# Pneumatic Profiles

## Application

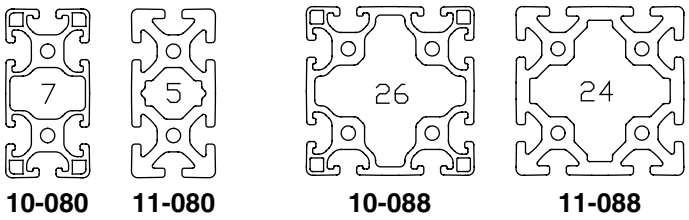
The cavity within a profile can be used to distribute compressed air as well as provide structural foundation for the system application. Connections may be made at any location using the proper accessory component and machining. Many of the profile configurations also provide for multiple channels allowing for the complete distribution of compressed air in complex systems.

# Available Profiles

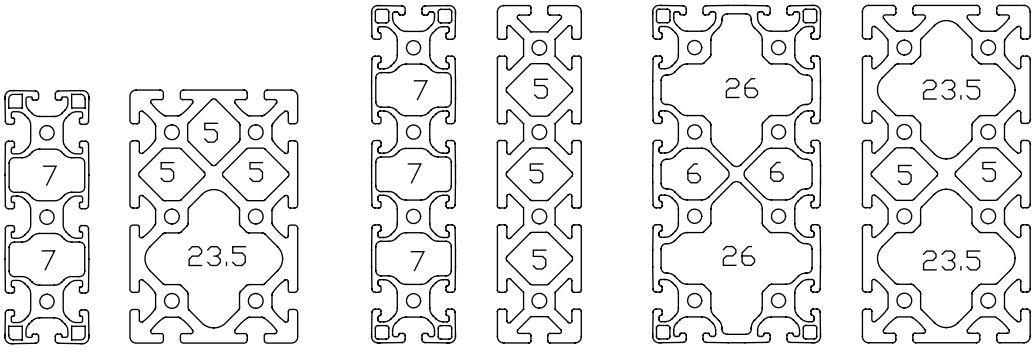
| Part # | Description | Available Air Channels | Structural Properties | | | | | Weight [kg/m] | Page |
|---|---|---|---|---|---|---|---|---|---|
| | | | $I_x$ [cm$^4$] | $I_y$ [cm$^4$] | $W_x$ [cm$^4$] | $W_y$ [cm$^4$] | Section [cm$^2$] | | |
| 10-080 | Profile 80X40 Standard | 1 | 71.79 | 17.23 | 17.99 | 8.62 | 11.53 | 3.18 | 26 |
| 11-080 | Profile 80X40 Heavy | 1 | 102.00 | 26.73 | 25.50 | 13.37 | 16.59 | 4.58 | 26 |
| 10-088 | Profile 80X80 Standard | 1 | 138.30 | 138.30 | 34.58 | 34.58 | 20.17 | 5.45 | 27 |
| 11-088 | Profile 80X80 Heavy | 1 | 185.20 | 185.20 | 46.30 | 46.30 | 26.01 | 7.02 | 27 |
| 10-120 | Profile 120X40 Standard | 2 | 220.54 | 24.22 | 36.76 | 12.11 | 16.12 | 4.35 | 28 |
| 11-122 | Profile 120x80 Heavy | 4 | 575.07 | 274.46 | 92.75 | 68.61 | 40.08 | 10.82 | 27 |
| 10-164 | Profile 160X40 Standard | 3 | 517.25 | 33.13 | 64.65 | 16.56 | 21.48 | 5.80 | 28 |
| 11-140 | Profile 160X40 Heavy | 3 | 749.51 | 54.80 | 93.60 | 27.40 | 32.30 | 8.72 | 28 |
| 10-160 | Profile 160X80 Standard | 4 | 922.50 | 271.10 | 115.30 | 67.80 | 38.10 | 10.29 | 29 |
| 11-160 | Profile 160X80 Heavy | 2 | 1215.79 | 357.51 | 151.97 | 89.38 | 51.72 | 13.96 | 29 |

Cavity areas shown are in cm$^2$ (1 cm$^2$ = 0.155 in$^2$)

To calculate volume, multiply area by the profile length.




**10-080** **11-080** **10-088** **11-088**




**10-120** **11-122** **10-164** **11-140** **10-160** **11-160**



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# Pressure Ratings and Leak Test

## Safe Maximum Pressure Rating

1725 kPa (250 psi)

## Supporting Pressure Rating Data

### Procedures

**Stage 1**

A sample assembly was connected to a nitrogen cylinder. Pressure of 690 kPA (100psi) was applied. The holding button head screws were checked and tightened to a torque of 13.6 Nm (10 ft-lbs). Pressure was increased in stages to 6900 kPa (1000 psi) with continuous inspection for leaks. This was duplicated for each profile.

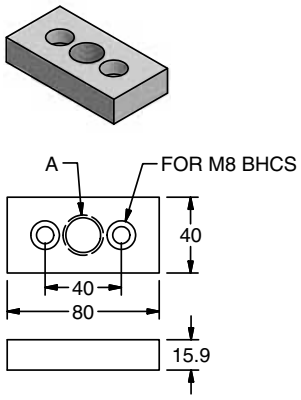
**Stage 2**

A sample was filled with water and pressure was applied in the same manner as in stage 1. Pressure was increased until a gaskets leaked or profiles burst. This was duplicated for each profile.

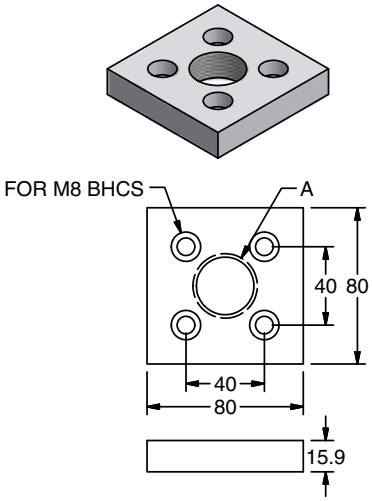
## Sample Testing Results

| Profile | Pressure Medium | Pressure kPA (psi) | Observation |
|---|---|---|---|
| 10-080 | Nitrogen | 6,900 (1000) | No Leakage |
| | Water | 9,655 (1400) | Profile Burst |
| 10-088 | Nitrogen | 6,900 (1000) | No Leakage |
| | Water | 9,655 (1400) | Profile Burst |
| 11-080 | Nitrogen | 6,900 (1000) | No Leakage |
| | Water | 27,580 (4000) | No Leakage |
| 11-088 | Nitrogen | 6,900 (1000) | No Leakage |
| | Water | 10,345 (1500) | Gasket Leaked |

# Connecting Plates




**21-040zX**




**21-043zX**

## Application

Connecting plates provide threaded NPT ports and align with air chambers within properly machined profiles. Both styles are designed to be attached to the end face of the profile. The 80x80 plate can also be attached to the T-slotted side of a profile with an 80mm dimension. All plates include the appropriate sealing gasket. These plates can be used to seal end of profile by using appropriate plug.

## Technical Data

Plate: Aluminum, Anodized

Seal: Neoprene or Buna

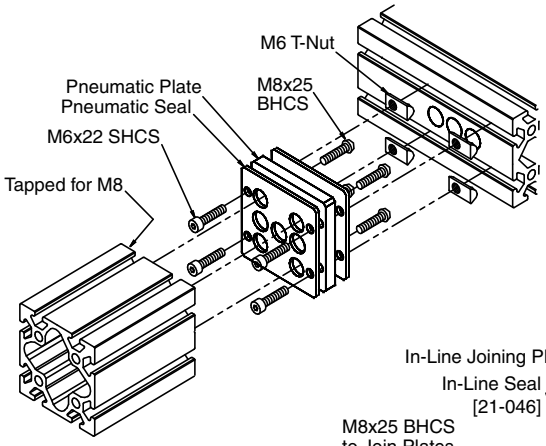
## Recommended Fasteners

| Mounting | Hardware | 21-040zX | 21-043zX |
|---|---|---|---|
| End Face Mount | Screw | (2) 24-125-8 | (4) 24-125-8 |
| Side Mount | Screw | — | (4) 24-118-8 |
| | T-Nut | — | (4) 20-058 |

## Ordering Information

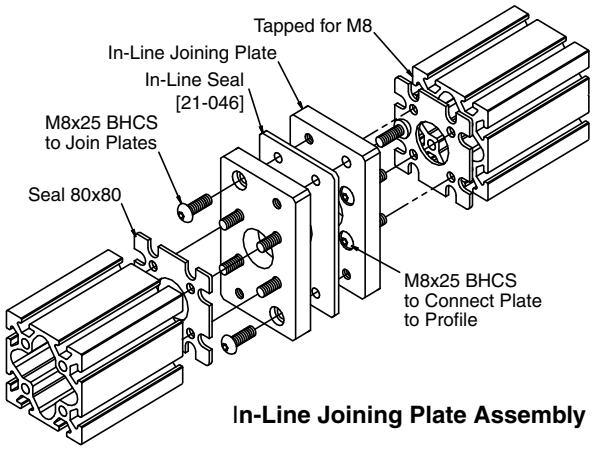
| Description | A | Unit | Weight | Part # |
|---|---|---|---|---|
| Connector Plate 80x40 | 1/8"-27 NPT | 1 Set | 0.11 kg | 21-040z1 |
| | 1/4"-18 NPT | 1 Set | 0.11 kg | 21-040z2 |
| | 3/8"-18 NPT | 1 Set | 0.11 kg | 21-040z4 |
| | 1/4" BSPP | 1 Set | 0.11 kg | 21-040z6 |
| | 1/2"-14 NPT | 1 Set | 0.11 kg | 21-040z8 |
| Connector Plate 80x80 | 1/2"-14 NPT | 1 Set | 0.23 kg | 21-043z2 |
| | 1/2" BSPP | 1 Set | 0.23 kg | 21-043z6 |
| | 1"-11.5 NPT | 1 Set | 0.23 kg | 21-043z8 |

# Joining Plates

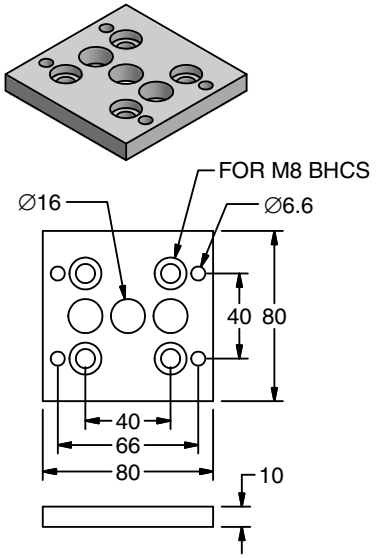



**T-Joining Plate Assembly**

Assembly note for 21-044: M6 SHCS must be inserted head first into T-slot of 80x80 profile BEFORE attachment of plate to end.




**In-Line Joining Plate Assembly**




**21-044**

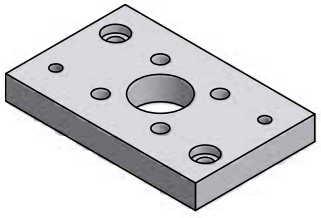
## Application

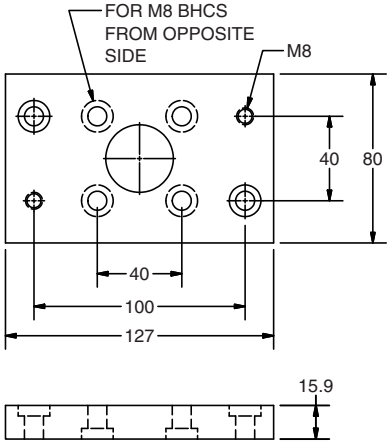
Joining Plates are used to join two profiles together while extending the compressed air cavity across the joint. These plates are available in in-line as well as "T" configurations. In-Line connections couple the end face of two profiles into a continuous straight section. "T" plates allow a profile to extend at a 90° angle. All Joining Plates come with the necessary seals for the intended application.

## Technical Data

21-044: Steel, Galvanized

21-045: Aluminum, Clear Anodized






**21-045**

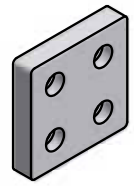
## Recommended Fasteners

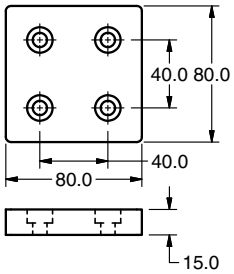
| Mounting | Screws | T-Nuts |
|---|---|---|
| "T" Connection (21-044) | (4) 24-125-8<br>(4) 24-322-6 | (4) 20-058 |
| In-Line (21-045) | (12) 24-125-8 | — |

## Ordering Information

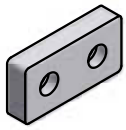
| Description | Unit | Weight | Part # |
|---|---|---|---|
| T-Joining Plate | 1 Set | 0.42 kg | 21-044 |
| In-Line Joining Plate | 1 Set | 1.09 kg | 21-045 |

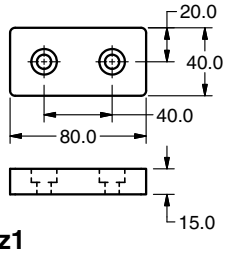
# Blank Plates






**21-8000z1**






**21-4000z1**

## Application

Used for closing 80x40 and 80x80 profile ends.

## Technical Data

Aluminum, Clear Anodized

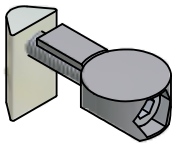
## Recommended Fasteners (Order Separately)

Screws: 24-125-8

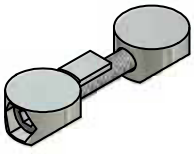
## Ordering Information

| Description | Unit | Weight | Part # |
|---|---|---|---|
| Blank Plate 80x40 | Each | 0.1 kg | 21-4000z1 |
| Blank Plate 80x80 | Each | 0.2 kg | 21-8000z1 |

# Pneumatic Fasteners



**20-011**



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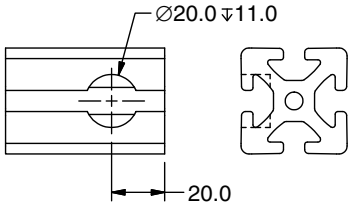



## Application

Two styles for connecting 80x40 or larger profiles together when used as compressed air piping. Universal is used on 90° connections. Butt-Fastening is for end to end connections

## Technical Data

Zinc Cast, Galvanized

## Ordering Information

| Description | Unit | Weight | Part # |
|---|---|---|---|
| Pneumatic Universal Fastening Set | Each | 36 g | 20-011 |
| Butt-Fastening Set M6 | Each | 45 g | 20-012 |

# Pneumatic Seals

## Application

Replacement seals for pneumatic connections.

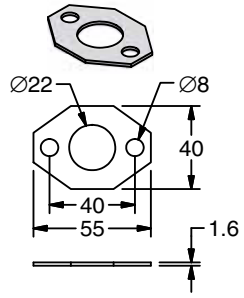
## Technical Data

Neoprene or Buna, Black

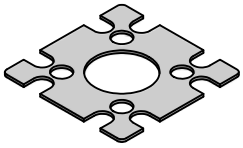
Note: Seals should be retightened after 24 hours of initial installation.

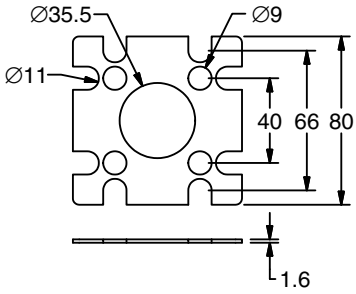
## Ordering Information

| Description | Unit | Part # |
|---|---|---|
| Seal 80x40 | Each | 21-041 |
| Seal 80x80 | Each | 21-042 |
| Seal 80x80 T-Joining Plate | Each | 21-144 |
| Seal 80x80 In-Line Plate | Each | 21-046 |




**21-041**



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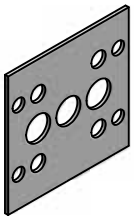
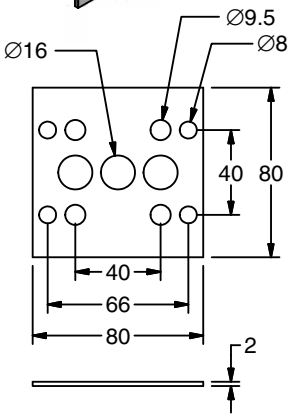
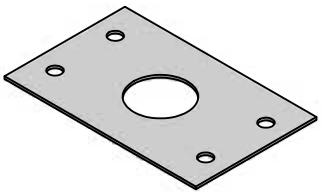
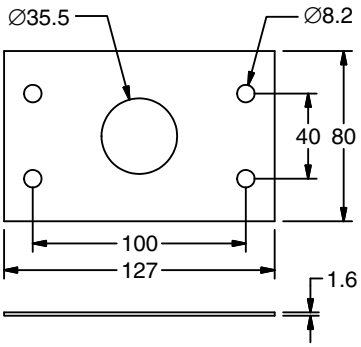





**21-144**






**21-046**



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