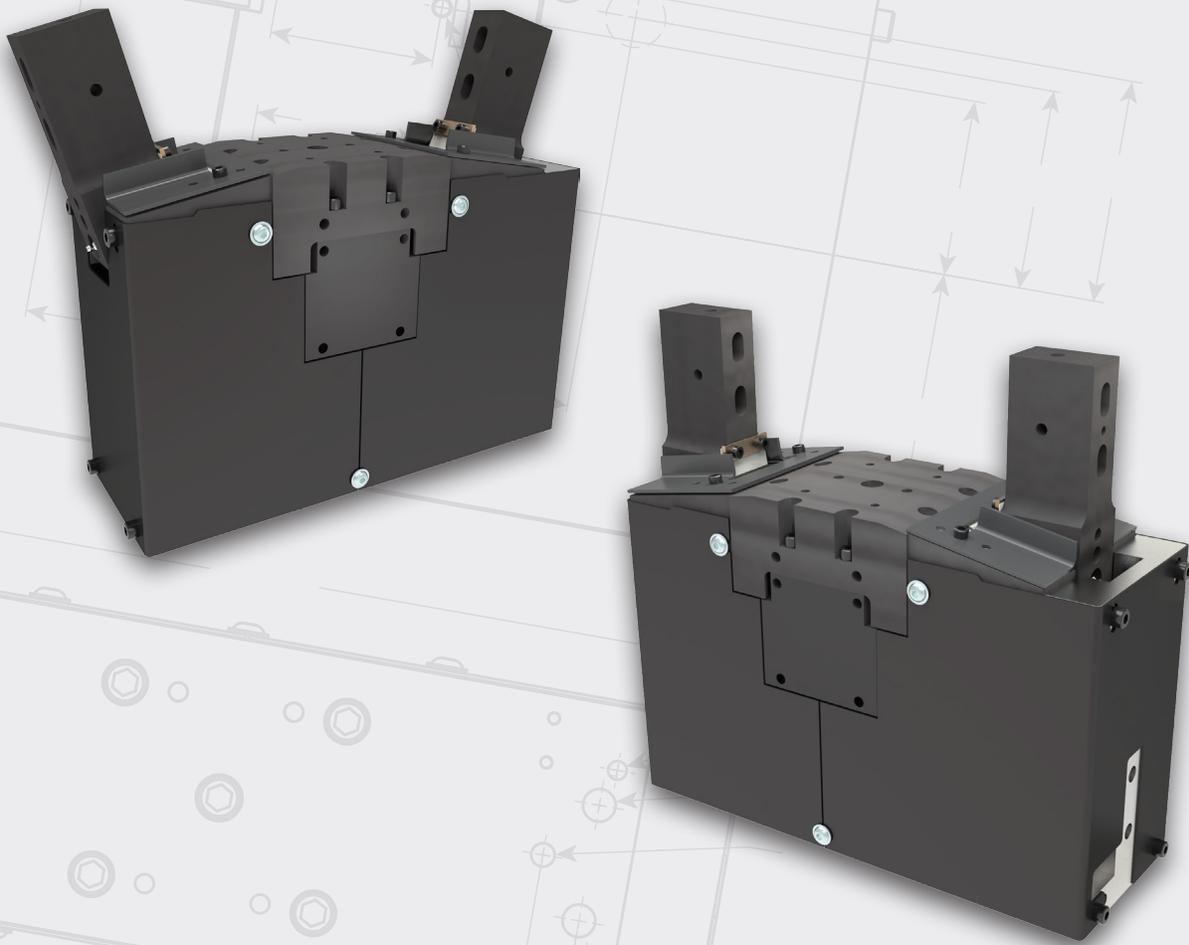


Pneumatic Frame Clamp

- Consistent, high clamping force across a wide power window
- Clamps larger, more complex parts with simpler tooling
- Weld cover design provides easy removal for maintenance and switch adjustments



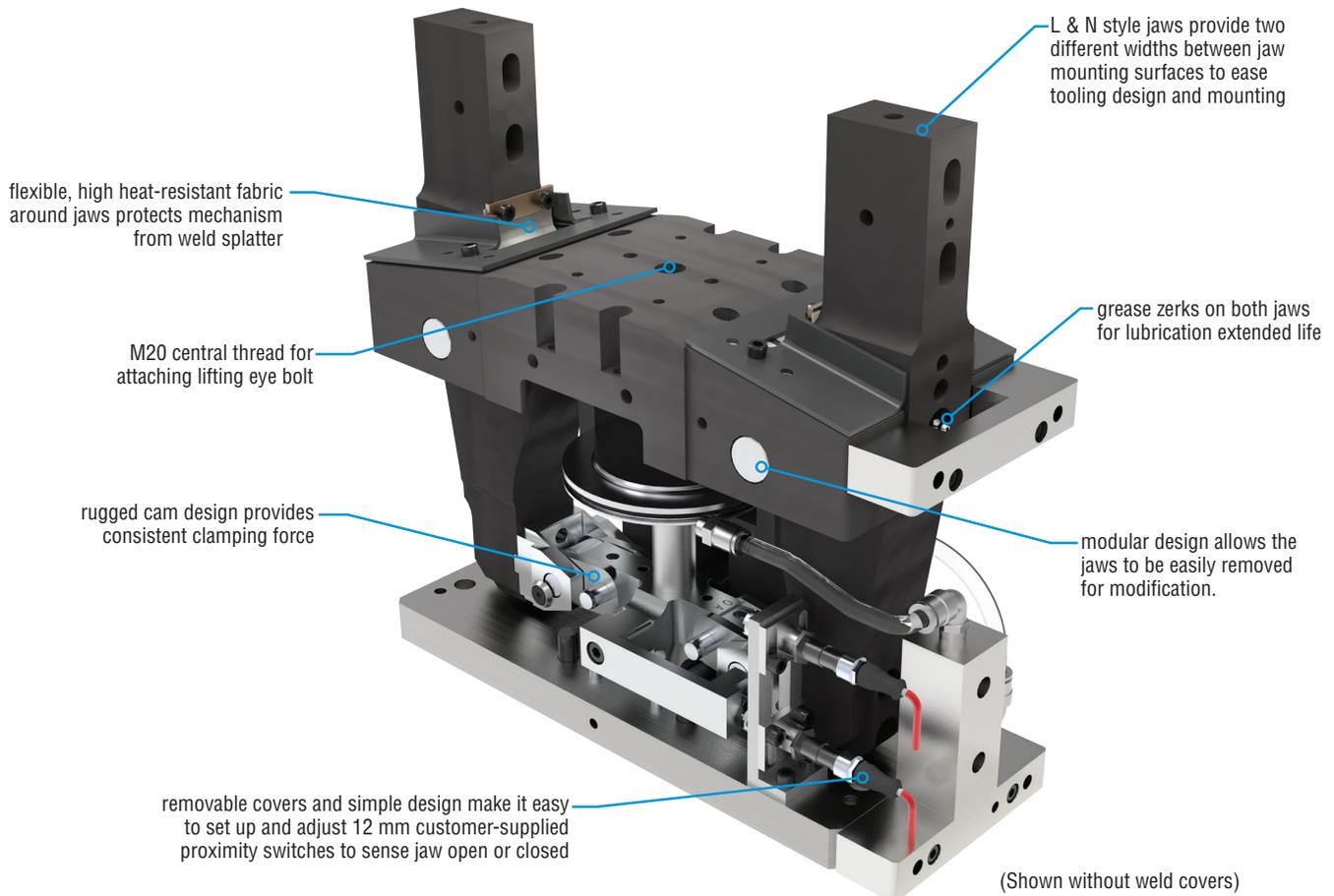
PFD

Major Benefits

- The rugged design delivers a consistent clamping force of 4,581 lb [20.4 kN] across a broad power window.
- The wide jaw throat opening and multiple jaw styles accommodate large workpieces using simple tooling.
- The body's tooling surfaces provide dowel pin mounting for securing workpiece support tooling.
- The modular design makes jaw removal quick and easy for modification or replacement.
- Weld covers safeguard internal mechanisms from weld debris and other contaminants.
- Covers can be conveniently removed while the clamp remains in place, facilitating efficient maintenance and switch adjustments.
- The switch-ready option allows jaw location sensing with customer-supplied 12 mm round proximity switches.
- Manifold ports and proximity switches are located at the end of the unit for optimal accessibility in confined areas or when installed side by side.
- The device operates quietly in under 0.7 seconds. Its internal orifices regulate speed, which reduces operating costs, speeds setup, and removes the need for external flow controls.
- An M20 threaded hole on the tooling surface provides a location to easily lift the clamp in and out of fixtures.
- Fully in-field repairable



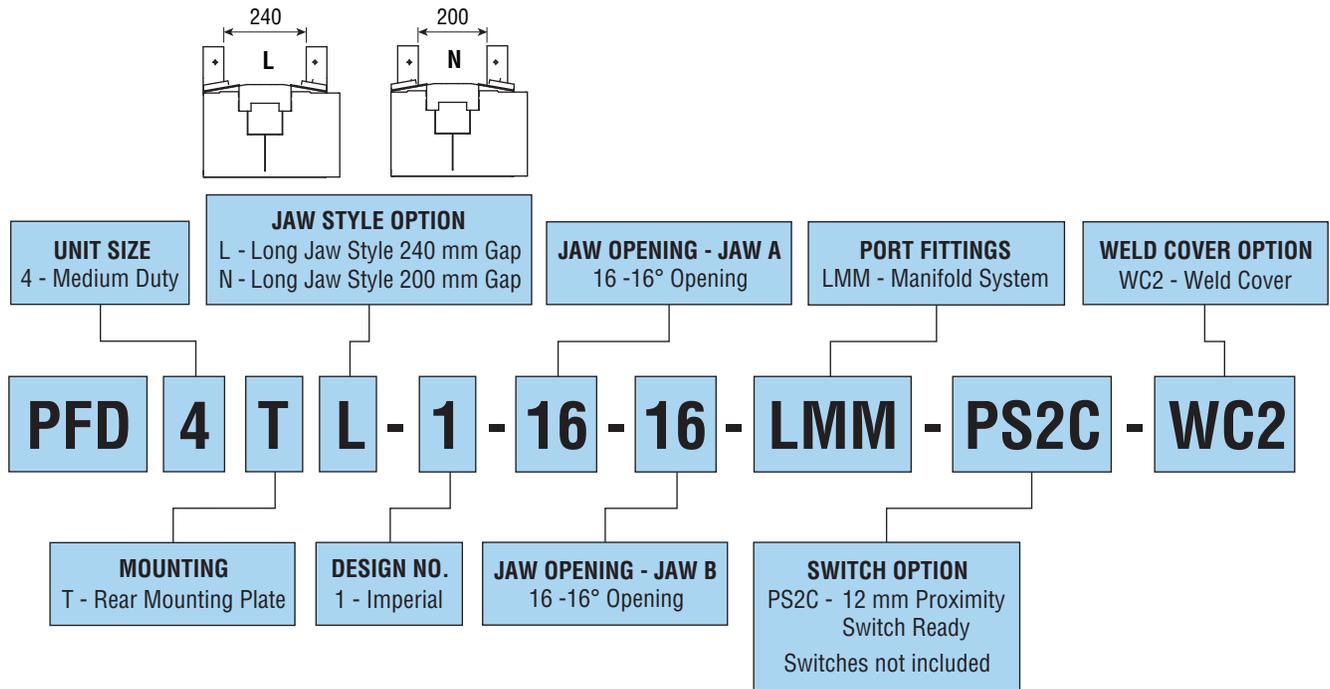
Direct replacement for competitor clamp with superior performance and usability.



ORDERING DATA: Series PFD Clamp

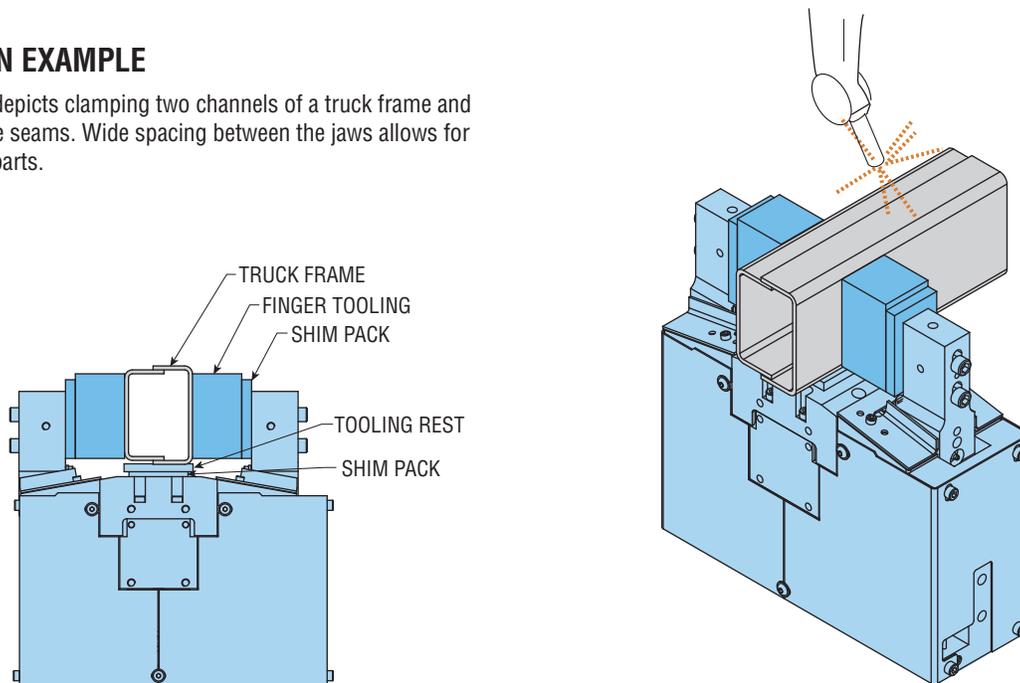
TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Fitting Option, Switch Option, and Weld Cover Option.



APPLICATION EXAMPLE

This application depicts clamping two channels of a truck frame and welding along the seams. Wide spacing between the jaws allows for clamping larger parts.

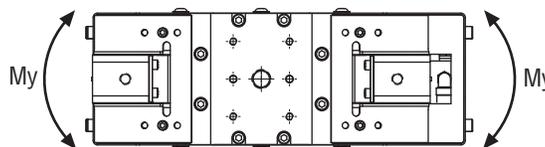


SPECIFICATIONS	SERIES PFD
WORKING PRESSURE	30 psi min. - 100 psi max. [2 bar min. - 7 bar max.]
BODY	Hardcoat Aluminum
JAWS	Steel
SEALS	Bidirectional Piston Seal, Lip Type Rod Seal
LUBRICATION	Permanent for Non-Lube Air
TEMPERATURE LIMITS	-20° to 180°F [-30° to 82°C]

MODEL	UNIT WEIGHT		TOTAL CLAMP FORCE at 72 psi [5 bar]		CLOSE OR OPEN TIME 72 psi [5 bar] second	DISPLACEMENT				CLAMP FORCE FACTOR (Cf)	
	lb	kg	lb	N		CLOSE		OPEN		Imperial	Metric
					in ³	cm ³	in ³	cm ³			
PFD4TL	83	37.6	4581	20390	0.7	44.72	724.3	43.1	706.3	268	436350
PFD4TN	81	36.7									

MOMENTS TEST

Take care to limit moment loads on the Series PFD. External loads and moments due to jaw clamp forces should be considered.



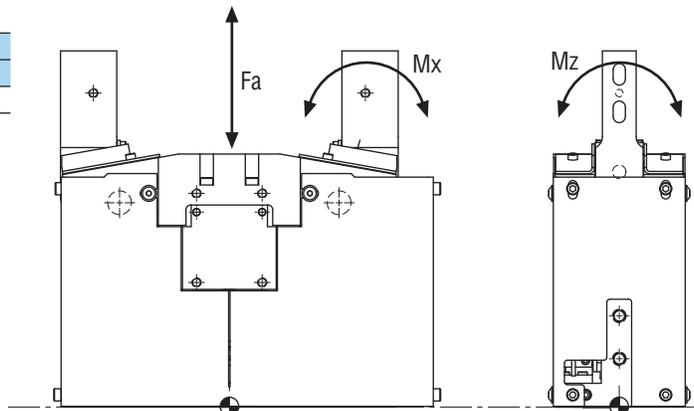
MODEL	Fa		Mx		My		Mz	
	lb	N	in-lb	Nm	in-lb	Nm	in-lb	Nm
PFD	1000	4448	20000	2261	10000	1130	10000	1130

Fa: Total for both jaws

Mx: Total for both jaws moments from base mounting surface

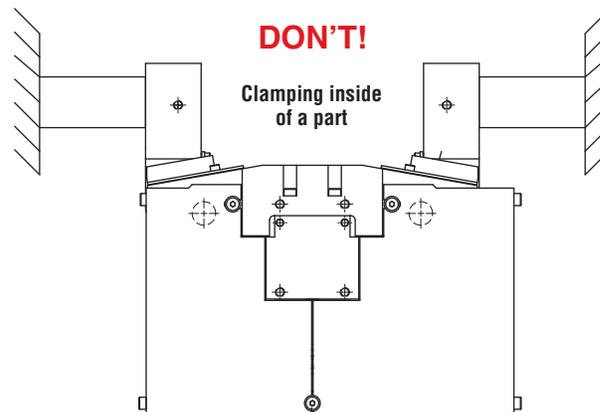
My: Total for both jaws moments from base mounting surface

Mz: Total for both jaws moments from base mounting surface



APPLICATION LIMITATIONS

The Series PFD has a robust mechanism designed to clamp the outside of a part. It should not be used to clamp the inside of a part, nor be limited externally from opening. The opening of one or both jaws should not be limited with external stops or tooling. Consult factory on internal applications.



EFFECTIVE CLAMPING RANGE

Total clamp force can be determined by multiplying air pressure by the clamp force multiplier (C_f), then dividing by the distance from clamping location to jaw pivot.

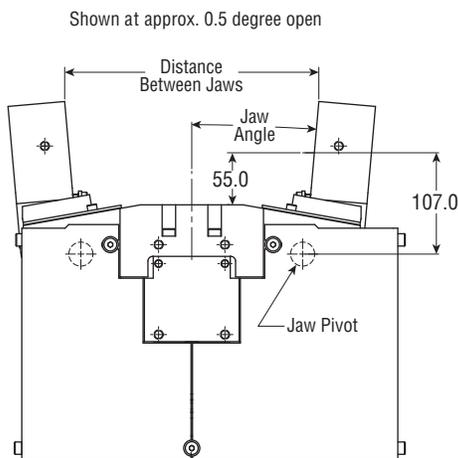
To achieve maximum clamp force, custom tooling or spacers must be used to close the jaws in the high force region. Refer to the chart for the high force region.

“L & N” LONG JAW STYLE

PFD4TL AND PFD4TN

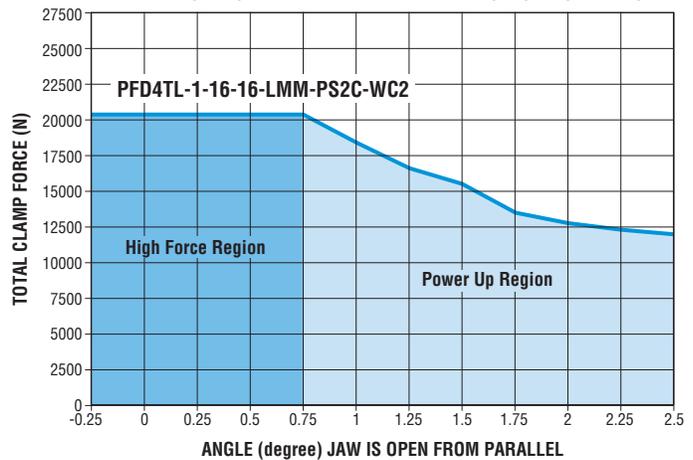
High force region C_f (Imperial) = 268

High force region C_f (Metric) = 436350



TOTAL CLAMP FORCE

Based on angle of jaws measured at 107 mm above jaw pivot pin at 72 psi.



Imperial Example:

Air line pressure: 72 psi

Clamp force multiplier: 268

(within high force region)

Distance from clamping location to pivot: 4.212 in

$(72 \times 268) / 4.212 = 4581$ lb total clamp force

Metric Example:

Air line pressure: 5 bar

Clamp force multiplier: 436350

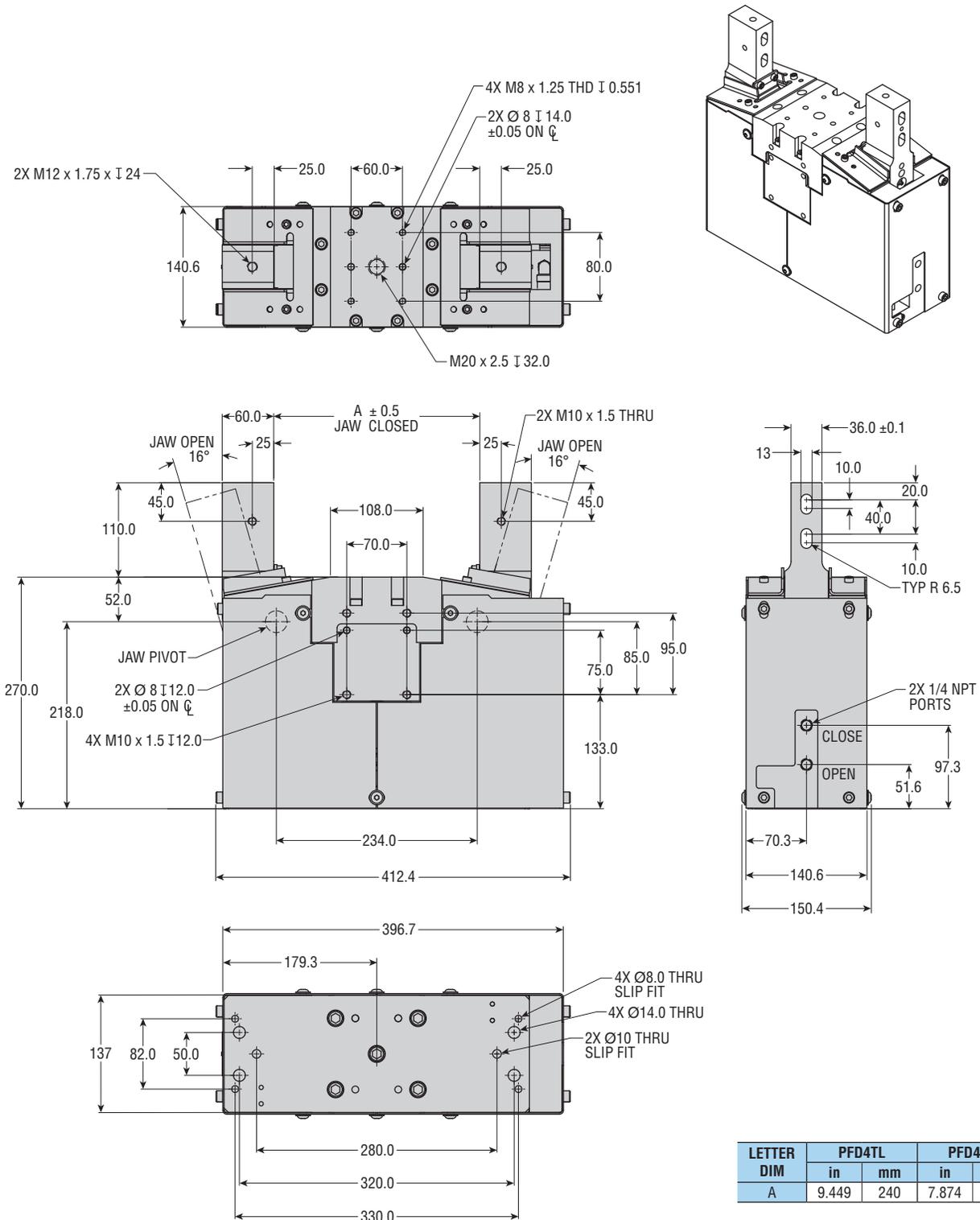
(within high force region)

Distance from clamping location to pivot: 107 mm

$(5 \times 436350) / 107 = 20390$ N total clamp force

All dimensions are reference only unless specifically tolerated.

DIMENSIONS: Series PFD Clamp - "L" and "N" Long Jaw Style



LETTER DIM	PFD4TL		PFD4TN	
	in	mm	in	mm
A	9.449	240	7.874	200

Top and body mounting surface are compatible to competitor unit.

All dimensions are reference only unless specifically toleranced.

INSTALLATION PROCEDURE

STEP 1:

To install or set the 12 mm proximity switches, first remove the four screws on the end with a 6 mm hex wrench. Then slide the cover away from the clamp so the switches are exposed as shown. Then follow the directions below.

STEP 2:

Using a 5 mm hex wrench, attach the switch mounting bracket (ORANGE) to the base plate with two M6 x 20 SHCS before attaching the switch mounting housings.

STEP 3:

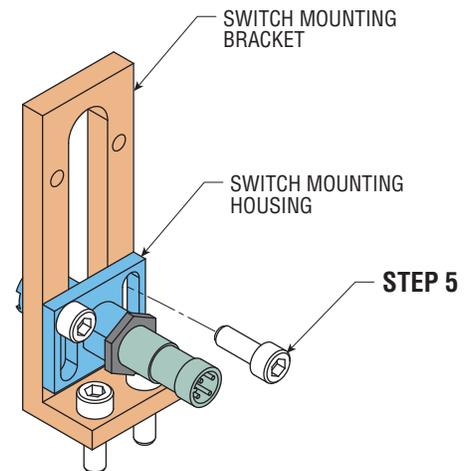
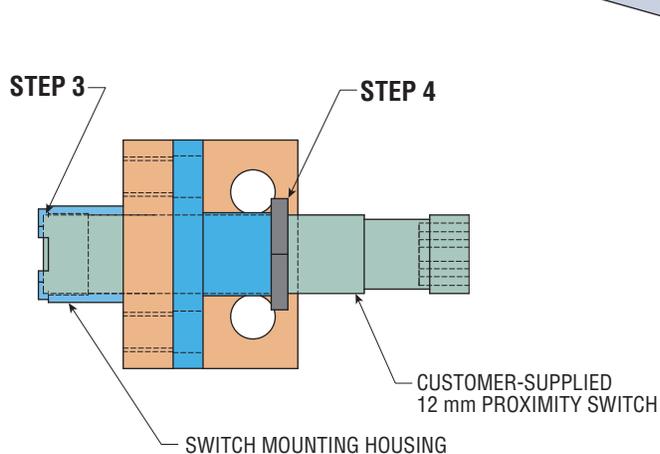
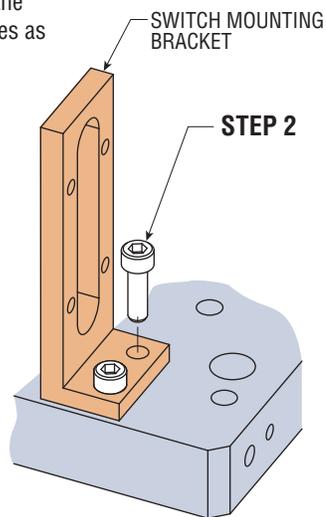
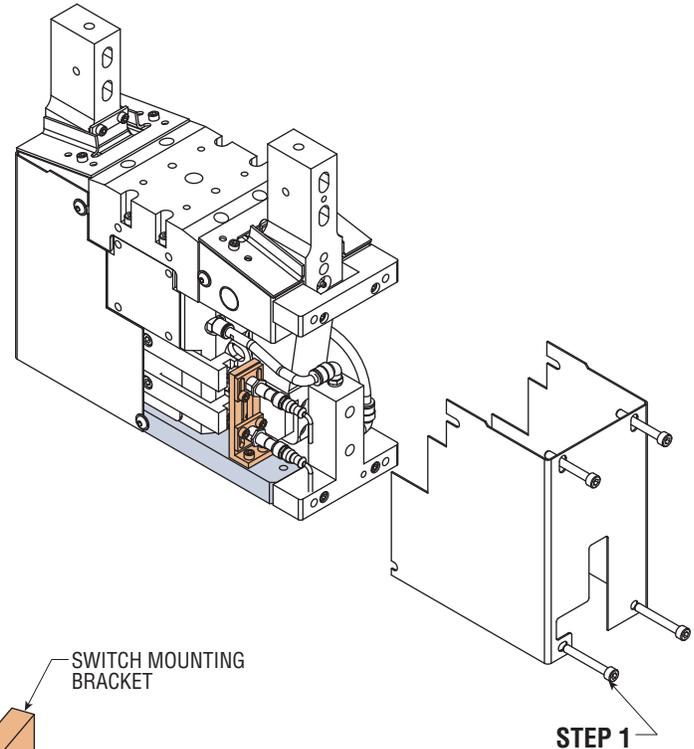
Thread the 12 mm proximity switch (GREEN) into the switch mounting housing (BLUE) until it bottoms out against the end of the housing.

STEP 4:

Tighten the jam nut (GRAY) against the end of the housing.

STEP 5:

Use two M6 x 10 SHCS to attach the switch mounting housing (BLUE) to the switch mounting bracket (ORANGE). Tighten the screws loosely using an M5 hex wrench. Adjust both switches as described on the next page.



SWITCH ADJUSTMENT: Series PFD Clamp

ADJUSTMENT PROCEDURE

Target and target screw move up and down as the jaws open and close.

STEP 1: TO SET OPEN SWITCH

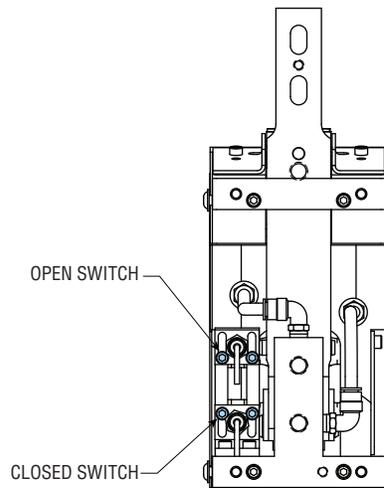
With the jaws in the OPEN position, the target will be in the up (unclamped) position. Loosen the OPEN fixing screws and slide the switch and housing up, then slide it back down until the switch trips on. Hold the switch in that position and retighten the fixing screws with a 5 mm hex wrench. The OPEN switch is now set.

STEP 2: TO SET CLOSED SWITCH

With the jaws CLOSED (clamped on part), the target will be in the down (clamped) position. Loosen the CLOSED fixing screws, then slide the switch and housing down. Then slide it up until the switch trips on. Hold the switch in this position and retighten the fixing screws with a 5 mm hex wrench. The CLOSED (clamped) switch is now set.

STEP 3:

Slide the cover over the clamp. Reinstall the four cover screws using a 6 mm hex wrench.



PFD4TL-1-16-16-LMM-PS2C-WC2

TWO 12 mm PROXIMITY SWITCHES AND CABLES SHOWN, BUT NOT INCLUDED

