	220 LB	185 LB	295 LB	248 LB
<b>60 MM</b>	560 LB	525 LB	700 LB	525 LB

## STROKE

The stroke accuracy of shot pin units is limited to that of the cylinder. Normal cylinder stroke accuracy is  $\pm .015$  (.38mm.) Hard stop mounting holes are provided in the ram for partial stroke applications.

Rap couplings cause the unit to be less than the normal stroke of the cylinder. The 24 and 40 series shot pins have a 2mm rap. The 60 series shot pin units have a 3mm rap. The rap allows the cylinder to begin moving before moving the ram. The impact of the coupler helps free tooling from a bound condition. Pneumatic shot pins are supplied with the rap coupler as standard. Hydraulic shot pins are supplied with the rigid coupler standard.

Pin packages come standard with Welker 40mm, 63mm or 100mm bore cylinders. Cylinders do not require lubrication. **WELKER DOES NOT MOUNT CUSTOMER SUPPLIED CYLINDERS TO PIN PACKAGES.** A magnetic piston cylinder is available for specific application use.

Standard 24 and 40 series cylinders use prox switch ports with 1.025" read depth. 60 series cylinders have prox switch ports with 1.250" read depth. Welker does not supply proximity switches.

## REPEATABILITY

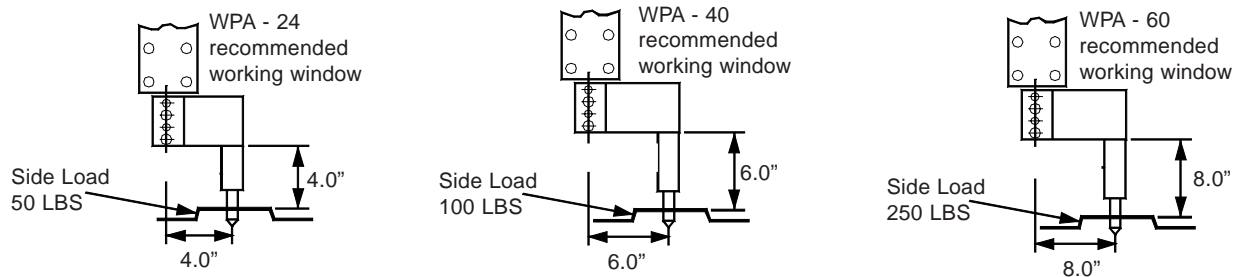
Shot pin packages utilize a full contact bearing surface for high repeatability. Repeatability within  $\pm .002$ " (.05mm) part to part is achievable.

## WEAR

Wear = variance in position under load over time. Shot pin test (WPA units) indicate maximum wear of .002" wear at 3,000,000 cycles.

## LOADING & DEFLECTION

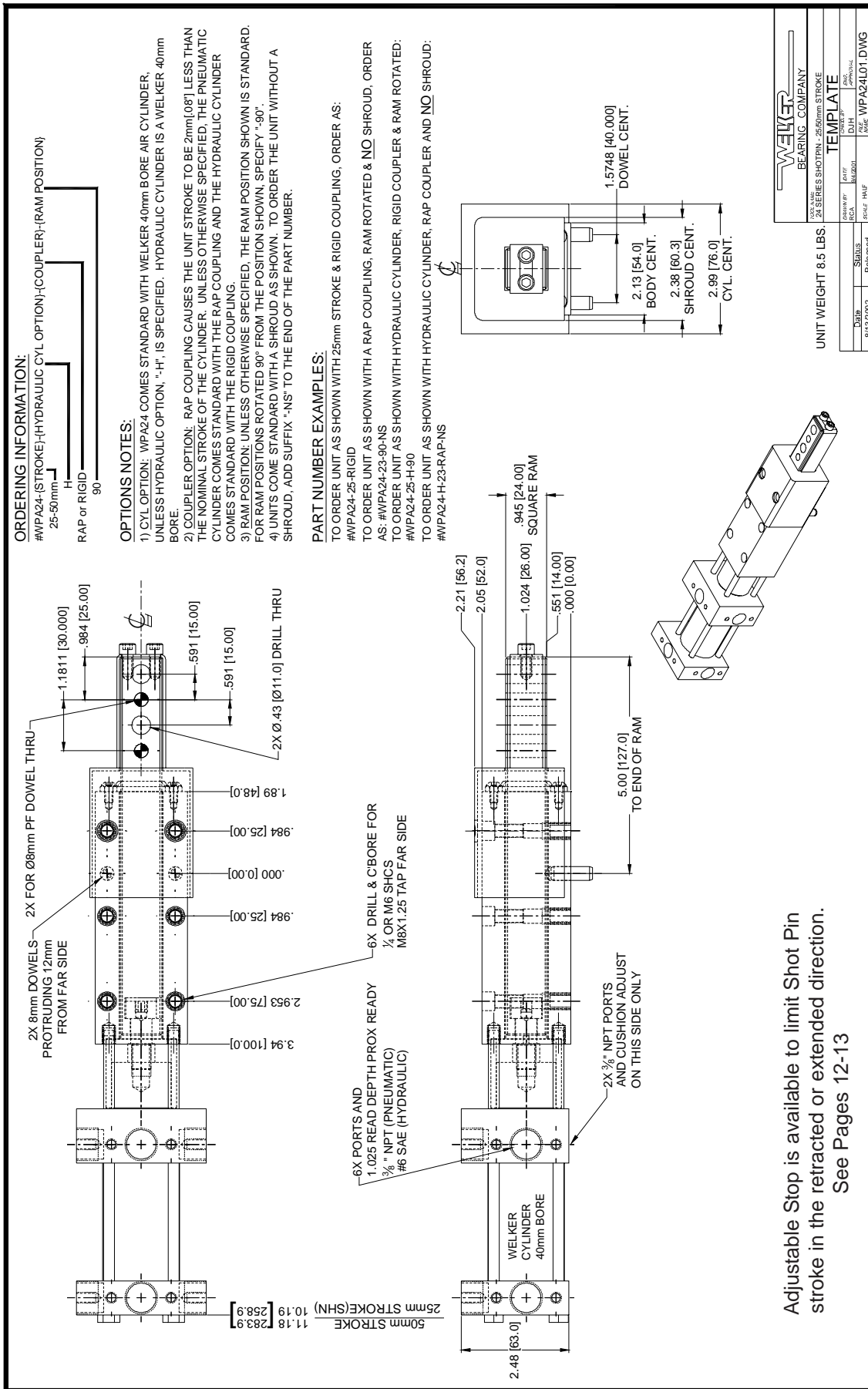
Deflection is measured at the end of the ram. Longer extensions can be used at lower tolerances and loads. Pins mounted closer to body exhibit less deflection.



# WELKER SHOT PIN PART NUMBERS

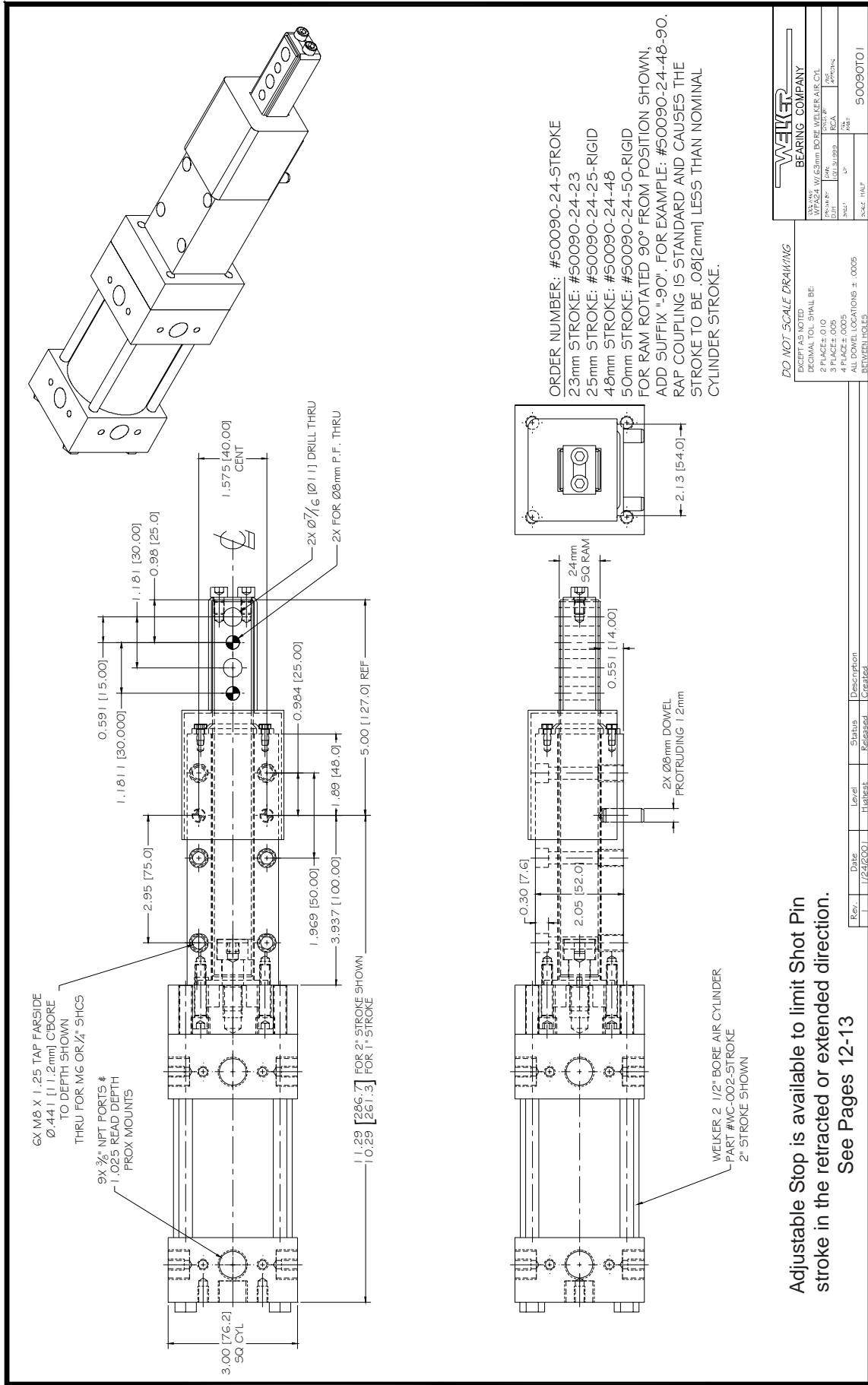
WELKER WPA PART NUMBERS			
PNEUMATIC RAP	PNEUMATIC RIGID	HYDRAULIC RAP	HYDRAULIC RIGID
WPA-24-(23,48)	WPA-24-(25,50)-RIGID	WPA-24-(23,48)-H-RAP	WPA-24-(25,50)-H
WPA-24-(23,48)-NS	WPA-24-(25,50)-RIGID-NS	WPA-24-(23,48)-H-RAP-NS	WPA-24-(25,50)-H-NS
WPA-24-(23,48)-90	WPA-24-(25,50)-RIGID-90	WPA-24-(23,48)-H-RAP-90	WPA-24-(25,50)-H-90
WPA-24-(23,48)-90-NS	WPA-24-(25,50)-RIGID-90-NS	WPA-24-(23,48)-H-RAP-90-NS	WPA-24-(25,50)-H-90-NS
S0090-24-(23,48)	S0090-24-(25,50)-RIGID	N/A	N/A
S0090-24-(23,48)-NS	S0090-24-(25,50)-RIGID-NS	N/A	N/A
S0090-24-(23,48)-90	S0090-24-(25,50)-RIGID-90	N/A	N/A
S0090-24-(23,48)-90-NS	S0090-24-(25,50)-RIGID-90-NS	N/A	N/A
RAM ROTATION OPTION ADD -90 (24 SERIES ONLY)			
ADJUSTABLE RETRACT OR EXTEND STOP OPTION: ADD -RET OR -EXT TO PART NUMBER EXAMPLE: WPA-24-23-RET (Page 12-13)			
WPA-40-(23,48,73)	WPA-40-(25,50,75) RIGID	WPA-40-(23,48,73)-H-RAP	WPA-40-(25,50,75)-H
WPA-40-(23,48,73)-NS	WPA-40-(25,50,75)-RIGID-NS	WPA-40-(23,48,73)-H-RAP-NS	WPA-40-(25,50,75)-H-NS
WPA-40-(23,48,73)-LOCK	WPA-40-(25,50,75)-RIGID-LOCK	WPA-40-(23,48,73)-H-RAP-LOCK	WPA-40-(25,50,75)-H-LOCK
WPA-40-(23,48,73)-LOCK-NS	WPA-40-(25,50,75)-RIGID-LOCK-NS	WPA-40-(23,48,73)-H-RAP-LOCK-NS	WPA-40-(25,50,75)-H-LOCK-NS
WPA-40 SHOT PINS NO LONGER INCLUDE CENTER HOLE IN RAM END (9-2002)			
ADJUSTABLE RETRACT OR EXTEND STOP OPTION: ADD -RET OR -EXT TO PART NUMBER EXAMPLE: WPA-40-23-RET (Page 12-13)			
WPA-60-(22-97)	WPA-60-(25-100)-RIGID	WPA-60-(23-97)-H-RAP	WPA-60-(25-100)-H
WPA-60-(22-97)-NS	WPA-60-(25-100)-RIGID-NS	WPA-60-(23-97)-H-RAP-NS	WPA-60-(25-100)-H-NS
Part Number Explanation: WPA-Ram Size-Stroke-H (Only if Hydraulic cylinder)-Coupler-NS (No Shroud) If H is not specified then cylinder is considered pneumatic			
SIDE-BY-SIDE SHOT PIN			
Hard Stop option add - HS C1 is standard cylinder position. See template drawing for complete ordering information.			
SBS24-(23-98)-HS-C1	SBS24-(25-100)-RIGID-HS-C1	SBS24-(23-98)-H-RAP-HS-C1	SBS24-(25-100)-H-HS-C1
SBS24-(23-98)-HS-C1-NS	SBS24-(25-100)-RIGID-HS-C1-NS	SBS24-(23-98)-H-RAP-HS-C1-NS	SBS24-(25-100)-H-HS-C1-NS
SBS40-(23-198)-HS-C1	SBS40-(25-200)-RIGID-HS-C1	SBS40-(23-198)-H-RAP-HS-C1	SBS40-(25-200)-H-HS-C1
SBS40-(23-198)-HS-C1-NS	SBS40-(25-200)-RIGID-HS-C1-NS	SBS40-(23-198)-H-RAP-HS-C1-NS	SBS40-(25-200)-H-HS-C1-NS
SBS60-(22-197)-HS-C1	SBS60-(25-200)-RIGID-HS-C1	SBS60-(22-197)-H-RAP-HS-C1	SBS60-(25-200)-H-H2-C1
SBS60-(22-197)-HS-C1-NS	SBS60-(25-200)-RIGID-HS-C1-NS	SBS60-(22-197)-H-RAP-HS-C1-NS	SBS60-(25-200)-H-H2-C1-NS
Part Number Explanation: SBS-Ram Size-Stroke-H (Only if Hydraulic) - Coupler-Hard Stop (Option) - Cylinder Position-NS (No Shroud) If H is not specified then cylinder is considered pneumatic			

# WPA-24 SHOT PIN 23-50mm Strokes



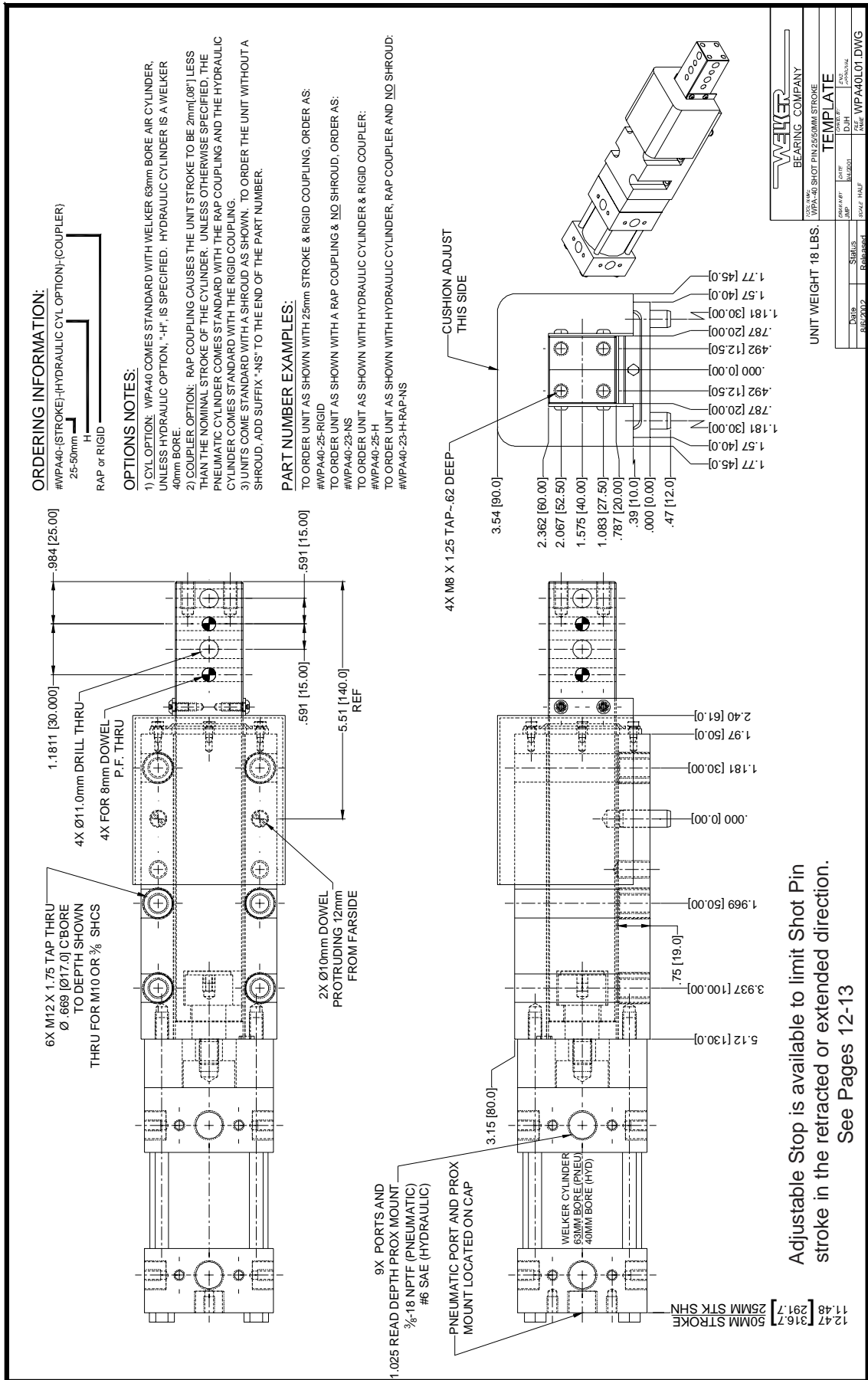
Adjustable Stop is available to limit Shot Pin stroke in the retracted or extended direction.  
 See Pages 12-13

# S0090 SHOT PIN 23-50mm Strokes



Adjustable Stop is available to limit Shot Pin stroke in the retracted or extended direction.  
 See Pages 12-13

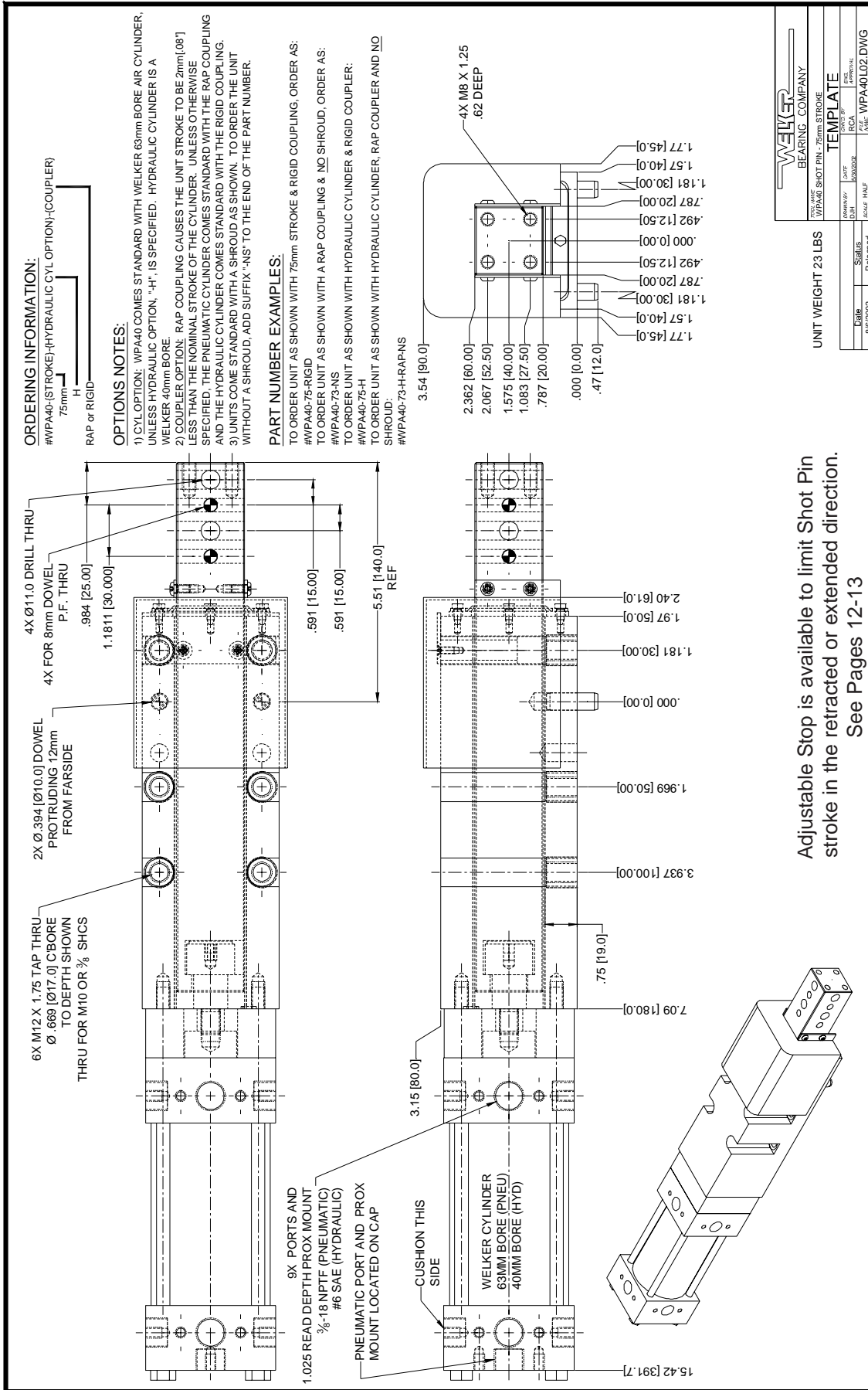
# WPA-40 SHOT PIN 23-50mm Strokes



Adjustable Stop is available to limit Shot Pin stroke in the retracted or extended direction. See Pages 12-13

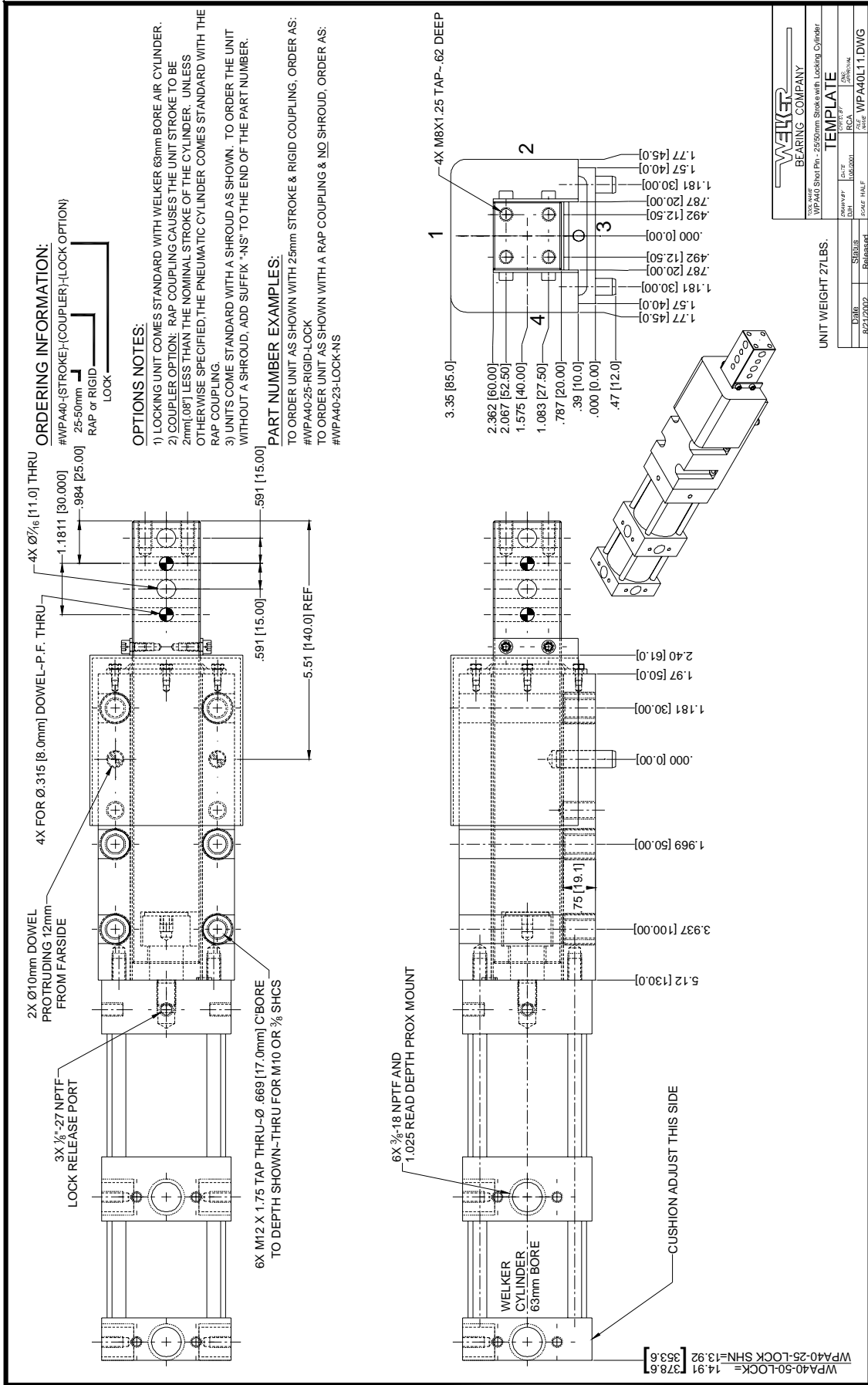


# WPA-40 SHOT PIN 73,75mm Strokes

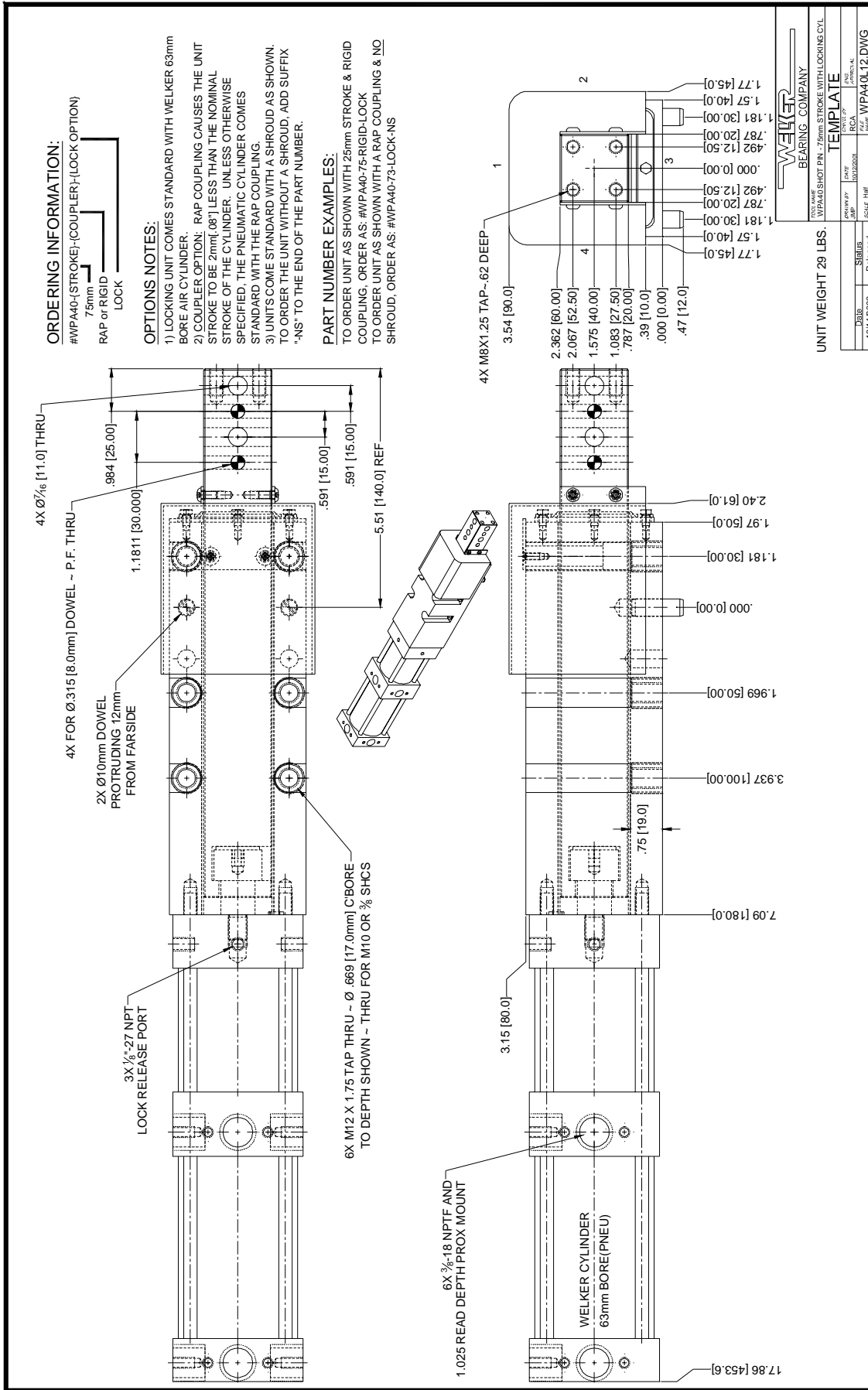


Adjustable Stop is available to limit Shot Pin stroke in the retracted or extended direction.  
 See Pages 12-13

# WPA-40 LOCKING SHOT PIN 23-50mm Strokes

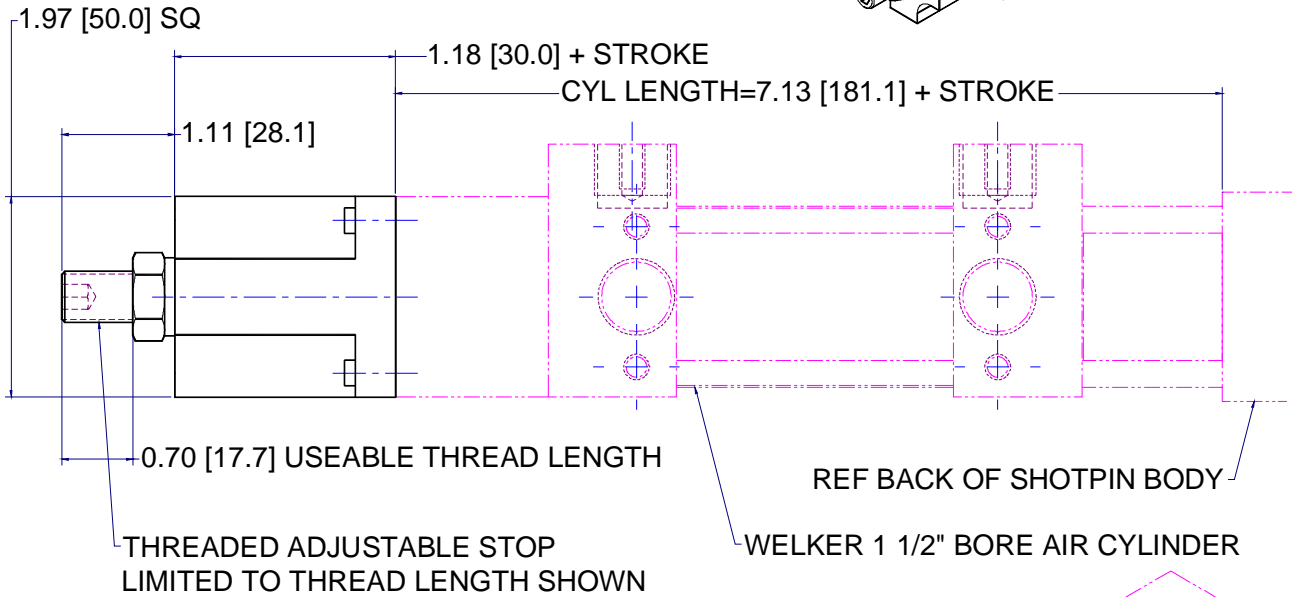
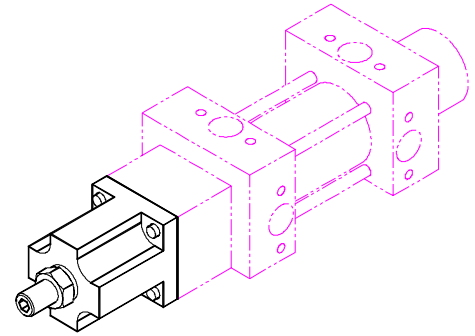


# WPA-40 LOCKING SHOT PIN 73,75mm Strokes



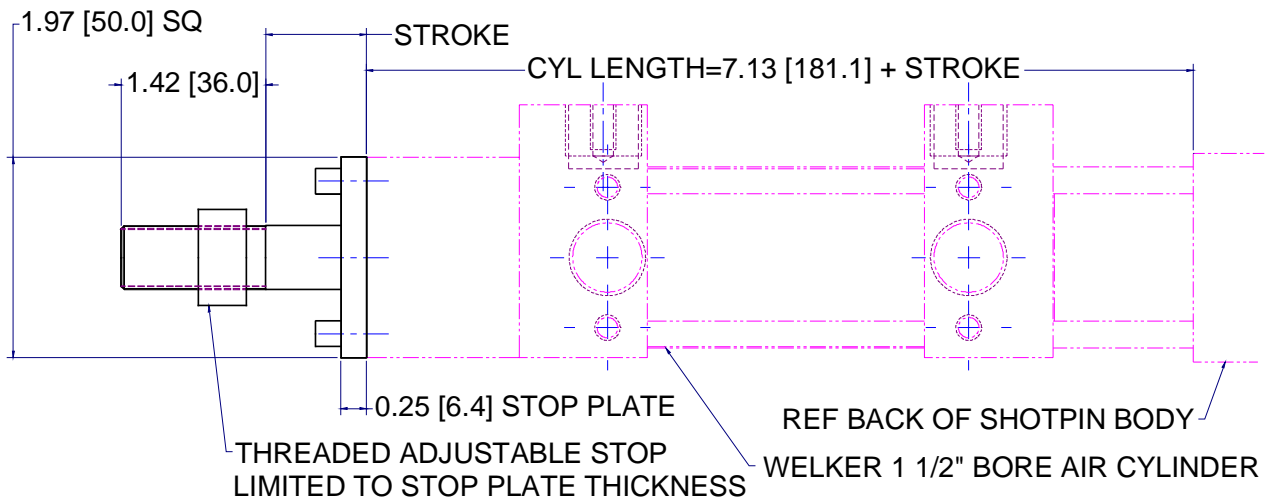
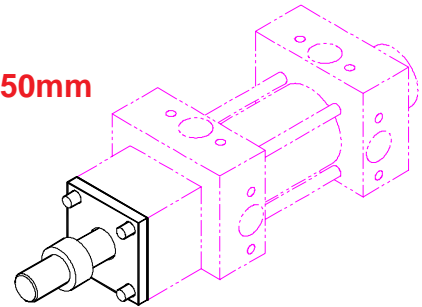
## Extend / Retract Option for 1 1/2" Bore Cylinders

### 1 1/2" BORE CYLINDER ADJUSTABLE RETRACT STOP

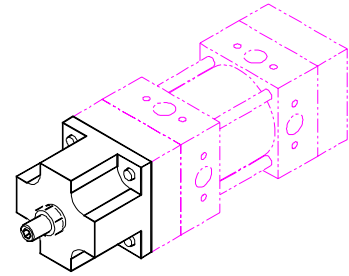


**Stroke lengths are nominal cylinder strokes of 25mm and 50mm  
To order add -RET or -EXT to Shot Pin part number**

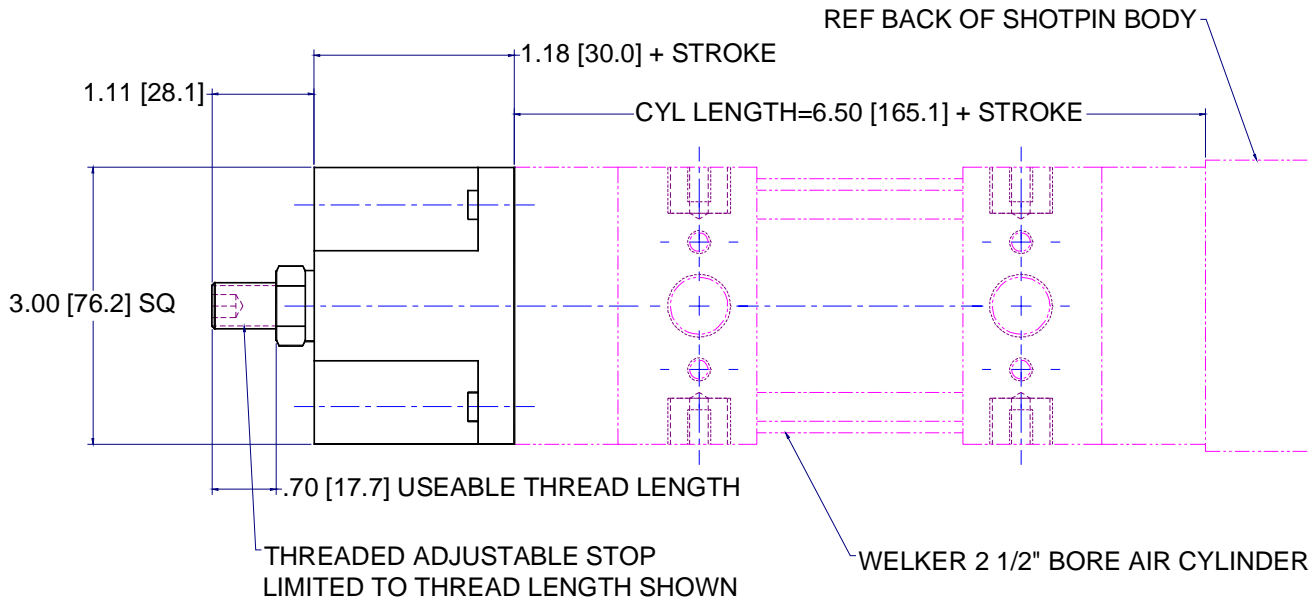
### 1 1/2" BORE CYLINDER ADJUSTABLE EXTEND STOP



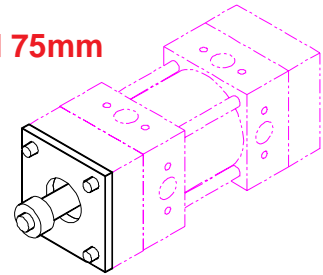
## Extend / Retract Option for 2 1/2" Bore Cylinders



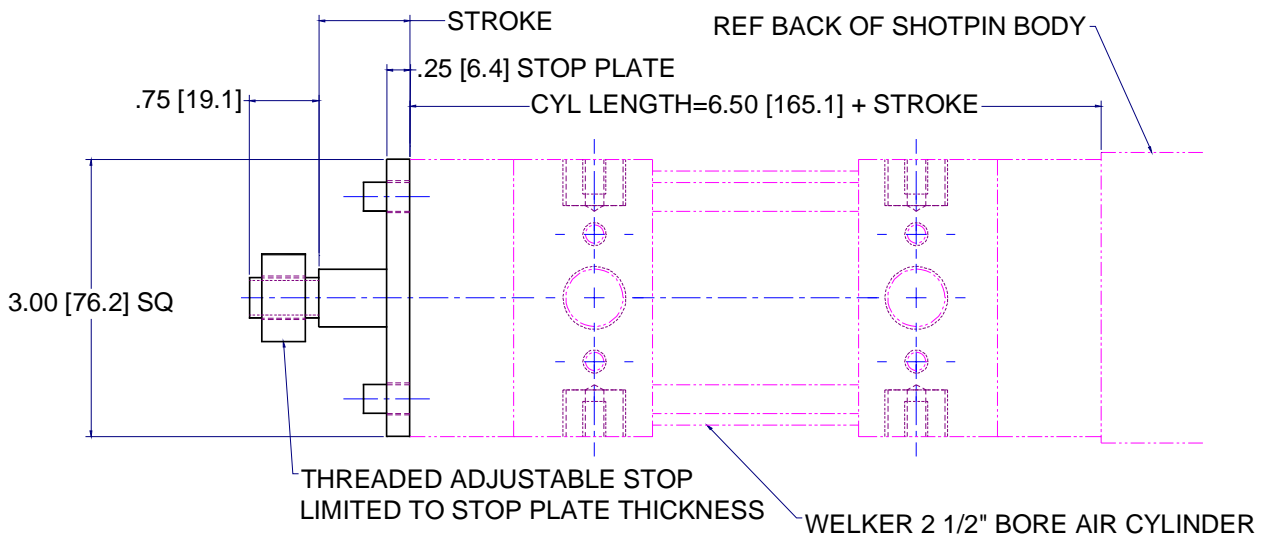
### 2 1/2" BORE CYLINDER ADJUSTABLE RETRACT STOP



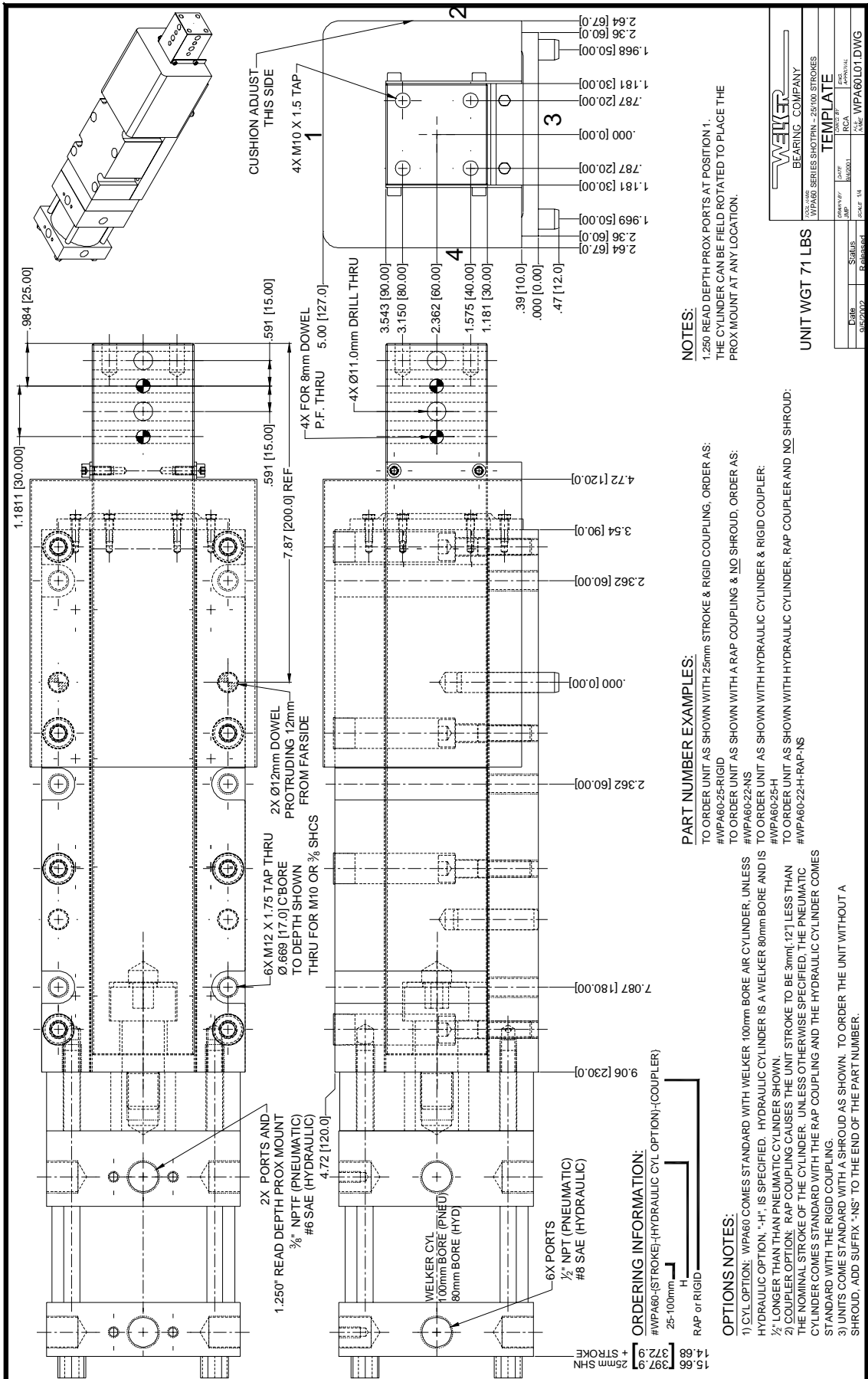
**Stroke lengths are nominal cylinder strokes of 25mm, 50mm and 75mm  
To order add -RET or -EXT to Shot Pin part number**



### 2 1/2" BORE CYLINDER ADJUSTABLE EXTEND STOP



# WPA-60 SHOT PIN 22-100mm Strokes



**NOTES:**  
 1. 1.250 READ DEPTH PROX PORTS AT POSITION 1.  
 THE CYLINDER CAN BE FIELD ROTATED TO PLACE THE PROX MOUNT AT ANY LOCATION.

**PART NUMBER EXAMPLES:**  
 TO ORDER UNIT AS SHOWN WITH 25mm STROKE & RIGID COUPLING, ORDER AS:  
 #WPA60-25-RIGID  
 TO ORDER UNIT AS SHOWN WITH A RAP COUPLING & NO SHROUD, ORDER AS:  
 #WPA60-22-NS  
 TO ORDER UNIT AS SHOWN WITH HYDRAULIC CYLINDER & RIGID COUPLER:  
 #WPA60-25-H  
 TO ORDER UNIT AS SHOWN WITH HYDRAULIC CYLINDER, RAP COUPLER AND NO SHROUD:  
 #WPA60-22-H-RAP-NS

**OPTIONS NOTES:**  
 1) CYL OPTION: WPA60 COMES STANDARD WITH WELKER 100mm BORE AIR CYLINDER, UNLESS HYDRAULIC OPTION, "H", IS SPECIFIED. HYDRAULIC CYLINDER IS A WELKER 80mm BORE AND IS 1/2" LONGER THAN PNEUMATIC CYLINDER SHOWN.  
 2) COUPLER OPTION: RAP COUPLING CAUSES THE UNIT STROKE TO BE 3mm (.127) LESS THAN THE NOMINAL STROKE OF THE CYLINDER. UNLESS OTHERWISE SPECIFIED, THE PNEUMATIC CYLINDER COMES STANDARD WITH THE RAP COUPLING AND THE HYDRAULIC CYLINDER COMES STANDARD WITH THE RIGID COUPLING.  
 3) UNITS COME STANDARD WITH A SHROUD AS SHOWN. TO ORDER THE UNIT WITHOUT A SHROUD, ADD SUFFIX "-NS" TO THE END OF THE PART NUMBER.

**ORDERING INFORMATION:**  
 #WPA60-(STROKE)-(HYDRAULIC CYL OPTION)-(COUPLER)  
 25-100mm  
 RAP or RIGID

**WELKER BEARING COMPANY**

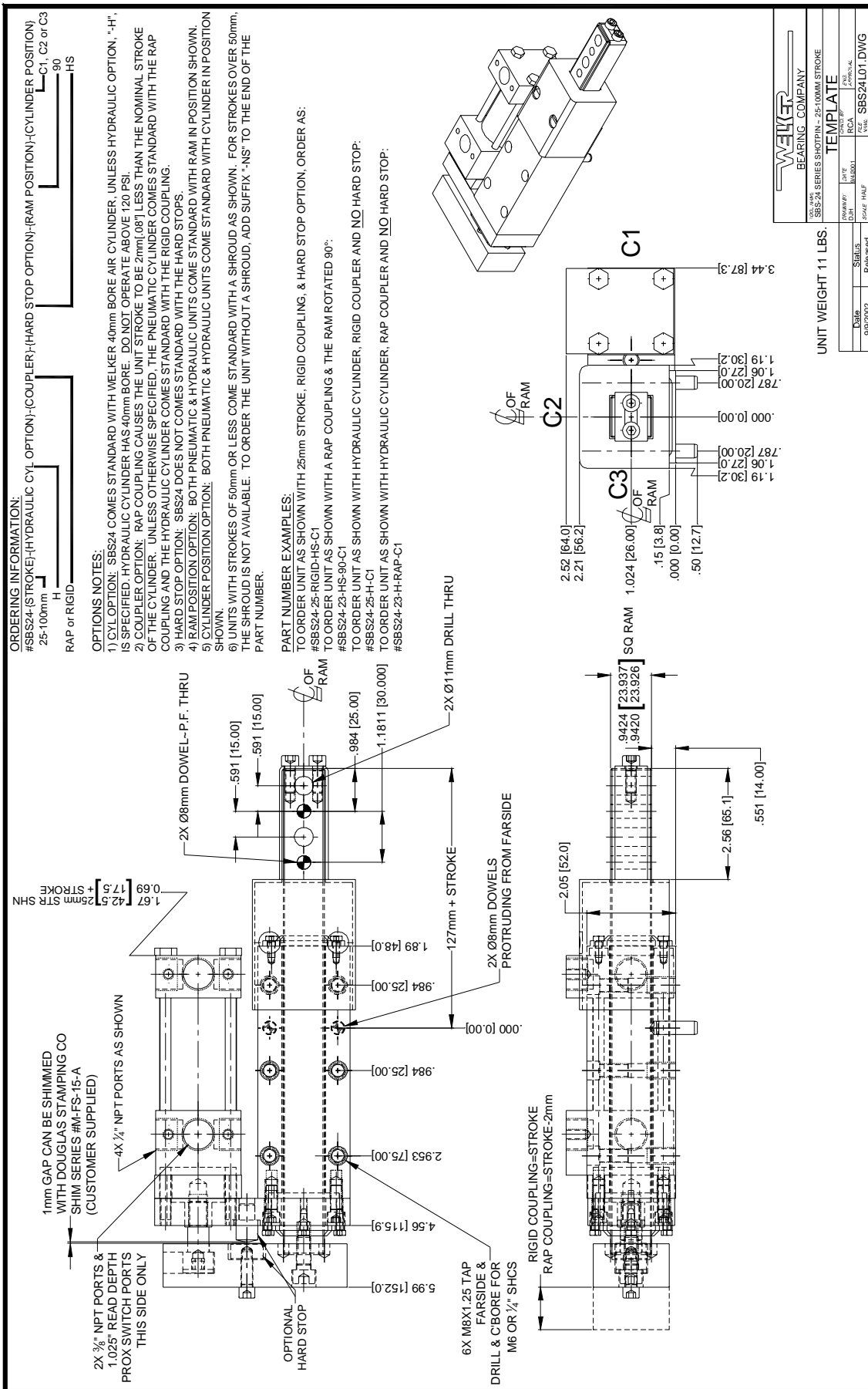
**TEMPLATE**

WPA60 SERIES SHOTPIN - 25/100mm STROKES

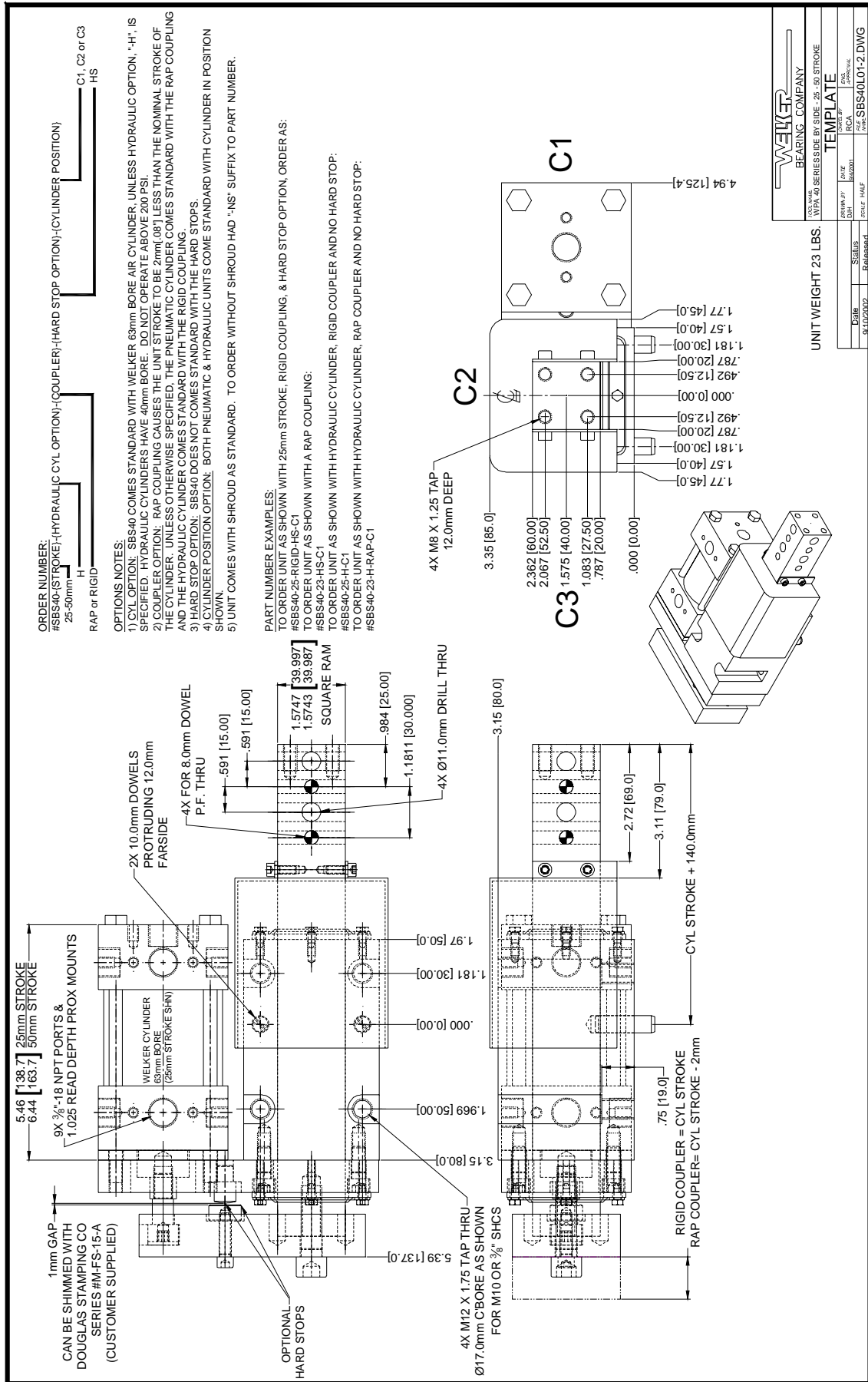
DATE	REV	BY	CHKD
01/25/2012	01	WELKER	WELKER
DESIGN	SCALE	PROJECT	DRAWING
01/25/2012	1:1	WPA60	WPA60L01.DWG

**UNIT WGT 71 LBS**

# SBS24 SIDE-BY-SIDE SHOT PIN 23-100mm Strokes

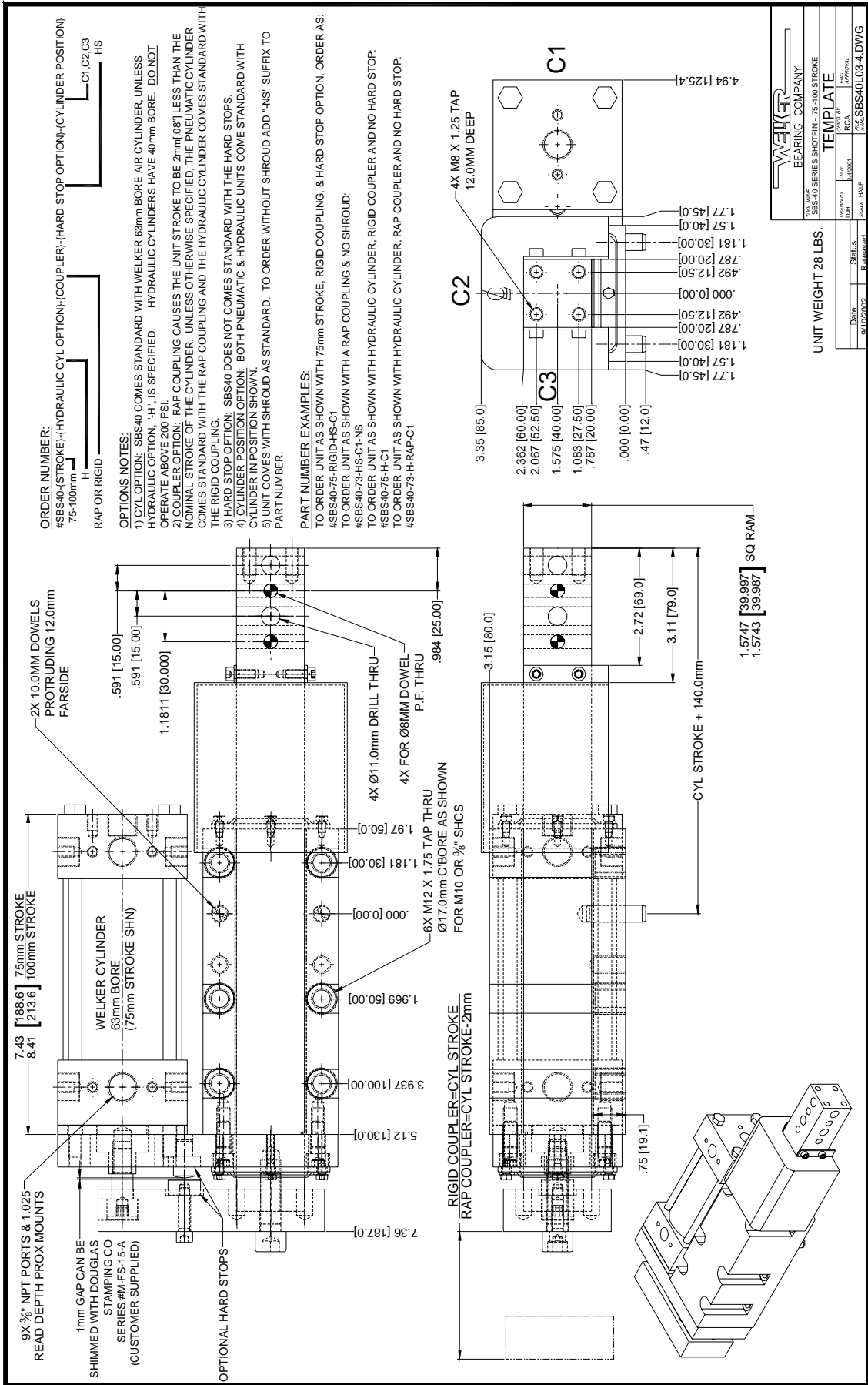


# SBS40 SIDE-BY-SIDE SHOT PIN 23-50mm Strokes

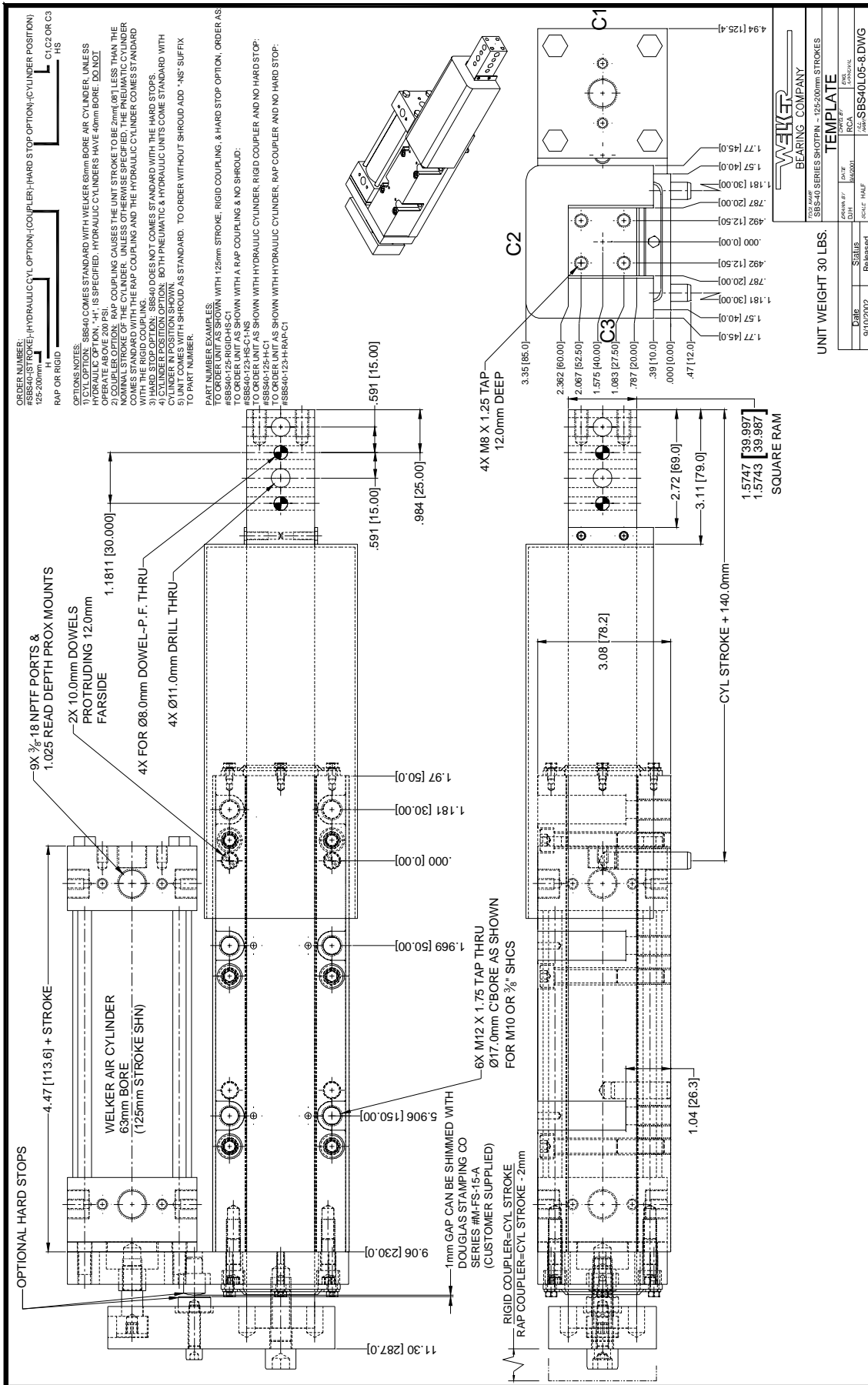




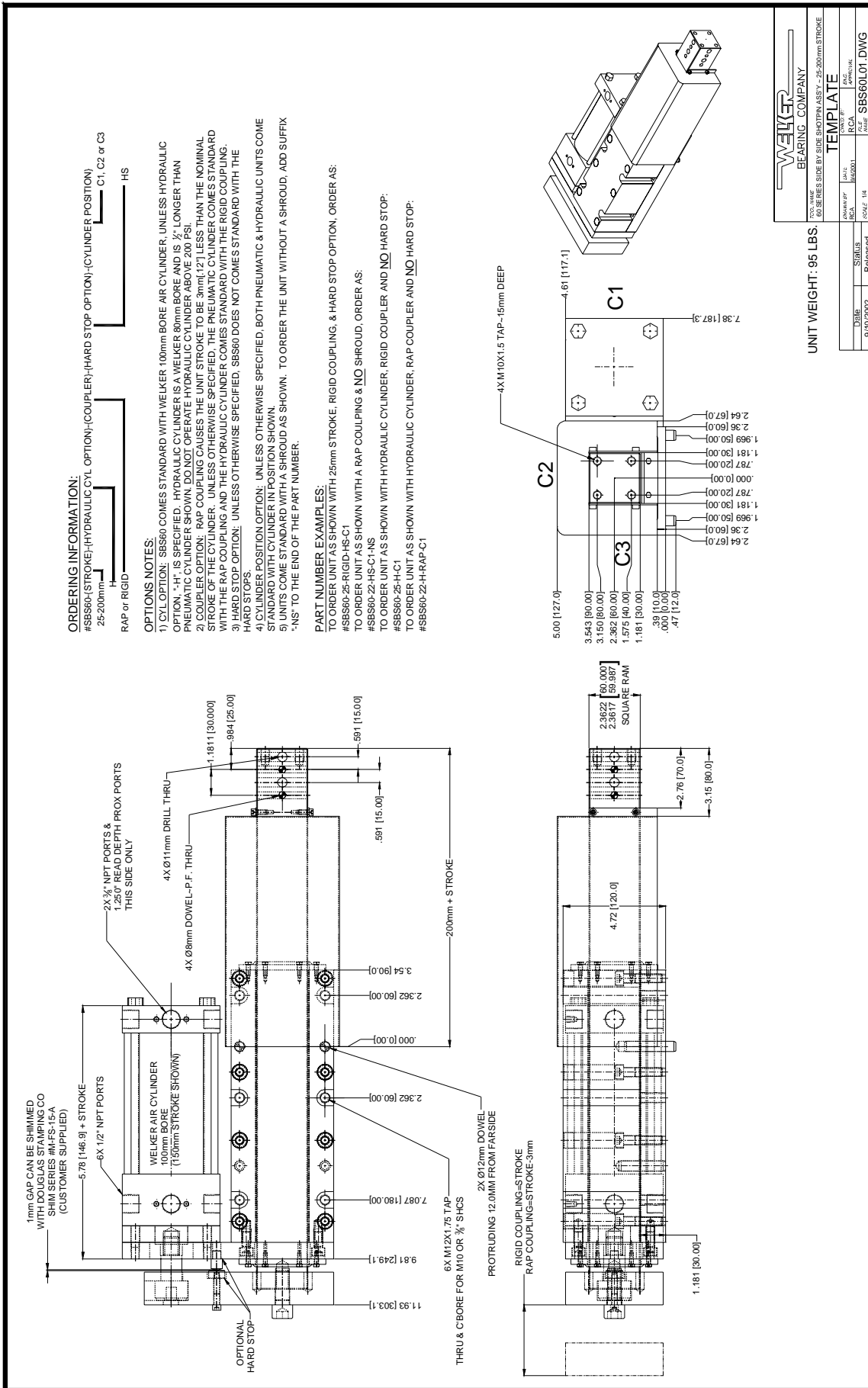
# SBS40 SIDE-BY-SIDE SHOT PIN 73-100mm Strokes



# SBS40 SIDE-BY-SIDE SHOT PIN 123-200mm Strokes



# SBS60 SIDE-BY-SIDE SHOT PIN 22-200mm Strokes





## WELKER PRODUCTS

- Lubrication Free Linear Slides & Gibs
- Lubrication Free Powered Slides
- Lubrication Free Shot Pin Packages
- Lubrication Free Lock-Out Pin Packages
- Lubrication Free Gapless Locating Pin Clamp Packages
- Rulon® Filled PTFE Bearings
- Laminate Composite Bearings
- Welker Friction Rollers
- Cast Bronze Bearings
- Simplicity™ Bearing Systems
- High Performance Plastic Bearings

Call your Welker representative for specific application information. (800) 229-0890

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