



## THE BIG DEAL

- Kit of 4 phase matched cables,  $\pm 2^\circ$  phase difference max
- Low loss, 0.49 dB typ. at 6 GHz
- Excellent return loss, 22 dB typ. up to 6 GHz
- Hand formable to almost any custom shape without special bending tools
- 6mm bend radius for tight installations
- Anti-torque nut prevents cable stress during installation
- Insulated outer jacket standard

## APPLICATIONS

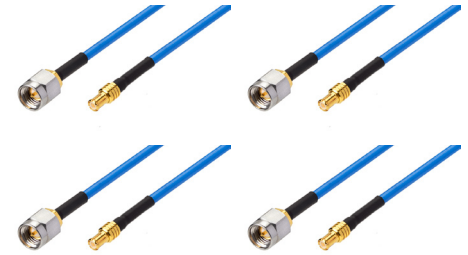
- Replacement for custom bent 0.086" semi-rigid cables
- Communication receivers and transmitters
- Radar, EW and ECM Defense Systems
- Environmental and test chambers

## PRODUCT OVERVIEW

K086-SMMCX+ series Hand-Flex™ coaxial cable kits consist of 4 identical, phase matched cables with a max phase difference of  $\pm 2^\circ$ . These semi-flex cables are ideal for interconnecting coaxial components and sub-assemblies in a wide range of systems, including communications, military and aerospace, environmental test chambers and more. The hand-formable cable provides a minimum bend radius of 6mm to accommodate tight layouts without the need for bending tools, adapters or brackets. SMA-Male and MCX-Male connectors make these cables ideal for connection of assemblies with SMA or MCX connector types. K086-SMMCX+ series cable kits are available in lengths of 8 and 12 inches to meet your system needs.

## KEY FEATURES

| Feature   | Advantages   |
|---|--|
| Hand-Flex™ (Hand-formable RF cables)              | Facilitates the assembly of coaxial systems and sub-systems without the need for special cable-bending tools or adapters. Reduces the risk of damage during bending.   |
| Phase Matched, $\pm 2^\circ$ phase difference max | When combining a number of amplifier modules it's important to have as little phase difference as possible. Delivering a group of phased matched cable assemblies allows them to easily be deployed in phase sensitive applications. |
| Tight bend-radius, 6mm                            | 6 mm bend-radius makes the cable ideal for connections in tight spaces and crowded layouts.  |
| Low insertion loss                                | Minimizes overall signal path loss.  |
| Excellent return loss                             | Minimizes signal reflection and VSWR ripple contribution.  |
| SMA-Male to MCX-Male connectors                   | Supports easy interconnection of components and equipment in systems with SMA and MCX connector types.   |
| Good power handling, 95W at 1 GHz                 | Supports medium to high RF power levels used in transmit paths.  |



Generic photo used for illustration purposes only

|               |                      |
|---------------|----------------------|
| Kit Model No. | K086-8SMMCX1+        |
| Case Style    | KP3378-8             |
| Connectors    | SMA-Male to MCX-Male |
| Qty.          | 4 cables             |

### +RoHS Compliant

The +Suffix identifies RoHS Compliance.  
See our website for methodologies and qualifications



## ELECTRICAL SPECIFICATIONS AT 25°C

| Parameter       | Frequency (GHz) | Min. | Typ. | Max. | Units  |
|-----------------|-----------------|------|------|------|--------|
| Frequency range |                 | DC   | -    | 6    | GHz    |
| Impedance       |                 | 50   |      |      | Ohms   |
| Length          |                 | 8    |      |      | inches |
| Insertion Loss  | DC - 6          | -    | 0.25 | 0.77 | dB     |
| Phase Match     | DC - 6          | -    | ±0.4 | ±2.0 | °      |
| Return Loss     | DC - 6          | 17.7 | 34   | -    | dB     |

1. Kit contains 4 identical, phase matched cables.

## MAXIMUM RATINGS

| Parameter                         | Ratings        |
|-----------------------------------|----------------|
| Operating Temperature             | -45°C to 85°C  |
| Storage Temperature               | -55°C to 105°C |
| Power Handling at 25°C, Sea Level | 95W at 1 GHz   |

Permanent damage may occur if any of these limits are exceeded.

## CABLE INFORMATION

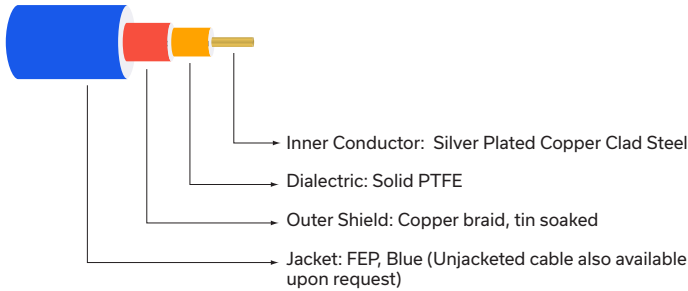
| Description                     | Connector 1                 | Connector 2  |
|---------------------------------|-----------------------------|--|
| Type                            | SMA Male                    | MCX Male   |
| Orientation                     | Straight                    | Straight   |
| Mounting Type                   | Standard                    | Standard   |
| Impedance                       | 50 Ω                        | 50 Ω   |
| Contact Material & Plating      | Gold Plated Brass           | Center: Gold Plated Brass<br>Outer: Gold Plated Beryllium Copper |
| Dielectric Type                 | PTFE                        | PTFE   |
| Body Material & Plating         | Gold Plated Stainless Steel | Gold Plated Brass  |
| Coupling Nut Material & Plating | Passivated Stainless Steel  | -  |
| Hex Size                        | 5/16 inch                   | -  |



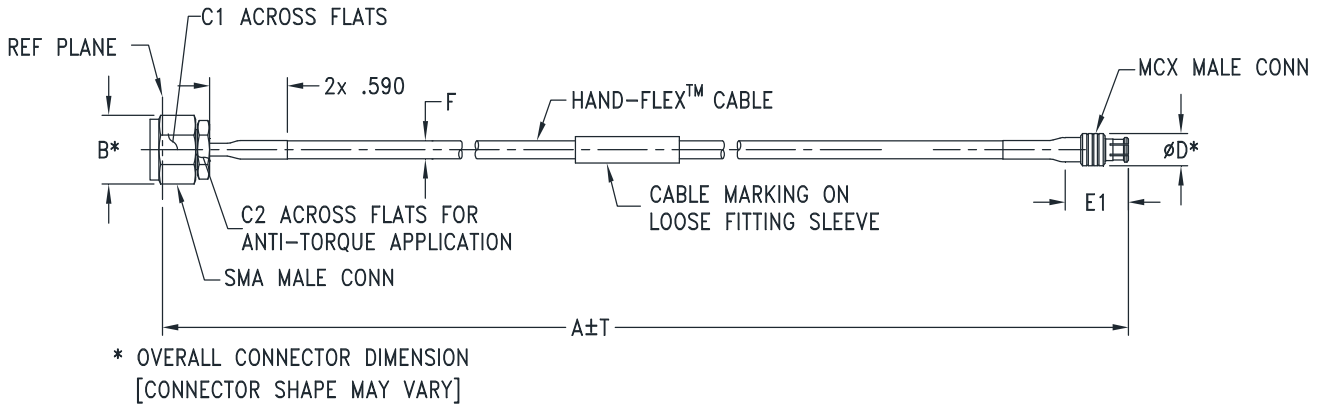
# Coaxial Cable Kit

50Ω, 8 inch, DC to 6 GHz, SMA Male to MCX Male

### CABLE CONSTRUCTION



### OUTLINE DRAWING



### OUTLINE DIMENSIONS

|        | A      | B    | C1    | C2    | D     | E1    | E2 | F         | T    |
|--------|--------|------|-------|-------|-------|-------|----|-----------|------|
| inches | 8.00   | 0.36 | 0.315 | 0.250 | 0.197 | 0.480 | -  | .089±.002 | 0.10 |
| mm     | 203.20 | 9.14 | 8.00  | 6.35  | 5.00  | 12.2  | -  | 2.26±.05  | 2.54 |

Total Weight: 10.18 grams



HAND FLEX™

# Coaxial Cable Kit

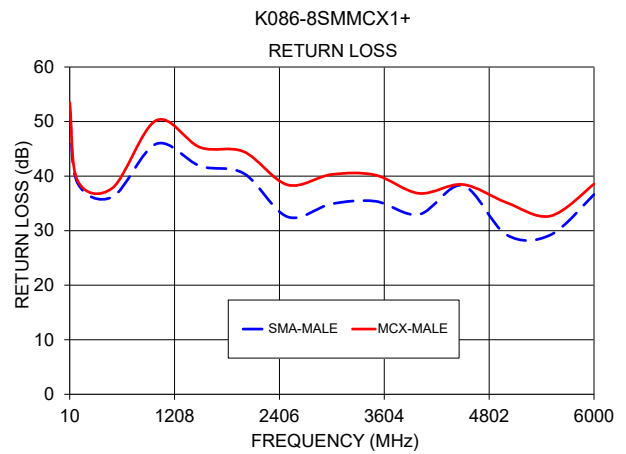
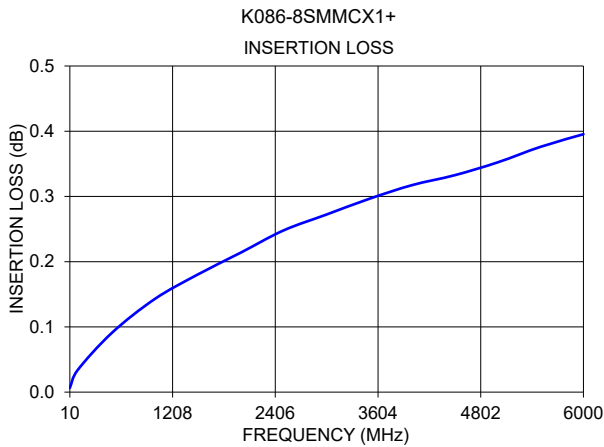
## K086-8SMMCX1+

Mini-Circuits

50Ω, 8 inch, DC to 6 GHz, SMA Male to MCX Male

### TYPICAL PERFORMANCE DATA AND CHARTS

| Frequency (MHz) | Insertion Loss (dB) | Phase Difference (± deg) | Return Loss (dB) |          |
|-----------------|---------------------|--------------------------|------------------|----------|
|                 |                     |                          | SMA-Male         | MCX-Male |
| 10              | 0.02                | 0.02                     | 51.42            | 53.68    |
| 100             | 0.05                | 0.02                     | 40.85            | 40.94    |
| 500             | 0.14                | 0.10                     | 46.59            | 45.76    |
| 1000            | 0.20                | 0.22                     | 38.07            | 37.69    |
| 1500            | 0.25                | 0.34                     | 34.11            | 34.27    |
| 2000            | 0.28                | 0.46                     | 31.83            | 32.01    |
| 2500            | 0.32                | 0.57                     | 30.11            | 30.09    |
| 3000            | 0.35                | 0.68                     | 28.90            | 28.72    |
| 3500            | 0.37                | 0.79                     | 27.35            | 26.95    |
| 4000            | 0.40                | 0.89                     | 25.30            | 24.76    |
| 4500            | 0.43                | 1.00                     | 24.01            | 23.35    |
| 5000            | 0.46                | 1.10                     | 23.29            | 22.45    |
| 5500            | 0.48                | 1.21                     | 23.00            | 22.11    |
| 6000            | 0.49                | 1.31                     | 23.25            | 22.19    |





## PROPER CABLE CONNECTION USING ANTI-TORQUE NUT

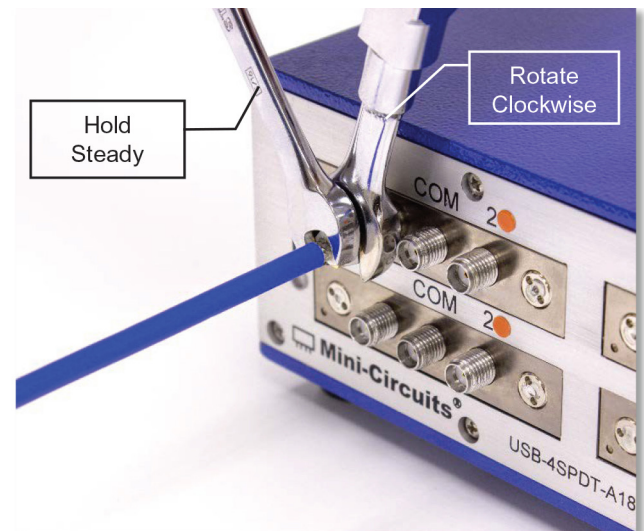
Mini-Circuits 086-series HandFlex™ interconnect cables are constructed with an anti-torque nut adjacent to the connector coupling nut. When used properly, this feature prevents possible damage to the cable due to torquing and twisting when tightening the cable connector.

### TO PROPERLY TIGHTEN THE CABLE CONNECTOR:

1) The cable connector includes a coupling nut which rotates to fasten the connector, and an anti-torque nut, which is fixed to prevent the cable from twisting during connection.



2) To properly tighten the cable, use a standard 1/4-inch open end wrench to brace the anti-torque nut.



3) Using a 5/16-inch open end wrench, rotate the coupling nut clockwise to tighten the cable connector.

\*NOTE: Mini-Circuits recommends using a 5/16-inch open end wrench calibrated to 8 inch-pounds maximum torque to prevent damage due to over-torquing the connector.

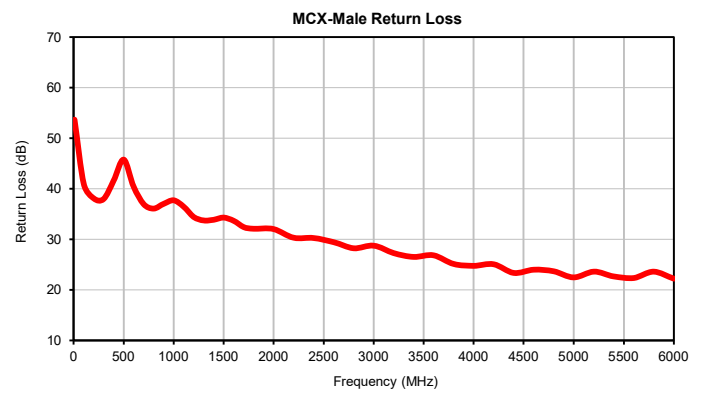
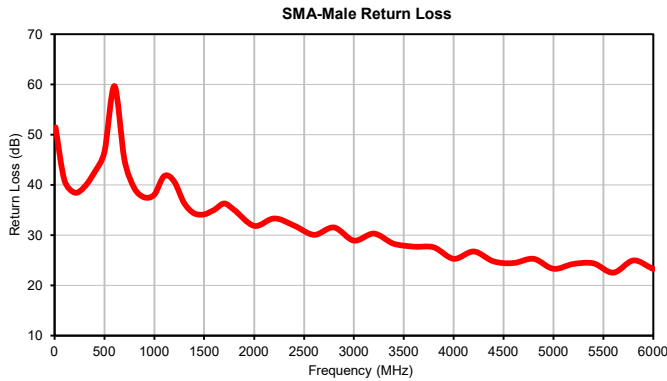
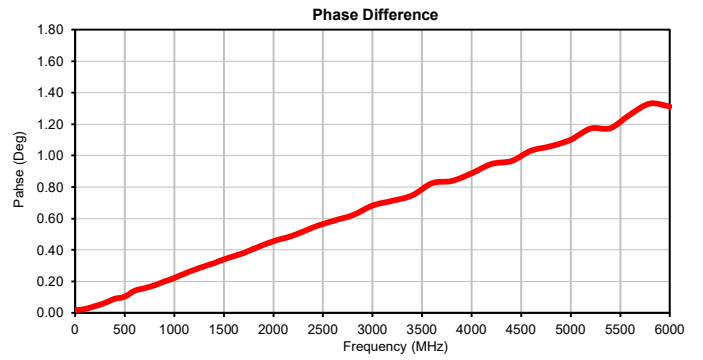
### NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

*Typical Performance Data*

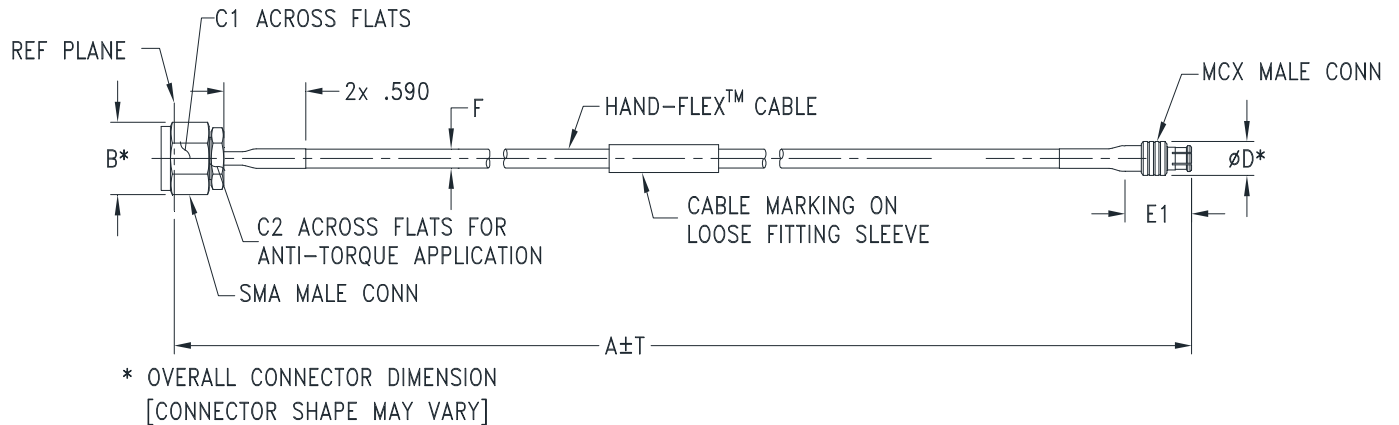
| FREQUENCY<br>(MHz) | INSERTION LOSS<br>(dB) | Phase Difference<br>(± deg) | SMA-MALE<br>RETURN LOSS<br>(dB) | MCX-MALE<br>RETURN LOSS<br>(dB) |
|--------------------|------------------------|-----------------------------|---------------------------------|---------------------------------|
| 10                 | 0.02                   | 0.02                        | 51.42                           | 53.68                           |
| 100                | 0.05                   | 0.02                        | 40.85                           | 40.94                           |
| 200                | 0.08                   | 0.04                        | 38.44                           | 38.10                           |
| 300                | 0.10                   | 0.06                        | 39.57                           | 37.98                           |
| 400                | 0.12                   | 0.09                        | 42.52                           | 41.54                           |
| 500                | 0.14                   | 0.10                        | 46.59                           | 45.76                           |
| 600                | 0.15                   | 0.14                        | 59.64                           | 40.36                           |
| 700                | 0.16                   | 0.16                        | 45.06                           | 36.97                           |
| 800                | 0.18                   | 0.18                        | 39.36                           | 36.06                           |
| 900                | 0.19                   | 0.20                        | 37.53                           | 37.02                           |
| 1000               | 0.20                   | 0.22                        | 38.07                           | 37.69                           |
| 1100               | 0.21                   | 0.25                        | 41.76                           | 36.46                           |
| 1200               | 0.22                   | 0.27                        | 40.65                           | 34.44                           |
| 1300               | 0.23                   | 0.30                        | 36.35                           | 33.69                           |
| 1400               | 0.24                   | 0.32                        | 34.34                           | 33.86                           |
| 1500               | 0.25                   | 0.34                        | 34.11                           | 34.27                           |
| 1600               | 0.25                   | 0.36                        | 35.04                           | 33.63                           |
| 1700               | 0.26                   | 0.38                        | 36.27                           | 32.42                           |
| 1800               | 0.27                   | 0.41                        | 35.03                           | 32.09                           |
| 2000               | 0.28                   | 0.46                        | 31.83                           | 32.01                           |
| 2200               | 0.30                   | 0.49                        | 33.32                           | 30.28                           |
| 2400               | 0.31                   | 0.54                        | 31.93                           | 30.26                           |
| 2600               | 0.32                   | 0.58                        | 30.05                           | 29.41                           |
| 2800               | 0.34                   | 0.62                        | 31.50                           | 28.22                           |
| 3000               | 0.35                   | 0.68                        | 28.90                           | 28.72                           |
| 3200               | 0.36                   | 0.71                        | 30.28                           | 27.28                           |
| 3400               | 0.37                   | 0.75                        | 28.30                           | 26.49                           |
| 3600               | 0.38                   | 0.82                        | 27.71                           | 26.81                           |
| 3800               | 0.39                   | 0.84                        | 27.54                           | 25.09                           |
| 4000               | 0.40                   | 0.89                        | 25.30                           | 24.76                           |
| 4200               | 0.41                   | 0.95                        | 26.73                           | 25.06                           |
| 4400               | 0.43                   | 0.97                        | 24.79                           | 23.34                           |
| 4600               | 0.43                   | 1.03                        | 24.42                           | 23.95                           |
| 4800               | 0.44                   | 1.06                        | 25.27                           | 23.67                           |
| 5000               | 0.46                   | 1.10                        | 23.29                           | 22.45                           |
| 5200               | 0.46                   | 1.17                        | 24.28                           | 23.59                           |
| 5400               | 0.47                   | 1.17                        | 24.36                           | 22.64                           |
| 5600               | 0.48                   | 1.26                        | 22.52                           | 22.33                           |
| 5800               | 0.48                   | 1.33                        | 24.97                           | 23.58                           |
| 6000               | 0.49                   | 1.31                        | 23.25                           | 22.19                           |

Typical Performance Curves



## Outline Dimensions

KP3378



### KP3378 SERIES

SMA MALE (CONN-1)

MCX MALE (CONN-2)

| CASE STYLE # | A     |        | B             | C1             | C2             | D              | E1             | E2 | F                           |                        | T    |      | WEIGHT GRAMS |
|--------------|-------|--------|---------------|----------------|----------------|----------------|----------------|----|-----------------------------|------------------------|------|------|--------------|
|              | INCH  | MM     |               |                |                |                |                |    | 086U-ASMMC+                 | 086-ASMMC+             | INCH | MM   |              |
| KP3378-8     | 8.00  | 203.20 | .36<br>[9.14] | .315<br>[8.00] | .250<br>[6.35] | .197<br>[5.00] | .480<br>[12.2] | -  | .089 ± .002<br>[2.26 ± .05] | .108 NOM<br>[2.74 NOM] | .10  | 2.54 | 8.36         |
| KP3378-12    | 12.00 | 304.80 |               |                |                |                |                |    |                             |                        | .10  | 2.54 | 10.18        |
|              |       |        |               |                |                |                |                |    |                             |                        |      |      |              |
|              |       |        |               |                |                |                |                |    |                             |                        |      |      |              |
|              |       |        |               |                |                |                |                |    |                             |                        |      |      |              |

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ± .03; 3Pl. ± .015

### Note:

- 086 Hand-Flex™ Coaxial Cable.
- "A" represents length of cable.

**Mini-Circuits®**

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified





All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification         | Test/Inspection Condition  | Reference/Spec              |
|-----------------------|--|-----------------------------|
| Operating Temperature | -45° to 85°C<br>Ambient Environment  | Individual Model Data Sheet |
| Storage Temperature   | -55° to 105°C<br>Ambient Environment   | Individual Model Data Sheet |
| Multiple Bend Radius  | 40 mm, 5 times for 141 series cables<br>30 mm, 5 times for 086 series cables |                             |
| Single Bend Radius    | 8 mm for 141 series cables<br>6 mm for 086 series cables                     |                             |