

CHAPTER 4: ACCESSORIES



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ACCESSORIES SELECTION

| IronHorse® Shaft Mount Gearbox Accessories | | | | |
|--|------------------------------------|-----------------|---|---|
| Part Number | Description | Fits Frame Size | Includes | Typical Photo |
| SMR2-TBK-20 | 1-1/4" tapered bushing kit | 2 | Fastening bolts and a full length shaft key |  |
| SMR2-TBK-23 | 1-7/16" tapered bushing kit | | | |
| SMR2-TBK-24 | 1-1/2" tapered bushing kit | | | |
| SMR2-TBK-31 | 1-15/16" tapered bushing kit | | | |
| SMR3-TBK-27 | 1-11/16" tapered bushing kit | 3 | | |
| SMR3-TBK-31 | 1-15/16" tapered bushing kit | | | |
| SMR3-TBK-32 | 2" tapered bushing kit | | | |
| SMR3-TBK-35 | 2-3/16" tapered bushing kit | | | |
| SMR4-TBK-31 | 1-15/16" tapered bushing kit | 4 | | |
| SMR4-TBK-32 | 2" tapered bushing kit | | | |
| SMR4-TBK-35 | 2-3/16" tapered bushing kit | | | |
| SMR4-TBK-39 | 2-7/16" tapered bushing kit | | | |
| SMR5-TBK-35 | 2-3/16" tapered bushing kit | 5 | | |
| SMR5-TBK-39 | 2-7/16" tapered bushing kit | | | |
| SMR5-TBK-40 | 2-1/2" tapered bushing kit | | | |
| SMR5-TBK-47 | 2-15/16" tapered bushing kit | | | |
| SMR2-CF | Screw conveyor flange | 2 | Mounting Hardware |  |
| SMR3-CF | Screw conveyor flange | 3 | | |
| SMR4-CF | Screw conveyor flange | 4 | | |
| SMR5-CF | Screw conveyor flange | 5 | | |
| SMR2-CDS-24 | 1-1/2" screw conveyor drive shaft | 2 | Mounting Hardware |  |
| SMR2-CDS-32 | 2" screw conveyor drive shaft | | | |
| SMR2-CDS-39 | 2-7/16" screw conveyor drive shaft | | | |
| SMR2-CDS-48 | 3" screw conveyor drive shaft | | | |
| SMR3-CDS-24 | 1-1/2" screw conveyor drive shaft | 3 | | |
| SMR3-CDS-32 | 2" screw conveyor drive shaft | | | |
| SMR3-CDS-39 | 2-7/16" screw conveyor drive shaft | | | |
| SMR3-CDS-48 | 3" screw conveyor drive shaft | | | |
| SMR4-CDS-24 | 1-1/2" screw conveyor drive shaft | 4 | | |
| SMR4-CDS-32 | 2" screw conveyor drive shaft | | | |
| SMR4-CDS-39 | 2-7/16" screw conveyor drive shaft | | | |
| SMR4-CDS-48 | 3" screw conveyor drive shaft | | | |
| SMR5-CDS-32 | 2" screw conveyor drive shaft | 5 | | |
| SMR5-CDS-39 | 2-7/16" screw conveyor drive shaft | | | |
| SMR5-CDS-48 | 3" screw conveyor drive shaft | | | |
| SMR5-CDS-55 | 3-7/16" screw conveyor drive shaft | | | |
| SMR2-BG | Belt guard | 2 | | |
| SMR3-BG | Belt guard | 3 | | |
| SMR4-BG | Belt guard | 4 | | |
| SMR5-BG | Belt guard | 5 | | |
| SMR2-MM | Motor mount | 2 | Mounting hardware |  |
| SMR3-MM | Motor mount | 3 | | |
| SMR4-MM | Motor mount | 4 | | |
| SMR5-MM | Motor mount | 5 | | |
| SMR2-TARM | Torque arm | 2 | Mounting hardware |  |
| SMR3-TARM | Torque arm | 3 | | |
| SMR4-TARM | Torque arm | 4 | | |
| SMR5-TARM | Torque arm | 5 | | |
| SMR2-BSK | Backstop assembly | 2 | - |  |
| SMR3-BSK | Backstop assembly | 3 | | |
| SMR4-BSK | Backstop assembly | 4 | | |
| SMR5-BSK | Backstop assembly | 5 | | |

BACKSTOP INSTALLATION

BACKSTOP INSTALLATION WARNINGS



WARNING: FAILURE TO INSTALL A BACKSTOP ASSEMBLY CORRECTLY CAN RESULT IN INJURY TO PERSONNEL AND/OR DESTRUCTION OF THE BACKSTOP ASSEMBLY, THE SPEED REDUCER, AND OTHER PROPERTY. READ ALL BACKSTOP INSTALLATION INSTRUCTIONS COMPLETELY BEFORE INSTALLING A BACKSTOP ASSEMBLY.



WARNING TO ELECTRICIANS: BEFORE POWERING UP EQUIPMENT THAT CONTAINS A SHAFT MOUNT REDUCER CONTAINING AN INSTALLED BACKSTOP ASSEMBLY, DISCONNECT THE V-BELTS FROM THE MOTOR SHEAVE AND CONFIRM THE ROTATION DIRECTION OF THE MOTOR. APPLYING POWER TO THE MOTOR IN A REVERSE DIRECTION AGAINST THE FREE WHEEL DIRECTION OF THE BACKSTOP ASSEMBLY WILL DESTROY THE BACKSTOP ASSEMBLY AND POSSIBLY DESTROY THE SHAFT MOUNT REDUCER AS WELL. FAILURE TO COMPLY WITH THIS INSTRUCTION WILL VOID THE MANUFACTURER'S WARRANTY OF THE SPEED REDUCER AND THE BACKSTOP ASSEMBLY AND MAY RESULT IN INJURY TO PERSONNEL OR PROPERTY.



WARNING: USE ONLY IRONHORSE® BACKSTOP ASSEMBLIES IN THE SMR SERIES SHAFT MOUNT REDUCERS. DO NOT USE ANY OTHER BRAND OR STYLE OF BACKSTOP ASSEMBLIES IN THESE SPEED REDUCERS. USING OTHER BRANDS OR STYLES OF BACKSTOP ASSEMBLIES MAY RESULT IN BACKSTOP ASSEMBLY FAILURE AND MAY RESULT IN INJURY TO PERSONNEL OR PROPERTY. USING ANOTHER MANUFACTURER OR STYLE OF BACKSTOP ASSEMBLY IN THE SMR SERIES SHAFT MOUNT REDUCER WILL VOID THE MANUFACTURER'S WARRANTY OF THE SPEED REDUCER AND THE BACKSTOP ASSEMBLY.



CAUTION: TO AVOID PREMATURE FAILURE OF THE BACKSTOP OR POSSIBLE MACHINE MALFUNCTION, INSTALLATION OF THE BACKSTOP SHOULD BE CARRIED OUT BY SUITABLY QUALIFIED PERSONNEL AND ACCORDING TO THE FOLLOWING INSTRUCTIONS:

BACKSTOP DESCRIPTION

In applications where it is possible for the load to drive the gearbox in reverse when the motor is off (such as an inclined conveyor belt), a backstop should be installed to prevent the gearbox from turning in reverse.

- 1) The main components of **SMRx-BSK** units are: Outer race, a number of energized sprags and side plate.
- 2) The maximum permissible overrunning speed must not be exceeded.
- 3) When used in dual drive applications, the maximum driving speed must not be exceeded.
- 4) Backstops (cam clutches) are shaft mounted, so the shaft on which the clutch is mounted must be hardened to HRC 56-60 and 1.5 mm [0.06 in] case depth after grinding. Grind to 1.5S (16 micro-inch) finish.
The taper of this shaft should not exceed 0.01 mm per 50mm [1.97 in].

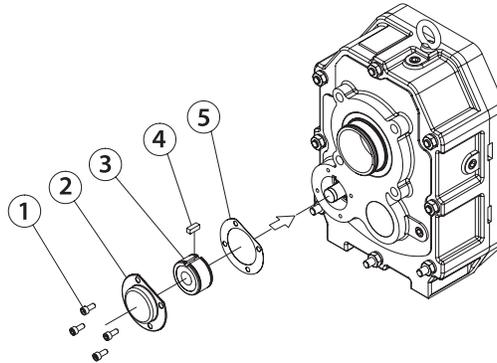
PRIOR TO INSTALLATION

- 1) The units should be unpacked and installed in a clean dry working environment.
- 2) For units dispatched 'dry,' corrosion inhibitor should be removed using flushing oil prior to installation.
- 3) The mounting register for the outer race should be within the housing bore (0 to +0.03 mm) tolerance. Details for each type are shown in the dimensions tables.
- 4) The freewheeling direction should be checked prior to installation (see *Backstop Assembly Type and Rotation Illustrations on the next page*).
- 5) If reversal of the freewheeling direction is required, turn the backstop through 180 degrees.

BACKSTOP INSTALLATION

- 1) The backstop (clutch) should be installed as an assembly.
- 2) The key should be the full length of the hub.
- 3) *Warning:* Drain off the oil before opening the backstop mounting compartment.
- 4) Refer to the illustration below for appropriate reducer size installation components.

1. Bolts
2. End cover
3. Backstop
4. Key
5. Gasket



- 5) Remove end cover and gasket from gearbox.
- 6) Determine the desired shaft rotation. IronHorse® backstops don't have an inner race. The rotation arrow is marked on the outer race, meaning the outer race's free direction; the shaft direction is opposite in other words.
- 7) The backstop should be mounted on the shaft by rotating it in the direction marked by the arrow shown on the backstop race. Do not apply shock to the backstop by hammering. The backstop may be tapped gently if necessary with a soft hammer (rawhide, not lead hammer).
- 8) Re-install the end cover and gasket.
- 9) Refill the gearbox with oil taking note of proper oil fill level based on gearbox mounting position.

AFTER INSTALLATION

- 1) After installation, ensure smooth rotation of the units in the freewheeling direction by manually turning the input shaft of the reducer to confirm the desired direction of rotation.
- 2) Ensure the unit contains the correct volume of the lubricant prior to use.
- 3) The expected drag torque produced when freewheeling is about 1/1000 of the nominal torque.

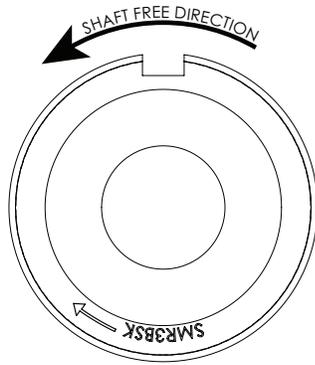
DISMANTLING

- 1) To dismantle the units, please follow the Installation section in reverse sequence.

LUBRICATION AND MAINTENANCE OF THE BACKSTOP ASSEMBLY

- 1) Type **SMRx-BSK** backstops are factory lubricated with oil.
- 2) Operating temperature ranges from -4°F to +158° (-20°C to +70°C).
- 3) The backstop can operate without maintenance.
- 4) In harsh conditions (i.e. high temperature / dusty conditions), the backstop should be re-lubricated every 3 to 6 months.
- 5) Do not use slip additives such as graphite, Molykote or similar agents in the oil and grease, as they will shorten service life of the clutches.

BACKSTOP ASSEMBLY TYPE AND ROTATION GUIDELINES



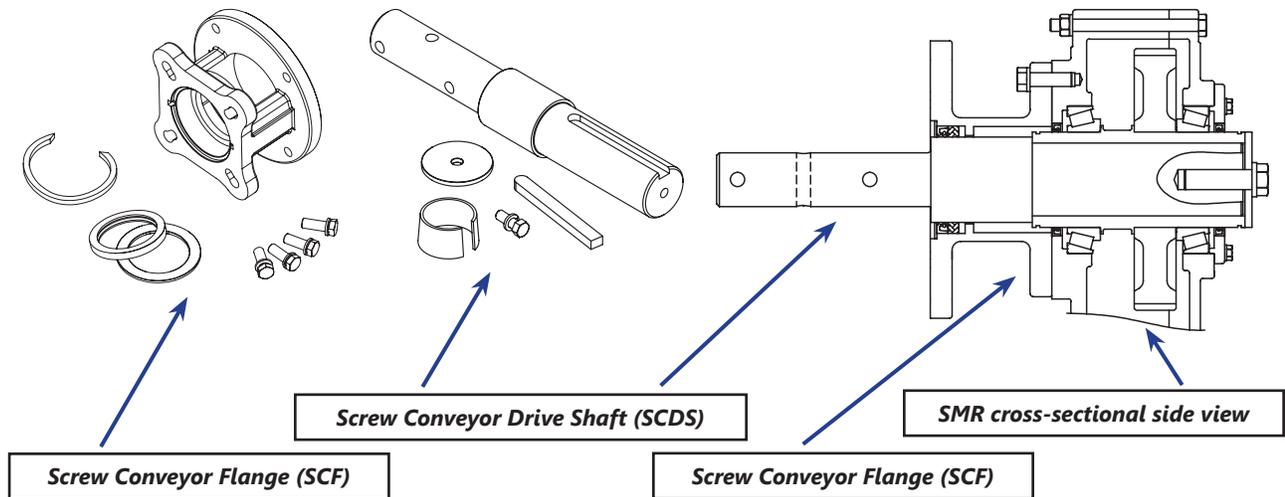
Type 1:
Backstop with outer race, the rotation arrow is marked on the outer race; shaft free direction is opposite.

| Backstop Tolerances – mm | | | | | | | | |
|--------------------------|---------|----------------|---------------|-------------|----------|-----------|---------|-------------|
| Model | Housing | Tolerance | Input Shaft Ø | Tolerance | Backstop | | | |
| | | | | | Inner Ø | Tolerance | Outer Ø | Tolerance |
| SMR2-BSK | φ62 | +0.06 to +0.03 | 24.65 | 0 to -0.013 | 24.65 | – | 62 | 0 to -0.019 |
| SMR3-BSK | φ47 | +0.05 to +0.03 | 18.8 | 0 to -0.013 | 18.796 | – | 47 | 0 to -0.016 |
| SMR4-BSK | φ62 | +0.06 to +0.03 | 22.57 | 0 to -0.013 | 22.57 | – | 62 | 0 to -0.019 |
| SMR5-BSK | φ80 | +0.06 to +0.03 | 30.8 | 0 to -0.016 | 30.862 | – | 80 | 0 to -0.019 |

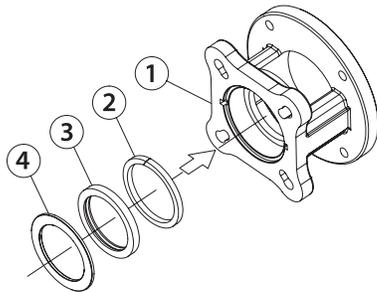
— Inner configuration with a spring, no tolerance

| Maximum Overrunning Speed | | |
|---------------------------|------------|-----------------------|
| Model | Frame Size | Max Overrunning Speed |
| SMR2-BSK | 2 | 1260 rpm |
| SMR3-BSK | 3 | 1370 rpm |
| SMR4-BSK | 4 | 1310 rpm |
| SMR5-BSK | 5 | 1130 rpm |

SCREW CONVEYOR DRIVE COMPONENTS



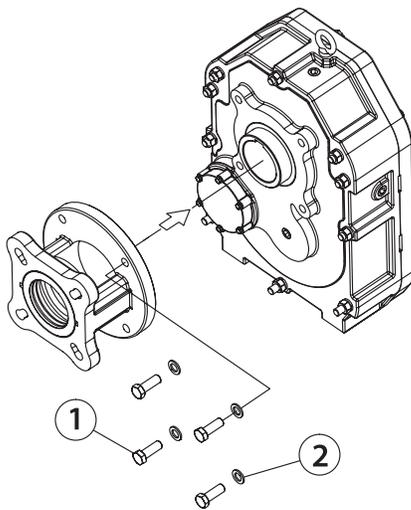
SCREW CONVEYOR ACCESSORIES ASSEMBLY



Step 1: Adapter Assembly

- 1) Adapter
- 2) Gland Seal
- 3) Oil Seal
- 4) Seal Retainer

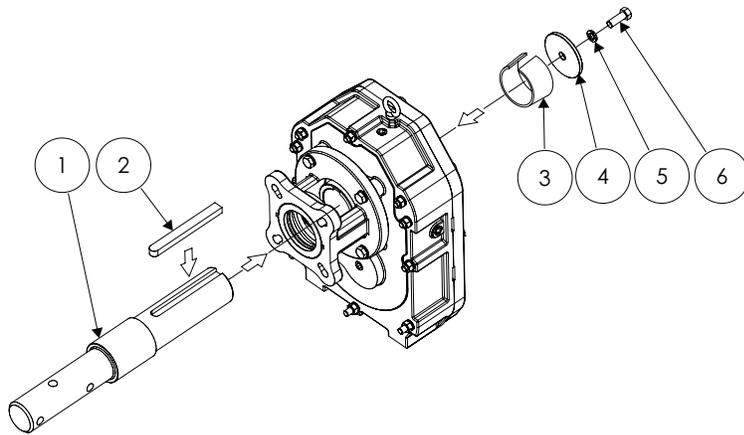
Please follow the sequence of gland seal, oil seal, and seal retainer to complete the adapter assembly.



Step 2: Reducer Assembly

- 1) Adapter Bolt
- 2) Spring Washer

Please place adapter bolts through the spring washers; then fasten the adapter kit onto the reducer.



Step 3: Drive Shaft Assembly

- 1) Drive Shaft
 - 2) Drive Shaft Key
 - 3) Bushing (sleeve)
 - 4) Shaft Retainer
 - 5) Spring Washer
 - 6) Bolt
- A) Insert the key onto the shaft.
 - B) Place the shaft through the reducer.
 - C) Place the bushing into the hollow shaft.
 - D) Place the spring washer through the bolt and shaft retainer then fasten it on to the drive shaft.

SCREW CONVEYOR FLANGE ADAPTERS

Figure 1

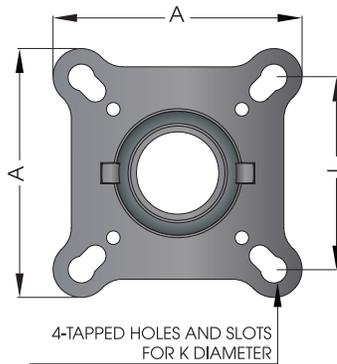
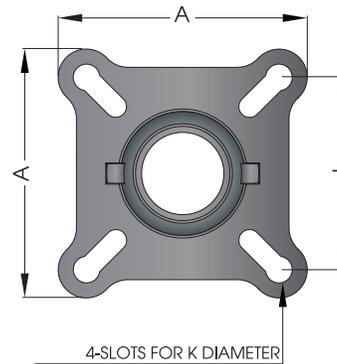


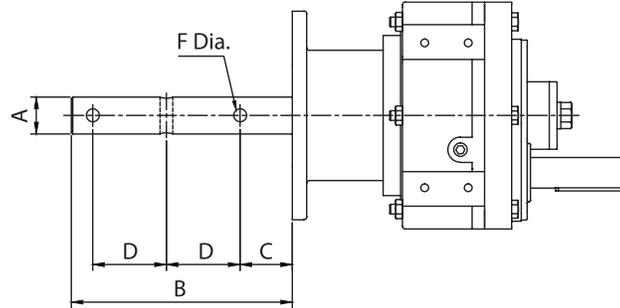
Figure 2



| Dimensions - Inches | | | | | | |
|---------------------|------------|-----------------|-------|-------------|------|--------|
| Model | Frame Size | Drive Shaft (Ø) | J | K | A | Figure |
| SMR2-xx | 2 | 1-1/2 | 4 | 1/2 - 13UNC | 7.75 | 1 |
| | | 2 | 5-1/8 | 5/8 | | |
| | | 2-7/16 | 5-5/8 | 5/8 | | |
| | | 3 | 6 | 3/4 | | |
| SMR3-xx | 3 | 1-1/2 | 4 | 1/2-13UNC | 8.50 | 1 |
| | | 2 | 5-1/8 | 5/8 | | |
| | | 2-7/16 | 5-5/8 | 5/8 | | |
| | | 3 | 6 | 3/4 | | |
| SMR4-xx | 4 | 1-1/2 | 4 | 1-2-13UNC | 9.26 | 1 |
| | | 2 | 5-1/8 | 5/8 | | |
| | | 2-7/16 | 5-5/8 | 5/8 | | |
| | | 3 | 6 | 3/4 | | |
| SMR5-xx | 5 | 2 | 5-1/8 | 5/8 | 9.26 | 2 |
| | | 2-7/16 | 5-5/8 | 5/8 | | |
| | | 3 | 6 | 3/4 | | |
| | | 3-7/16 | 6-3/4 | 3/4 | | |

See our website www.AutomationDirect.com for complete Engineering drawings.

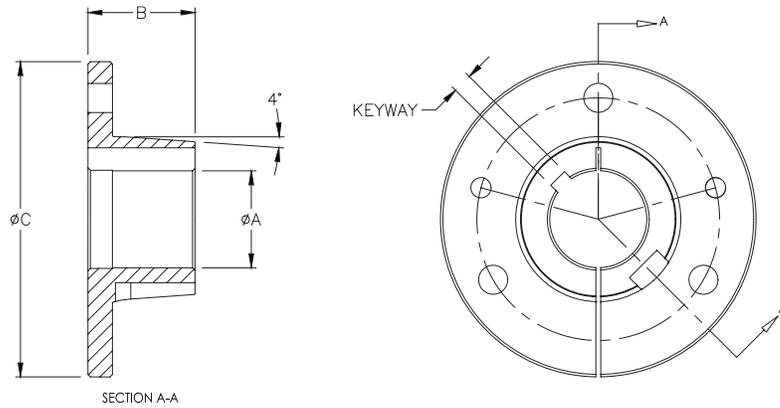
SCREW CONVEYOR DRIVE SHAFTS



| Dimensions - Inches | | | | | | |
|---------------------|------------|-------------------|-------|------|------|-------|
| Model | Frame Size | Drive Shaft A (Ø) | B | C | D | F (Ø) |
| SMR2-CDS-xx | 2 | 1-1/2 | 9.00 | 2.13 | 3.00 | 0.52 |
| | | 2 | 9.00 | 2.13 | 3.00 | 0.64 |
| | | 2-7/16 | 9.69 | 2.75 | 3.00 | 0.64 |
| | | 3 | 9.88 | 2.88 | 3.00 | 0.77 |
| SMR3-CDS-xx | 3 | 1-1/2 | 9.00 | 2.13 | 3.00 | 0.52 |
| | | 2 | 9.00 | 2.13 | 3.00 | 0.64 |
| | | 2-7/16 | 9.69 | 2.75 | 3.00 | 0.64 |
| | | 3 | 9.88 | 2.88 | 3.00 | 0.77 |
| SMR4-CDS-xx | 4 | 1-1/2 | 9.00 | 2.13 | 3.00 | 0.52 |
| | | 2 | 9.00 | 2.13 | 3.00 | 0.64 |
| | | 2-7/16 | 9.69 | 2.75 | 3.00 | 0.64 |
| | | 3 | 9.88 | 2.88 | 3.00 | 0.77 |
| | | 3-7/16 | 14.13 | 3.88 | 4.00 | 0.89 |
| SMR5-CDS-xx | 5 | 2 | 9.00 | 2.13 | 3.00 | 0.64 |
| | | 2-7/16 | 9.69 | 2.75 | 3.00 | 0.64 |
| | | 3 | 9.88 | 2.88 | 3.00 | 0.77 |
| | | 3-7/16 | 14.13 | 3.88 | 4.00 | 0.89 |

See our website www.AutomationDirect.com for complete Engineering drawings.

BUSHING KITS



| Bushings Dimensions | | | | | | | |
|---------------------|--------------------------|----------|-------|---------|------|------------|-------|
| Part Number | Fits Gearbox Part Number | A (Bore) | | B (Oal) | | C (Flange) | |
| | | in | mm | in | mm | in | mm |
| SMR2-TBK-20 | SMR2-xx | 1.25 | 31.75 | 1.38 | 35.0 | 4.06 | 103.2 |
| SMR2-TBK-23 | | 1.4375 | 36.51 | 1.38 | 35.0 | 4.06 | 103.2 |
| SMR2-TBK-24 | | 1.5 | 38.10 | 1.38 | 35.0 | 4.06 | 103.2 |
| SMR2-TBK-31 | | 1.9375 | 49.21 | 1.38 | 35.0 | 4.06 | 103.2 |
| SMR3-TBK-27 | SMR3-xx | 1.6875 | 42.86 | 1.63 | 41.5 | 4.37 | 111.1 |
| SMR3-TBK-31 | | 1.9375 | 49.21 | 1.63 | 41.5 | 4.37 | 111.1 |
| SMR3-TBK-32 | | 2.0 | 50.80 | 1.63 | 41.5 | 4.37 | 111.1 |
| SMR3-TBK-35 | | 2.1875 | 55.56 | 1.63 | 41.5 | 4.37 | 111.1 |
| SMR4-TBK-31 | SMR4-xx | 1.9375 | 49.21 | 2.13 | 54.0 | 4.81 | 122.2 |
| SMR4-TBK-32 | | 2.0 | 50.80 | 2.13 | 54.0 | 4.81 | 122.2 |
| SMR4-TBK-35 | | 2.1875 | 55.56 | 2.13 | 54.0 | 4.81 | 122.2 |
| SMR4-TBK-39 | | 2.4375 | 61.91 | 2.13 | 54.0 | 4.81 | 122.2 |
| SMR5-TBK-35 | SMR5-xx | 2.1875 | 55.56 | 2.07 | 52.5 | 5.63 | 142.9 |
| SMR5-TBK-39 | | 2.4375 | 61.91 | 2.07 | 52.5 | 5.63 | 142.9 |
| SMR5-TBK-40 | | 2.5 | 63.50 | 2.07 | 52.5 | 5.63 | 142.9 |
| SMR5-TBK-47 | | 2.9375 | 74.61 | 2.07 | 52.5 | 5.63 | 142.9 |

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