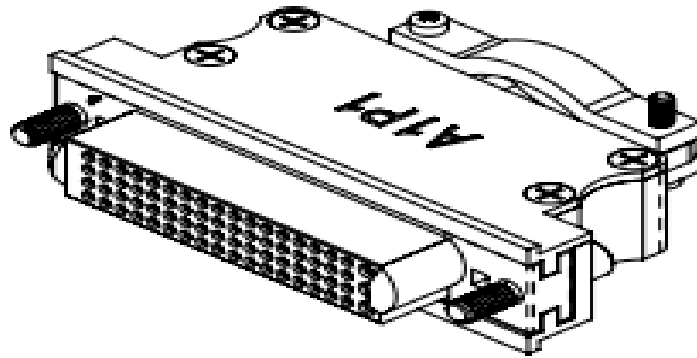


ASTRONICS COREPOWER ECBU CABLE CONNECTORS

USER GUIDE



Positronic®
an Amphenol company

THE SCIENCE OF CERTAINTY®

ASTRONICS ECBU CABLE CONNECTORS

USER GUIDE

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1.0 SCOPE

This document describes the Positronic cable connectors used on the Astronics CorePower ECBUs and Control LRUs. Characteristics of the connectors, required tooling and termination instructions will be covered.

2.0 TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES

Insulator material	Glass-filled LCP, UL 94V-O, grey color
Contact material	Copper alloy
Contact plating	Gold flash over nickel 30 µin gold over nickel.
Backshell material	Aluminum
Backshell plating	Yellow chromate conversion
Backshell hardware material	Stainless steel with thread locking patch Steel with thread locking patch
Backshell hardware plating	Passivation Nickel plating
Interfacial seal material	Flourosilicone sponge, MIL-R- 6130 type II

ELECTRICAL

Working voltage (rms) 100v to 1000v

Initial contact resistance Power - 0.2 mΩ
Signal - 5 mΩ

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Contact current rating

Power - up to 100A
Signal - 3A

MECHANICAL

Contact style

Removable

Contact termination

Crimp

Female contact design

Closed entry

Mating cycles

1000

Back shell jackscrews

8-32, with 0.143 [3.63mm] socket head

ENVIRONMENTAL

Operation temperature

-55 to 160 deg C

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3.0 CONNECTORS – 28VDC – ECBU LRU

28VDC connectors with backshells

Part number	SK18444-1-2K1	SK18444-2-2K1
Position	P1	P1
Gender	Female	Female
Keyed	No	Yes
Kitted Contact	FC0404N2S/AA-14-1882.35 Size 4 - qty 1 For 4 awg wire	FC0404N2S/AA-14-1882.35 Size 4 - qty 1 For 4 awg wire
Kitted Contact	FC114P2/AA-PA907 Size 16 - qty4 For 14 to 16 awg wire	FC114P2/AA-PA907 Size 16 - qty4 For 14 to 16 awg wire
Kitted Contact	FC1816P2/AA Size 18 - qty3 For 16 to 18 awg wire	FC1816P2/AA Size 18 - qty3 For 16 to 18 awg wire
Kitted Contact	FC422P9/AA Size 22 - qty 28 For 22 to 26 awg wire	FC422P9/AA Size 22 - qty 28 For 22 to 26 awg wire

Part number	SK18445-1-1K1	SK18445-2-1K1
Position	P2	P2
Gender	Male	Male
Keyed	No	Yes
Kitted Contact	MC112NS/AA Size 16 - qty 4 For 12 awg wire	MC112NS/AA Size 16 - qty 4 For 12 awg wire
Kitted Contact	MC114N/AA Size 16 - qty 4 For 14 to 16 awg wire	MC114N/AA Size 16 - qty 4 For 14 to 16 awg wire
Kitted Contact	FC1816N/AA Size 18 - qty 12 For 16 to 18 awg wire	FC1816N/AA Size 18 - qty 12 For 16 to 18 awg wire

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28VDC connectors

Part number	SK18444-K	SK18445-K
Position	P1	P2
Gender	Female	Male
Keyed	NA	NA
Kitted Contact	FC0404N2S/AA-14-1882.35 Size 4 - qty 1 For 4 awg wire	MC112NS/AA Size 16 - qty 4 For 12 awg wire
Kitted Contact	FC114P2/AA-PA907 Size 16 - qty4 For 14 to 16 awg wire	MC114N/AA Size 16 - qty 4 For 14 to 16 awg wire
Kitted Contact	FC1816P2/AA Size 18 - qty3 For 16 to 18 awg wire	FC1816N/AA Size 18 - qty 12 For 16 to 18 awg wire
Kitted Contact	FC422P9/AA Size 22 - qty 28 For 22 to 26 awg wire	

28VDC crimp tooling

Positronic Contact Part Number	Strip Wire Length [in (mm)]	Crimp Tools			Positioner		
		Positronic PN	DMC Equivalent	Mil Equivalent	Positronic PN	DMC Equivalent	Mil Equivalent
MC1816N/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-32-0-0 9502-18-0-0	K1202	-
MC114N/AA	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
MC112NS/AA	.230±.020 (5.84±.51)	9509-4-0-0	GS222	-	9509-5-0-0	TP1366	-
FC1816P2/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-30-0-0 9502-18-0-0	K1202	-
FC114P2/AA- PA907	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
FC0404N2S/AA- 14-1882.35	.460±.020 (11.68±.51)	9503-2-1-0 9503-2-2-0	WA23 WA23-4	M22520/23-01 M22520/23-04	9503-2-4-0	WA23- 458L	-

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FC422P9/AA	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-
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28VDC insertion/ removal tooling

Positronic Contact Part Number	Insertion Tool				Removal Tool			
	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent
MC1816N/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
MC114N/AA	9099-0-0-0	ITH 1094	DAK123A	M81969/18-01	9081-0-0-0	RTG 2103	DRK124A	M81969/20-01
MC112NS/AA	9099-0-0-0	ITH 1094	DAK123A	M81969/18-01	9081-0-0-0	RTG 2103	DRK124A	M81969/20-01
FC1816P2/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
FC114P2/AA-PA907	9099-0-0-0	ITH 1094	DAK123A	M81969/18-01	9081-0-0-0	RTG 2103	DRK124A	M81969/20-01
FC0404N2S/AA-14-1882.35	N/A				N/A			
FC422P9/AA	9099-7-0-0	-	-	-	9081-3-0-0	RNG-2103	-	-

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4.0 CONNECTORS – 115VAC – ECBU LRU

115VAC ECBU connectors with backshells

Part number	SK21801-1-1K1	SK21801-2-1K1
Position	P1	P1
Gender	Male	Male
Keyed	No	Yes
Kitted Contact	MC1210NS/AA Size 12 - qty 1 For 10 awg wire	MC1210NS/AA Size 12 - qty 1 For 10 awg wire
Kitted Contact	MC114N/AA Size 16 - qty 4 For 14 - 16 awg wire	MC114N/AA Size 16 - qty 4 For 14 - 16 awg wire
Kitted Contact	MC1816NS/AA Size 18 - qty3 For 16 – 18 awg wire	MC1816NS/AA Size 18 - qty3 For 16 – 18 awg wire
Kitted Contact	MC422N9/AA-1127.11 Size 22 - qty 28 For 22 to 26 awg wire	MC422N9/AA-1127.11 Size 22 - qty 28 For 22 to 26 awg wire

Part number	SK21804-1-2K1	SK21804-2-2K1
Position	P2	P2
Gender	Female	Female
Keyed	No	Yes
Kitted Contact	MC4008DS/AA Size 12 - qty 3 For 8 awg wire	MC4008DS/AA Size 12 - qty 3 For 8 awg wire
Kitted Contact	FC112P2/AA-PA907 Size 16 - qty 2 For 12 to 12 awg wire	FC112P2/AA-PA907 Size 16 - qty 2 For 12 to 12 awg wire

115VAC ECBU connectors

Part number	SK21801-K	SK21804-K
Position	P1	P2
Gender	Male	Female
Keyed	NA	NA
Kitted Contact	MC1210NS/AA Size 12 - qty 1 For 10 awg wire	MC4008DS/AA Size 12 - qty 3 For 8 awg wire
Kitted Contact	MC114N/AA Size 16 - qty 4 For 14 - 16 awg wire	FC112P2/AA-PA907 Size 16 - qty 2 For 12 to 12 awg wire
Kitted Contact	MC1816NS/AA Size 18 - qty3 For 16 – 18 awg wire	
Kitted Contact	MC422N9/AA-1127.11	

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	Size 22 - qty 28 For 22 to 26 awg wire	
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115VAC crimp tooling

Positronic Contact Part Number	Strip Wire Length [in (mm)]	Crimp Tools			Positioner		
		Positronic PN	DMC Equivalent	Mil Equivalent	Positronic PN	DMC Equivalent	Mil Equivalent
MC422N9/AA- 1127.11	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-
MC1816NS/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-32-0-0 9502-18-0-0	K1202	-
MC114N/AA	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
MC112NS/AA	.230±.020 (5.84±.51)	9509-4-0-0	GS222	-	9509-5-0-0	TP1366	-
MC1210NS/AA	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9509-6-2-0	TP1386	-
FC114P2/AA- PA907	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
FC4008DS/AA	.350±.020 (8.89±.51)	9504-1-0-0	HX-4	M22520/5-01	9504-19-1-0	Y524	-

115VAC insertion/ removal tooling

Positronic Contact Part Number	Insertion Tool				Removal Tool			
	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent
MC422N9/AA- 1127.11	9099-7-0-0	-	-	-	9081-3-0-0	RNG2103	-	-
MC1816NS/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
MC114N/AA	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
MC112NS/AA	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
MC1210NS/AA	9099-3-0-0	ITP 1168	-	-	2711-0-0-0	-	-	-
FC114P2/AA- PA907	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
FC4008DS/AA	-				4311-0-0-0	-	-	-

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5.0 CONNECTORS – 270VDC – ECBU LRU

270VDC ECBU connectors

Part number	SK25170-K	SK25172-K
Position		
Gender	Male	Female
Associated back shell	SK25204-*	SK25203-*
Keyed	NA	NA
Kitted Contact	MC1816N/AA Size 18 - qty 5 For 16 – 18 awg wire	FC0404N2S/AA-14-1882.35 Size 4 - qty 1 For 4 awg wire
Kitted Contact		FC422P9/AA Size 22 - qty 36 For 22-26 awg wire

Part number	SK25174-K
Position	
Gender	Male
Associated back shell	SK25204-*
Keyed	NA
Kitted Contact	MC1816N/AA Size 18 - qty 5 For 16 – 18 awg wire

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270VDC crimp tooling

Positronic Contact Part Number	Strip Wire Length [in (mm)]	Crimp Tools			Positioner		
		Positronic PN	DMC Equivalent	Mil Equivalent	Positronic PN	DMC Equivalent	Mil Equivalent
MC1816N/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-32-0-0 9502-18-0-0	K1202	-
FC4008DS/AA	.350±.020 (8.89±.51)	9504-1-0-0	HX-4	M22520/5-01	9504-19-1-0	Y524	-
FC422P9/AA	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-

270VDC insertion/ removal tooling

Positronic Contact Part Number	Insertion Tool				Removal Tool			
	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent
MC1816N/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
FC0404N2S/AA-14-1882.35	N/A				N/A			
FC422P9/AA	9099-7-0-0	-	-	-	9081-3-0-0	RNG-2103	-	-

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6.0 CONNECTORS - SCM - ECBU LRU

SCM connectors

Part number	SK25115-K	SK25117-K
Position		
Gender	Male	Female
Associated back shell	SK25203-*	SK25203-*
Keyed	NA	NA
Kitted Contact	MC422N9/AA-1127.11 Size 22 - qty 72 For 22 to 26 awg wire	FC1816P2/AA Size 22 - qty 3 For 16 to 18 awg wire
Kitted Contact		FC422P9/AA Size 22 - qty 68 For 22 to 26 awg wire

SCM crimp tooling

Positronic Contact Part Number	Strip Wire Length [in (mm)]	Crimp Tools			Positioner		
		Positronic PN	DMC Equivalent	Mil Equivalent	Positronic PN	DMC Equivalent	Mil Equivalent
MC422N9/AA-1127.11	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-
FC1816P2/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-30-0-0 9502-18-0-0	K1202	-
FC422P9/AA	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-

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SCM insertion/ removal tooling

Positronic Contact Part Number	Insertion Tool				Removal Tool			
	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent
MC422N9/AA- 1127.11	9099-7-0-0	-	-	-	9081-3-0-0	RNG2103	-	-
FC1816P2/AA	9099-6-0-0				-			
FC422P9/AA	9099-7-0-0	-	-	-	9081-3-0-0	RNG-2103	-	-

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7.0 CONNECTORS – GCU – ECBU LRU

GCU connectors

Part number	SK25166-K	SK25168-K
Position		
Gender	Female	Female
Associated back shell	SK25202-*	SK25203-*
Keyed	NA	NA
Kitted Contact	FC1816P2/AA Size 22 - qty 6 For 16 to 18 awg wire	FC1816P2/AA Size 22 - qty 6 For 16 to 18 awg wire
Kitted Contact	FC422P9/AA Size 22 - qty 36 For 22 to 26 awg wire	FC422P9/AA Size 22 - qty 20 For 22 to 26 awg wire

GCU crimp tooling

Positronic Contact Part Number	Strip Wire Length [in (mm)]	Crimp Tools			Positioner		
		Positronic PN	DMC Equivalent	Mil Equivalent	Positronic PN	DMC Equivalent	Mil Equivalent
FC1816P2/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-30-0-0 9502-18-0-0	K1202	-
FC422P9/AA	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-

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GCU insertion/ removal tooling

Positronic Contact Part Number	Insertion Tool				Removal Tool			
	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent
FC1816P2/AA	9099-6-0-0				-			
FC422P9/AA	9099-7-0-0	-	-	-	9081-3-0-0	RNG-2103	-	-

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8.0 BACKSHELLS – ALL ECBU/LRU

Backshells

Part number	SK25202-1	SK25202-2	SK25202-3
Keying position	Neutral	Left	Right
Center to center dim.	2.65" [67.31mm]	2.65" [67.31mm]	2.65" [67.31mm]

Part number	SK25203-1	SK25203-2	SK25203-3
Keying position	Neutral	Left	Right
Center to center dim.	2.86" [72.62mm]	2.86" [72.62mm]	2.86" [72.62mm]

Part number	SK25204-1	SK25204-2
Keying position	Neutral	Left
Center to center dim.	2.24" [56.88mm]	2.24" [56.88mm]

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9.0 COMBINED CONTACT/TOOLING MATRIX

Crimp tooling

Positronic Contact Part Number	Strip Wire Length [in (mm)]	Crimp Tools			Positioner		
		Positronic PN	DMC Equivalent	Mil Equivalent	Positronic PN	DMC Equivalent	Mil Equivalent
MC422N9/AA-1127.11	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-
MC1816N/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-32-0-0 9502-18-0-0	K1202	-
MC1816NS/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-32-0-0 9502-18-0-0	K1202	-
MC114N/AA	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
MC112NS/AA	.230±.020 (5.84±.51)	9509-4-0-0	GS222	-	9509-5-0-0	TP1366	-
MC1210NS/AA	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9509-6-2-0	TP1386	-
FC1816P2/AA	.230±.020 (5.84±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-30-0-0 9502-18-0-0	K1202	-
FC112P2/AA-P907	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
FC114P2/AA-PA907	.230±.020 (5.84±.51)	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03
FC0404N2S/AA-14-1882.35	.460±.020 (11.68±.51)	9503-2-1-0	WA23	M22520/23-01	9503-2-4-0	WA23-458L	-
		9503-2-2-0	WA23-4	M22520/23-04			
FC4008DS/AA	.350±.020 (8.89±.51)	9504-1-0-0	HX-4	M22520/5-01	9504-19-1-0	Y524	-

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FC422P9/AA	.125±.020 (3.18±.51)	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	-
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Insertion/ removal tooling

Positronic Contact Part Number	Insertion Tool				Removal Tool			
	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent	Positronic PN	Contact Service Equivalent	DMC Equivalent	Mil Equivalent
MC422N9/AA- 1127.11	9099-7-0-0	-	-	-	9081-3-0-0	RNG2103	-	-
MC1816N/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
MC1816NS/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
MC114N/AA	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
MC112NS/AA	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
MC1210NS/AA	9099-3-0-0	ITP 1168	-	-	2711-0-0-0	-	-	-
FC1816P2/AA	9099-6-0-0	-	-	-	9081-9-0-0	-	-	-
FC112P2/AA- P907	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
FC114P2/AA- PA907	9099-0-0-0	ITH 1094	DAK123A	M81969/18- 01	9081-0-0-0	RTG 2103	DRK124A	M81969/20- 01
FC4008DS/AA					4311-0-0-0	-	-	-
FC0404N2S/AA- 14-1882.35	N/A				N/A			

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10.0 ASSEMBLY INSTRUCTIONS

ASSEMBLY INSTRUCTIONS

Terminate contacts

- Use the tooling guide to determine the correct crimp tooling.
- Use the tooling guide to determine the correct insulation strip length on the conductors to be terminated.
- Crimp contacts and inspect using your internal inspection criteria.

Load Contacts

- Load contacts into the desired pinout positions.
- All contacts, except for the large size 4 power contact use AS39029 style retention. The contacts should “click” into place.
- Check that the contact are fully seated for applying a gentle force, pulling backward on the conductor.
- The size 4 power contact should be fully inserted into the connector body. The “u-shaped” clipped is then inserted into the connector body locking the contact into place. The clip is fully seated when it is flush with the connector body.

Assemble backshell

- After completing the contact loading, place the connector into the backshell.
- Terminate ground pigtailed to the two grounding positions in the backshell.
- Dress the harness bundle per preferred workmanship standards.
- Build up the harness bundle if necessary, and install the cable clamps.
- Install backshell cover.
- Install jackscrews into back shell by threading them through the backshell until they pass all the way through the threads and are “free to spin”.

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- Install the interfacial seal on the mating face of male connectors by carefully lining up the through holes with the contacts and gently pushing the seal down until it is seated against the connector body at the base of the contacts.

11.0 RESOURCES

Technical resources

Technical inquiries should be directed to the resources listed. Our team offers immediate responses to your questions. We can answer your questions in real time communication and provide technical drawing in PDF and Stp formats.

- Positronic point of contact:
 - Eric Eike
 - eeike@connectpositronic.com
 - 334.390.9365
- Positronic Field Application Engineers:
 - Posilive@connectpositronic.com
 - 417.855.2030
 - Live web chat www.connectpositronic.com

Purchasing resources

Purchasing inquiries for quote and order placement can be directed direct to Positronic or one of our authorized distributors.

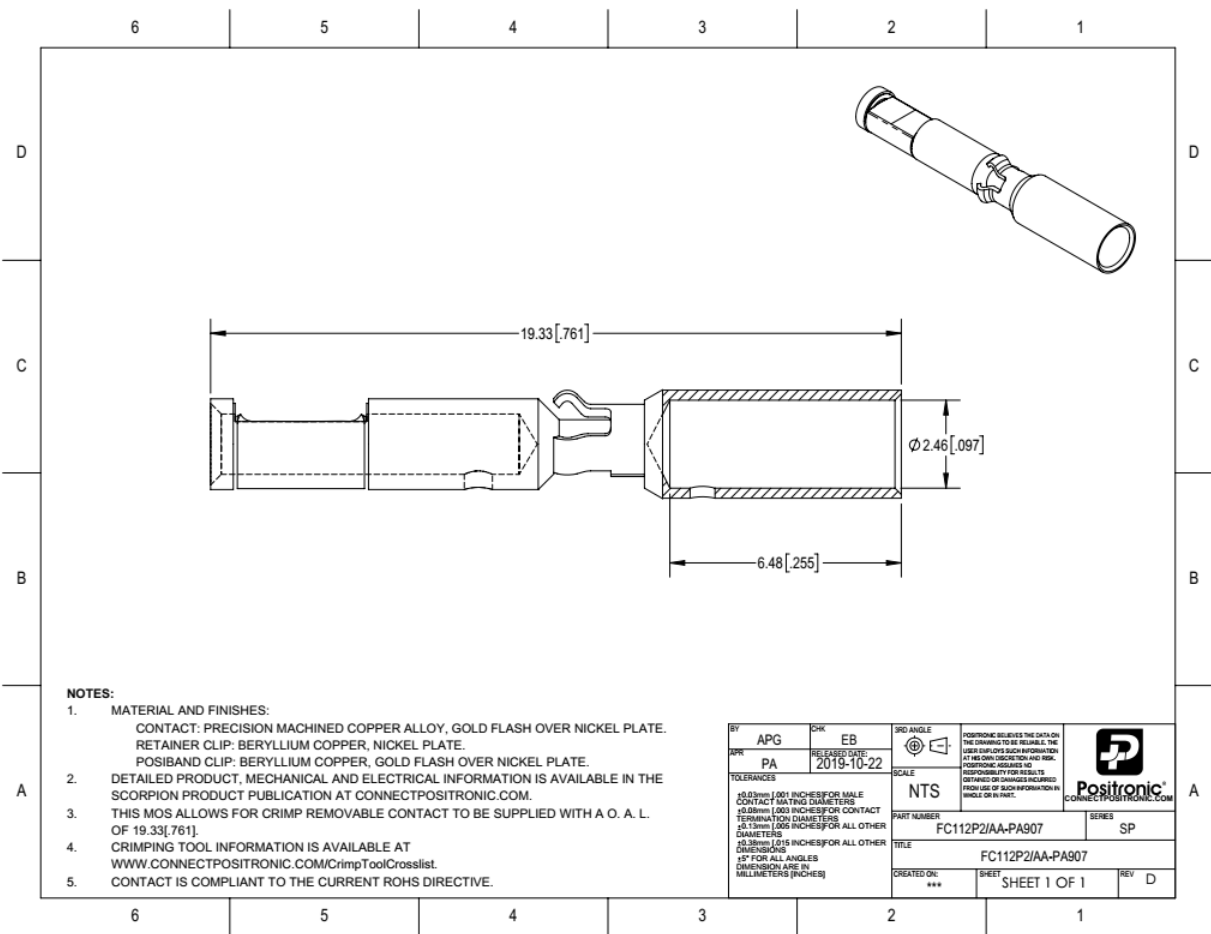
- Positronic direct communication:
 - Inside sales team
 - Insidesales@connectpositronic.com
 - 417.866.2322
- Authorized distributors
 - Distributors: <https://www.connectpositronic.com/en/channel-partners/>

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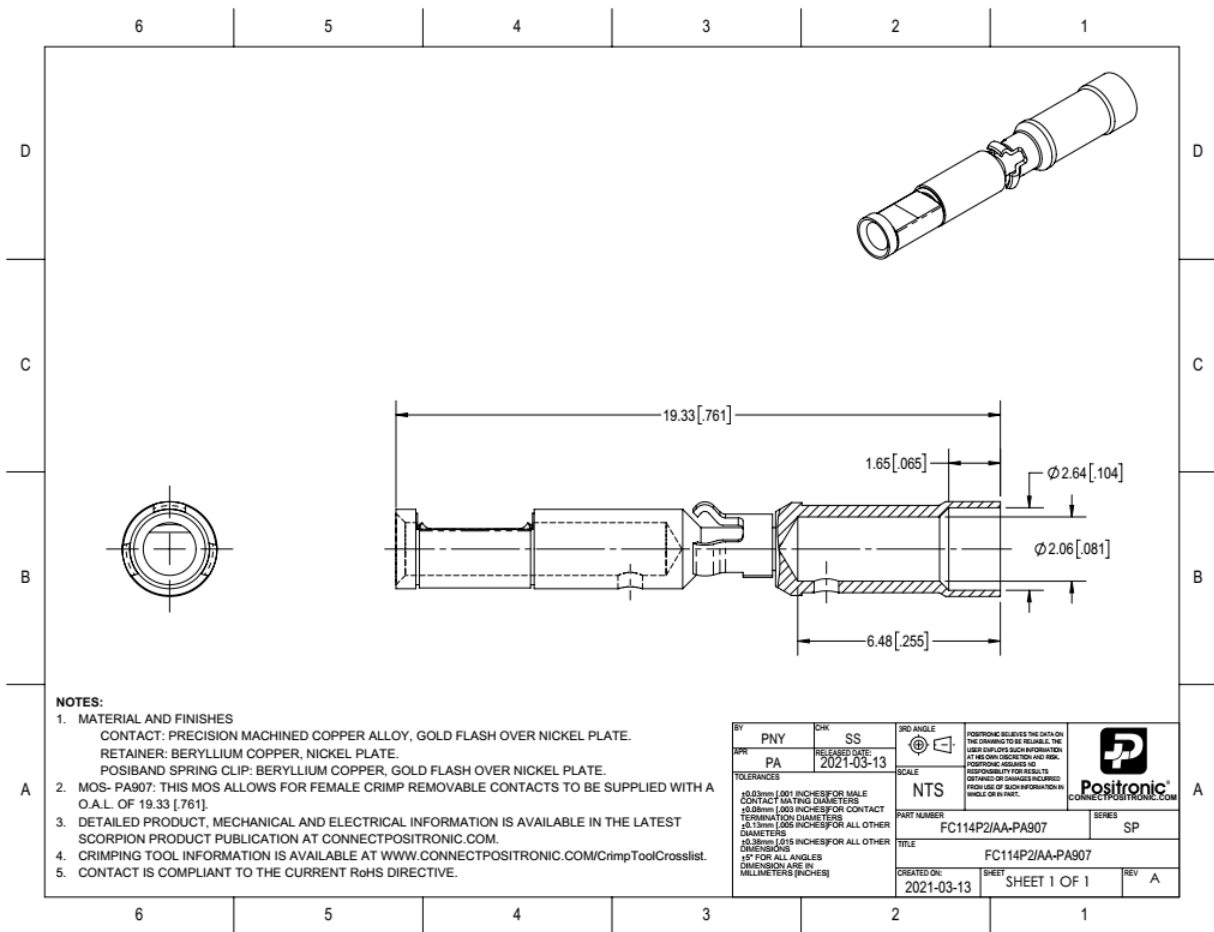
12.0 DRAWINGS – CONTACTS - CONNECTORS - BACKSHELLS



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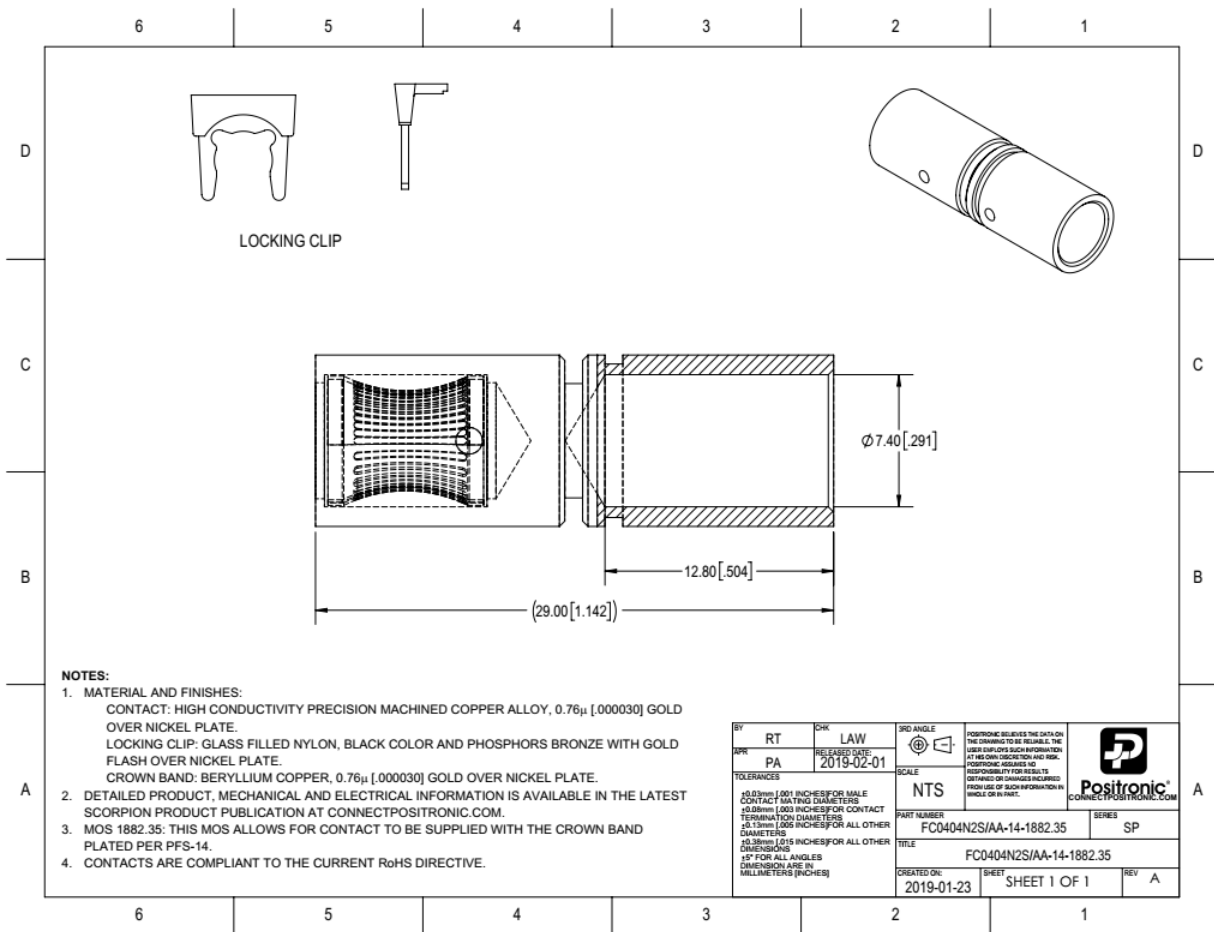
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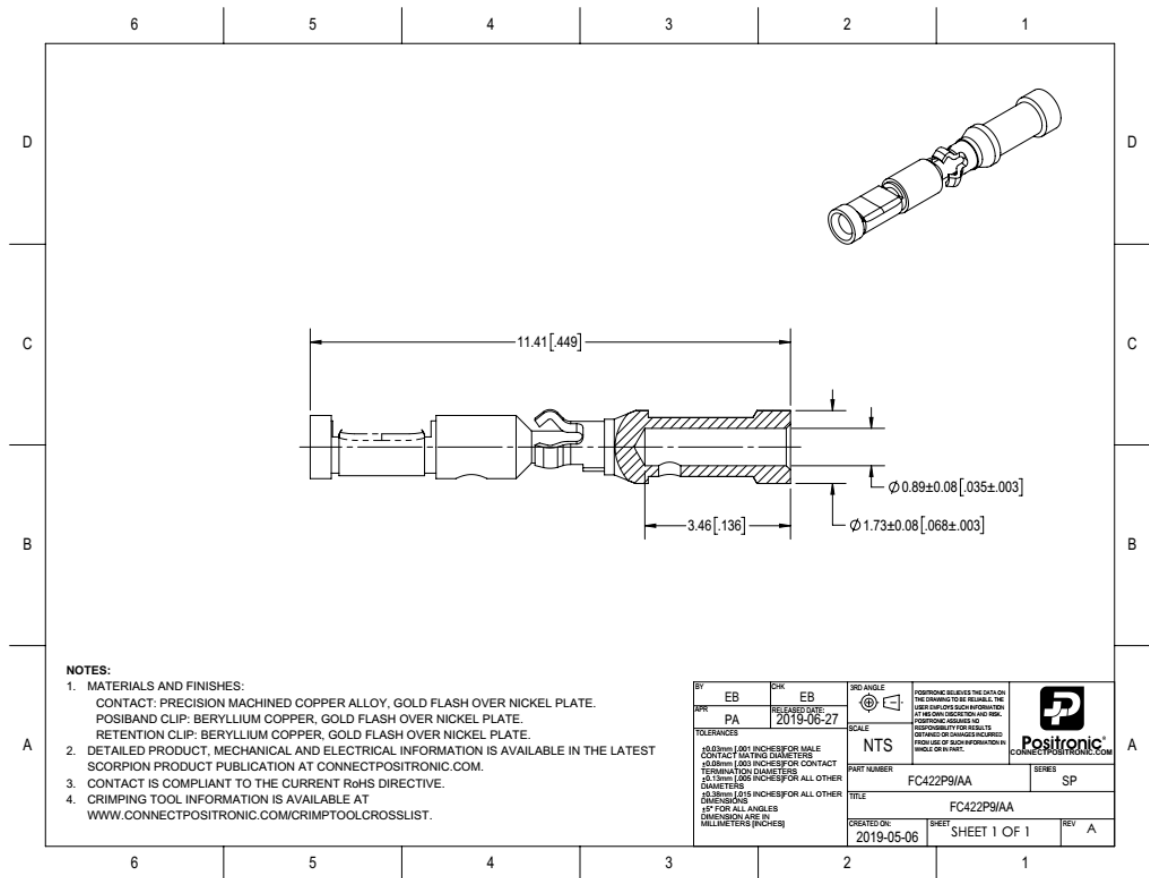
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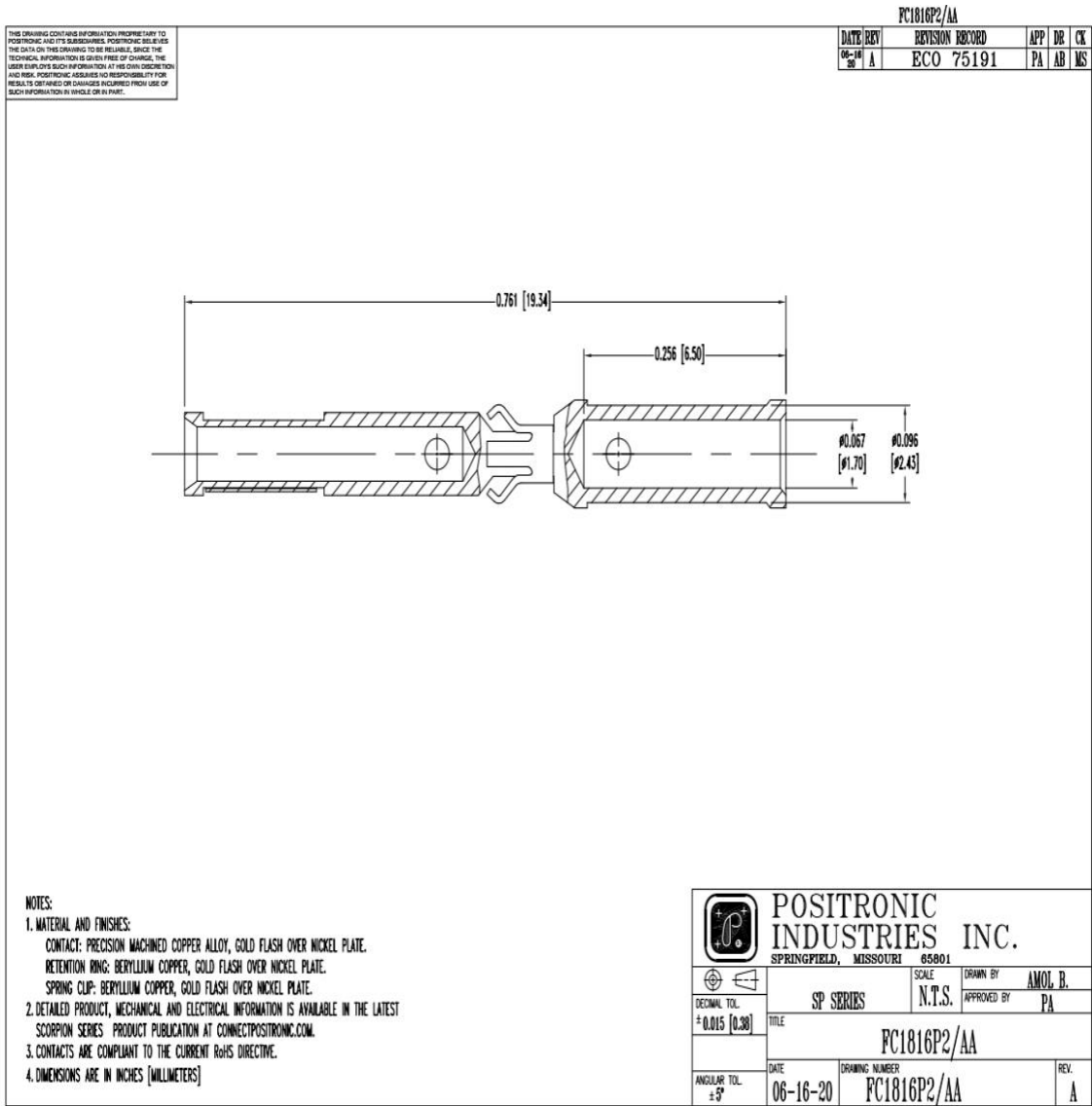
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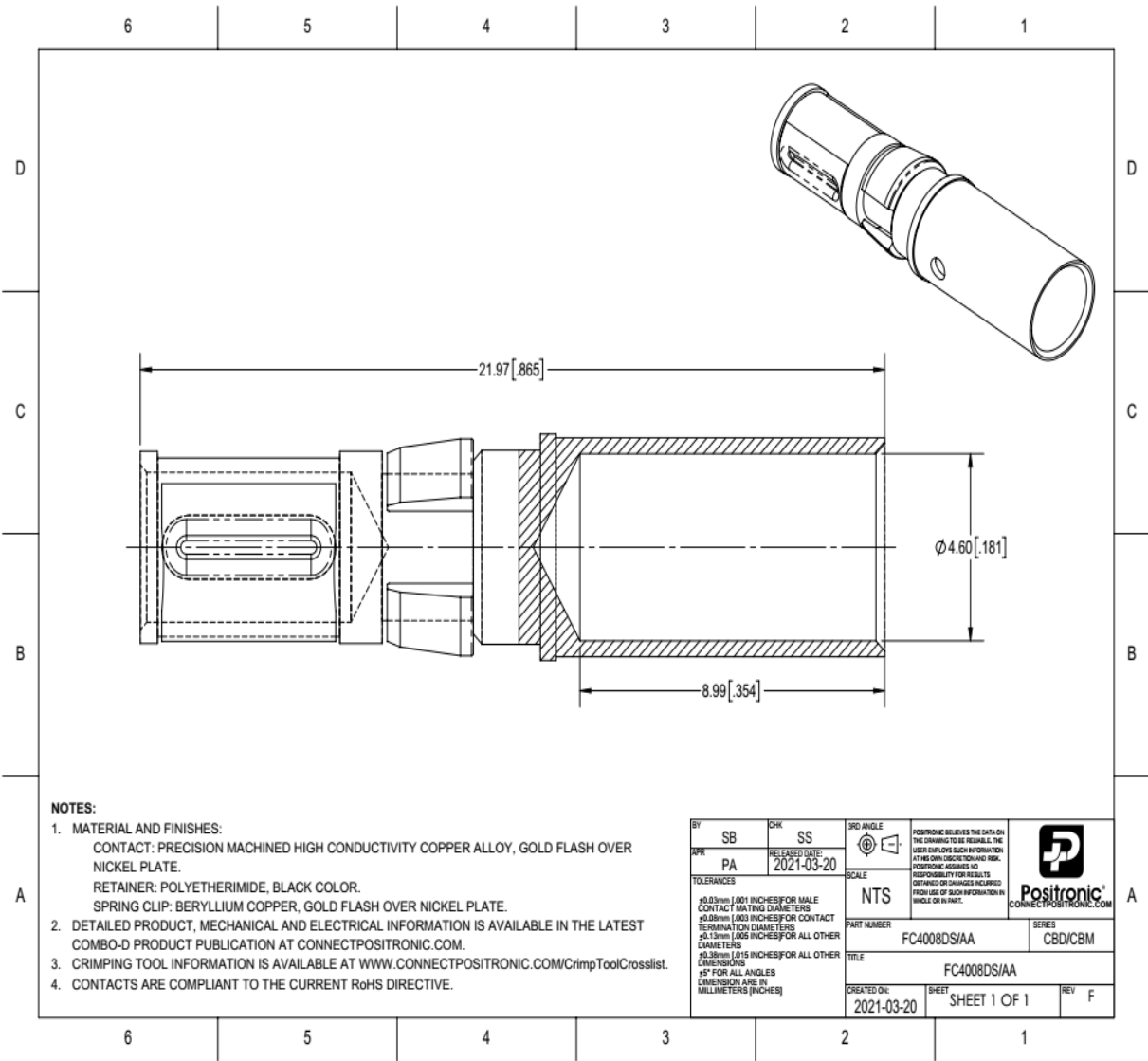
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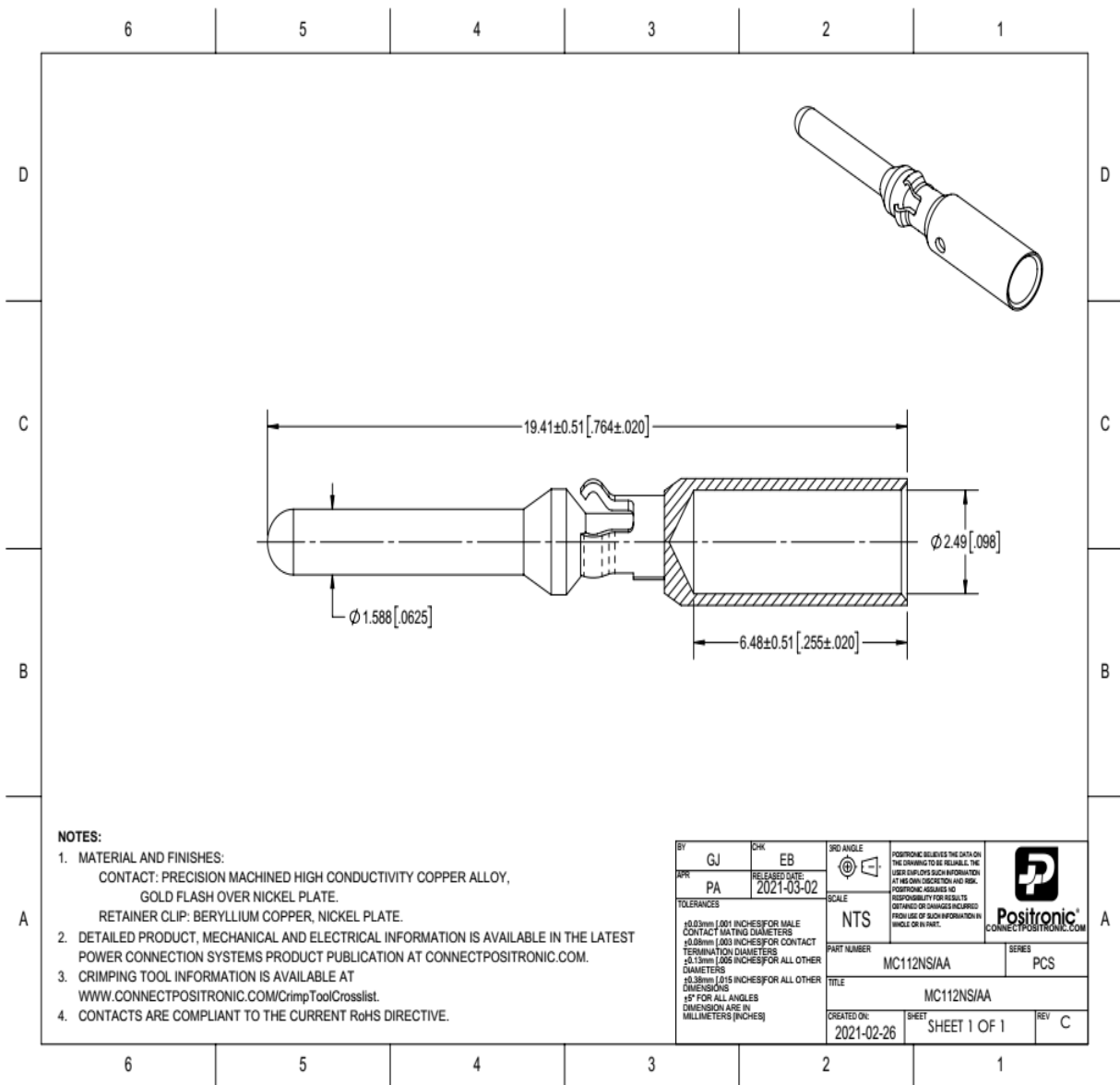
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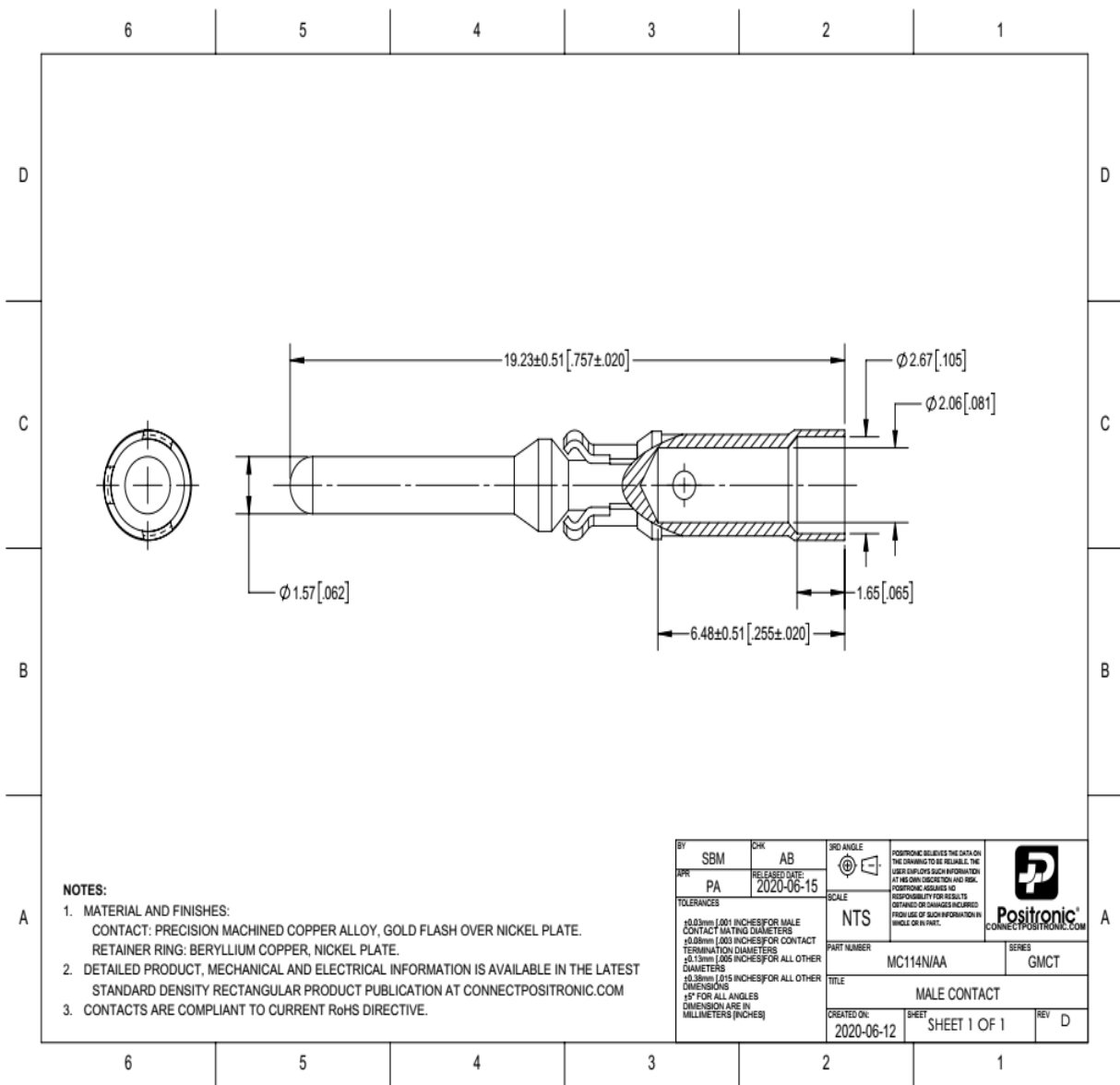
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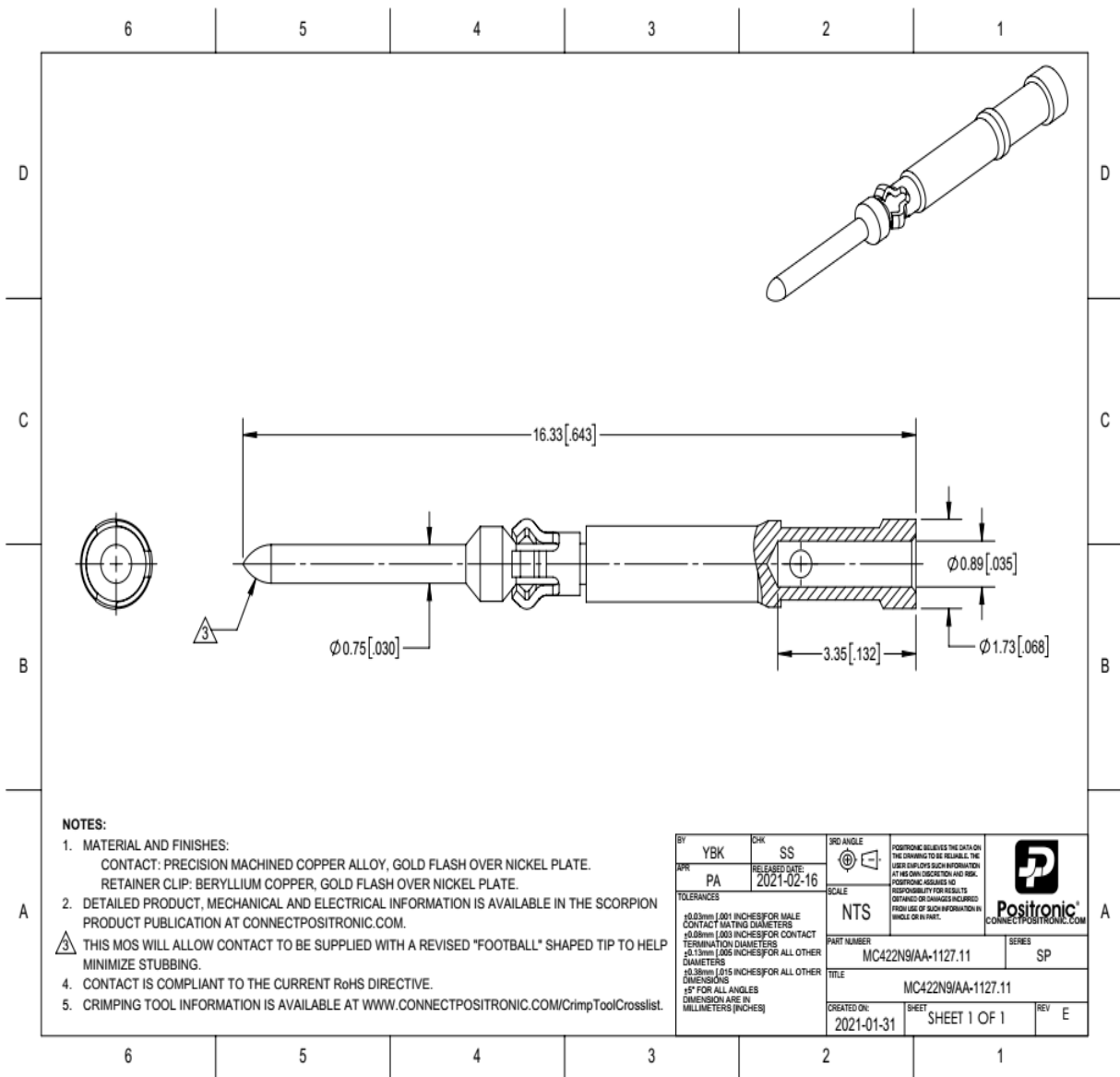
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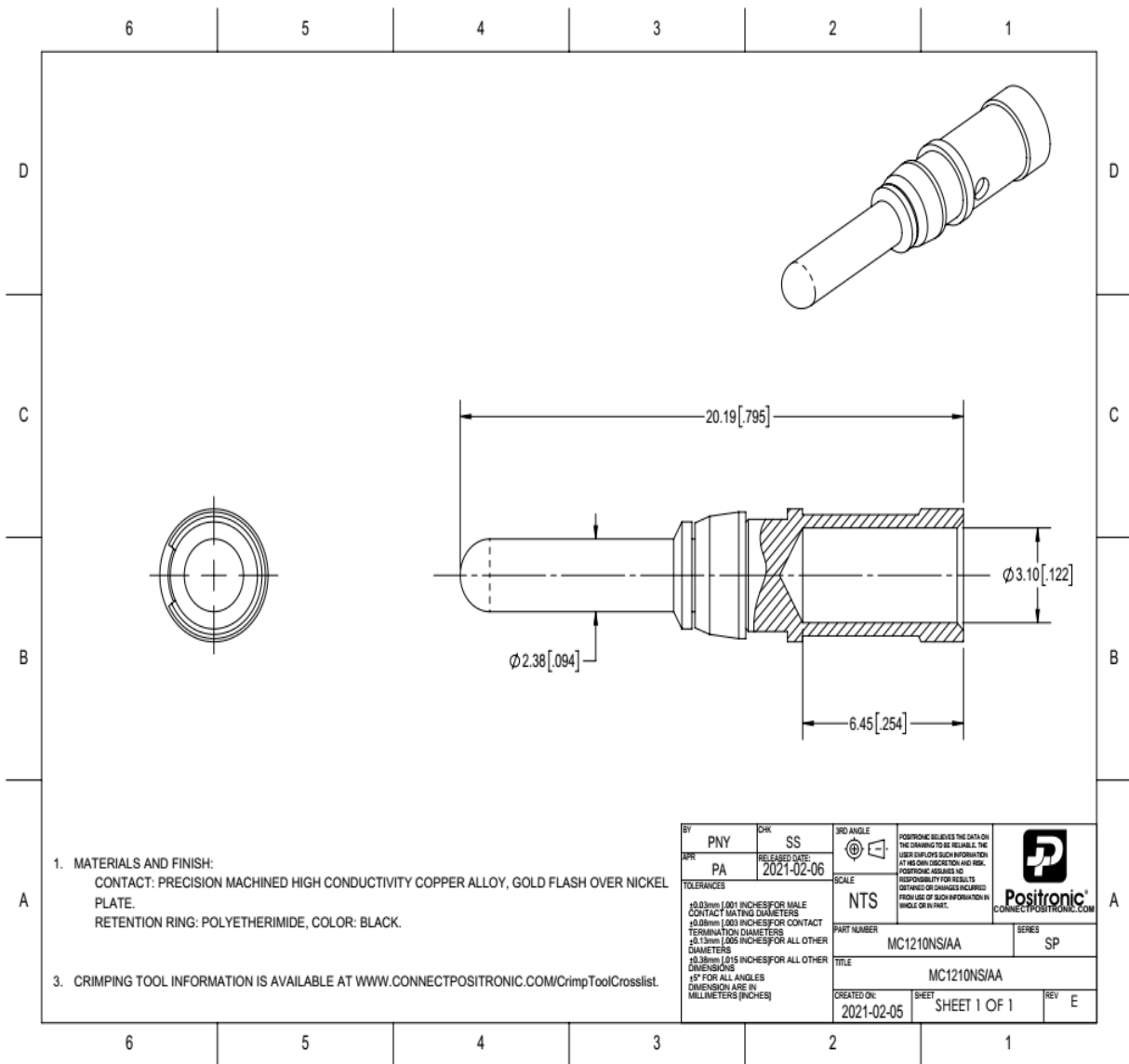
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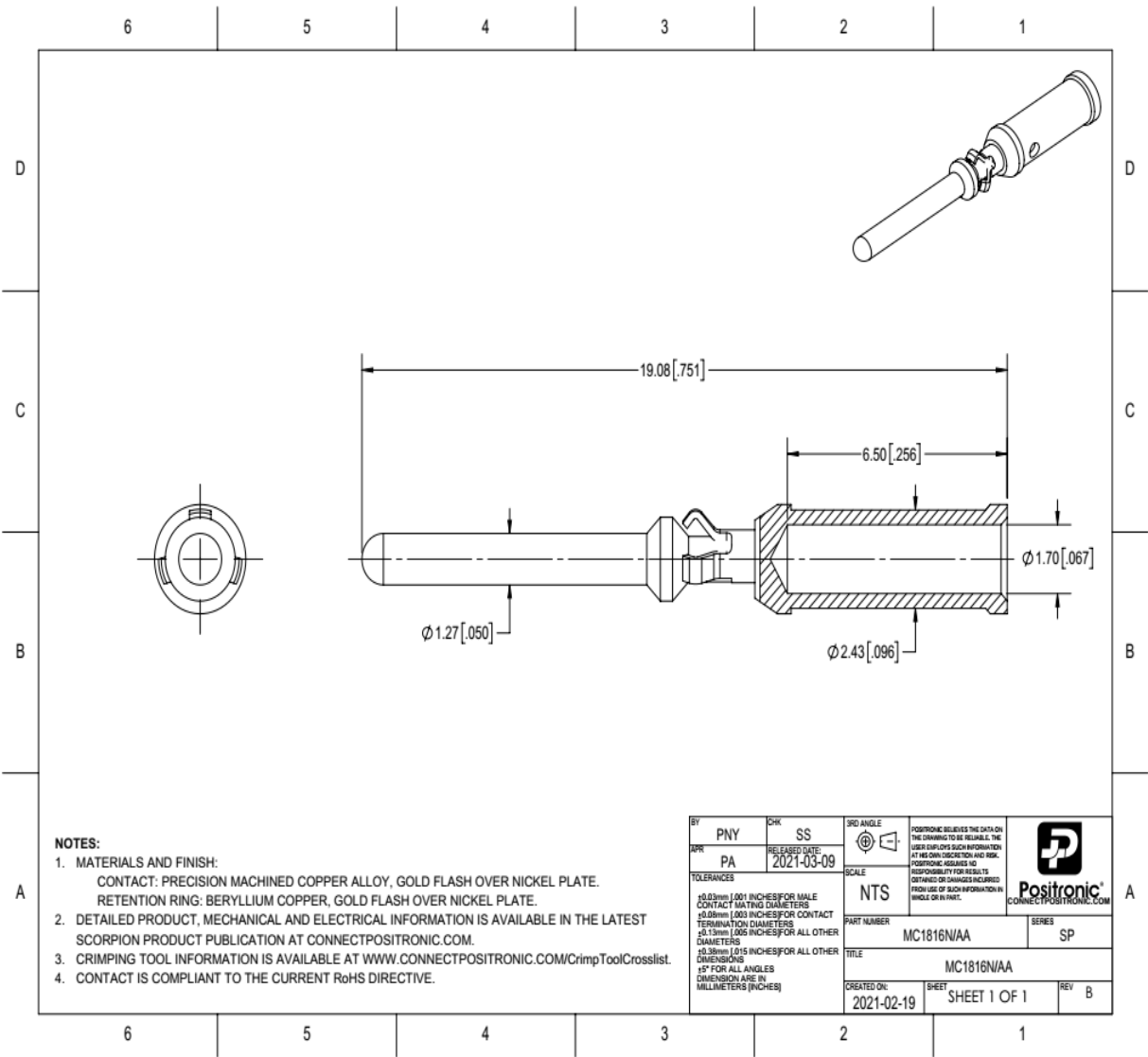
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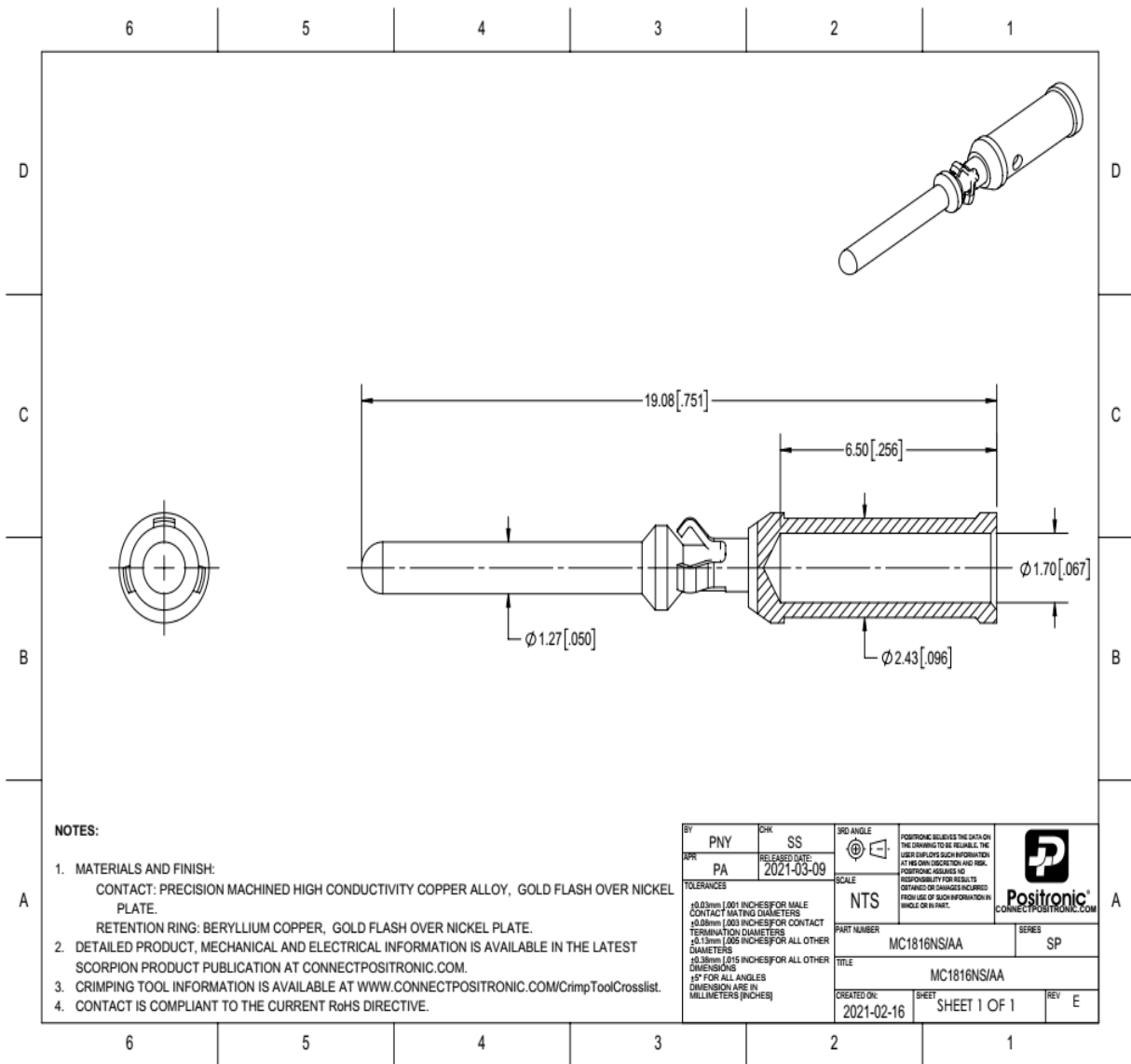
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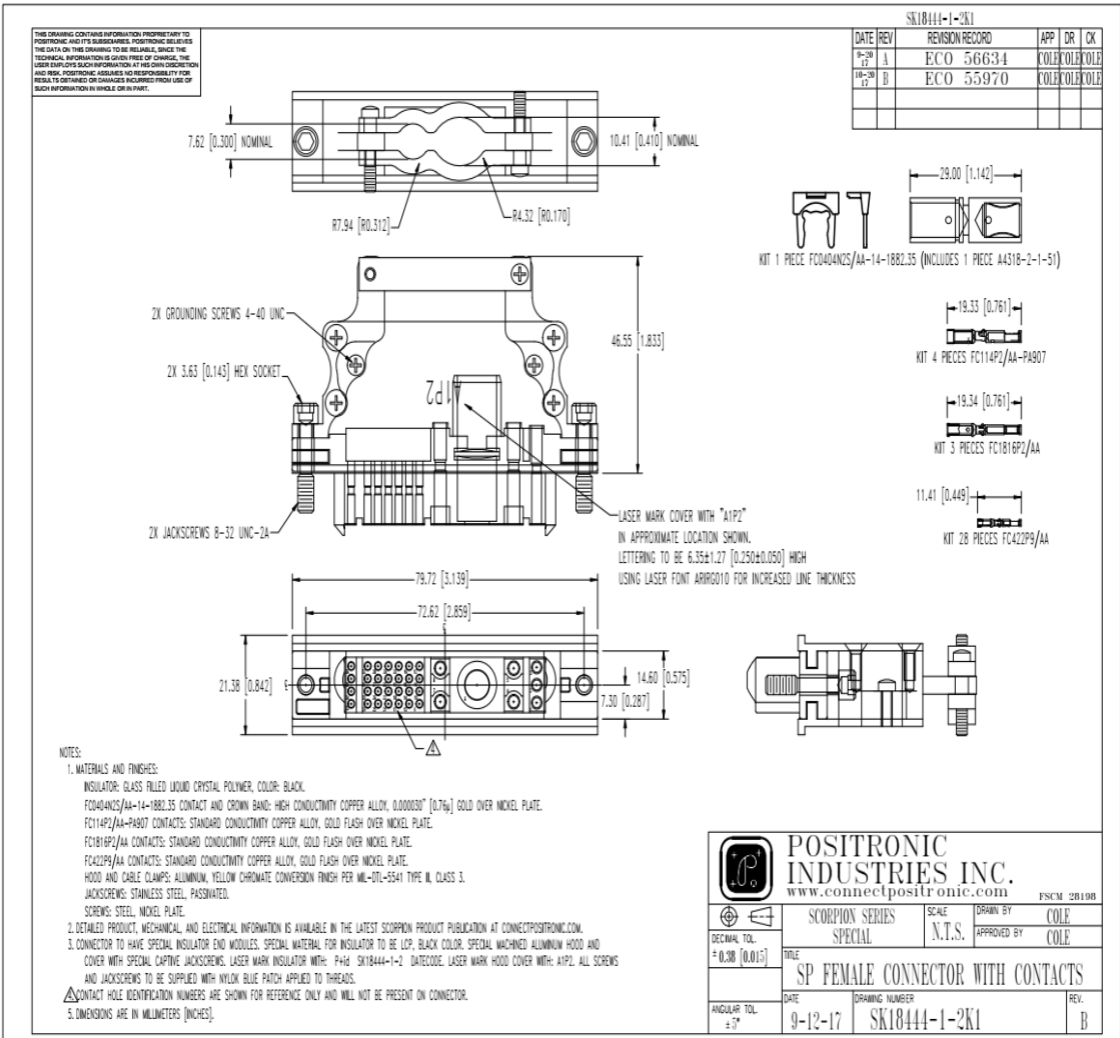
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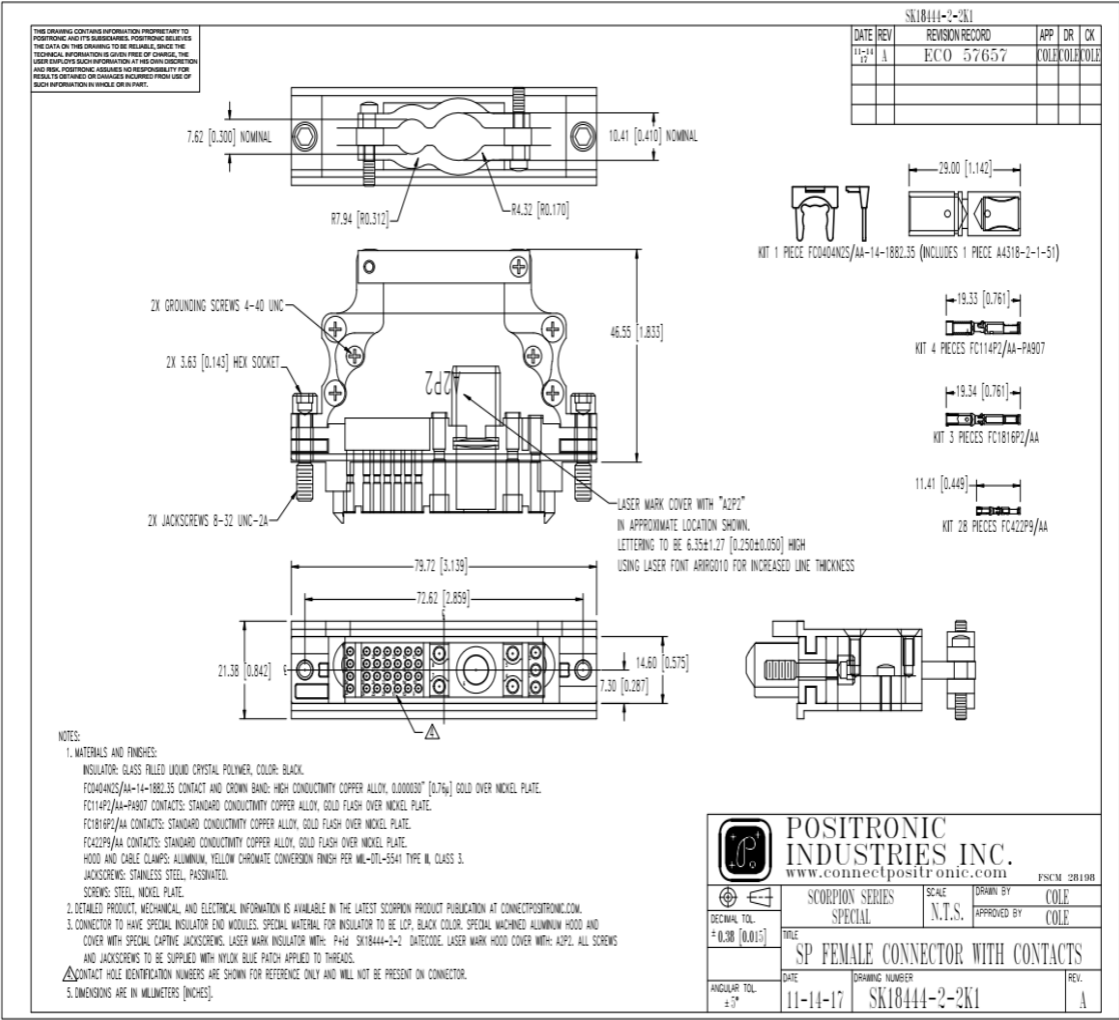
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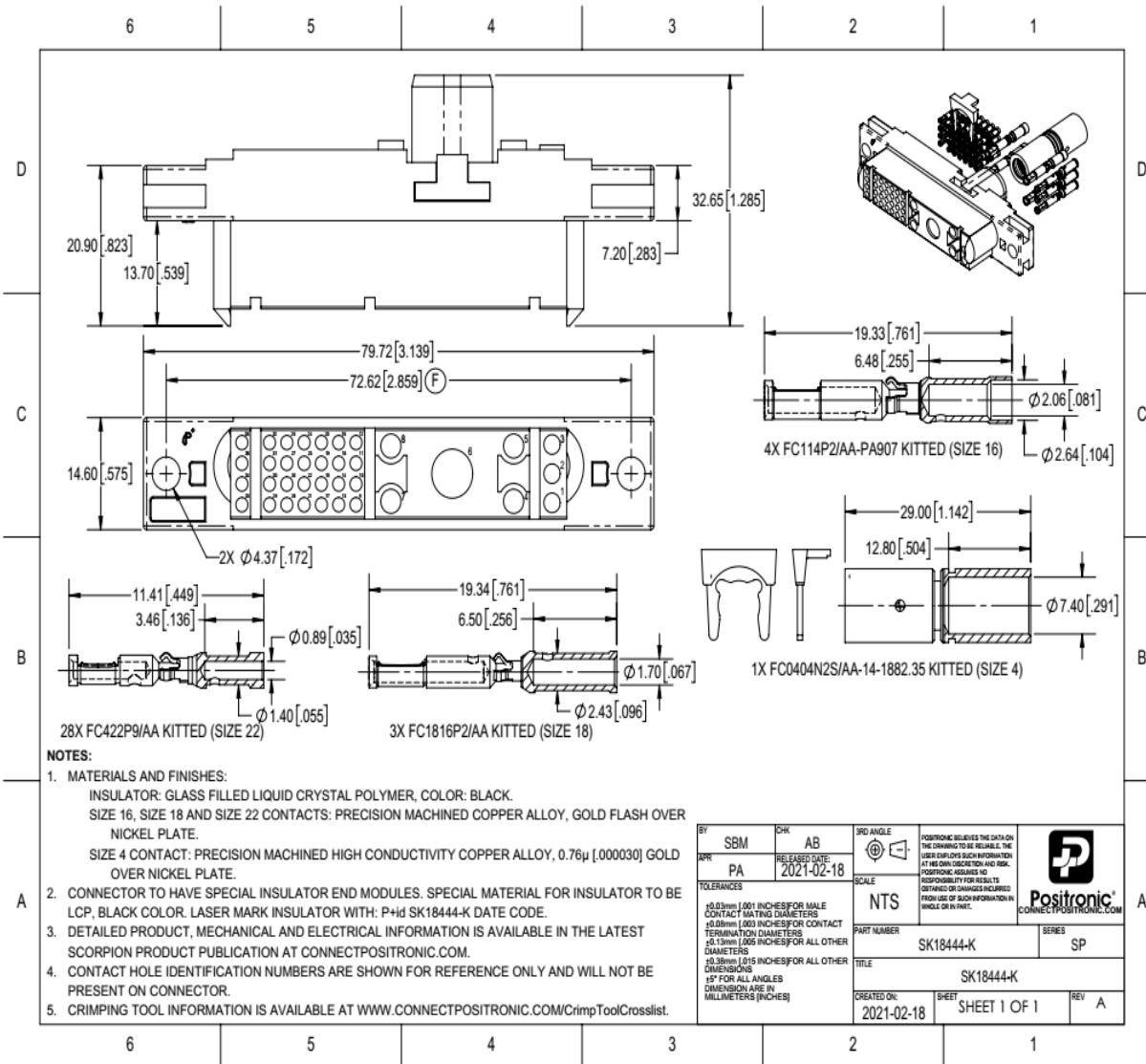
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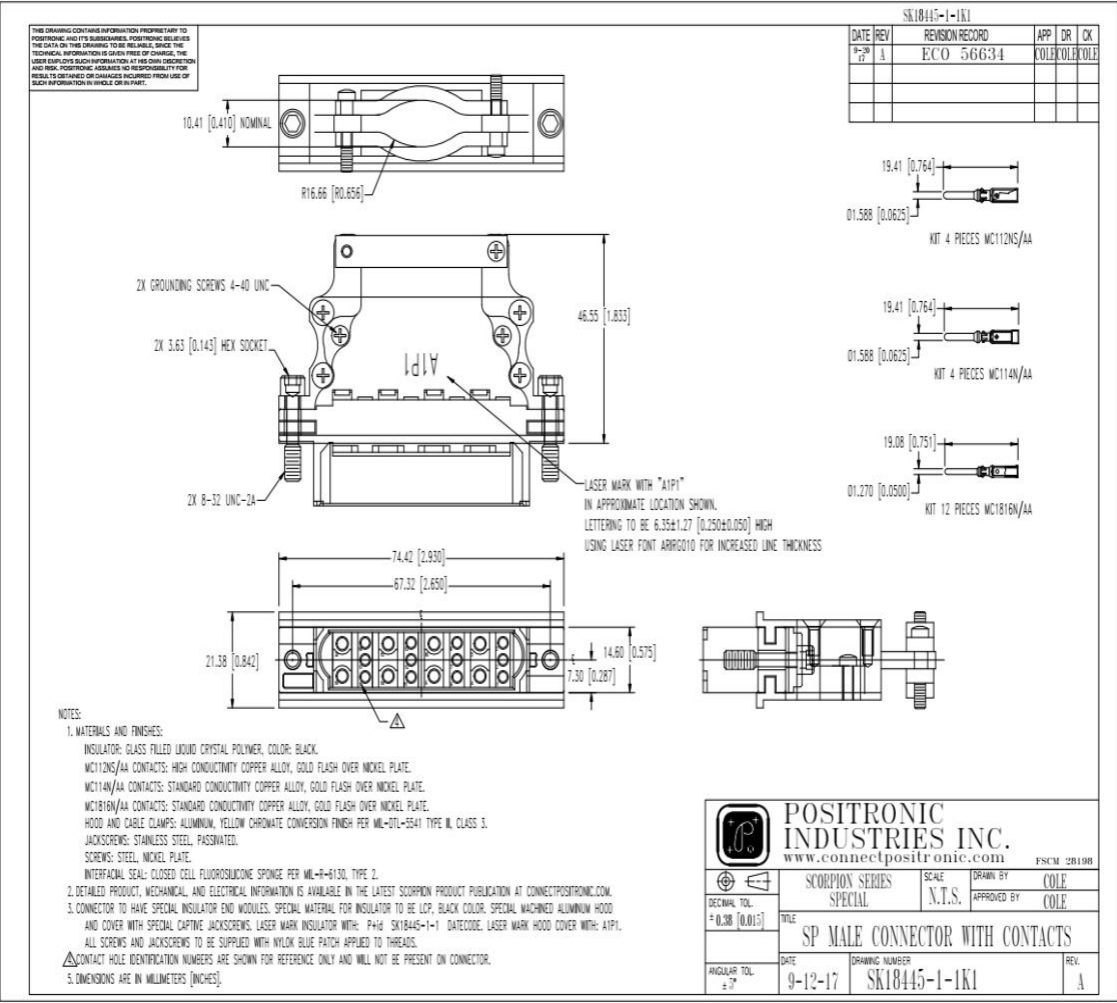
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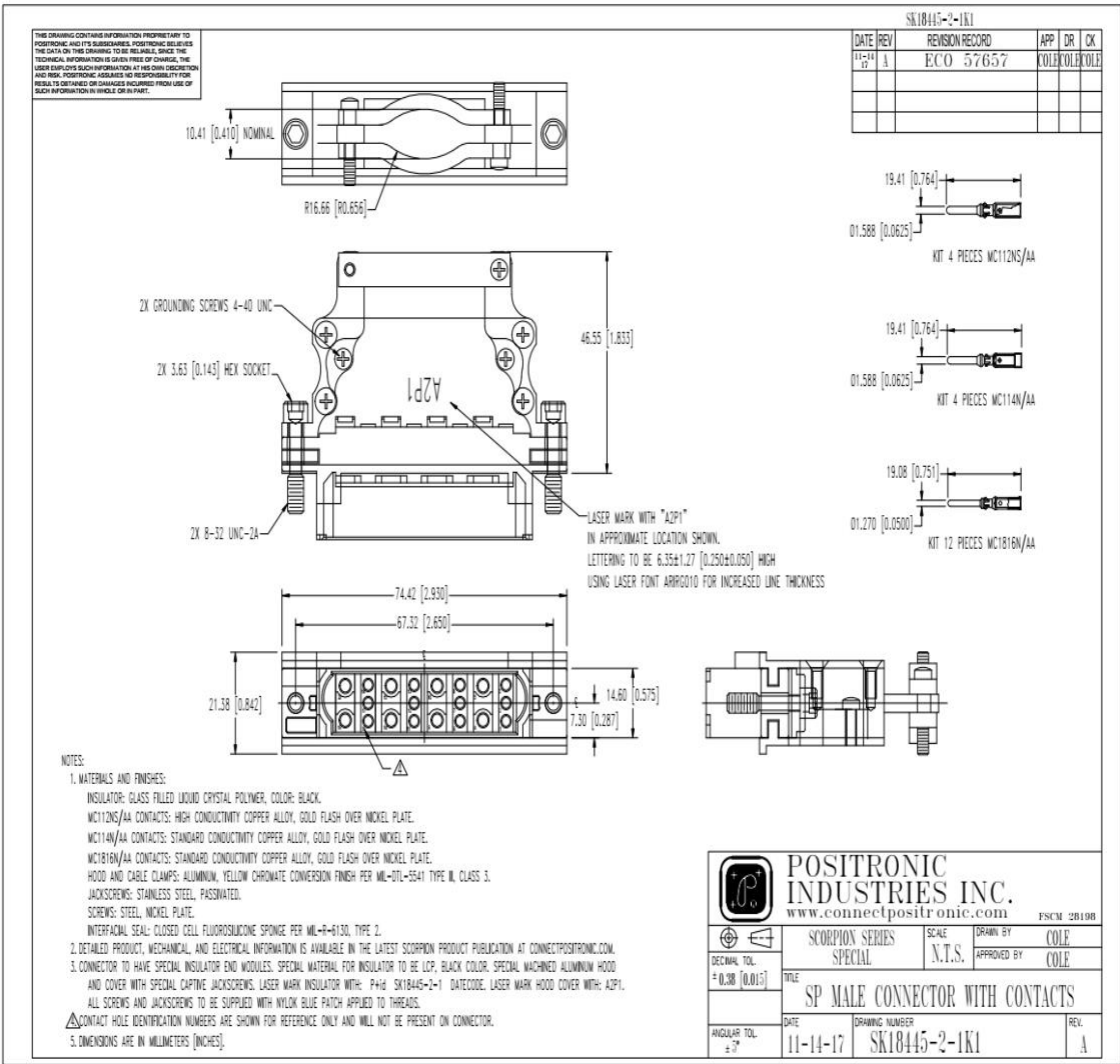
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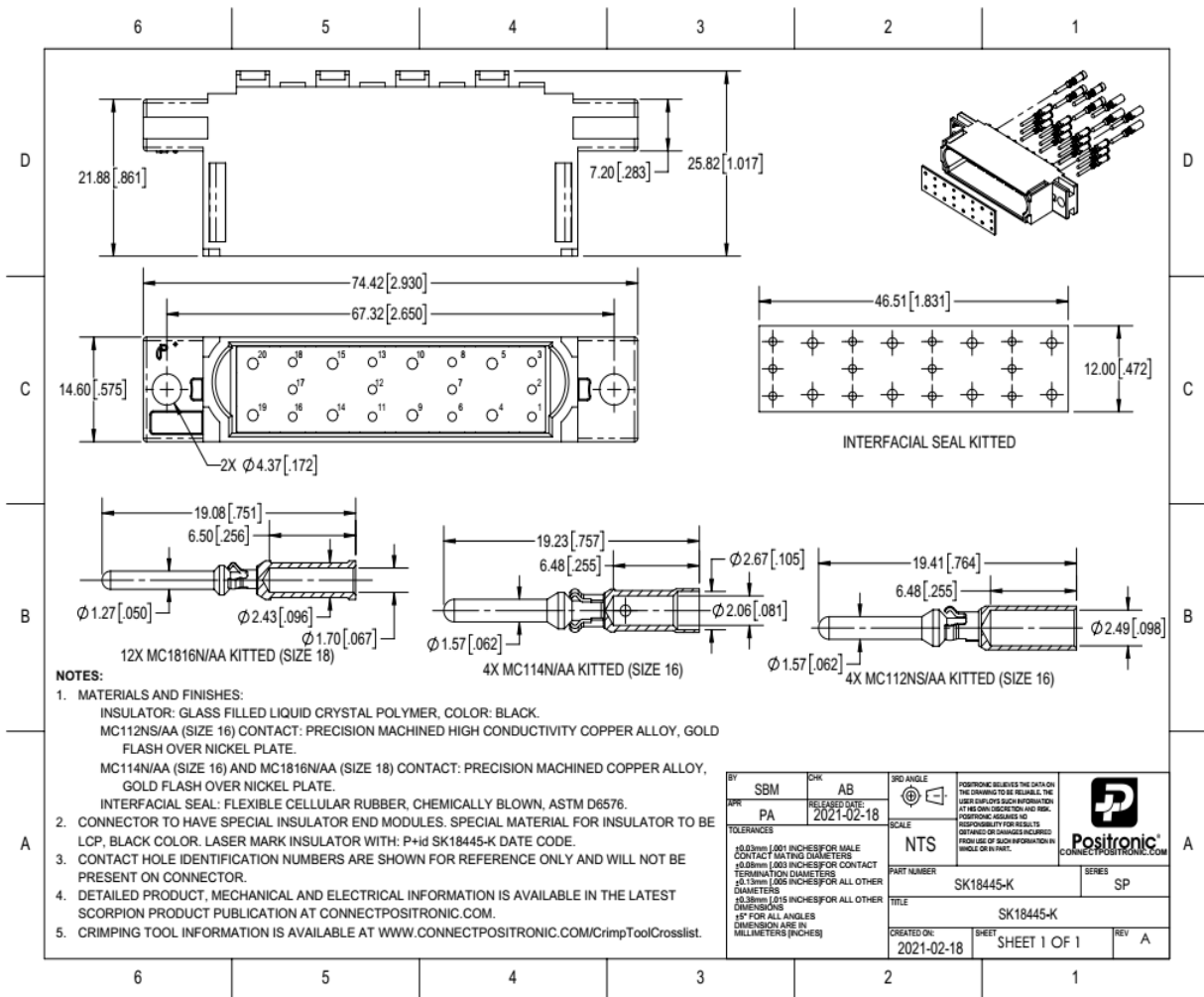
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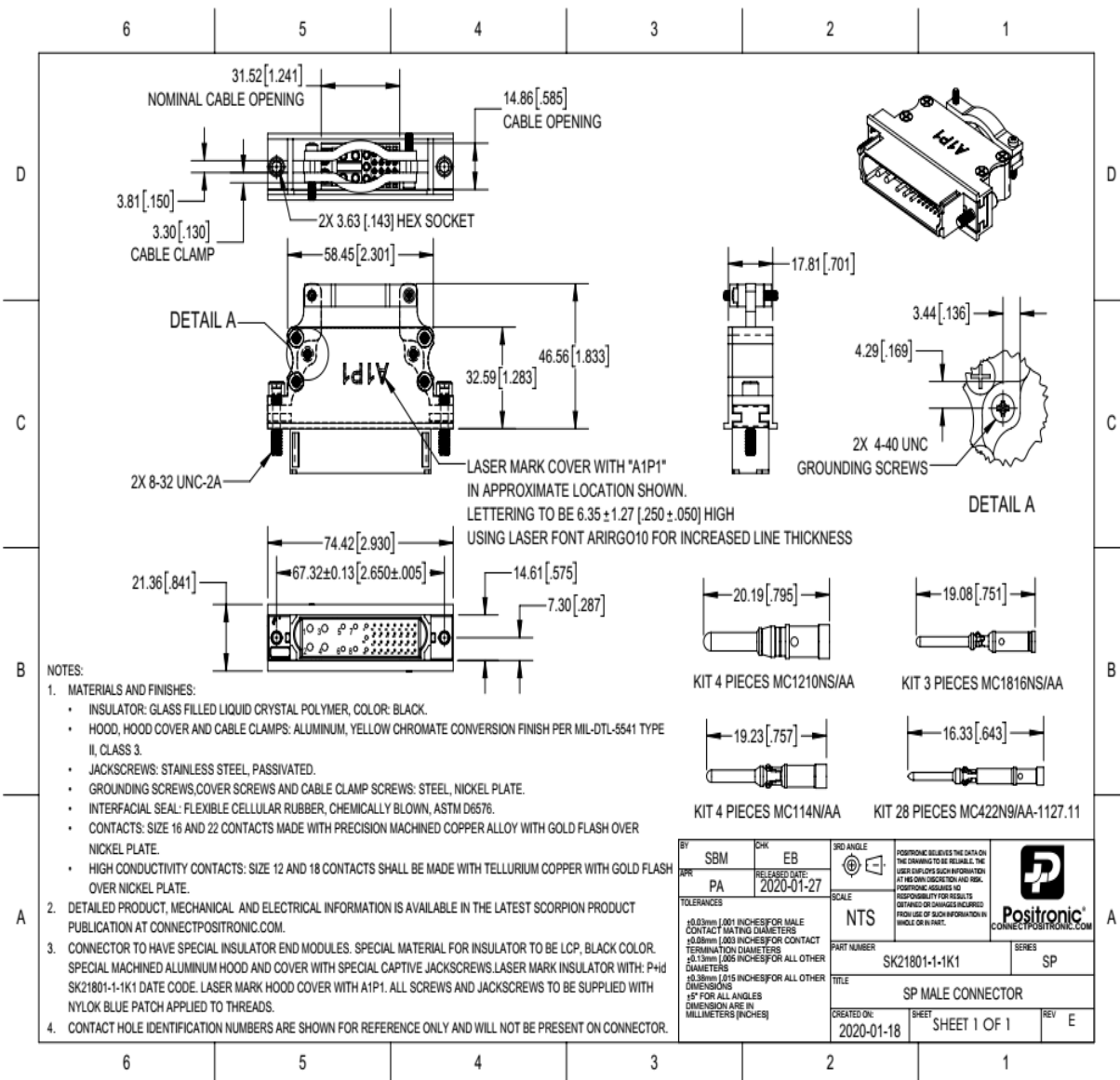
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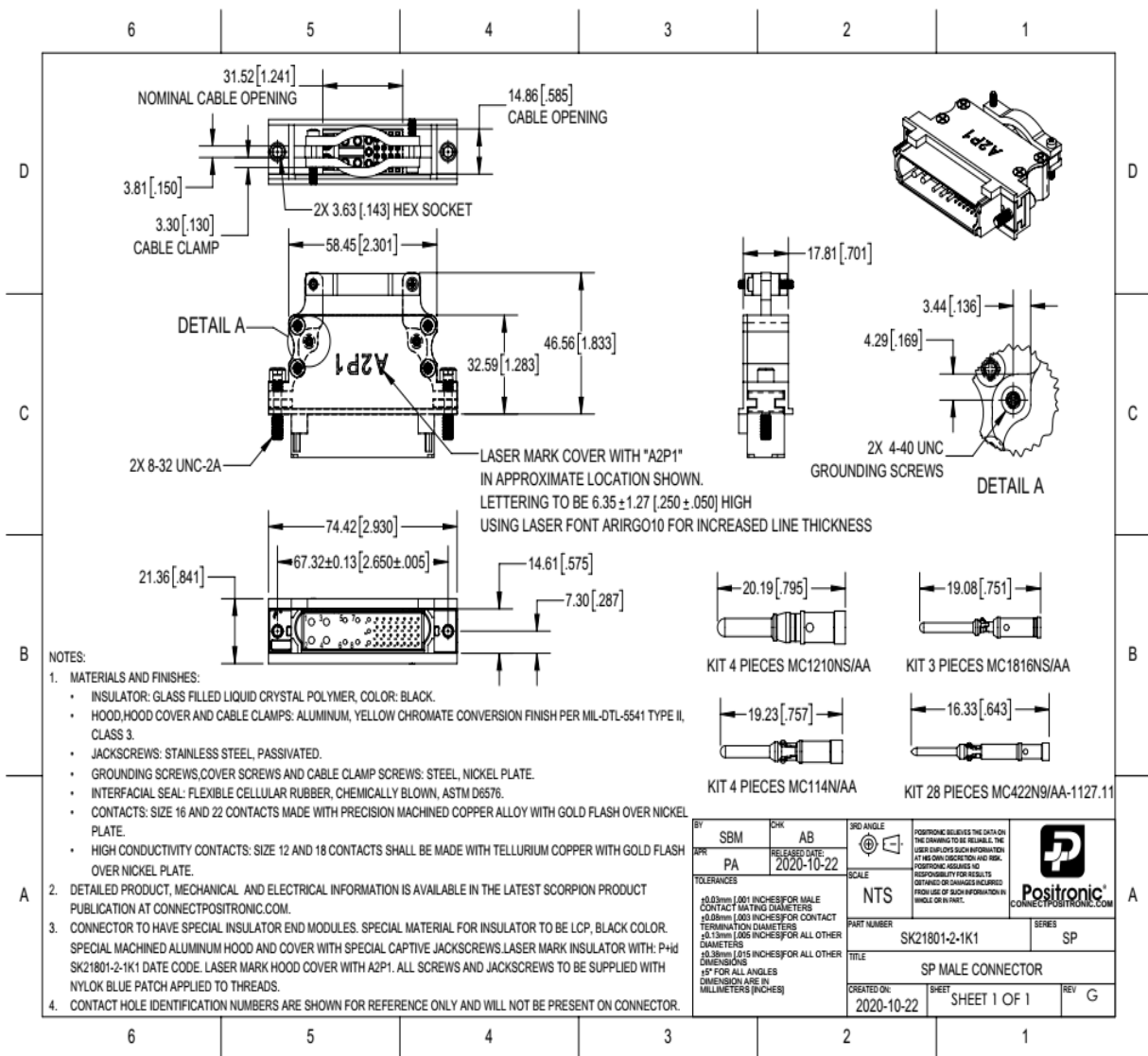
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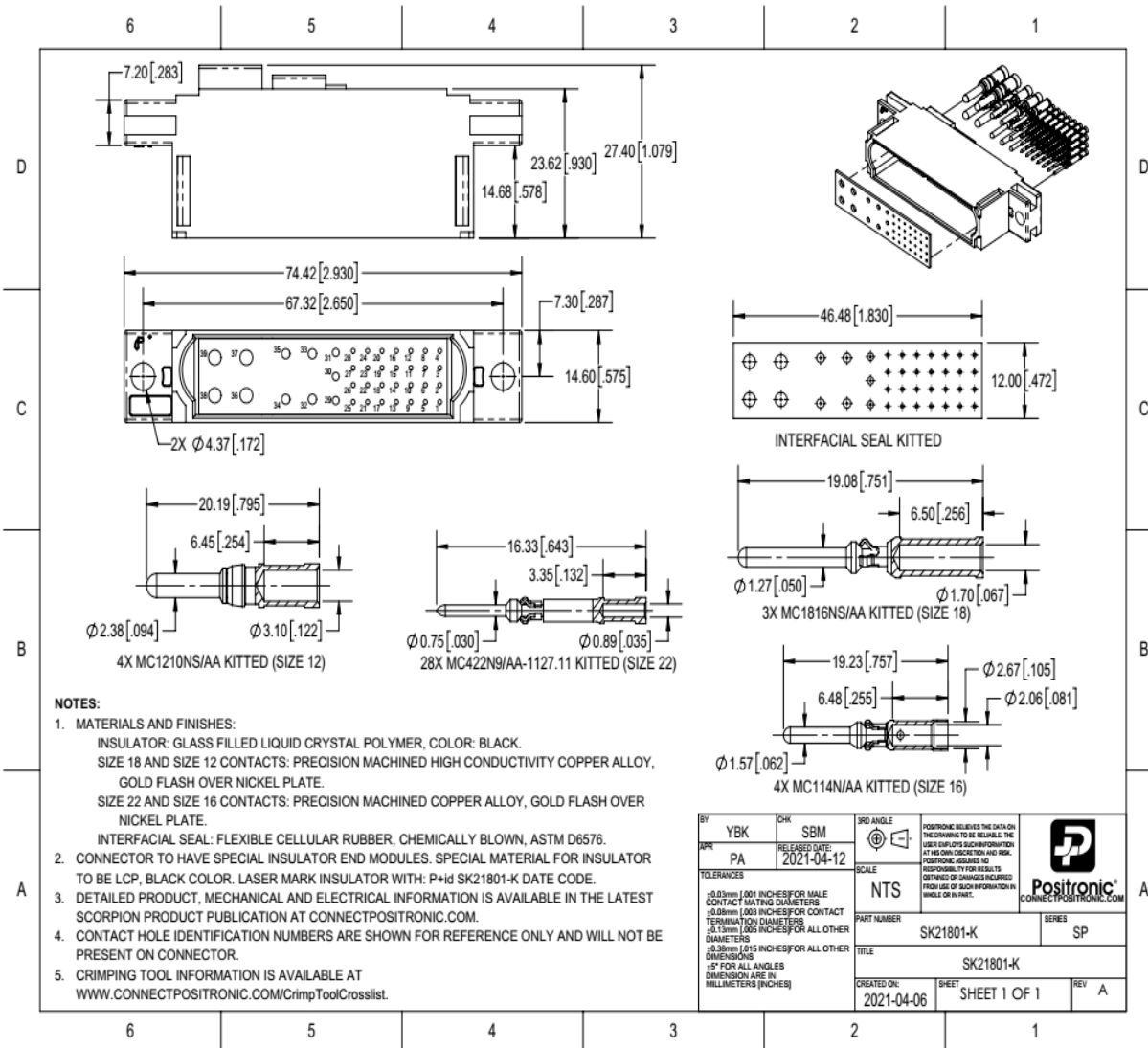
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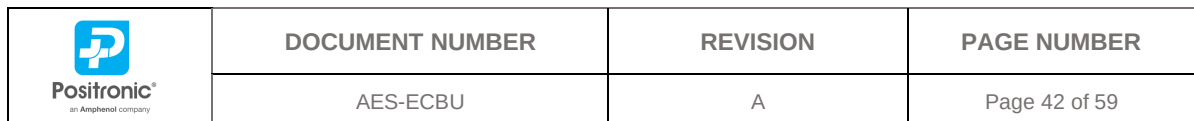
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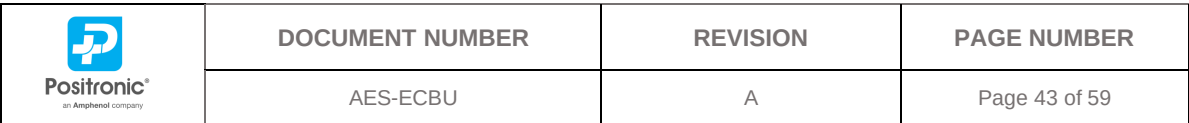


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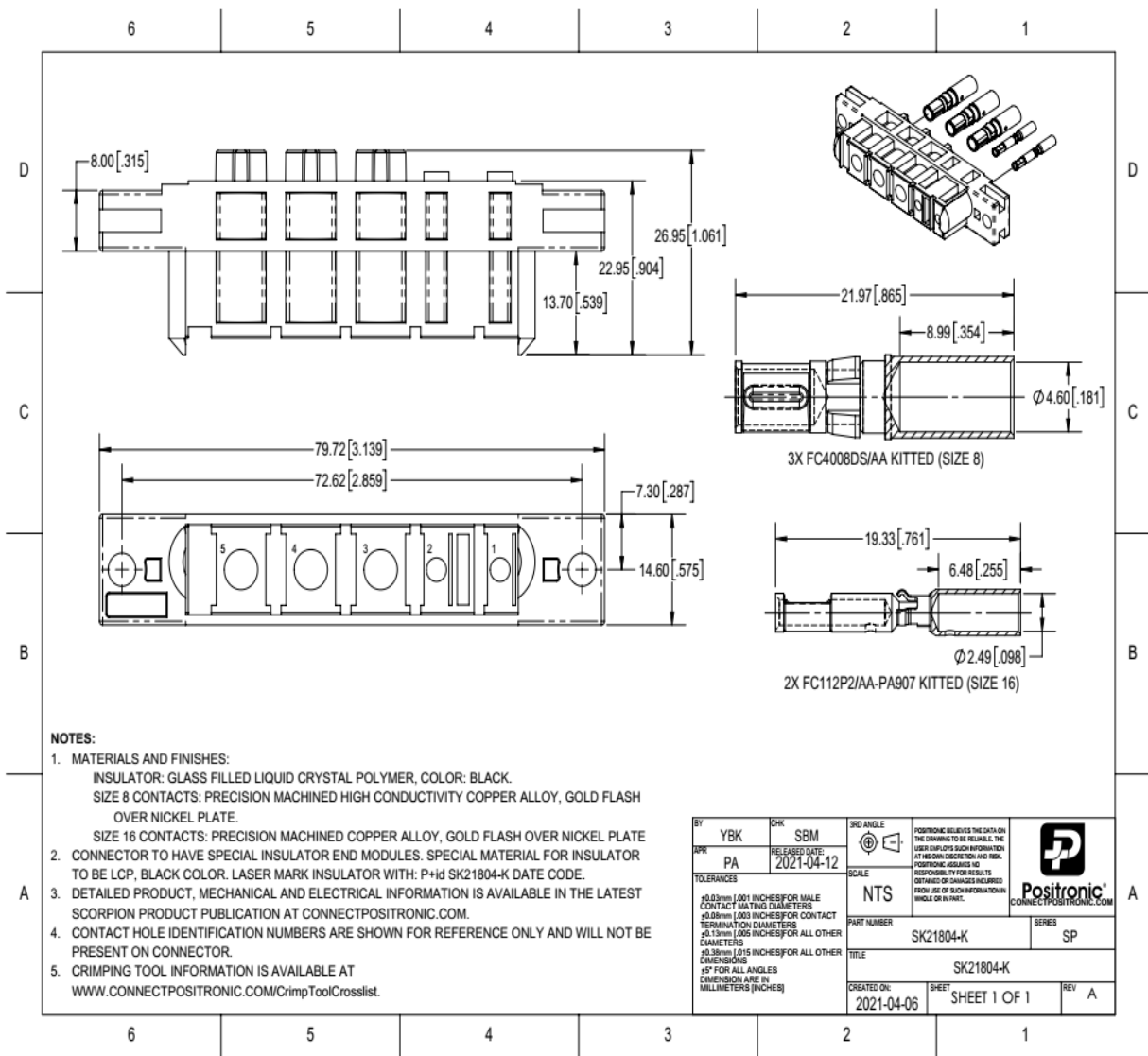


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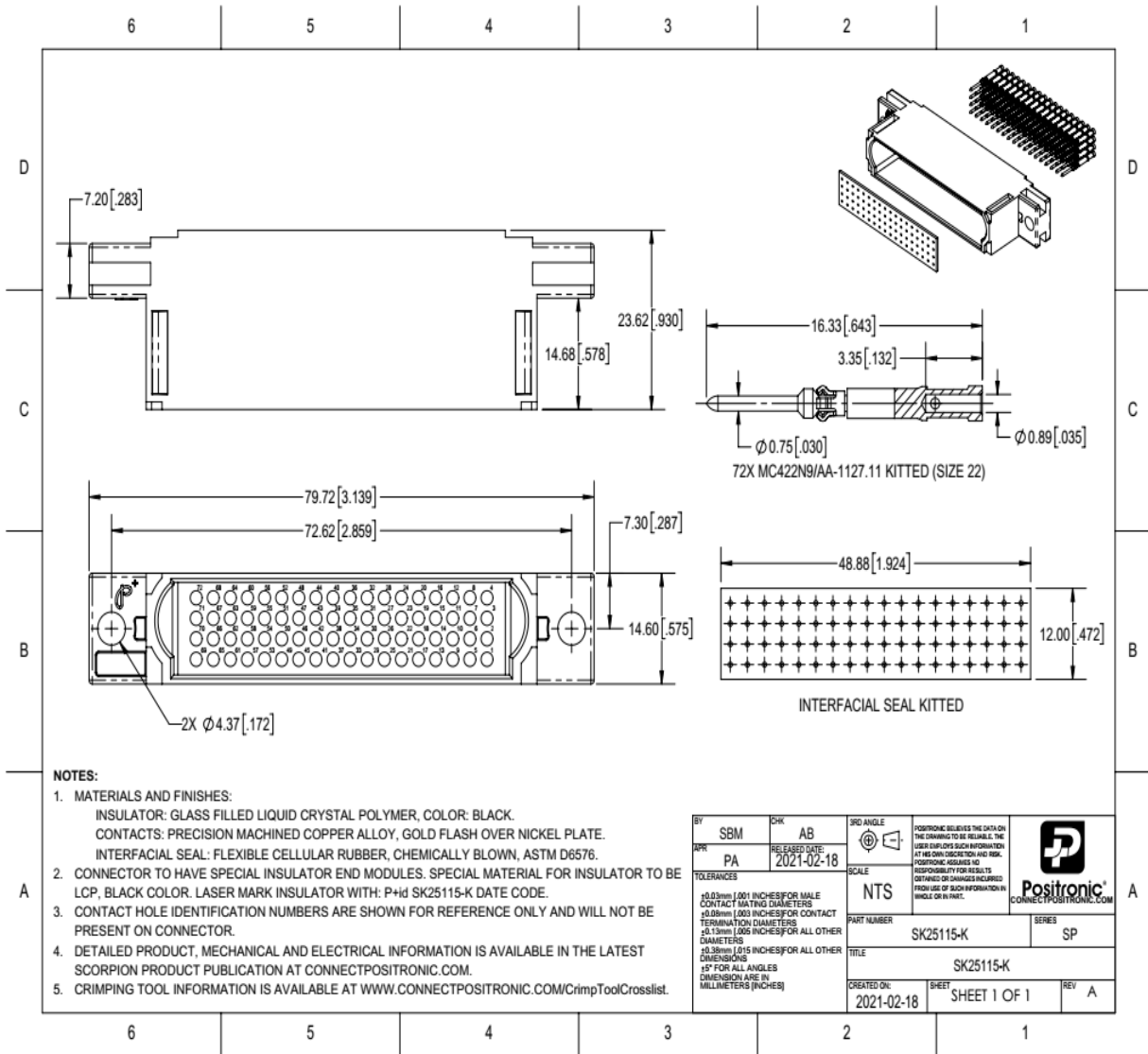
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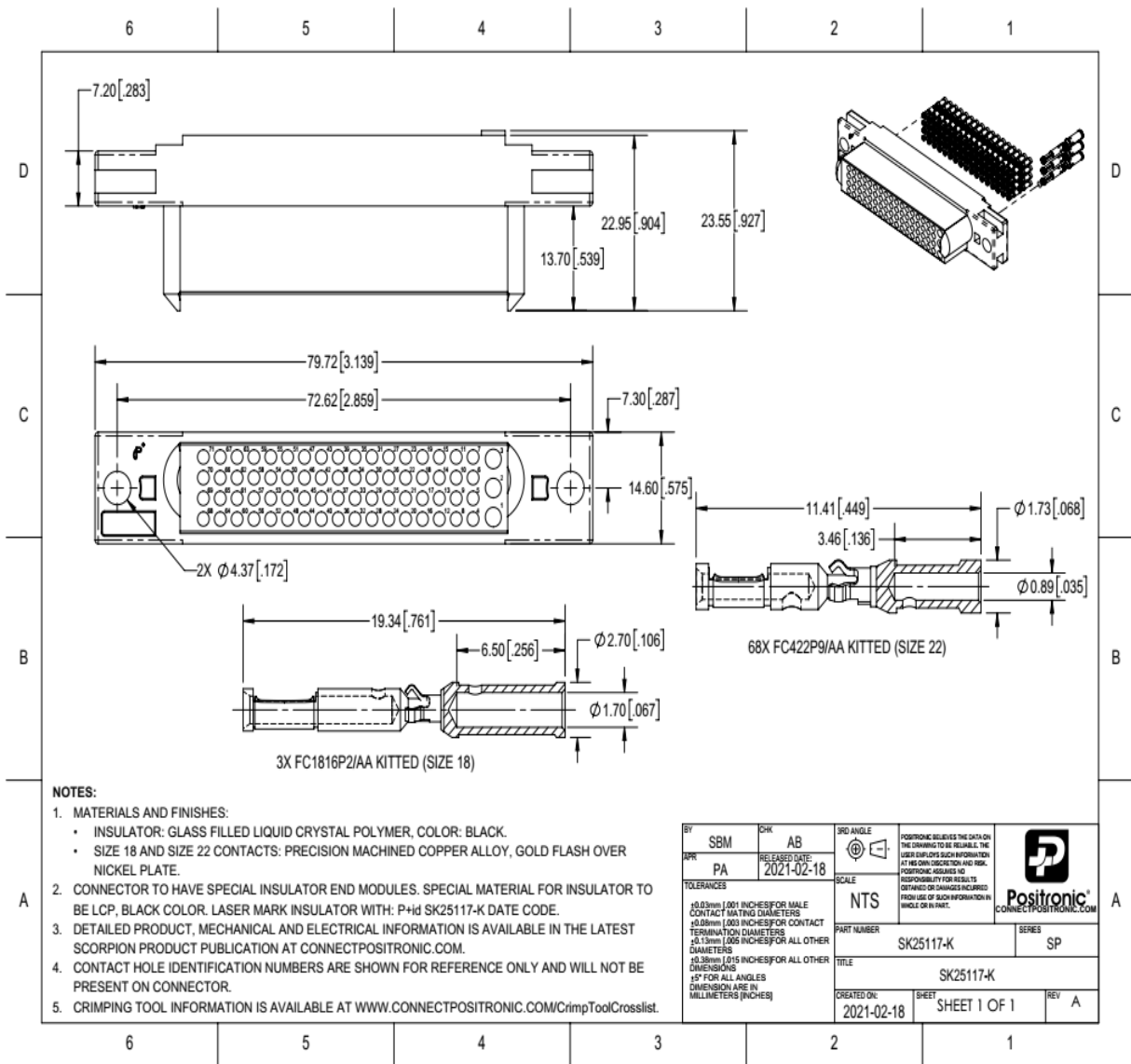
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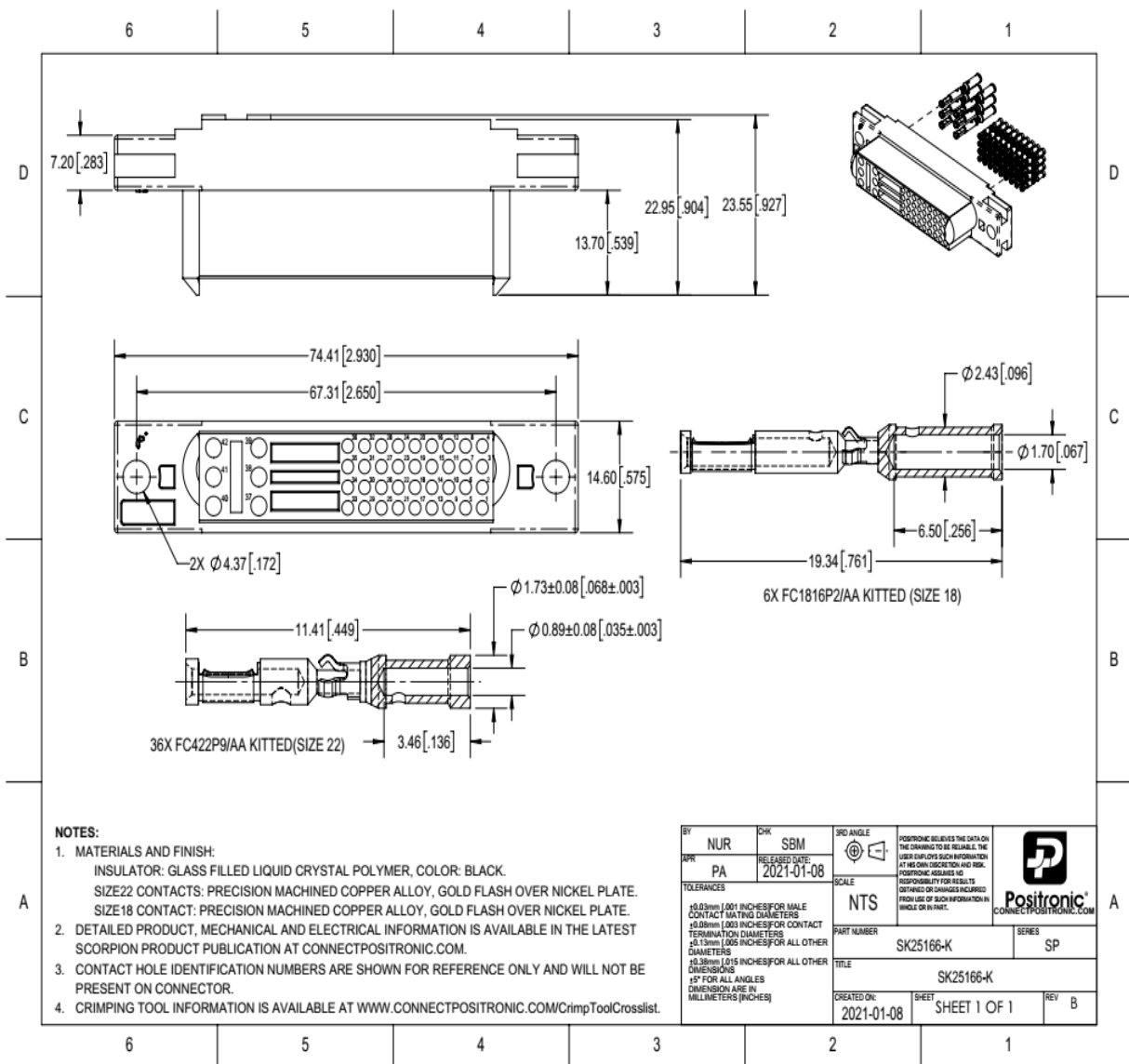
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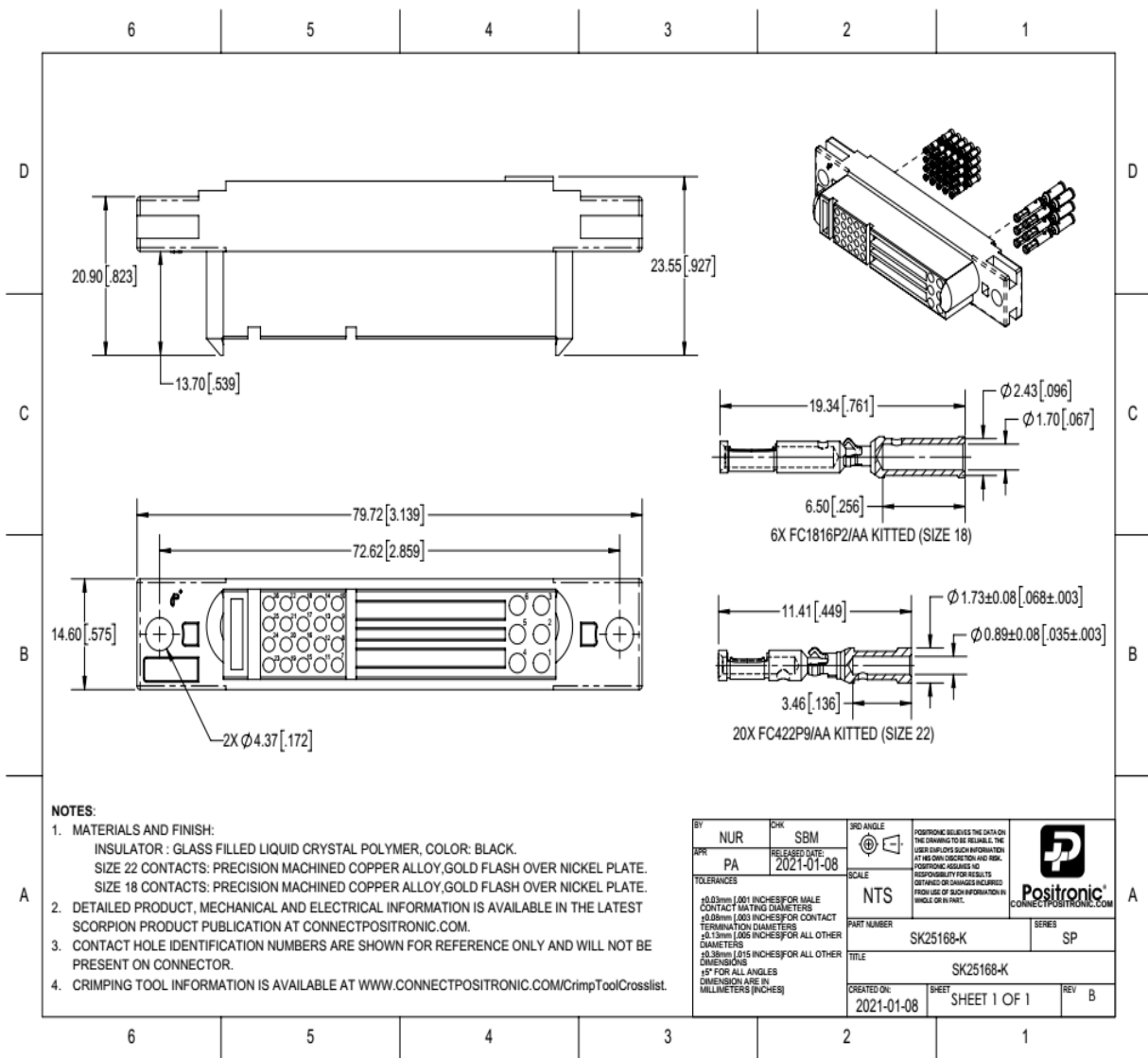
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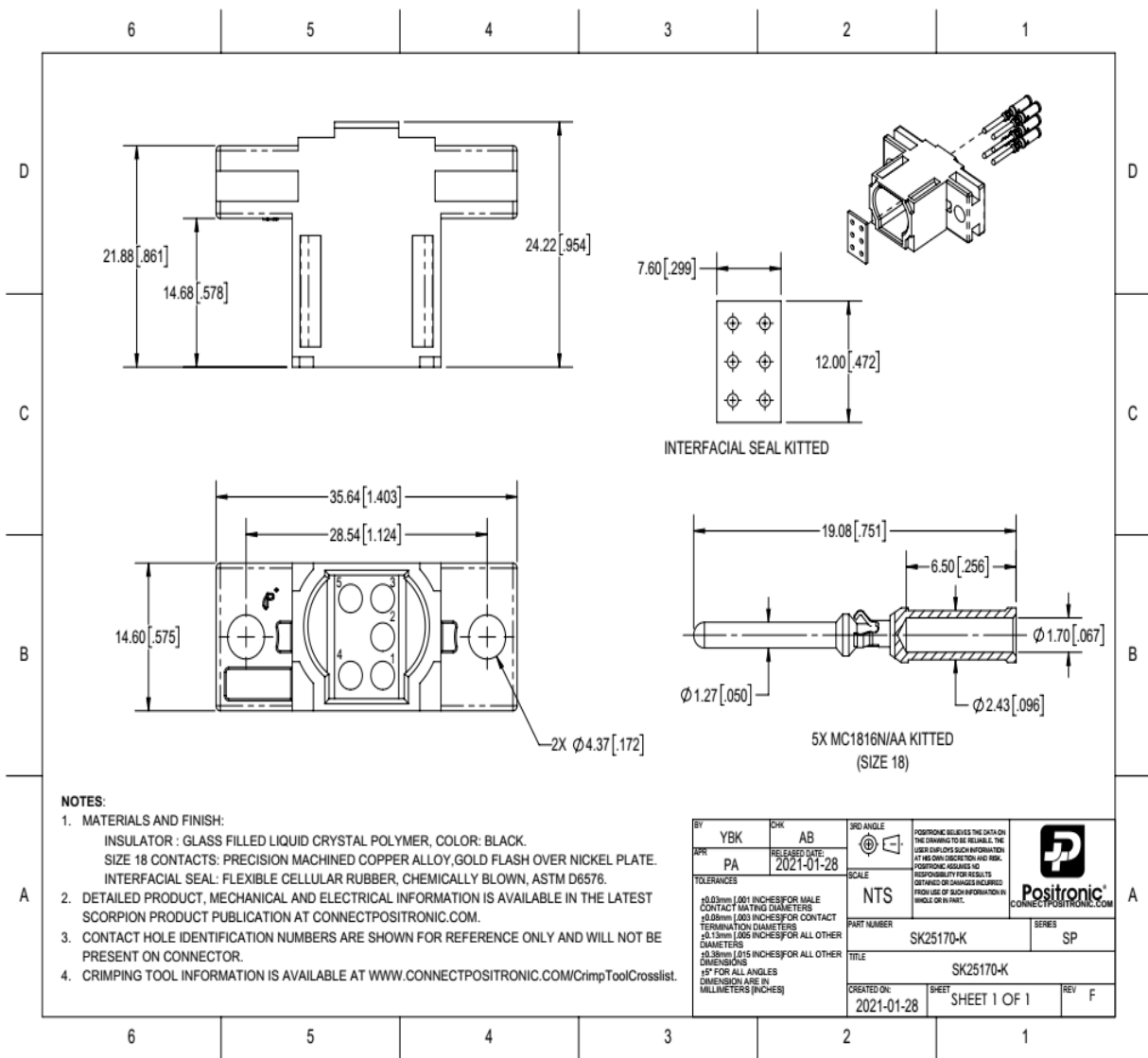
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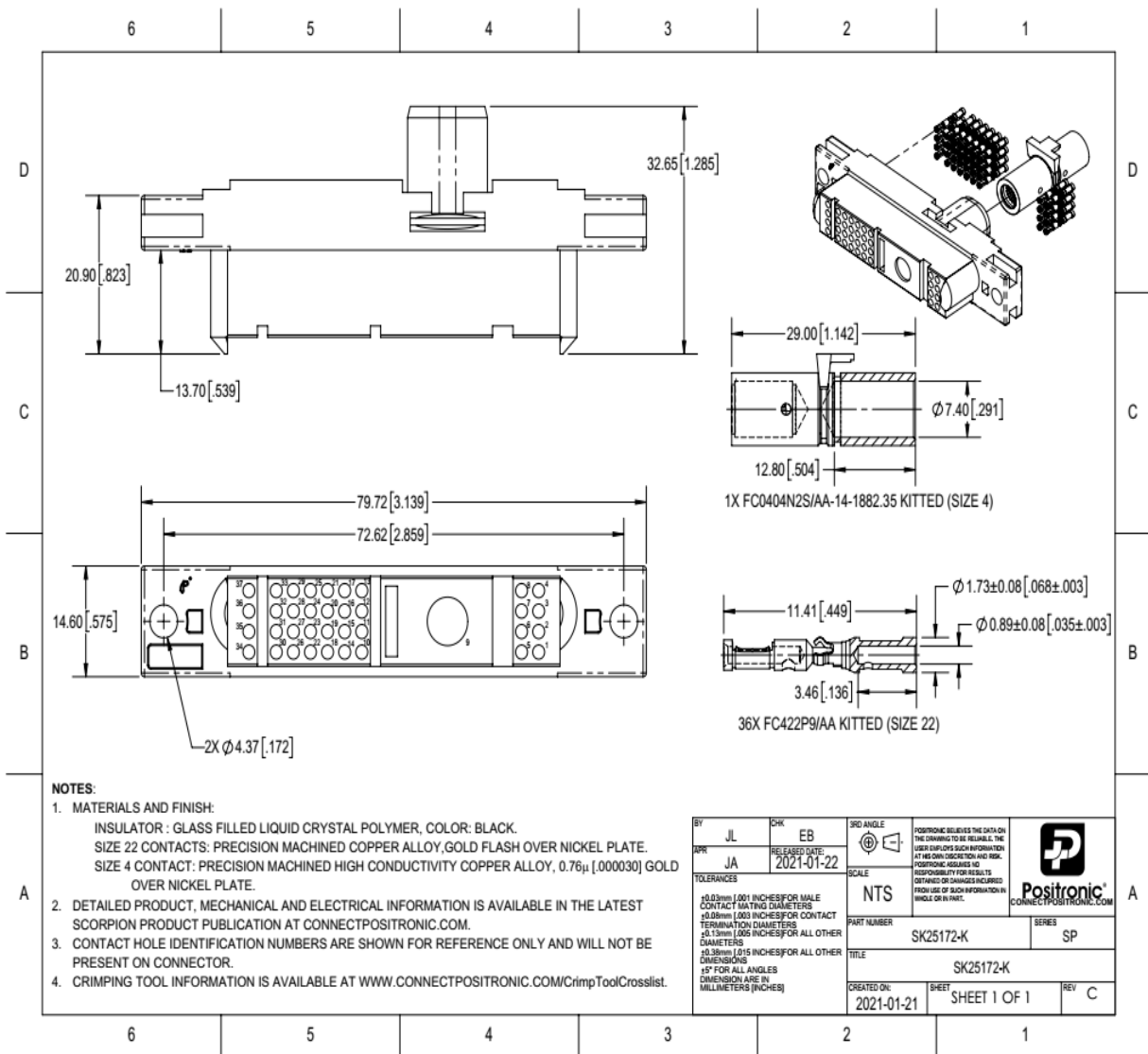
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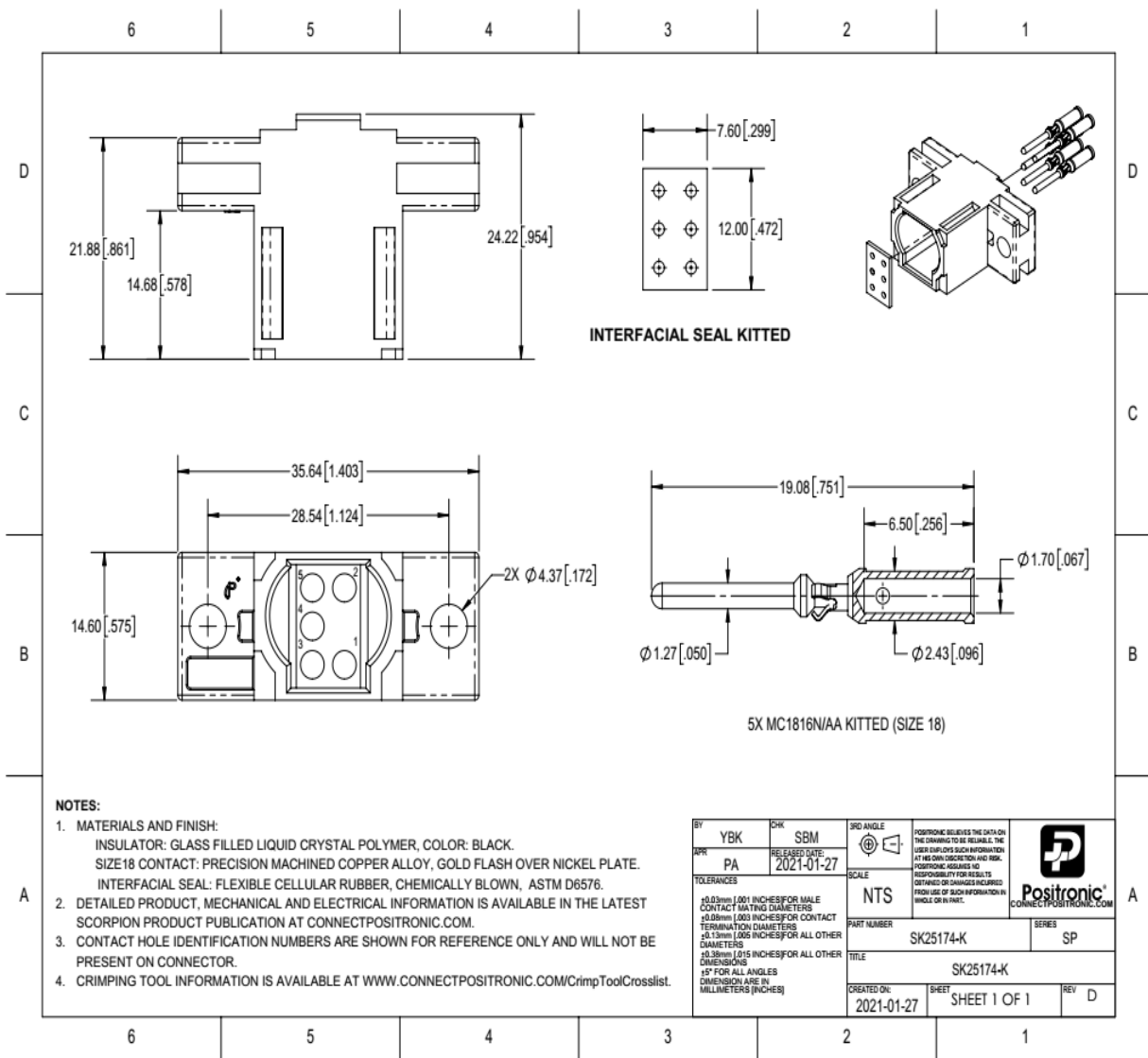
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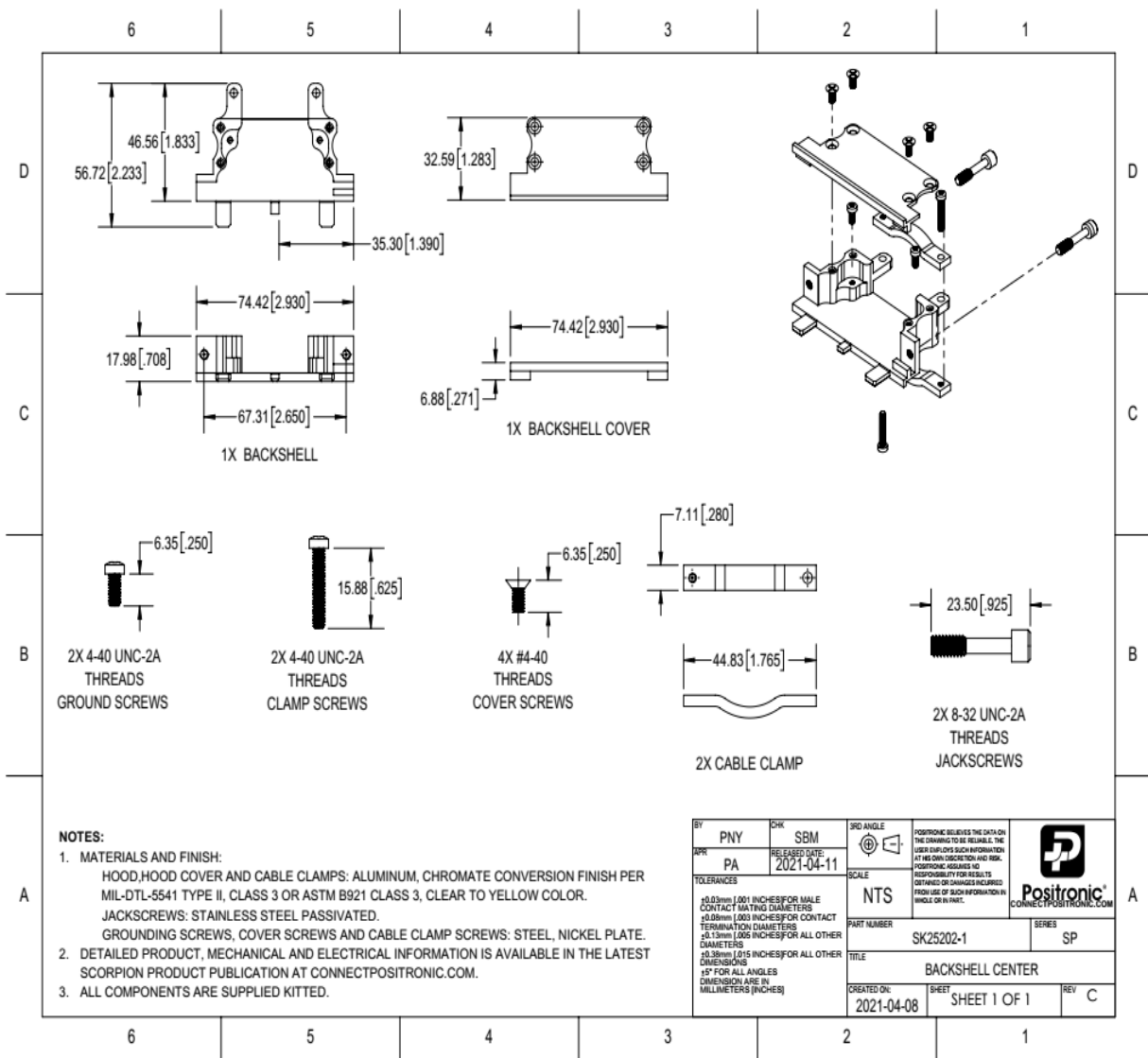
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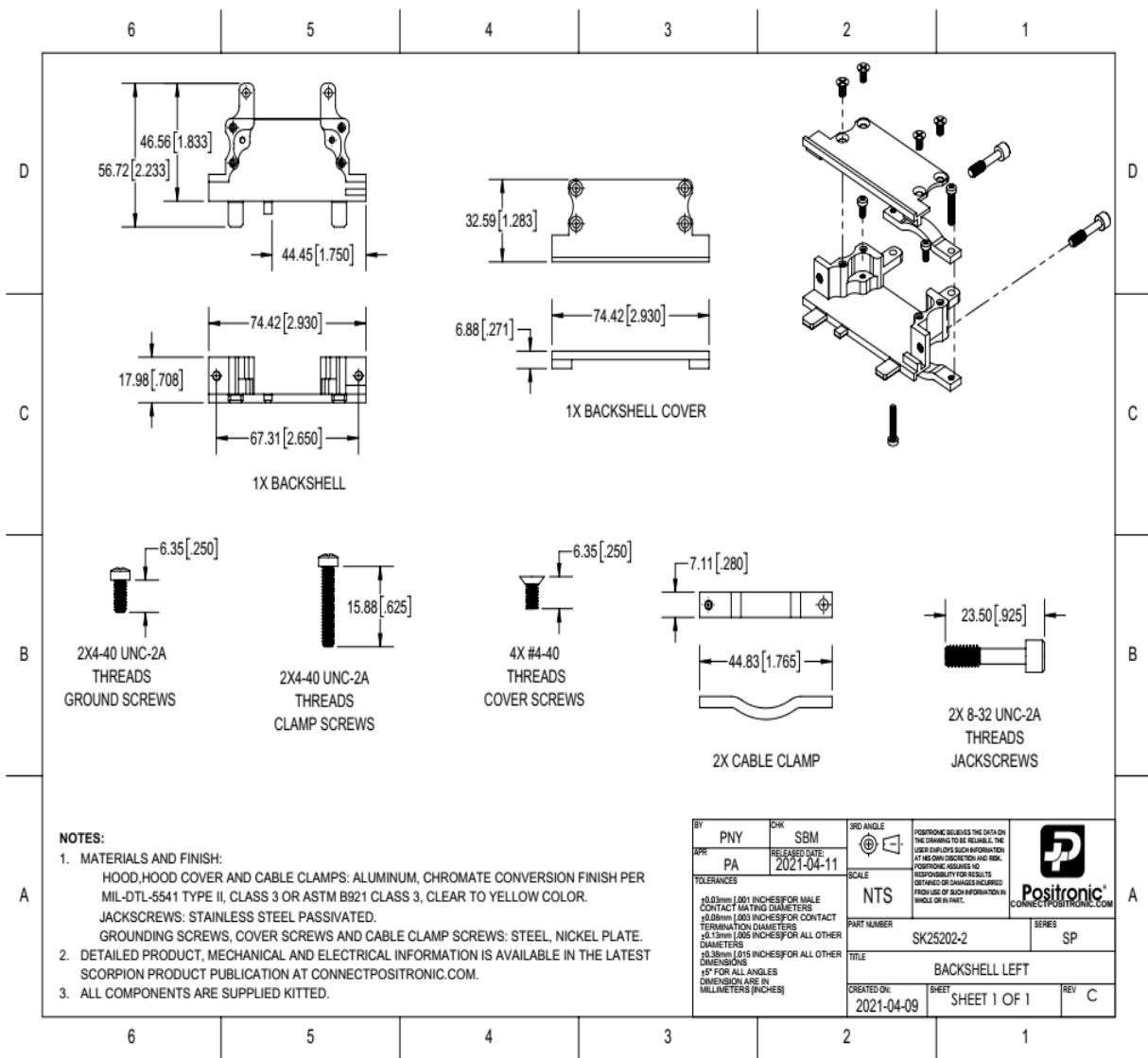
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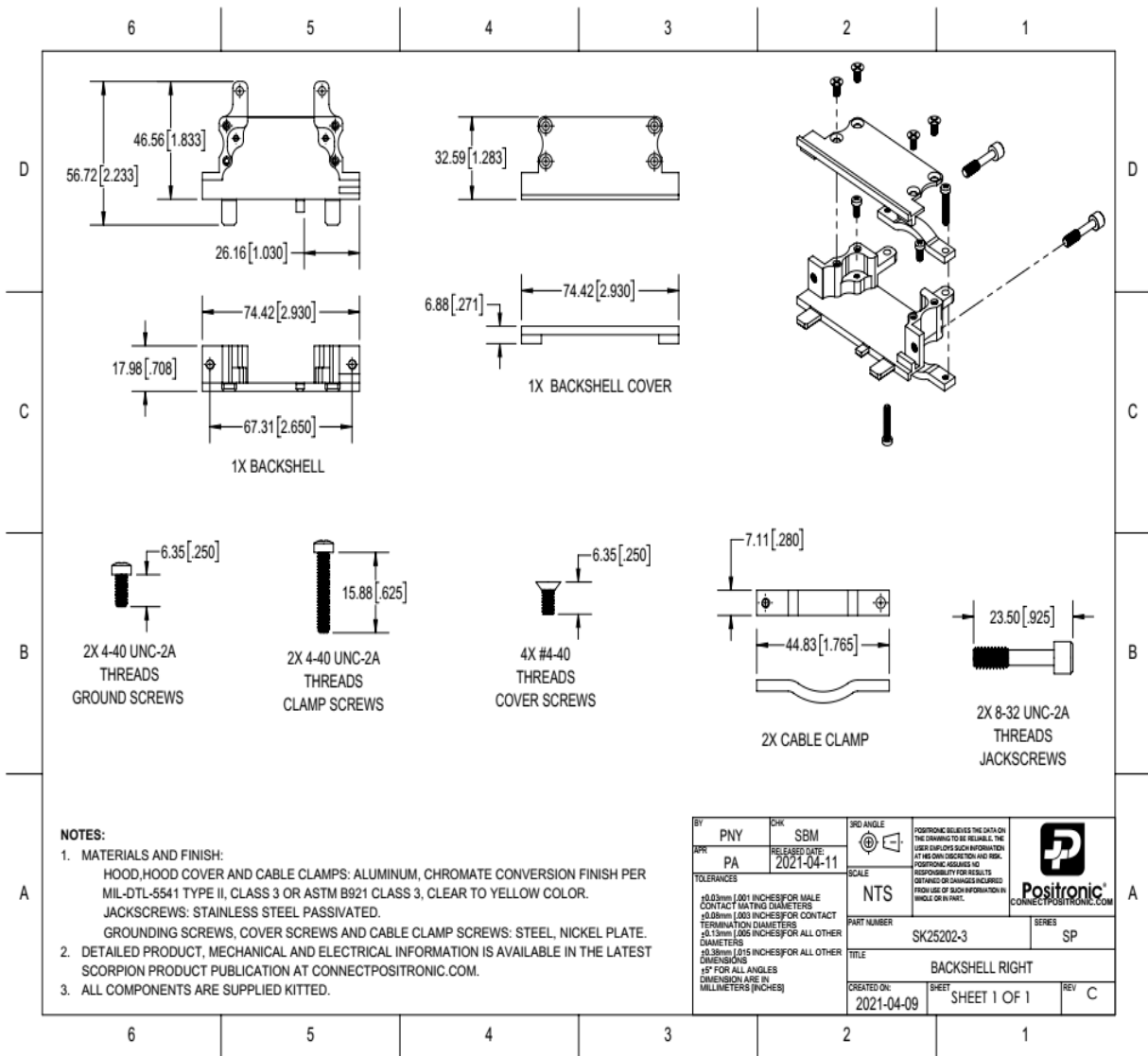
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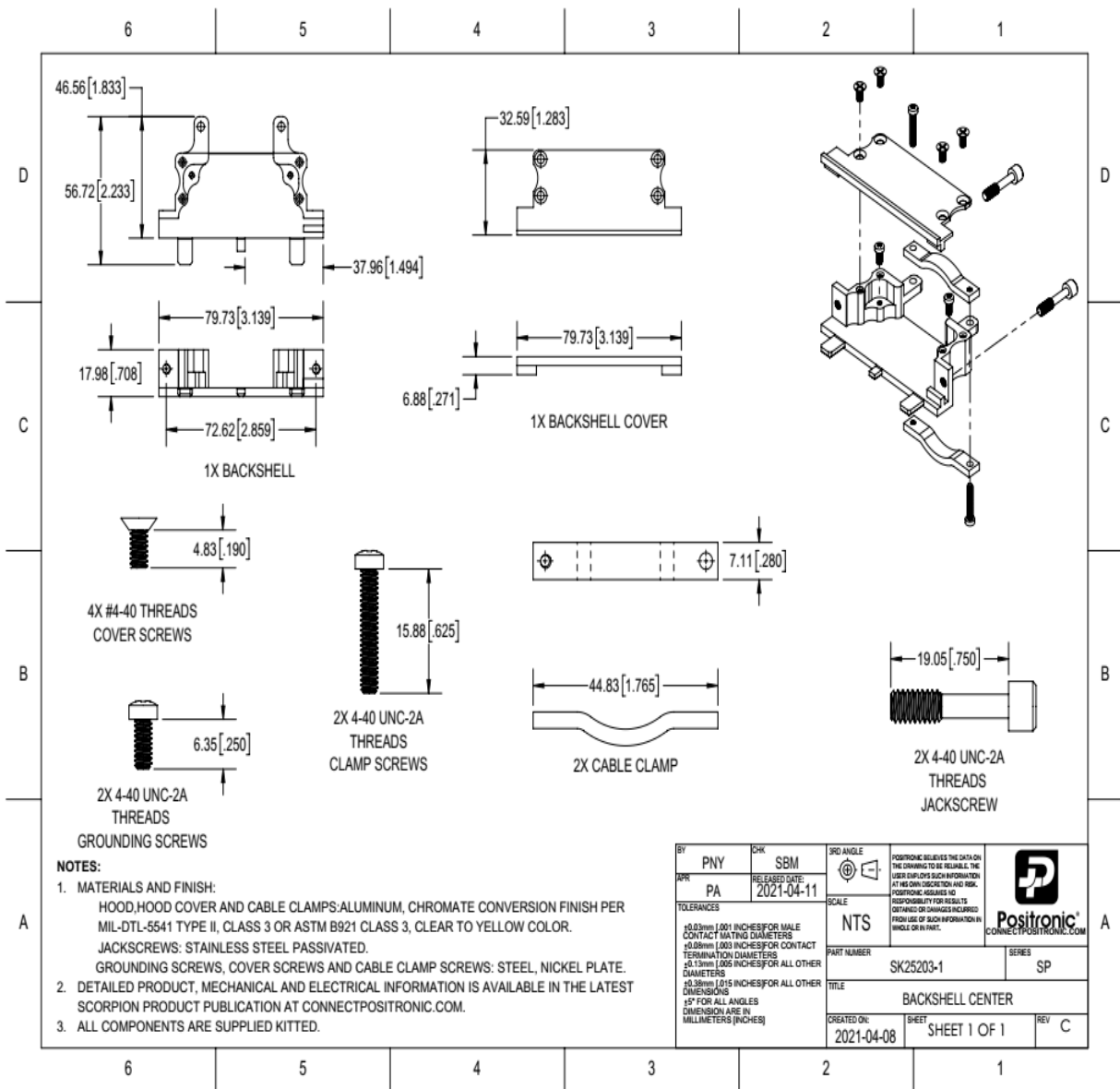
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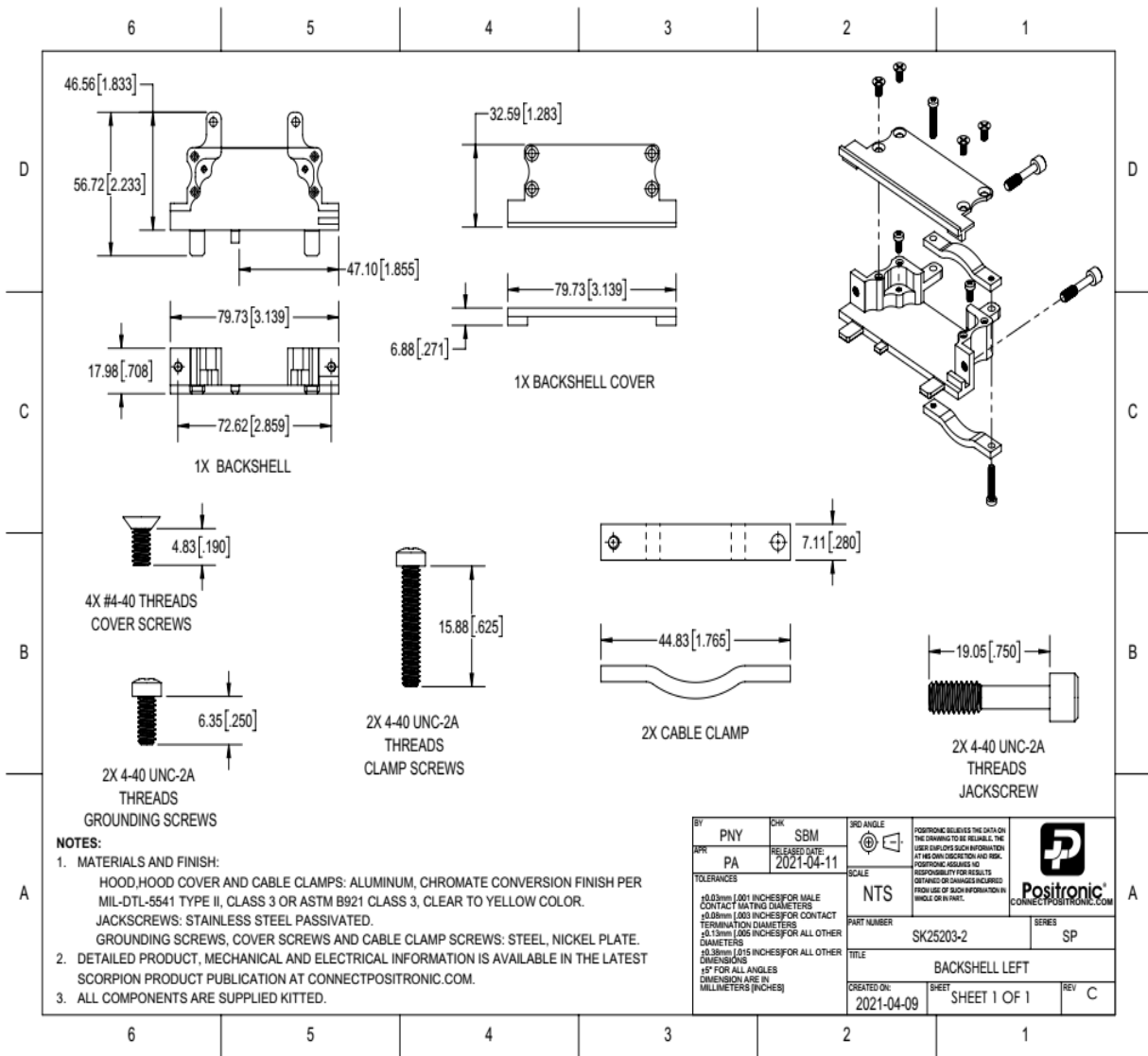
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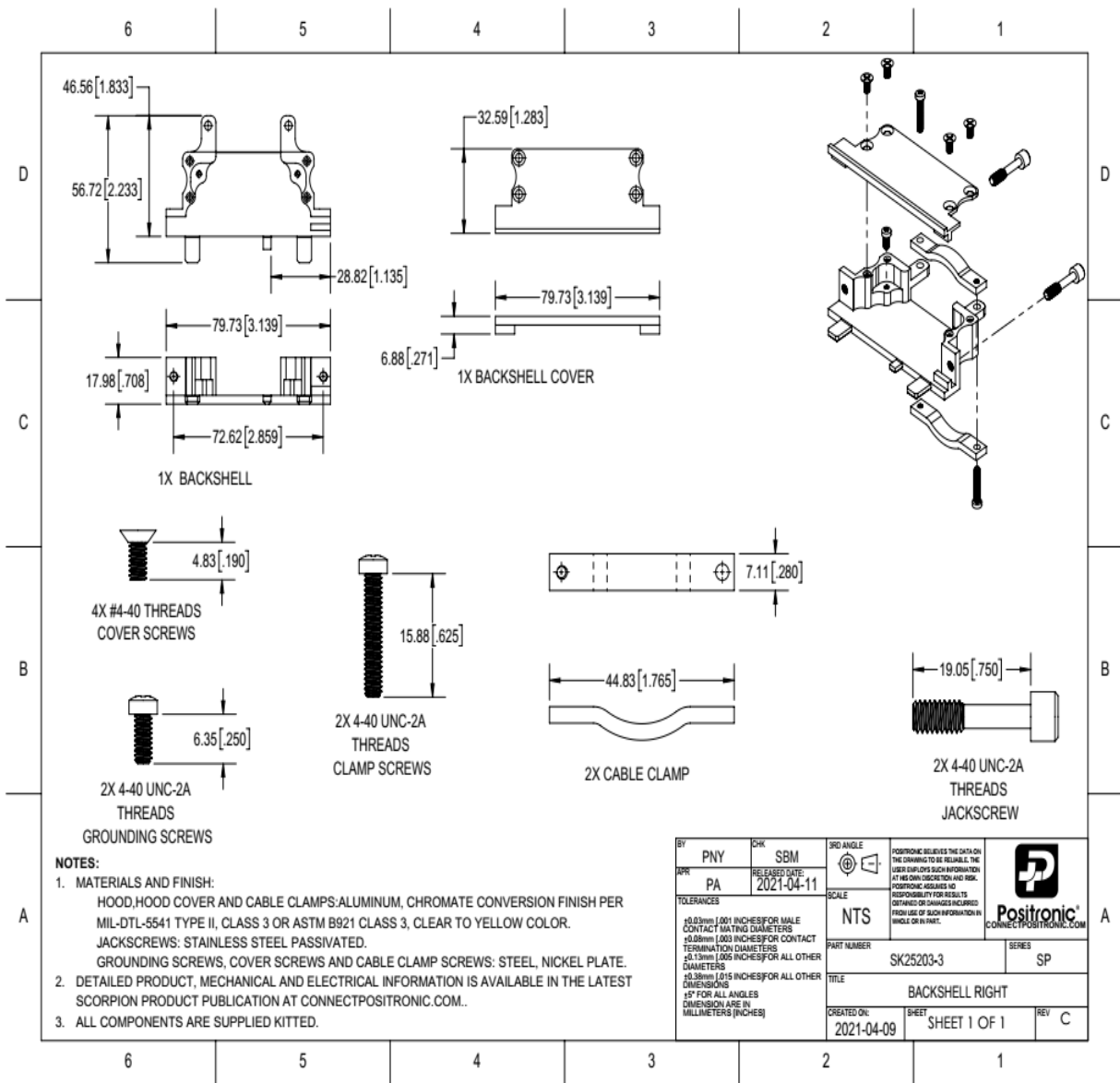
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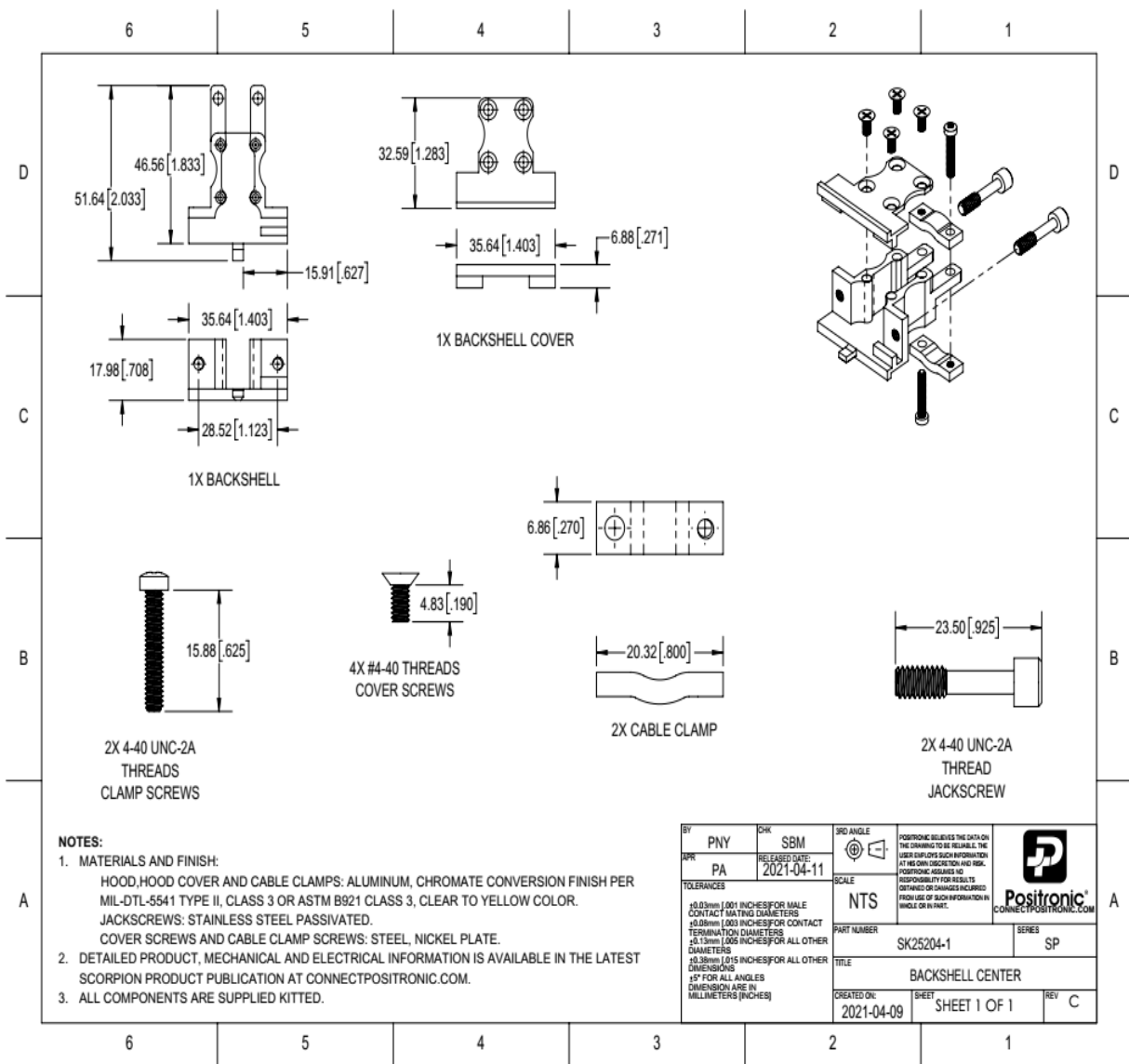
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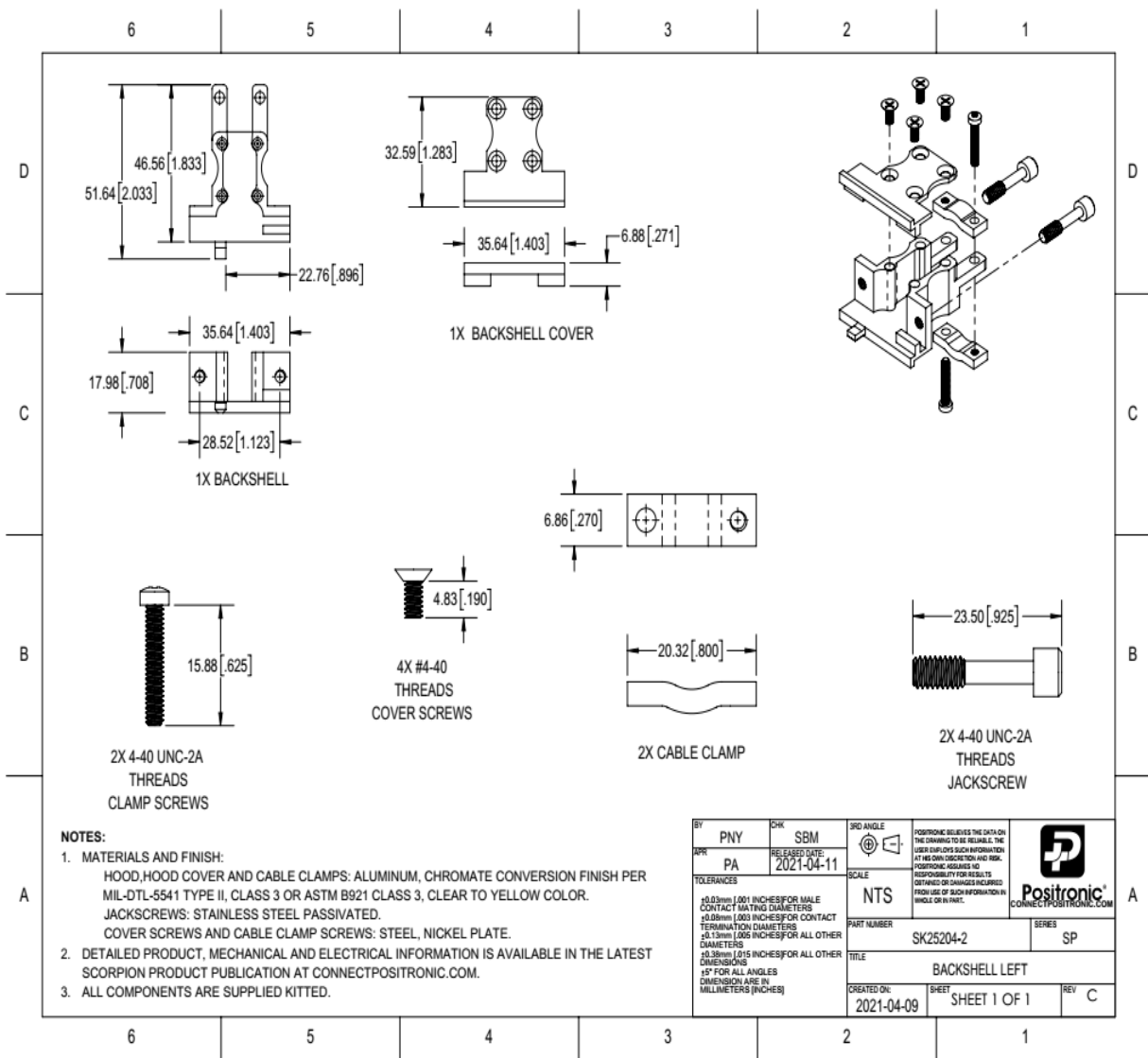
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