



Micro Electronics Inc.

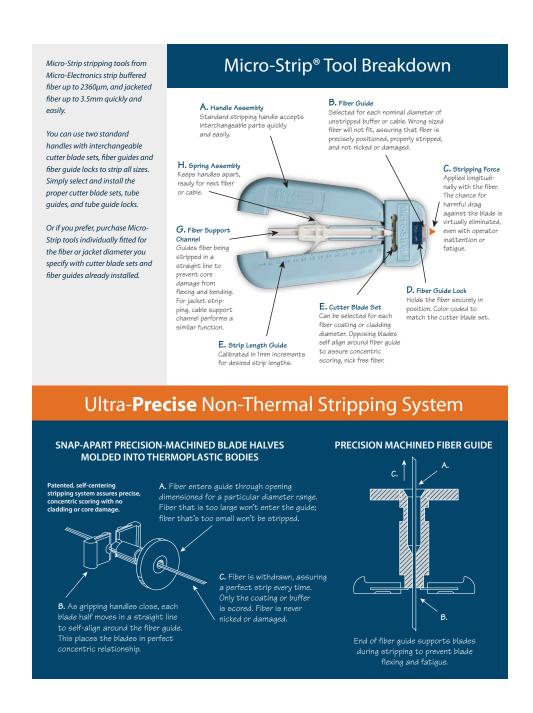
Product Name:

Micro-Strip Stripper, .0055 (140um) Blade, .0160 (406um) Guide

Manufacturer Part Number:

MS1-05S-16-FS

Click here for more details on the Micro-Strip Stripper, .0055 (140um) Blade, .0160 (406um) Guide







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Non-Thermal Stripping Procedure

PROPER TOOL SELECTION

Select the proper tool and components for either fiber stripping or jacket stripping by referring to the tables enclosed. If necessary, install proper fiber guide, fiber guide lock and cutter blade set.

STRIPPING PROCEDURE (BUFFERED OPTICAL FIBER USING MS-1-FS TOOL)

- 1. Hold tool in one hand, fiber in the other. Keep handles in fully expanded position. Insert fiber through fiber guide until end lines up with markings to match desired strip length.
- **2.** Squeeze handles closed. Cutter blades are now scoring the buffer or coating.
- **3.** While maintaining a slight pressure to keep the stripper blades closed, withdraw fiber from tool, completing the stripping process.

STRIPPING PROCEDURE (BUFFERED OPTICAL FIBER USING MS-2-L TOOL WITH LATCH BAR)

- **1.** Insert cable through fiber guide. Align end of cable with rule marking at desired strip length.
- 2. Close handles together while blades cut into jacket while holding handles closed, flip latch bar down around pin. Release handles to latched, semi-open position. Do not reclose handles. Move hand up to grasp head of tool. While other hand is holding cable firmly, pull with a quick smooth motion. Flip latch off pin. Stripped jacket will fall out through rear of channel when handles are fully open.

Note: Never leave tool with latch in locked position. This can cause Delrin spring to take set, preventing handles from opening fully. When stripping hard, tough or thick jackets, it is NOT necessary to use latch bar. Lock bar out of the way by tightening the screw.



Ultra-Versatile

Coating / Buffer Stripping

Jacket Stripping

Use these two standard handles to strip buffered fiber up to 900µm, or jacketed fiber up to 3.5mm quickly and easily. Simply select and install the proper cutter blade sets, fiber guides and fiber guide locks. Or, if you prefer, purchase Micro-Strip® tools individually fitted for the fiber of jacket diameter you specify. Cutter blade sets and fiber guides come pre-installed.

MS-1-FS tool with interchangeable cutter blades and fiber guides can mechanically strip buffered fiber up to 2300um.

Cutter Blade Sets: 18 sizes for 80um to 1350µm fiber. Fiber Guides: 20 sizes, for 180um to 2360µm coatings. Fiber Guide Locks: Provided with cutter blade sets.



MS-2-L tool with interchangeable cutter blades and fiber guides can mechanically strip jackets for 2.5mm, 3.0mm, and 3.5mm cable.

Cutter Blade Sets: One standard size 0.054' dia. Fiber Guides: 3 sizes for 2.5mm, 3.0mm, and 3.5mm jackets.

Fiber Guide Locks: Provided with cutter blade sets.







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Micro-Strip® Ordering Information

- 1. From table, identify coating or cladding diameter you wish to strip down to. Read across to Complete Tool Cat. No.
- 2. From Fiber Guide Selection table, identify desired coating or buffer diameter to learn Fiber Guide Cat. No. Put 2-diait code in Complete Tool Cat. No. space to complete it.
- 3. Order complete tool. Proper cutter blade set and fiber quide will be provided.
- 4. Order replacement cutter blade sets and fiber guides as needed.
- 1. From table, identify iacket diameter you wish to strip. Read across to Complete Tool Cat. No.
- 2. Order complete tool. Proper cutter blade set and jacket guide will be provided.
- 3. Order replacement cutter blade sets and jacket guides as needed.

COMPLETE TOOLS AND REPLACEMENT BLADE SETS FOR OPTICAL FIBER						
Fiber Cladding Diameter		Proper	Complete Tool	Replacement	Blade Color	Γ
to E	xpose	Blade	Cat. No. †	Cutter Blade	Code	
(µm)	(in.)	Dia.		Set Cat. No.*		[
up to 80	up to .0031	.0045	MS1-04SFS	MS1-RB-04S	CLEAR	
85-120	.00330047	.0055	MS1-05SFS	MS1-RB-05S	LAVENDER	
125-135	.00490053	.0063	MS1-06SFS	MS1-RB-06S	PURPLE	Г
125-175	.00490068	.008	MS1-08SFS	MS1-RB-08S	RED	Г
180-230	.00700090	.010	MS1-10SFS	MS1-RB-10S	LIGHT BLUE	Г
235-280	.00920110	.012	MS1-12SFS	MS1-RB-12S	WHITE	Г
285-330	.01120129	.014	MS1-14SFS	MS1-RB-14S	DARK GREEN	
335-380	.01310149	.016	MS1-16SFS	MS1-RB-16S	ORANGE	
385-430	.01510169	.018	MS1-18SFS	MS1-RB-18S	YELLOW	Г
435-500	.01710196	.021#	MS1-21SFS	MS1-RB-21S	ROYAL BLUE	Г
505-550	.01980216	.023	MS1-23SFS	MS1-RB-23S	MAROON	Г
555-600	.02180236	.025	MS1-25SFS	MS1-RB-25S	LIGHT GREEN	
605-680	.02380267	.028##	MS1-28SFS	MS1-RB-28S	BLACK	
685-750	.02690295	.031	MS1-31	MS1-RB-31S	TAN	
755-830	.02970326	.034	MS1-34	MS1-RB-34S	PINK	
835-900	.03280354	.037	MS1-37	MS1-RB-37S	GRAY	Г
905-1050	.03560413	.044	MS1-44	MS1-RB-44S	DARK BROWN	ı
1055-1350	.04150531	.054	MS1-54	MS1-RB-54S	NATURAL	

- For best results use .0063 inch blade when removing 250µm coating. For best results use .0080 inch blade when removing 900µm buffer.
- # For best results when stripping secondary buffer down to primary 250µm coating use blade size .021.
 # For best results when stripping secondary buffer down to primary 250µm coating use blade size .028.
 † Includes tool individually boxed with cleaning tool, push tool and instructions.
- Catalog numbers are for two cutter blade sets packaged together with a matching fiber guide lock. Each blade set consists of a pair of joined, matched blades which must be snapped apart prior to use Matched cutter blade sets are NOT interchangeable, and must only be used with their matching half.

or	Fiber Coating	Replacement
	or Buffer	Fiber Guide
	Dia. (µm)to Strip	Cat. No.▲
	up to 180	MS1-RT-07
ER	180-250	MS1-RT-10
	250-343	MS1-RT-13
	343-407	MS1-RT-16
UE	407-457	MS1-RT-18
	457-533	MS1-RT-21
EN	533-635	MS1-RT-25
E	635-787	MS1-RT-31
V	787-889	MS1-RT-35
UE.	889-1016	MS1-RT-40
N	1016-1168	MS1-RT-46
EN	1168-1321	MS1-RT-52
	1321-1397	MS1-RT-55
	1397-1600	MS1-RT-63
	1600-1702	MS1-RT- 67
	1702-1778	MS1-RT- 70
WN	1778-1930	MS1-RT- 76
ιL	1930-2057	MS1-RT-81
	2057-2184	MS1-RT-86
	2184-2362	MS1-RT-93

individually packaged fiber guide with integral size indicator disk.

COMPLETE TOOLS AND REPLACEMENT BLADE SETS FOR JACKET STRIPPING								
Jacket Diameter (um) (in.)		Blade dia.	Complete Tool Cat. No. ††	Replacement Cutter Blade Set Cat. No.*	Blade Color Code			
2.5	.098	.054	MS2-54S-D1	MS2-RB-54S	NATURAL			
3.0	.118	.054	MS2-54S-D2	MS2-RB-54S	NATURAL			
3.5	.137	.054	MS2-54S-D3	MS2-RB-54S	NATURAL			

- MS-1 and MS-2 components are not interchangeable.

 * Catalog are for two cutter blade sets packaged together with a matching fiber guide lock Each blade set consists of a pair of joined, matched blades which must be snapped apart prior to use. Matched cutter blade sets are NOT interchangeable, and must only be used with their matching half.
- REPLACEMENT HANDLE ASSEMBLY Application Assembly Fiber coating/buffer stripping up to 2360µm MS-1-FS MS-2-L
- cleaning brush, push tool and instructions ++ Catalog numbers are for single individually packaged Jacket Guide (with integral size indicator disk).
- Includes handle individually boxed with cleaning brush, push tool and instructions.
 Cutter blade set and fiber guide are NOT included.

OPTICAL FIBER TERMINOLOGY

as metallic wire carries electricity. Optical fibers are encased in various ways to meet application requirements. Shown here are the typical components of optical fiber:

BUFFER - Material that protects an optical fiber from physical damage. COATING - Material in intimate contact with the cladding surface, applied to preserve its integrity. CLADDING - The dielectric material surrounding an optical fiber's core.

CORE - The central region of an optical fiber through which light is transmitted.

MULTIPLE-FIBER RIBBON - A formed, flat carrier of several optical fibers OPTICAL CABLE - A fiber, multiple fibers, or fiber bundle in a structure fabricated to meet optical, mechanical, and environmental specifications.

BUFFER CLADDING COATING





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Thermal Stripping Procedure

Strip outer jacket (if any) using the Soft Strip® non-thermal tool. Install and connect battery(s), or install and connect AC adapter. Install proper cutter blade set, fiber quide and fiber quide lock.

HEATER OVEN

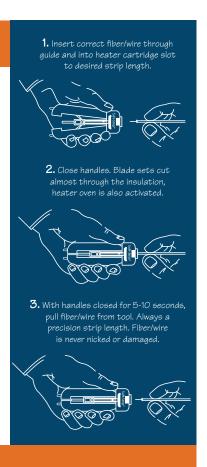
Unit is activated when handles are closed. Close handles only when stripping. Check heater operation by closing handles firmly for no longer than ten seconds. Nose end of heater should be warm to the touch.

After stripping operation, remove heater oven from tool and clean with brush provided (spring assembly in later models include automatic scrap ejector). Reinsert, making sure that the heater oven is pushed completely forward toward the blade area and snaps into place. The 2" heater oven area should be visible at front of tool so operator can monitor positioning and preheating of coating.

STRIPPING PROCEDURE

- 1. Insert fiber through fiber guide and into heater oven to desired length. Be sure buffered fiber is flat in the oven channel. Otherwise, heater oven movement will cause fiber to buckle up and out of the heating zone.
- 2. Close handles completely. Blades are precisely aligned for concentric scoring without cladding, core, or conductor damage. Heater oven is automatically activated to start softening process.
- 3. Keep handles closed (AA 10-20 seconds, 6V or AC adapter 4-8 seconds) for optimum softening. Then, begin to pull the fiber, slowly increasing pull force until coating releases from the fiber. Remove the fiber from the tool with a smooth, even motion.

Note: Heater unit heats continuously when handles are closed. Do not hold handles closed for longer than 20 seconds for AA battery units. 10 seconds for 6V battery/AC adapter units, or overheating can damage the tool. Do not touch heater oven while in operation. Allow to cool before removal and cleaning.



Ultra Versatile

Use these two standard handles to strip buffered fiber up to 900µm, or 2 to 12 fiber ribbon quickly and easily. Simply select and install the proper cutter blade sets, fiber guides and fiber guide locks.

Or, if you prefer, purchase Soft-Strip* tools individually fitted for the multi-fiber ribbon you specify. Cutter blade sets, fiber guides and fiber guide locks come already installed.











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Soft-Strip® Ordering Information

Complete Ribbon Stripping Tools and Replacements

- 1. From table, identify ribbon type you wish to strip. Read across to Complete Tool Cat. No.
- 2. Select desired power supply from Table A and insert identifying letter (B or T) in empty space.
- 3. Order complete tool. Proper cutter blade set and ribbon guide will be provided. Order T type power supplies separately from table A below.
- **4.** Order replacement cutter blade sets and ribbon guides as needed.
- Replacement Replacement Type Cat. No. † Cutter Blade Ribbon Guide Set Cat. No.* Cat. No.▲ MS-3__-06-G1 AT & T ASR MS-3-RT-G1 MS3-RB-06 12-FIBER 'B' 'R' MS-3 _-06-G2 MS3-RB-06 MS-3-RT-G2 MS-3-RT-G3 4-FIBER'E MS-3 -06-G3 MS3-RB-06 8-FIRFR'F MS3-RR-06 MS-3-RT-G4 MS-3 MS-3 -06-G5 MS3-RB-06 MS-3-RT-G6 8-FIBER'B -06-G6 10-FIBER 'E' MS-3__-06-G7 MS3-RB-06 MS-3-RT-G7 10-FIBER'B' MS-3 MS3-RB-06 MS-3-RT-G10 MS3-RB-06 MS-3-RT-G15 12-FIBER 'E' MS-3 -06-G15
 - 'E' Encapsulated 'B' Bonded 'R' Ribbonized
 - † Includes tool individually boxed with cleaning tool, push tool and instructions.
- MS-SK-1 Thermal Stripping Kit Includes necessary components for stripping all ribbon except 18-fiber ribbon. * Catalog numbers are for two cutter blade sets packaged together with a matching
- color-coded fiber lock. Fach cutter blade set consists of a pair of joined, matched blades which must be snapped apart prio to use. Matched cutter blade sets are NOT interchangeable, and must only be used with their matching half.
- ▲ Catalog numbers are for a single, individually packaged ribbon guide with integral size indicator disk

Complete Fiber Stripping Tools and Replacements

- 1. From table, identify fiber coating or cladding diameter you wish to strip down to. Read across to Complete Tool Cat. No.
- 2. Select desired power supply from Table A belov and insert identifying letter (B or T) in first space.
- 3. From Fiber selection Guide table, identify desired coating or buffer diameter, and insert 2 digit code at end of Complete Tool Cat. No. to complete it.
- 4. Order complete tool. Proper cutter blade set and fiber guide will be provided. Order T type power supplies separately from table A below.
- 5. Order replacement cutter blade sets and fiber guides as needed.

COMPLETE TOOLS AND REPLACEMENT BLADE SETS FOR OPTICAL FIBER							
Fiber Cladding Diameter		Proper	Complete Tool	Replacement	Blade Color		
to Expose		Blade	Cat. No. †	Cutter Blade	Code		
(μm) (in.)		Dia.		Set Cat. No.*		F	
up to 80	up to .0031	.0045	MS-404S	MS1-RB-04S	CLEAR		
85-120	.00330047	.0055	MS-405S	MS1-RB-05S	LAVENDER	Dia	
125-135	.00490053	.0063	MS-406S	MS1-RB-06S	PURPLE		
125-175	.00490068	.008	MS-408S	MS1-RB-08S	RED		
180-230	.00700090	.010	MS-410S	MS1-RB-10S	LIGHT BLUE		
235-280	.00920110	.012	MS-412S	MS1-RB-12S	WHITE		
285-330	.01120129	.014	MS-414S	MS1-RB-14S	DARK GREEN	ıL	
335-380	.01310149	.016	MS-416S	MS1-RB-16S	ORANGE		
385-430	.01510169	.018	MS-418S	MS1-RB-18S	YELLOW		
435-500	.01710196	.021#	MS-421S	MS1-RB-21S	ROYAL BLUE		
505-550	.01980216	.023	MS-423S	MS1-RB-23S	MAROON		
555-600	.02180236	.025	MS-425S	MS1-RB-25S	LIGHT GREEN		
605-680	0238-0267	028##	MS-4 28S-	MS1-RR-28S	RI ACK		

For best results use .0063 inch blade when removing 250µm coating.

- For best results use .0080 inch blade when removing 900µm buffer.

 For best results when stripping secondary buffer down to primary 250µm coating use blade size .021.

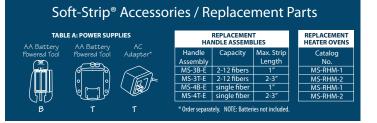
 For best results when stripping secondary buffer down to primary 250µm coating use blade size .021.
- Includes tool individually boxed with cleaning tool, push tool and instructions.

 Catalog numbers are for two cutter blade sets packaged together with a matching fiber guide lock.

 Each blade set consists of a pair of joined, matched blades which must be snapped apart prior to use. Matched cutter blade sets are NOT interchangeable, and must only be used with their matching half.

FIBER GUIDE SELECTION FOR SINGLE OPTICAL FIBERS				
Fiber Coating or Buffer Dia. (µm) to Strij	Replacement Fiber Guide Cat. No.▲			
up to 180 180-250	MS1-RT- 07 MS1-RT- 10			
250-343	MS1-RT-13			
343-407 407-457	MS1-RT- 16 MS1-RT- 18			
457-533	MS1-RT-21			
533-635	MS1-RT-25			
635-787 787-889	MS1-RT-31 MS1-RT-35			
889-1016	MS1-RT-40			

▲ Catalog numbers are for a single. individually nackaged fiber quide with integral size indicator disk.







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Micro-Strip® /Soft-Strip® Cutter Blade Replacement

TO REMOVE INSTALLED BLADES:

- 1. Using flat end of push tool, remove fiber guide lock by pushing out from the back side of tool head.
- 2. Remove Fiber guide from tool.
- 3. Using prong end of push tool in small holes on back side of tool head, eject blade set.

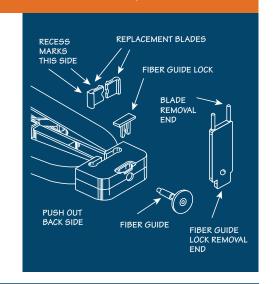
IMPORTANT!

Do not remove cutter blades while fiber guide is still in tool.

TO INSTALL NEW BLADES:

(Furnished in a matched set for blade precision. Snap apart before installation.)

- Install with "ears" pointing toward top of tool and recess marks visible. Push firmly with flat end of push tool until both blades are seated.
- 2. Insert fiber guide through hole in top of tool until it stops.
- $\textbf{3.} \ \ Insert \ fiber \ guide \ lock \ through \ slot \ in \ front \ of \ tool \ head.$



Note: Blades are color coded and matched to diameter and color of fiber guide lock. Replace or install fiber guide and fiber guide lock as needed. Always test strip fiber after installing new blade set. Remove blades periodically and clean with brush provided and alcohol.

The Best Non-Thermal / Thermal Stripping Tools

Accuracy

Every stripping component of the Micro-Strip® system is manufactured to tolerances tighter than 0.0005".

Error Proof

Because Micro-Strip®'s components are color coded, there's no chance for error, and virtually no chance of fiber damage. Every detail of Micro-Strip®'s design has been tested, retested, and proven in the field since 1973.

The Right Tool

You can order a variety of standard Micro-Strip® tools already fitted with your desired fiber guide and cutter blade set. You can also order replacement blade sets and guides so the same handle can be used to strip many sizes of fiber or cable.



Tool Kits

Convenient Micro-Strip® and Soft-Strip® kits include the most used components for fiber optic stripping, along with compete instructions, cleaning brush and component tool.

Versatility

There's no need to purchase separate tools for each fiber size. Micro-Strip''s modular blade sets are quickly interchangeable and replaceable for coated optical fibers up to 2300um, or jacketed fibers up to 3.5mm.

Low Stripping Force

Lower stripping force means less stress on the fiber and higher quality splices.

Micro-Strip® requires less than a pound of peak force for stripping coated fiber.





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Micro-Strip® Kit Information

Fiber Optic and A.W.G. Wire Stripping Starter Kits



Fiber Optic Stripping Kit

This fiber optic stripping kit, MS-FOK-1, contains stripping tool, blade and fiber guide components for both outer jacket stripping (up to 3.5mm) and coating/buffer stripping (up to 900μm). It comes packaged in an attractive metal case



Fiber Optic Stripping Kit

This convenient three-step fiber optic stripping kit, MS-FOK-2, contains Kevlar scissors and prefitted strippers for outer jackets (up to 3.5mm), 900μm buffers and 250 μm coatings.



A.W.G. Wire Stripping Kit

This A.W.G. wire stripping kit, MS-TK-1, is used for precision stripping of 18-32 gage fine wire. It contains a standard stripping handle with a variety of blade and guide components for stripping a wide range of solid or stranded wire.

Soft-Strip® Kit Information

Thermal Stripping Starter Kits



Thermal Stripping Kit

The MS-SK-1 kit contains the patented Soft-Strip® thermal stripper and components necessary for stripping the most popular ribbon types including 2-12 fiber encapsulated, bonded or ribbonized constructions. It is powered by an AC wall outlet adapter (order separately).



Thermal Stripping Kit

The MS-SK-2 kit includes patented Soft-Strip® thermal stripper and components necessary for stripping discrete fibers with Cladding diameter up to 140µm and Coating/Buffer diameter up to 900µm. It is powered by an AC wall outlet adapter (order





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Additional Items, Accessories and Options



MS-SZR-1 Reliable, multipurpose scissors for use in fiber optic and electrical service applications. Serrated models for non-slip Kevlar cutting and fiber or wire cutting. Stripping notches for 19 and 23 A.W.G. fine wire. File on back edge of blade to sharpen.

BLADE CLEANING BRUSHES



Both of these useful brushes are for removing residue from

blade area normal to the stripping operation. COMPONENT REMOVAL AND INSERTION TOOL



MS-PT-1 Facilitates easy removal for replacing or interchanging a wide range of Micro-Strip® blade set and fiber guide packages.

FIBER OPTIC SCRIBES



MS-FO-90-DW For a wide cutting surface, the deluxe 90° Wedge Diamond Scribe is housed in an attractive retractable type metal casing



MS-FO-60-SW For an even wider cutting surface, this 60° Wedge Sapphire Scribe is housed in an attractive retractable type metal casing.



MS-F0-60-DC This economy Diamond Scribe has a 60° conical point housed in an attractive retractable type metal casing.



MS-F0-90-DW



MS-F0-60-SW





MS-SZR-2 Ergonomic handle, reliable, multipurpose scissors for use in fiber optic and electrical service applications. Serrated models for non-slip Kevlar cutting and fiber or wire cutting. Stripping notches for 19 and 23 A.W.G. fine wire. File on back edge of blade to sharpen.

REPLACEMENT SOFT-STRIP® HEATER CARTRIDGES



MS-RHM-1 (for models MS-3B and MS-4B) Used with AA battery powered thermal stripper only. 30mm maximum strip length.

MS-RHM-2 (for models MS-3T and MS-4T) Used with AC adapter / 6V battery powered thermal strippers only. 60mm maximum strip length.

SOFT-STRIP® ADAPTERS











Australia New Zealand

Hong Kong

Middle East / Far East

6 VOLT BATTERY CASE



MS-BC-2 This convenient 6V battery case can be worn on your belt. It's ideal for field work when no electrical power is available.

It works with the same thermal stripper as the AC adapter. Leads are included.





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MS-3T-06/2-G20	MS-4T-54S-81-FS	MS1-18S-25-FS	MS-4T-28S-35-FS	MS1-12S-46-FS	MS-4T-05S-10-FS	MS-4T-31S-52-FS
MS-3T-06/2-G21	MS-4T-54S-76-FS	MS1-18S-35-FS	MS-4T-28S-31-FS	MS1-12S-55-FS	MS-4T-08S-52-FS	MS-4T-23S-52-FS
MS2-06/2-G21	MS1-05S-46-FS	MS1-34S-52-FS	MS-4T-25S-93-FS	MS1-25S-70-FS	MS-4T-08S-31-FS	MS-4T-23S-40-FS
MS2-06/2-G20	MS-4T-44S-76-FS	MS1-34S-46-FS	MS-4T-25S-86-FS	MS1-25S-67-FS	MS-4T-08S-35-FS	MS-4T-23S-25-FS
MS-4T-08S-13-FS	MS-4T-54S-67-FS	MS1-31S-40-FS	MS-4T-23S-76-FS	MS1-14S-52-FS	MS-4T-06S-46-FS	MS-4T-21S-67-FS
MS-4T-06S-40-FS	MS-4T-54S-63-FS	MS1-31S-52-FS	MS-4T-23S-70-FS	MS1-14S-46-FS	MS-4T-44S-67-FS	MS-4T-21S-63-FS
MS-4T-54S-70-FS	MS-4T-44S-93-FS	MS1-31S-46-FS	MS-4T-25S-31-FS	MS1-14S-35-FS	MS-4T-37S-93-FS	MS-4T-18S-70-FS
MS-4T-44S-52-FS	MS-4T-44S-86-FS	MS1-28S-40-FS	MS-4T-25S-67-FS	MS1-14S-16-FS	MS-4T-34S-93-FS	MS-4T-18S-67-FS
MS-4T-37S-86-FS	MS-4T-06S-07-FS	MS1-28S-31-FS	MS-4T-25S-63-FS	MS1-16S-21-FS	MS-4T-31S-55-FS	MS-4T-18S-63-FS
MS-4T-37S-81-FS	MS-4T-05S-46-FS	MS1-28S-46-FS	MS-4T-10S-16-FS	MS1-16S-18-FS	MS-4T-34S-67-FS	MS-4T-16S-18-FS
MS-4T-37S-67-FS	MS-4T-05S-18-FS	MS1-25S-40-FS	MS1-31S-35-FS	MS1-14S-67-FS	MS-4T-34S-40-FS	MS-4T-14S-67-FS
MS-4T-34S-76-FS	MS-4T-44S-70-FS	MS1-23S-40-FS	MS1-28S-93-FS	MS1-14S-63-FS	MS-4T-31S-46-FS	MS-4T-31S-35-FS
MS-4T-34S-63-FS	MS1-05S-07-FS	MS1-23S-35-FS	MS1-28S-86-FS	MS1-25S-52-FS	MS-4T-31S-81-FS	MS-4T-28S-93-FS
MS-4T-34S-55-FS	MS-4T-05S-40-FS	MS-4T-05S-35-FS	MS-4T-28S-63-FS	MS1-23S-81-FS	MS-4T-28S-46-FS	MS1-10S-21-FS
MS-4T-34S-52-FS	MS1-05S-21-FS	MS1-23S-55-FS	MS-4T-28S-55-FS	MS-4T-12S-25-FS	MS1-54S-67-FS	MS-4T-18S-46-FS
MS-4T-34S-46-FS	MS1-05S-10-FS	MS1-08S-16-FS	MS-4T-28S-52-FS	MS1-16S-70-FS	MS-4T-21S-76-FS	MS-4T-18S-35-FS
MS-4T-31S-40-FS	MS1-05S-40-FS	MS1-18S-63-FS	MS-4T-10S-31-FS	MS1-16S-67-FS	MS-4T-23S-67-FS	MS-4T-18S-25-FS
MS-4T-25S-40-FS	MS-4T-23S-86-FS	MS1-06S-35-FS	MS-4T-37S-63-FS	MS1-16S-63-FS	MS-4T-23S-55-FS	MS-4T-18S-21-FS
MS-4T-14S-63-FS	MS1-44S-81-FS	MS-4T-06S-18-FS	MS-4T-10S-52-FS	MS1-28S-52-FS	MS1-25S-63-FS	MS-4T-16S-70-FS
MS-4T-12S-52-FS	MS1-44S-55-FS	MS1-08S-21-FS	MS-4T-10S-46-FS	MS1-28S-35-FS	MS1-23S-76-FS	MS-4T-16S-67-FS
MS-4T-08S-55-FS	MS1-37S-81-FS	MS1-08S-31-FS	MS1-44S-46-FS	MS1-25S-86-FS	MS-4T-16S-21-FS	MS-4T-21S-52-FS
MS1-37S-70-FS	MS-4T-21S-81-FS	MS1-08S-25-FS	MS1-37S-93-FS	MS1-25S-81-FS	MS-4T-44S-81-FS	MS-4T-21S-46-FS
MS1-31S-67-FS	MS1-05S-52-FS	MS1-06S-21-FS	MS1-37S-86-FS	MS1-25S-93-FS	MS-4T-37S-55-FS	MS-4T-21S-35-FS
MS1-25S-55-FS	MS-4T-05S-31-FS	MS1-05S-35-FS	MS1-28S-76-FS	MS1-06S-16-FS	MS-4T-06S-21-FS	MS-4T-21S-31-FS
MS1-25S-35-FS	MS-4T-05S-25-FS	MS1-05S-31-FS	MS-4T-12S-13-FS	MS1-16S-40-FS	MS-4T-25S-81-FS	MS-4T-18S-55-FS
MS1-23S-70-FS	MS-4T-05S-21-FS	MS1-05S-25-FS	MS1-31S-55-FS	MS1-06S-52-FS	MS-4T-28S-86-FS	MS-4T-14S-52-FS
MS1-18S-67-FS	MS-4T-05S-52-FS	MS1-06S-25-FS	MS1-31S-86-FS	MS1-06S-31-FS	MS-4T-28S-67-FS	MS-4T-14S-46-FS
MS1-08S-35-FS	MS1-44S-86-FS	MS1-05S-16-FS	MS1-31S-81-FS	MS1-06S-18-FS	MS-4T-25S-70-FS	MS-4T-14S-40-FS
MS1-23S-52-FS	MS1-44S-63-FS	MS1-05S-13-FS	MS1-31S-76-FS	MS1-16S-35-FS	MS-4T-25S-55-FS	MS-4T-14S-25-FS
MS-4T-08S-40-FS	MS1-44S-52-FS	MS1-05S-18-FS	MS1-31S-70-FS	MS1-10S-18-FS	MS-4T-25S-46-FS	MS-4T-14S-18-FS
MS1-21S-46-FS	MS1-37S-52-FS	MS1-06S-46-FS	MS1-37S-67-FS	MS1-08S-46-FS	MS-4T-21S-55-FS	MS-4T-14S-16-FS
MS1-21S-31-FS	MS1-06S-40-FS	MS-4T-14S-21-FS	MS1-37S-63-FS	MS1-12S-13-FS	MS-4T-23S-81-FS	MS-4T-12S-55-FS
MS2-54S-D2	MS1-06S-13-FS	MS-4T-28S-40-FS	MS1-37S-76-FS	MS1-10S-40-FS	MS-4T-14S-55-FS	MS1-18S-52-FS
MS2-54S-D1	MS1-54S-63-FS	MS-4T-21S-40-FS	MS1-34S-76-FS	MS1-12S-40-FS	MS-4T-14S-35-FS	MS1-18S-46-FS
MS-3T-06-G2	MS1-14S-31-FS	MS-4T-21S-25-FS	MS1-34S-70-FS	MS1-12S-52-FS	MS-4T-12S-63-FS	MS1-18S-40-FS
MS-SK-1	MS1-14S-25-FS	MS-4T-18S-40-FS	MS1-34S-67-FS	MS1-14S-55-FS	MS-4T-12S-40-FS	MS1-12S-31-FS MS1-12S-25-FS
MS-4T-06S-13-FS	MS1-14S-21-FS	MS-4T-10S-40-FS	MS1-34S-86-FS	MS1-12S-63-FS	MS-4T-12S-31-FS MS-4T-12S-21-FS	MS1-12S-25-FS MS1-12S-16-FS
MS-3T-06-G5	MS1-14S-18-FS	MS-4T-14S-31-FS	MS1-44S-76-FS	MS1-16S-55-FS	MS-4T-12S-16-FS	MS1-123-10-F3
MS-3T-06-G10	MS1-12S-35-FS	MS-4T-23S-63-FS	MS1-44S-70-FS	MS1-18S-55-FS MS1-18S-21-FS	MS-4T-23S-46-FS	MS1-28S-63-FS
MS-3T-06-G8	MS1-12S-21-FS MS1-12S-18-FS	MS-4T-08S-10-FS MS-4T-25S-35-FS	MS1-44S-67-FS MS-4T-25S-76-FS	MS1-163-21-F3 MS1-28S-55-FS	MS-4T-23S-31-FS	MS-4T-12S-35-FS
MS-3T-06-G6 MS1-06S-07-FS	MS1-123-16-FS MS1-10S-16-FS	MS-4T-54S-93-FS	MS1-37S-40-FS	MS1-203-53-FS MS1-21S-52-FS	MS-4T-08S-46-FS	MS1-10S-55-FS
MS-4T-16S-35-FS	MS1-103-10-FS	MS-4T-05S-16-FS	MS1-21S-70-FS	MS1-21S-76-FS	MS-4T-08S-25-FS	MS1-10S-52-FS
MS-4T-16S-55-FS	MS1-003-10-13	MS-4T-05S-13-FS	MS1-21S-67-FS	MS1-25S-76-FS	MS-4T-06S-52-FS	MS1-105-46-FS
MS-4T-16S-52-FS	MS1-08S-13-FS	MS-4T-05S-07-FS	MS1-21S-63-FS	MS1-31S-63-FS	MS-4T-06S-35-FS	MS1-105-35-FS
MS-4T-16S-46-FS	MS1-23S-31-FS	MS-4T-12S-46-FS	MS1-21S-55-FS	MS1-28S-81-FS	MS-4T-18S-76-FS	MS1-10S-31-FS
MS-4T-28S-76-FS	MS1-23S-25-FS	MS-4T-10S-21-FS	MS1-18S-76-FS	MS1-28S-70-FS	MS-4T-18S-52-FS	MS1-10S-25-FS
MS-4T-28S-70-FS	MS1-23S-46-FS	MS-4T-10S-18-FS	MS1-21S-35-FS	MS-4T-08S-21-FS	MS-4T-18S-31-FS	MS1-103-23-F3
MS-4T-16S-31-FS	MS1-18S-31-FS	MS-4T-37S-70-FS	MS1-18S-70-FS	MS-4T-08S-18-FS	MS-4T-16S-63-FS	MS1-08S-52-FS
MS-4T-16S-25-FS	MS1-16S-31-FS	MS-4T-06S-10-FS	MS1-34S-55-FS	MS-4T-08S-16-FS	MS-4T-16S-40-FS	MS1-10S-13-FS
MS-4T-28S-81-FS	MS1-16S-25-FS	MS-4T-34S-86-FS	MS1-54S-81-FS	MS1-34S-81-FS	MS-4T-10S-55-FS	MS1-06S-10-FS
MS-4T-31S-67-FS	MS1-103-23-13 MS1-14S-40-FS	MS-4T-34S-81-FS	MS1-54S-76-FS	MS1-34S-63-FS	MS-4T-10S-35-FS	MS1-08S-40-FS
MS-4T-31S-63-FS	MS-SK-2	MS-4T-34S-70-FS	MS1-54S-70-FS	MS1-31S-93-FS	MS-4T-10S-25-FS	MS-FOK-1
MS-4T-31S-93-FS	MS1-44S-93-FS	MS-4T-37S-76-FS	MS1-37S-46-FS	MS1-16S-52-FS	MS-4T-10S-13-FS	MS-FOK-2
MS-4T-31S-86-FS	MS1-25S-31-FS	MS-4T-25S-52-FS	MS1-23S-67-FS	MS1-16S-46-FS	MS-4T-06S-31-FS	.113 1 0 1 2
MS-4T-31S-76-FS	MS1-25S-46-FS	MS-4T-37S-52-FS	MS1-23S-63-FS	MS-4T-06S-16-FS	MS-4T-06S-25-FS	
MS-4T-31S-70-FS	MS1-21S-40-FS	MS-4T-37S-46-FS	MS1-23S-86-FS	MS1-54S-86-FS	MS-4T-23S-35-FS	
MS1-21S-81-FS	MS1-21S-25-FS	MS-4T-37S-40-FS	MS-4T-12S-18-FS	MS1-37S-55-FS	MS-4T-44S-63-FS	
MS-4T-54S-86-FS	MS1-34S-40-FS	MS-4T-44S-46-FS	MS1-54S-93-FS	MS1-34S-93-FS	MS-4T-44S-55-FS	