

RS *STANDARD*[®]

Composite Utility Poles

Assembly & Installation Guide (USA)





RS **STANDARD**[®]
Composite Utility Poles

RS Technologies

www.RStandard.com

Email **info@grouprsi.com**
Toll Free **+1 877 219 8002**
Phone **+1 403 219 8000**
Fax **+1 403 219 8001**

2421 - 37th Avenue NE, Suite 400
Calgary, AB T2E 6Y7



Assembly & Installation Guide

Table of Contents

Foreword	2
1.0 Module Information	3
2.0 Equipment and Safety	4
3.0 Pole & Module and Code Legend	5
4.0 Receiving and Unloading	
- 4.1 Receiving a trailer load of poles	6
5.0 Un-Nest Pole Modules	
- 5.1 Remove shipping bolt	6
- 5.2 Un-nest modules and prepare for assembly	6
6.0 Line-Up Modules For Assembly	
- 6.1 Line-up modules on blocks	7
- 6.2 Fit modules together by hand	7
7.0 Install Jacking Lugs	
- 7.1 Insert jacking lugs into pre-drilled holes	8
- 7.2 Secure jacking lugs	8
- 7.3 Install jacking lug safety device	9
8.0 Assemble Modules	
- 8.1 Attach come-alongs to jacking lugs	10
- 8.2 Winch modules together	10
9.0 Secure Joint	
- 9.1 Drill holes for the blind nut	11
- 9.2 Install blind nuts	11
10.0 Install Base Plate	
- 10.1 Insert J-Bolts into pre-drilled base plate holes	12
- 10.2 Attach base plate using J-Bolts, washers and nuts	12
11.0 Install Top Cap	13
12.0 Set the Pole	13

Foreword

Disclaimer:

The following instructions are RS Technologies' recommendations regarding the receiving, assembly and installation of RStandard® modular composite utility poles and communication structures. These recommendations are intended to supplement standard utility pole setting work methods.

Recommended procedures do not cover all possible variations in equipment design or provide answers to all specific installation and operating questions which may occur. As such please contact your local RS representative should you have any questions about procedures that are not covered in this guide.

Standard Items Delivered With RStandard Poles:

1. Joint Hardware (two blind nuts, washers and bolts per joint)
2. One Base Plate (per pole)
3. Four J-Bolts, Nuts and Washers (for base plate)
4. One Top Cap (per pole)
5. Four Self-Tapping Screws (for top cap)

Additional Accessories Available From RS Upon Request:

1. RStandard Jacking Lugs (4 or more are required to assemble a pole)
2. Drill Bits For Standard or Custom Drilling
3. Pole Steps

1.0 Module Information

Imperial Units	Module Label	Length (ft.)	Thickness (in.)	Weight (lbs.)	Tube Taper (in./ft.)	Lap Length (ft.)	Tip Diameter (in.)	Base Diameter (in.)	Standard Base Plate Diameter (in.)	N-1 Base Plate Diameter (in.)
	1L	20.167	0.465	216.1	0.109	1.694	7.567	9.768	12.83	N/A
	1	15.141	0.465	152.1	0.111	1.694	8.083	9.768	12.83	N/A
	2	17.667	0.38	169.8	0.243	2.264	8.272	12.559	15.77	12.83
	3	17.389	0.38	224.9	0.243	2.792	11.087	15.315	18.56	15.77
	4	18.944	0.38	299.8	0.242	3.36	13.689	18.268	21.49	18.56
	5	18.993	0.406	359.4	0.247	3.924	16.591	21.284	24.46	21.49
	5/6	34.875	0.465	771.6	0.236	0	16.587	24.835	27.94	24.46 ¹
	6/7	34.875	0.425	899.5	0.246	5.197	19.331	27.917	31.11	27.94
	8/9	35.745	0.459	1197.1	0.242	6.444	25.823	34.472	37.03	N/A
	10/11	36.877	0.459	1499.1	0.239	0	31.965	40.76	43.91 ²	N/A

¹ M5/6 Base OD = 24.835", however N-1 base plate (M5) does work.

² M10/11 Base Plate is not circular but approximately 38" x 38" with trimmed corners measuring 43.91" corner to corner.

Metric Units	Module Label	Length (m)	Thickness (cm)	Mass (kg)	Tube Taper (mm/m)	Lap Length (m)	Tip Diameter (cm)	Base Diameter (cm)	Standard Base Plate Diameter (mm)	N-1 Base Plate Diameter (mm)
	1L	6.147	1.18	98	9.09	0.516	19.22	24.81	325.9	N/A
	1	4.615	1.18	69	9.27	0.516	20.53	24.81	325.9	N/A
	2	5.385	0.965	77	20.22	0.69	21.01	31.9	400.6	325.9
	3	5.3	0.965	102	20.26	0.851	28.16	38.9	471.5	400.6
	4	5.774	0.965	136	20.14	1.024	34.77	46.4	546	471.5
	5	5.789	1.03	163	20.59	1.196	42.14	54.06	621.4	546
	5/6	10.63	1.18	350	19.71	0	42.13	63.08	709.7	621.4 ¹
	6/7	10.63	1.08	408	20.52	1.584	49.1	70.91	790.1	709.7
	8/9	10.895	1.165	543	20.17	1.964	65.59	87.56	940.5	N/A
	10/11	11.24	1.165	680	19.88	0	81.19	103.53	1115.2 ²	N/A

¹ M5/6 Base OD = 630.8 mm, however N-1 base plate (M5) does work.

² M10/11 Base Plate is not circular but approximately 965.2 mm with trimmed corners measuring 1115.2 mm corner to corner.

2.0 Equipment and Safety

2.1 Installation Site Equipment Requirements For The RStandard® Pole

1. Jacking Lugs
2. Jacking Lug Safety Restraints (straps or chains)
3. Come-Alongs
4. Rubber Mallet (for slip joints tension release during module assembly)
5. Crescent Wrench with capabilities from 9/16" [14 mm] (for J-Bolts) to 1-1/8" [29 mm] (for blind nuts)
6. #8 Hex Head socket with drill attachment (to install top cap screws)
7. Drill (gas, hydraulic or battery operated)
8. 1-1/8" [29 mm] Carbide Tip Drill Bit (other sizes as necessary if field drilling is required)
9. Chalk Line (for axial marking if field drilling is required)
10. Circular Saw with Diamond Blade (if modules will be field cut)
11. Permanent Marker (if field drilling or cutting)
12. Particle Mask and Safety Goggles (if field drilling or cutting)
13. Gloves
14. Ground Wire Clips and Self-Tapping Screws (if ground wire is run externally)
15. Fish Tape/Draw Wire/Draw Tape (if ground wire is run internally)
16. 100 ft. [30.48 m] Tape Measure
17. Cant Pole

2.2 Safety Notes

2.2.1

Refer to the MSDS and consult your safety coordinator for information on Personal Protective Equipment required for this task. Always follow manufacturer's instructions when operating the drills and come-alongs.

2.2.2

Always wear gloves when handling the modules.

2.2.3

Always wear a particle mask when cutting or drilling fiberglass.

2.2.4

Always wear safety glasses with side shields when cutting or drilling fiberglass.

2.2.5

Always install safety strap or chain when using jacking lugs.

3.0 RStandard® Pole & Module Code Legend

The following pole data uses the RStandard® pole codes. See Figure 1a/Figure 1b for an understanding of pole and module code components.

From Figure 1a the sample code denotes a 45 ft. [12 m] pole using modules 2, 3 and 4 with the top module cut to achieve the 45 ft. [12 m] length.

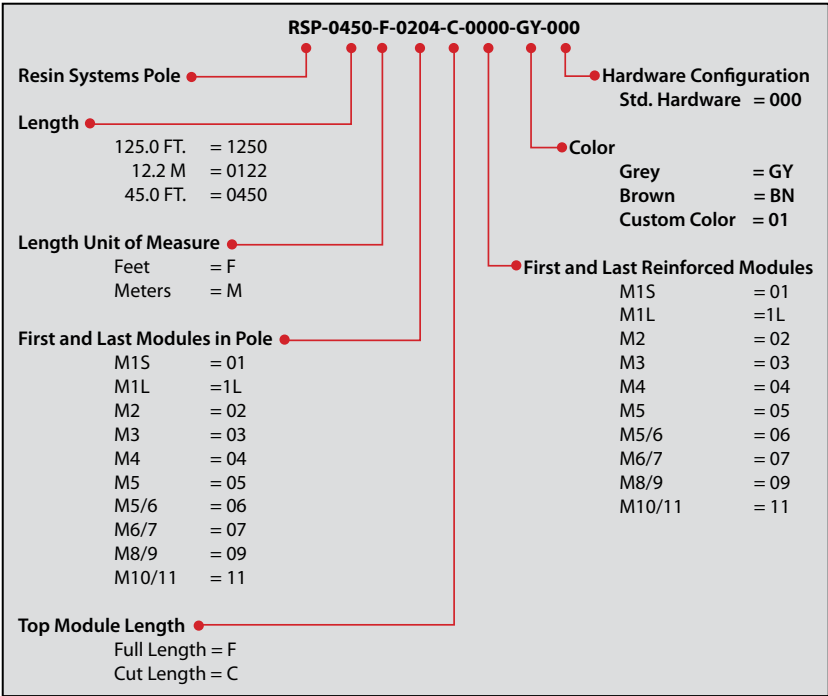


Figure 1a: Pole Code Legend

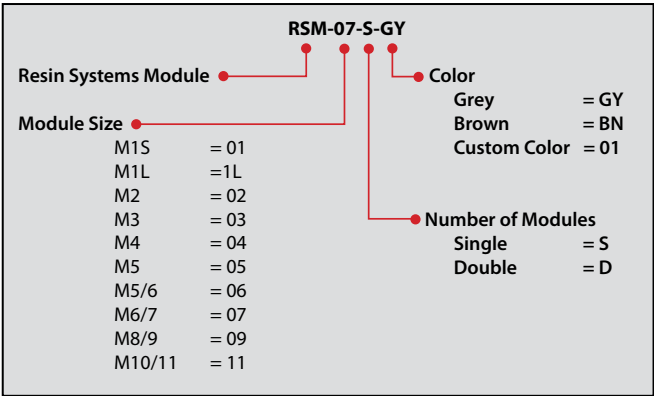


Figure 1b: Module Code Legend

4.0 Receiving and Unloading

4.1 Receiving a trailer load of poles

RStandard® poles are shipped in nested bundles. Depending on the size of the pole, these bundles will be approximately 19 ft. [5.79 m] or 37 ft. [11.28 m] in length (See Figure 2). Nested RStandard poles can be unloaded using a forklift or boom truck (See Figure 3).



Figure 2: Typical flatbed trailer of RStandard modular poles.



Figure 3: Unloading poles.



5.0 Un-Nest Pole Modules

5.1 Remove shipping bolt

RStandard nested bundles are secured with a shipping bolt. To un-nest RStandard modules, this bolt must be removed with a socket or a crescent wrench (See Figure 4). The shipping bolt is located at the base (or larger) end of the bundle and passes through all the modules in the bundle.

Note: Other blind nut/bolt assemblies may be installed along the length of the module(s) or bundle; these bolts are used to secure double modules used in reinforced poles and SHOULD NOT be removed.



Figure 4: Shipping bolt being removed.



Figure 5: Modules being un-nested and laid out for assembly.



5.2 Un-nest modules and lay out for assembly

After the shipping bolt is removed, un-nest the modules starting with the innermost (smallest) module first and layout for assembly (See Figure 5). For smaller modules, this can usually be accomplished by-hand with two to four crew members. For larger modules, handling with a boom truck is recommended to make moving faster and safer.

6.0 Line-Up Modules For Assembly

6.1 Line-up modules on blocks

Once the modules are un-nested and laid out in sequence for assembly, it is recommended that the modules be set on “blocking” to keep the modules off the ground and debris out of the slip joints. Remove any debris from the slip joint region (See Figure 6). This will make it easier and quicker to assemble the modules. Two blocks per module is recommended.



Figure 6: Modules being lined-up on blocks for assembly.

6.2 Fit modules together by hand

Once the modules are up on blocks, starting with the biggest modules, slide the base of the smaller module over the tip of the larger module by hand using the alignment marks as a guide. Using the alignment marks ensures that the jacking lug holes are kept in alignment (See Figure 7 for pole marking details and Figure 8 for an example of modules being fitted together).

Note: Alignment marks may appear as text.

Note: RStandard® poles can also be assembled vertically. For this type of assembly, the base module should be set and plumbed first. The subsequent modules can then be lifted into place as a pre-framed single unit or module-by-module, depending on preference and site conditions. If the pole is assembled vertically, the modules are still required to be “jacked together” using come-alongs, safety straps or chains and RStandard jacking lugs.

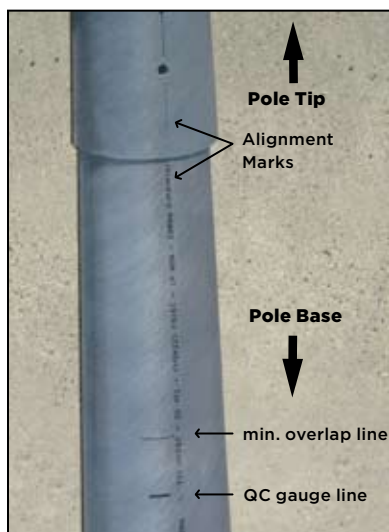


Figure 7: Pole marking details.



Figure 8: Modules being fitted together by hand in preparation for assembly.

7.0 Install Jacking Lugs

7.1 Insert jacking lugs into pre-drilled holes

Insert four jacking lugs into the pre-drilled jacking lug holes. Two jacking lugs holes are located at 180 degrees to each other at the same height on opposite sides of the pole near the base of the smaller module and two jacking lugs holes are located at 180 degrees to each other near the top of the larger module (See Figure 9). Ensure that the lugs are fully inserted and flush with the pole wall to prevent damage to the pole wall or jacking lug.



Figure 9: Jacking lug being inserted into pre-drilled jacking lug hole.

7.2 Double wall vs Single wall jacking lugs

When assembling two standard single wall (SW) modules, four single wall jacking lugs are required.

RStandard® modules are also available in a double wall (DW) configuration where two of the same module have been assembled at the factory and secured with blind nut/bolt assemblies. It is important not to remove these bolt assemblies in the field. Additionally, these DW modules will require additional blind nut/bolt assemblies installed in pre-drilled locations along their length in the field after the entire pole has been assembled. Double wall modules may have a short section of the inner module protruding from the outer module at the base or be trimmed flush with the base of the outer module. Care should be taken in identifying these modules prior to pole assembly.

For assembling two DW modules, four DW jacking lugs are required.

For assembling one SW and one DW module, two SW and two DW jacking lugs are required.

Note: The SW and DW jacking lugs should be used only in their respective modules. It is critical to use the correct type of jacking lugs for SW and DW modules as improper use could result in damage to the module(s).

SW jacking lugs are stamped with the following:

H-JL-S

DD/MM/YYYY

MADE IN CANADA

DW jacking lugs are stamped with the following:

H-JL-D

DD/MM/YYYY

MADE IN CANADA

MAX LOAD: 3T

DOUBLE WALL ONLY

Note: The H-JL-S and the H-JL-D were formerly stamped RSX-1 and RSX-1DW respectively and are all compatible with RStandard modules.

7.3 Install jacking lug safety device

Wrap the jacking lug safety strap or chain around the module at each jacking lug location. Ensure that the strap or chain passes through the large hole in the jacking lug. Fasten the strap with the ratcheting device (or use the quick-link on the chain), the strap or chain should be as snug as possible but not tight (some minor slack is expected in the chain, See Figure 10 and 11).



Figure 10: Jacking lugs with safety strap installed correctly.

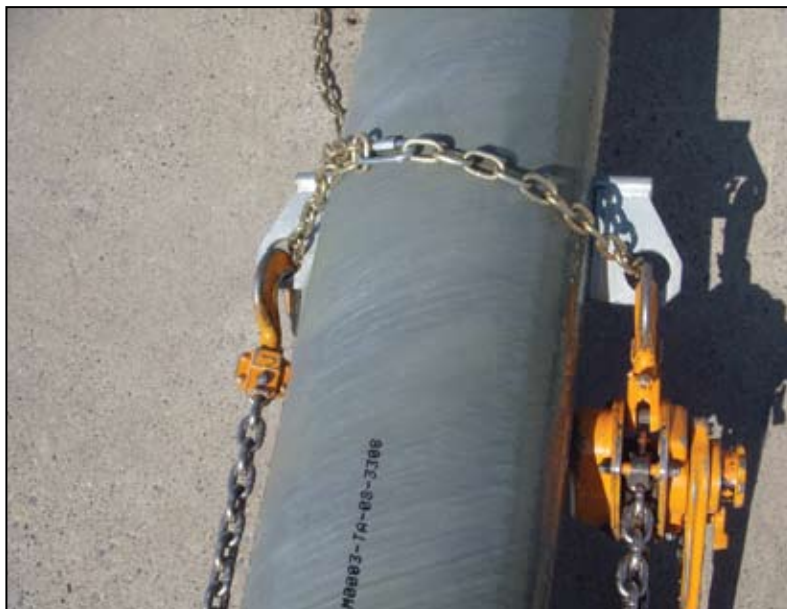


Figure 11: Jacking lugs with safety chain installed correctly.

Note: The use of safety straps or chains is mandatory when assembling RStandard® modules. Failure to use a safety chain or strap could result in serious injury.

8.0 Assemble Modules

8.1 Attach come-alongs to jacking lugs

Ensure that the modules being assembled are “lined-up” using the alignment marks, then attach come-alongs to the jacking lugs on both sides of the pole (See Figure 10). It is recommended that 3 ton come-alongs are used to ensure that slip-joints are brought together properly.

8.2 Winch modules together

After come-alongs are securely attached to the jacking lugs, winch modules together using equal force on both sides. During this process ensure that the longitudinal alignment between the modules is maintained (See Figure 11). Continue winching PAST the dotted minimum overlap line until the joint is snug. Due to slip joint tolerance, the base of the top module may or may not pass the solid QC gauge line during pole assembly.

Note: The solid horizontal QC gauge line is used for manufacturing process quality assurance purposes and is not the maximum slip joint overlap (See Figure 12 and 13).

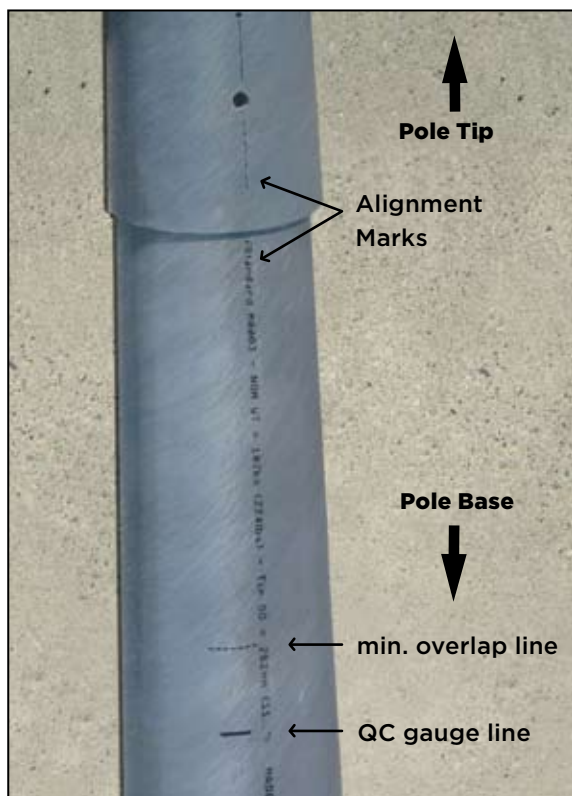


Figure 12: Alignment and minimum line markings.



Figure 13: Modules being winched together.

It is important that each slip joint is assembled securely. Continue winching PAST the dotted minimum overlap line until the joint is snug. Due to slip joint tolerance, the base of the top module may or may not pass the solid QC gauge line during pole assembly. Winching should continue until the slip joint is tight. If damage occurs to the jacking lug hole(s) during assembly, contact your local RS representative.

9.0 Secure Joint

9.1 Drill holes for the blind nut

Once the joint is tight and fully seated, drill through the inner modules at the base end of the slot in the outer module with a 1-1/8" in. [29 mm] drill bit using the pre-cut slots as a guide (See Figure 14). The drilled hole should be located as close to the base-end of the slot as possible (See Figure 15).

Note: The slot is 7/8" [22 mm] wide to accommodate the 3/4" [19 mm] bolt used in the blind nut. The hole is drilled oversized to allow the insertion of the blind nut.

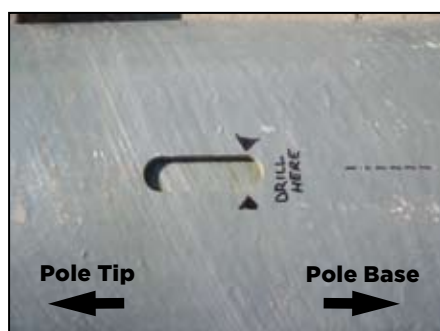


Figure 14: Drill holes for the blind nut.

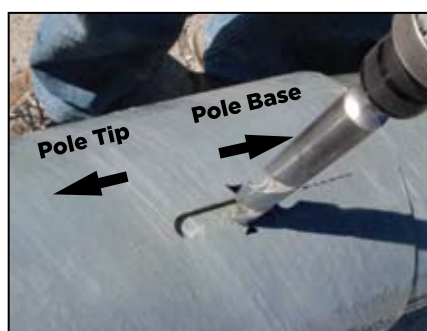


Figure 15: Drill point for blind nut holes.

9.2 Install blind nuts

Insert blind nut into drilled hole and pull back on the cable to center the nut in the drilled hole. Next, thread the bolt by hand, ensuring that the blind nut is kept in line vertically (parallel) with the pole center line (See Figure 16). If the blind nut is horizontal, it may damage the pole wall. Once the bolt is threaded, tighten it with a socket or a crescent wrench. Repeat on the opposite side of the pole.



Figure 16: Blind nut being installed.

For any remaining modules that need to be assembled, repeat the procedures for assembling the modules, inserting the jacking lugs, jacking the modules together and securing the joint.

Note: After completing the blind nut installation at the slip joints, trim the blind nut cable (See Figure 17).

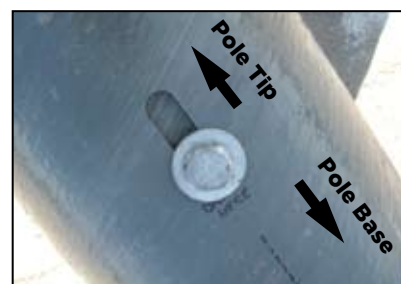


Figure 17: Blind nut after installation.

10.0 Install Base Plate

10.1 Insert J-Bolts into pre-drilled base plate holes

Insert four J-Bolts from the inside of the module into pre-drilled base plate holes located at the bottom of the base module (See Figure 18).

Note: Reverse this procedure to install J-Bolts on the inside of the pole, if desired. If the 'N-1' base plate is ordered, J-Bolts must be installed on the inside of the pole.



Figure 18: J-Bolts being inserted in pre-drilled base plate holes/slots at the base of the bottom module.

10.2 Attach base plate using J-Bolts, washers and nuts

Place the appropriately sized base plate on the base of the pole and align the base plate with the J-Bolts installed. Thread J-Bolts through the slots on the base plate and then attach the washers and nuts by hand (See Figure 19). After all four J-Bolts are secured and the base plate is centered; tighten each nut with a socket or crescent wrench. .



Figure 19: Align base plate slots with J-Bolts and install washers and nut on each J-Bolt to hold base plate in place. Standard base plate on the left, 'N-1' base plate on the right.

Note: RStandard poles are shipped with the standard base plate. For installations where a smaller diameter base plate is required, the 'N-1' base plate option can be utilized and ordered accordingly. See page 3 of this Assembly and Installation Guide for base plate options and dimensional information.



Figure 20: Standard base plate properly installed.



Figure 21: 'N-1' base plates properly installed.
Note: For the 'N-1' base plate option, the J-Bolts must be installed on the inside of the base module.

11.0 Install Top Cap

Place the correctly sized top cap on the top module of an assembled pole and secure with four self tapping #8 hex head screws to pole using the pilot holes in the top cap (See Figure 22).



Figure 22: Top cap being installed.

12.0 Set the Pole

It is recommended that nylon slings be used when setting RStandard® poles (See Figure 23). The poles are very light, tapered structures, so the balance point for the pole is easy to find. It is typically located close to the center of the pole, towards the butt end. Once the proper fulcrum point for hoisting is found, industry standard practices can be followed for setting the pole.

Note: Contact between RStandard poles and sharp, hard, or abrasive tools and equipment should be avoided. These can damage the pole by scraping the surface. If this contact cannot be avoided, a buffer material (rubber, carpet, etc.) should be used.



Figure 23: Setting the pole using nylon slings.



www.RStandard.com

Email **info@grouprsi.com**
Toll Free **+1 877 219 8002**
Phone **+1 403 219 8000**
Fax **+1 403 219 8001**

2421 - 37th Avenue NE, Suite 400
Calgary, AB T2E 6Y7

For more information on this product contact:



"RStandard" and "Infrastructure For Life" are registered trademarks of Resin Systems Inc.
*Disclaimer - The information contained herein is offered only as a guide for RStandard poles and has been prepared in good faith by technically knowledgeable personnel. This sheet is for information only and could be modified without notice. Printed in Canada.

TSX:RS



RSAIG V2.2c