

Non-Metallic Systems

ATS - Type CS90 - Yellow Elastomer



TechnicCS90I Characteristics

Conforms to BSI Kitemark KM-35161
 CE Low voltage directive
 Lloyd's Register of Shipping (Type Approval)
 NF 16-10/12 I4, F2
 CEI 11170 LR3 / LR4

Approvals and Standards

Degree of mechanical protection High Impact Resistance

Degree of protection IP66 - As standard
 IP67 - As standard
 IP68 - As standard (4 bar 30 mins)
 IP69k - As standard

UV protection Very High

Fitting Characteristics 90° Elbow swivel fitting - Integrated Seal System
 Swivel external male thread
 (Locknut supplied with METRIC threads only)

Application For insertion into knockouts & threaded entries using a locknut to secure

| Normal operating temperature range | Application | Min Temp | Max Temp |
|------------------------------------|-------------|----------|----------|
| | Static | - 50°C | +120°C |
| | Dynamic | - 45°C | +120 °C |

For use with - Conduit Series Light, Standard and Heavyweight variants of type [PA](#), [PI](#), [PR](#), [PADL](#) & [PF](#)

| Fire performance | Test Standard | Performance Rating |
|------------------|--------------------|--------------------|
| | BS EN 61386-1 & 23 | Approved |
| | NFF16-101 | I4 F2 |
| | ISO 4589-2 | 24% |
| | BS EN 60695-2-11 | 850°C |
| | UL94 | HB |

**Self Extinguishing
Low Smoke & Halogen
Free**

Testing data [Click](#) or See pages [5](#) & [6](#)

Type of material Polyamide (Nylon) 66 body, TPE Seal



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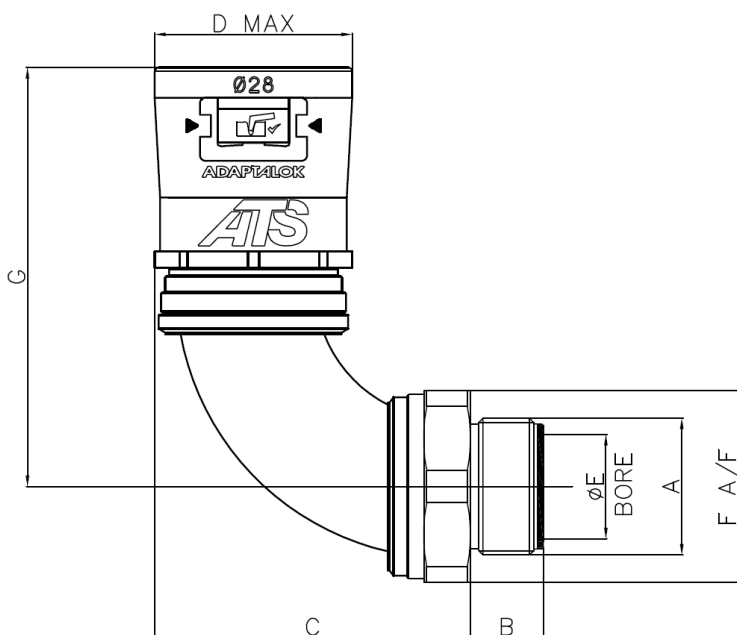


Dimensional & Thread Data

| Part No Black Body PF Threads | Part No Grey Body PF Threads | Thread A | Nominal Dimensions (mm) | | | | | |
|-------------------------------------|------------------------------------|-------------|-------------------------|-------|------|-------|------|-------|
| | | | B | C | D | E | F | G |
| AT13/M16/CS90/BLY | AT13/M16/CS90/GRY | M16x1.5 | 12.0 | 44.3 | 21.2 | 11.0 | 24.0 | 65.2 |
| AT16/M16/CS90/BLY | AT16/M16/CS90/GRY | M16x1.5 | 12.0 | 44.3 | 23.2 | 11.0 | 24.0 | 65.2 |
| AT21/M20/CS90/BLY | AT21/M20/CS90/GRY | M20x1.5 | 12.0 | 47.5 | 30.2 | 15.4 | 27.0 | 70.0 |
| AT28/M25/CS90/BLY | AT28/M25/CS90/GRY | M25x1.5 | 12.3 | 57.5 | 37.2 | 149.0 | 34.0 | 76.4 |
| AT34/M32/CS90/BLY | AT34/M32/CS90/GRY | M32x1.5 | 17.0 | 70.3 | 44.2 | 25.9 | 42.0 | 86.4 |
| AT42/M40/CS90/BLY | AT42/M40/CS90/GRY | M40x1.5 | 17.5 | 87.5 | 54.2 | 33.3 | 52.0 | 104.7 |
| AT48/M50/CS90/BLY | AT48/M50/CS90/GRY | M50x1.5 | 16.0 | 110.7 | 65.0 | 43.8 | 63.0 | 127.6 |
| AT54/M50/CS90/BLY | AT54/M50/CS90/GRY | M50x1.5 | 16.0 | 110.7 | 66.2 | 43.6 | 70.0 | 127.6 |
| AT54/M63/CS90/BLY | AT54/M63/CS90/GRY | M63x1.5 | 16.0 | 110.7 | 66.2 | 43.6 | 70.0 | 127.6 |

| Metric | Standard thread conforming to EN60423 & BS3643 | | | |
|--------|--|-----------------------------|----------------------------|-------|
| | Thread Size | Ext Thread Outside Diameter | Int Thread Inside Diameter | Pitch |
| M16 | 16.0mm | 14.4mm | 1.5mm | |
| M20 | 20.0mm | 18.4mm | 1.5mm | |
| M25 | 25.0mm | 23.4mm | 1.5mm | |
| M32 | 32.0mm | 30.4mm | 1.5mm | |
| M40 | 40.0mm | 38.4mm | 1.5mm | |
| M50 | 50.0mm | 48.4mm | 1.5mm | |
| M63 | 63.0mm | 61.4mm | 1.5mm | |

NOTE: Dimensions are nominal



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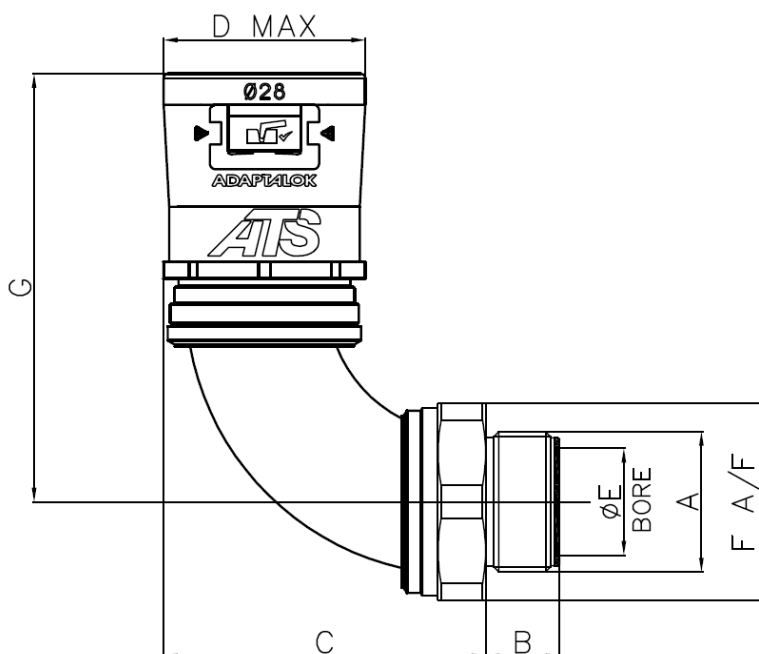
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Dimensional & Thread Data

| Part No Black Body PF Threads | Part No Grey Body PF Threads | Thread A | Nominal Dimensions (mm) | | | | | |
|-------------------------------------|------------------------------------|-------------|-------------------------|-------|------|------|------|-------|
| | | | B | C | D | E | F | G |
| AT13/PG9/CS90/BLY | AT13/PG9/CS90/GRY | PG9 | 12.0 | 44.3 | 21.2 | 11.2 | 20.6 | 65.2 |
| AT13/PG11/CS90/BLY | AT13/PG11/CS90/GRY | PG11 | 12.0 | 44.3 | 21.2 | 12.0 | 24.0 | 65.2 |
| AT16/PG9/CS90/BLY | AT16/PG9/CS90/GRY | PG9 | 12.0 | 44.3 | 23.2 | 11.2 | 24.0 | 65.2 |
| AT16/PG11/CS90/BLY | AT16/PG11/CS90/GRY | PG11 | 12.0 | 44.3 | 23.2 | 12.0 | 24.0 | 65.2 |
| AT16/PG16/CS90/BLY | AT16/PG16/CS90/GRY | PG16 | 12.0 | 44.3 | 23.2 | 13.5 | 27.0 | 65.2 |
| AT21/PG13/CS90/BLY | AT21/PG13/CS90/GRY | PG13.5 | 12.0 | 47.5 | 30.2 | 15.7 | 27.0 | 70.0 |
| AT21/PG16/CS90/BLY | AT21/PG16/CS90/GRY | PG16 | 12.0 | 47.5 | 30.2 | 17.7 | 27.0 | 70.0 |
| AT28/PG21/CS90/BLY | AT28/PG21/CS90/GRY | PG21 | 12.3 | 57.5 | 37.2 | 22.5 | 34.0 | 76.4 |
| AT34/PG29/CS90/BLY | AT34/PG29/CS90/GRY | PG29 | 17.0 | 70.3 | 44.2 | 28.9 | 42.0 | 86.4 |
| AT42/PG36/CS90/BLY | AT42/PG36/CS90/GRY | PG36 | 17.5 | 87.5 | 54.2 | 38.0 | 52.0 | 104.7 |
| AT54/PG48/CS90/BLY | AT54/PG48/CS90/GRY | PG48 | 16.0 | 110.7 | 66.2 | 51.0 | 70.0 | 127.6 |

| PG | German Standard Thread Conforming to DIN40430 | | |
|-------------|--|----------------------------------|--------|
| Thread Size | Ext Thread Outside Diameter | Int Thread Inside Diameter | Pitch |
| PG7 | 12.5mm | 11.3mm | 1.27mm |
| PG9 | 15.2mm | 13.9mm | 1.41mm |
| PG11 | 18.6mm | 17.3mm | 1.41mm |
| PG13.5 | 20.4mm | 19.1mm | 1.41mm |
| PG16 | 22.5mm | 21.2mm | 1.41mm |
| PG21 | 28.3mm | 26.8mm | 1.59mm |
| PG29 | 37mm | 35.5mm | 1.59mm |
| PG36 | 47mm | 45.5mm | 1.59mm |
| PG48 | 59.3mm | 57.8mm | 1.59mm |



NOTE: Dimensions are nominal

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ADAPTAflox **ATS** - Type CS90 - Yellow Elastomer

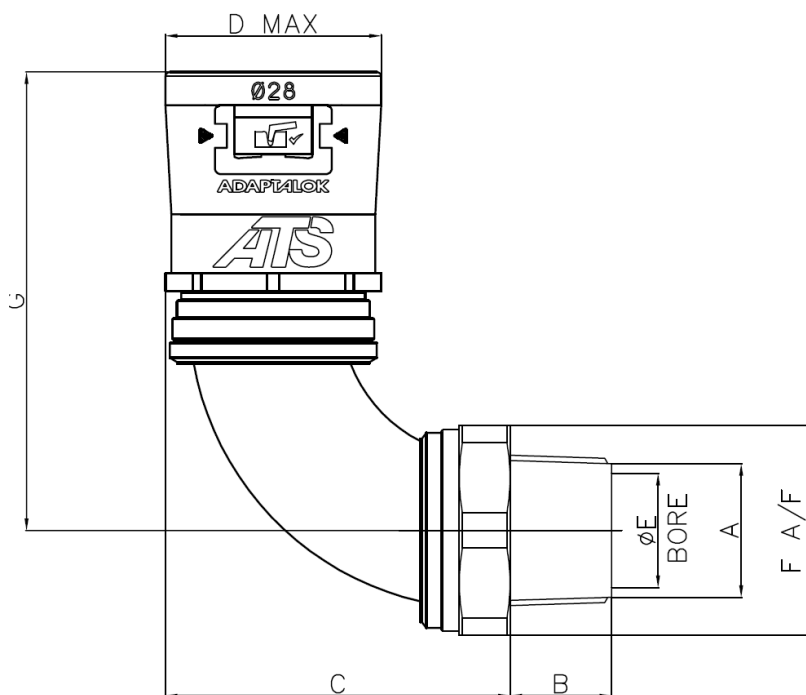


Dimensional & Thread Data

| Part No Black Body NPT Threads | Part No Grey Body NPT Threads | Thread A | Nominal Dimensions (mm) | | | | | |
|--------------------------------------|-------------------------------------|----------------------|-------------------------|-------|------|------|------|-------|
| | | | B | C | D | E | F | G |
| AT13/038/CS90/BLY | AT13/038/CS90/GRY | NPT $\frac{3}{8}$ " | 12.7 | 44.3 | 21.2 | 11.2 | 24.0 | 65.2 |
| AT16/038/CS90/BLY | AT16/038/CS90/GRY | NPT $\frac{3}{8}$ " | 12.7 | 44.3 | 23.2 | 11.2 | 24.0 | 65.2 |
| AT21/050/CS90/BLY | AT21/050/CS90/GRY | NPT $\frac{1}{2}$ " | 12.7 | 47.5 | 30.2 | 15.2 | 27.0 | 70.0 |
| AT28/075/CS90/BLY | AT28/075/CS90/GRY | NPT $\frac{3}{4}$ " | 13.5 | 57.5 | 37.2 | 19.1 | 34.0 | 76.4 |
| AT34/100/CS90/BLY | AT34/100/CS90/GRY | NPT1" | 17.5 | 70.3 | 44.2 | 26.4 | 42.0 | 86.4 |
| AT42/125/CS90/BLY | AT42/125/CS90/GRY | NPT1 $\frac{1}{4}$ " | 19.0 | 87.5 | 54.2 | 35.0 | 52.0 | 104.7 |
| AT48/150/CS90/BLY | AT48/150/CS90/GRY | NPT1 $\frac{1}{2}$ " | 24.3 | 108.6 | 65.0 | 45.0 | 70.0 | 113.0 |
| AT54/200/CS90/BLY | AT54/200/CS90/GRY | NPT2" | 24.3 | 110.7 | 66.2 | 52.0 | 70.0 | 127.6 |

| NPT | US taper seal pipe thread conforming to ANSI/ASME B1.20.1-1983 | |
|-------------|--|--------|
| Thread Size | Ext Thread Outside Diameter | Pitch |
| 3/8" | 16.7 | 1.14mm |
| 1/2" | 21.0 | 1.81mm |
| 3/4" | 26.4 | 1.81mm |
| 1" | 33.3 | 2.21mm |
| 1 1/4" | 41.9 | 2.21mm |
| 1 1/2" | 47.8 | 2.21mm |
| 2" | 59.6 | 2.21mm |

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ADAPTALEX



BS EN 61386 Classification

| Fitting | Compression | Impact | Min temp | Max temp | bending | electrical | IP solids | IP water | Corrosion | Tensile | Non-flame Propogating | Suspended load |
|---------|-------------|--------|----------|----------|---------|------------|-----------|----------|-----------|---------|-----------------------|----------------|
| ATS | N/A | 4 | 2 | 4 | N/A | 0 | 6 | 7 | 0 | 1 | 1 | 0 |

Mechanical Properties

| Test Type | Methods / Standards | Requirements | Value |
|-------------------------|---------------------|---|---------|
| Tensile Strength | IEC61386-1 | 2 mins at Specified Value (<i>PAFS21 Conduit</i>) | Class 1 |
| Tensile Strength | | Ultimate Pullout (<i>PAFS21 Conduit</i>) | 240N |
| Impact Strength @ -45°C | IEC61386-1 | No visible damage | Class 1 |
| Impact Strength @ -5°C | IEC61386-1 | No visible damage | Class 3 |
| Impact Strength @ 23°C | IEC61386-1 | No visible damage | Class 5 |

Tensile Tests to IEC 61386 gives the minimum classification value only. Actual values will depend on the type and size of the fittings used and will always be greater than the minimum – Impact strength is the minimum classification value at the minimum temperature – actual values will depend on size and temperature. Specific values available on request.

Thermal Properties

| Test Type | Methods / Standards | Requirements | Value |
|------------------------|---------------------|------------------------------|-----------------|
| Dynamic Applications | IEC 61386-23 | 5000 Operations at MBR 2hrs | -45°C to +120°C |
| Static Short Term Temp | | Temporary Use (3000hrs) | -50°C to +120°C |
| Static Long Term Temp | | Permanent Use (30,000) Hours | -40°C to +105°C |

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Flammability

| Test Type | Method / Standard | Requirement | Result | Unit |
|----------------------------------|-------------------|-------------------------------------|--------|-----------|
| Glow Wire | BS EN 60695-2-11 | Extinguish within 30s | 850°C | °C |
| Flammability | IEC 61386-1-12 | 1Kw Burner Flame to Self Extinguish | Pass | Pass/Fail |
| Oxygen Index - Nylon Body | ISO 4589-2 | | 24.1 | % |
| Ignition Rating - Nylon Body | NF F16-101 | I Rating | I4 | - |
| Oxygen Index - Elastomer Seal | ISO 4589-2 | | 20.2 | % |
| Ignition Rating - Elastomer Seal | ISO 4589-2 | I Rating | I4 | - |

Smoke

| Test Type | Method / Standard | Requirement | Result | Unit |
|------------------------------|-------------------|-------------|--------|------|
| Fume Rating - Nylon Body | NF F16-101 | F Rating | F2 | - |
| Fume Rating - Elastomer Seal | NF F16-101 | F Rating | F2 | - |

Toxicity

| Test Type | Method / Standard | Requirement | Result | Unit |
|--------------|-------------------|-------------|--------|-----------|
| Halogen Free | NFX 70-100 | < 0.5% | Pass | Pass/Fail |

Pre Test Conditions

| Duration | Standard | Temperature | Relative Humidity |
|-------------|----------|-------------|-------------------|
| 168 (Hours) | IEC61386 | 23 (°C) | 50 (%) |

Chemical Resistance Chart

| Key: | Green | Yellow | Red | Black |
|-----------------------|-------|--------|-----|-------|
| Suitable : | ● | ● | ● | ● |
| Limited Suitability : | ● | ● | ● | ● |
| Unsuitable : | ● | ● | ● | ● |
| Not Tested : | ● | ● | ● | ● |

| | | | |
|------------------------|---------------------------|--------------------------|-------------------------|
| ● Astm No.1 | ● Diesel oil | ● Methyl Bromide | ● Sulphur Dioxide (Gas) |
| ● Astm No.2 | ● Diethylamine | ● MEK | ● Sulphuric Acid (10%) |
| ● Astm No.3 | ● Ethanol | ● Nitric Acid (10%) | ● Sulphuric Acid (70%) |
| ● Acetic Acid (10%) | ● Ether | ● Nitric Acid (70%) | ● Toluene |
| ● Acetone | ● Ethylamine | ● Oxalic Acid | ● Transformer Oil |
| ● Aluminium Chloride | ● Ethylene Glycol | ● Ozone (Gas) | ● 1,1,1-Trichloroethane |
| ● Aniline | ● Ethyl Ethanoate | ● Paraffin oil | ● Trichloroethylene |
| ● Benzaldehyde | ● Freon 32 | ● Petrol | ● Turpentine |
| ● Benzene | ● Hydrochloric Acid (10%) | ● Phenol | ● Vegetable Oil |
| ● Carbon tetrachloride | ● Hydrochloric Acid (36%) | ● Sea Water | ● Vinyl Acetate |
| ● Chlorine water | ● Hydrogen Peroxide (35%) | ● Silver Nitrate | ● Water |
| ● Chloroform | ● Hydrogen Peroxide (87%) | ● Skydrol | ● White Spirit |
| ● Citric Acid | ● Lactic Acid | ● Sodium Chloride | ● Zinc Chloride |
| ● Copper Sulphate | ● Lubricating oil | ● Sodium Hydroxide (10%) | |
| ● Cresol | ● Methanol | ● Sodium Hydroxide (60%) | |

All Values Based on Size 21 Fittings and PAFS Conduit, For Other Sizes and Conduit Systems Please Consult

The information above is given as a guide only and is based on published technical data and experience. The chemical resistance of the above products is dependant on factors such as chemical exposure, concentration of the chemical and temperature. The above chemicals are valid for a temperature of 23°C. Use of the above table is at the users own discretion and risk. Those using it must satisfy themselves that their application presents no health and safety risks. The end user should assess compatibility with their application and contact Thomas & Betts for further information.

ADHERENCE TO THE CURRENT WIRING REGULATIONS BS7671 OR NEC WIRING REGULATIONS (FOR USA) IS STRONGLY ADVISED.

MINIMUM BEND RADIUS FOR FLEXING IS DEPENDANT UPON MINIMUM TEMPERATURE, BENDING FREQUENCY AND CHEMICAL ENVIRONMENT.

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