jeremias®
EXHAUST SYSTEMS

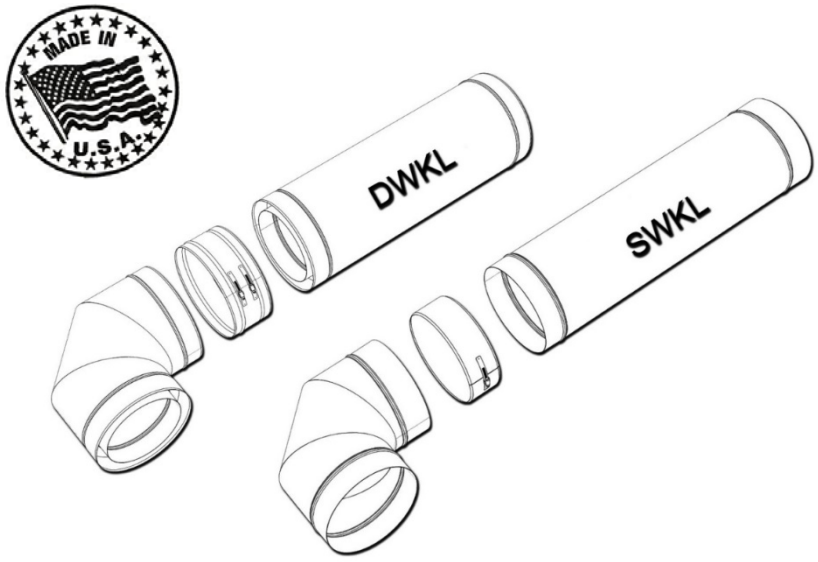
- Engine Exhaust
- Boiler Breeching/Stack
- Fume Venting
- Fireplace Chimney

# HPE

# High Pressure Exhaust

c UL us LISTED

## Models DWKL and SWKL Installation Instructions




These Instructions are applicable for the following variations:

**DWKL & SWKL**

**DWKL-Vt & SWKL-Vt**

**DWKL-Lt & SWKL-Lt**

**DWKL-Rx**

A MAJOR CAUSE OF CHIMNEY RELATED FIRES IS FAILURE TO MAINTAIN REQUIRED CLEARANCES (AIR SPACES) TO COMBUSTIBLE MATERIALS. IT IS OF UTMOST IMPORTANCE THAT THIS CHIMNEY BE INSTALLED ONLY IN ACCORDANCE WITH THESE INSTRUCTIONS.

# INDEX

# PART 1 – GENERAL INFORMATION

## INTRODUCTION

These instructions must be followed in all details. Failure to do so may result in a hazardous installation. Contact Jeremias Inc. if there are any questions regarding these instructions.

The safe operation of a factory-built chimney assembly is based on the use of parts supplied by Jeremias and the performance of the assembly may be affected if the combination of these parts is not used in actual building construction. Compliance with local code, acceptance by the local code authority (AHJ) and warranty coverage is contingent upon the DWKL / SWKL systems being installed and maintained in strict accordance with these installation and maintenance instructions.

Contact Local Building or Fire Officials about restrictions and installation inspection in your area.

## DWKL & SWKL OVERVIEW

DWKL is the designation model number for Jeremias' Double Wall conical chimney and exhaust system. SWKL is the designation model number for the Single Wall option. The –Vt, -Lt, and –Rx variations have different inner gage thickness and/or insulation. For the purpose of these installation instructions, both DWKL and SWKL, as well as all the variations, will be treated together. Differences in UL Listings, installation, and weights will be shown where needed.

## APPLICATIONS & USES

Models DWKL and SWKL are factory built high pressure and high temperature exhaust systems for various types of appliances. The Model DWKL is Double Wall and Model SWKL is Single Wall. Each Model, including different variations, may be intermixed in the same exhaust or chimney system assuming proper clearances and other installation guidelines are maintained for each system.

See UL Listings and Clearances sections for maximum temperatures and required clearances to combustibles at different operating temperatures.

Models DWKL and SWKL are intended for use in connecting heating and hot water appliances, engines, and turbines to the outdoors. There are also many other applications and uses including, but not limited to the following: Chimney Liners, Chutes, Fireplace Chimneys, Dryer Vents, Fume Venting, Industrial Oven and Process Stacks, Incinerator Exhausts, Paint Booth Exhausts, Particle Conveying, and Ventilation Ducts.

## USE AND INSTALLATION OF INDIVIDUAL COMPONENTS

These instructions comprise both general and specific requirements for all parts in the product line. Before specifying a design or beginning an installation, these instructions should be carefully reviewed.

## EXHAUST/CHIMNEY CALCULATIONS & DESIGN

Jeremias engineering department, upon request, will use the "Chimney, Gas Vent, and Fireplace Systems" chapter of the ASHRAE Handbook to assure that the exhaust/chimney system shall be sized in accordance with the appliance manufacturers' installation instructions.

Jeremias can also check venting layout distances, and recommend all appropriate accessories (drains, supports, access panels, etc.) as required by any specific appliance manufacturers instructions.

## UL & cUL LISTINGS

**UL-103 Standard, Building Heating Appliance Chimney Listing / ULC/ORD-C959 Industrial Type 540°C Chimney** – under this Listing, all variations of Model DWKL have been determined suitable for venting flue gases from gas, liquid and solid fuel fired appliances at a temperature not exceeding 1000°F (540°C) continuously. 1400°F (760°C) intermittent (maximum one hour), and 1700°F (930°C) brief (maximum 10 minutes) is also permitted under this application. All variations of Model SWKL Listings for this application are per UL-103 only.

**UL-103 Standard, Additional Type HT Listing** – Models DWKL and DWKL-Lt have qualified for UL's additional, optional Type HT rating for Building Heating Appliance Chimneys which indicates they have been evaluated and found suitable for exposure to 2100°F flue gases for 10 minutes. Many local authority having jurisdictions require a Type HT rating for chimneys for certain appliance venting applications, especially with solid fuel.

**UL-2561 Standard, 1400F Chimney Listing / ULC/ORD-C959 Industrial Type 760°C Chimney** – under this Listing, Models DWKL and DWKL-Lt have been determined suitable for venting flue gases at a temperature not exceeding 1400°F continuously and intermittent service (maximum 10 minutes) at temperatures not exceeding 1800°F.

**UL-103 Standard, Additional Positive Pressure Listing** – UL has confirmed all the variations of Models DWKL and SWKL exhaust and chimney system are suitable for use at maximum 90 inch water column internal pressure when used in positive pressure applications. This 90 inch water column was measured after the exhaust was influenced by UL-2561's continuous 1400°F flue gas temperatures.

**UL-1978 Standard, Grease Duct** – under this Listing, Models DWKL, DWKL-Lt, SWKL, and SWKL-Lt have been determined suitable for Grease Ducts as defined by NFPA-96, the "Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations". UL confirmed proper minimum air space clearance to combustibles for 500°F continuous exhaust gas temperatures and 2000°F exhaust gas temperature for 30 minutes simulating a kitchen exhaust fire. UL also confirmed that the installed joints are grease and smoke tight.

**ULC-S662, (Canadian) Standard for Factory-Built Grease Ducts** – under this (c-UL) Listing, Model DWKL and DWKL-Lt have been determined suitable for Grease Duct applications as defined in ULC S650-01, the Canadian Standard for the Installation and Performance of Ventilation and Fire Suppression Systems for Commercial and Institutional Cooking Equipment.

**See separate UL-1978 and ULC-S662 Installation Instructions for all installation, clearances, and support methods.**

**UL-1777 Standard, Chimney Liners** – under this Listing, all variations of Model SWKL have been determined suitable for venting flue gases from gas and liquid fuel fired appliances at a temperature not exceeding 570°F (299°C).

**ULC-S635, (Canadian) Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents** - under this (c-UL) Listing, all variations of Model SWKL have been determined suitable for venting flue gases from gas, liquid and solid fuel fired appliances where the temperature of the flue gases does not normally exceed 650°C (1200°F).

**See separate UL-1777 and ULC-S635 Installation Instructions Addendum for information requirements specific to chimney liner applications.**

## TERMINATION REQUIREMENTS

Per NFPA 211, building heating appliance chimneys are required to terminate a minimum of 3' above the highest point where it passes through a roof of a building and a minimum of 2' higher than any part of the building within a horizontal distance of 10'. There are exceptions to this requirement, such as mechanical draft and various listed appliances with other requirements, so consult with the Authority Having Jurisdiction for actual requirements if in question.

## FEATURES & BENEFITS

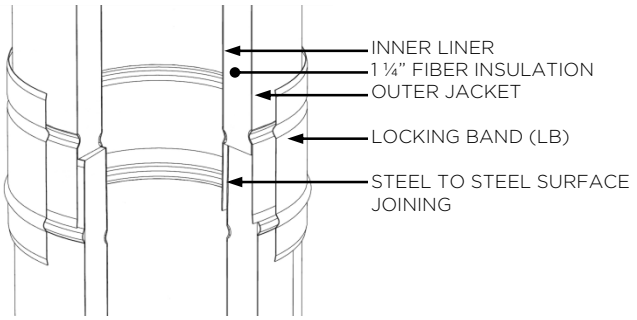
Models DWKL and SWKL are cylindrical, factory built, modular venting systems that incorporate a steel to steel conical joint and clamp system for quick and easy assembly in the field. The conical joint is tapped in place creating a gas and liquid tight seal where sealant is not needed.

# PART 1 – GENERAL INFORMATION

The conical joints have a 2.2" wide steel to steel surface overlap area at each connection allowing greater stiffness, sealing, and durability over ½" flange to flange systems. Example, 6" I.D. DWKL/SWKL have a 41.45 in² surface area at each joint where a ½" flanged systems has 9.42 in².

The double wall Model DWKL is insulated with 1¼" thick compressed fiber which allows the inner and outer pipes to stay aligned, without the use of additional clips or brackets, eliminating hot spots at the joint connections.

Figure 1-1, Model DWKL Assembly Detail

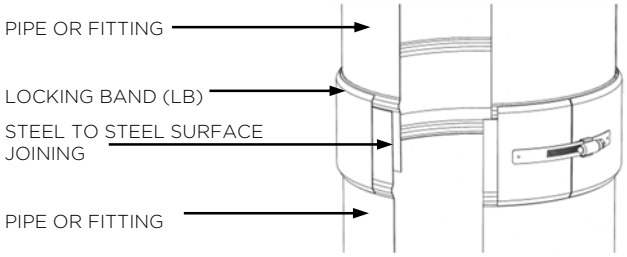



Further features of Model DWKL double wall and fiber insulated include:

a) Reduced clearance to combustibles
b) Reduced outer pipe skin temperatures
c) Reduced building heat gain
d) Increased efficiencies of energy recovery systems
e) Reduced noise levels caused by high velocity exhausts
f) Maintain flue gas heat for chimney draft performance

The single wall Model SWKL can be used as an option for Unlisted Metal Chimneys (Smokestacks) or single wall Steel Pipe Connectors as defined by NFPA-211. Model SWKL is intended for an entirely non-combustible surrounding and must be installed in strict accordance with NFPA-211 requirements for single wall stacks and connectors.

Figure 1-2, Model SWKL Assembly Detail




Further features of Model SWKL single wall include:

a) No field welding
b) All-stainless steel construction
c) Smooth flowing inner liner
d) Wide array of accessories such as supports and drains
e) May be connected to and from DWKL

## PART NUMBER IDENTIFICATIONS

These instructions identify Model DWKL and SWKL item code in text and illustrations. Actual part numbers include the Model (DWKL or SWKL), diameter, item code, and variation (none, -Vt, -Lt, or –Rx)

Example 1: DWKL8-36L for an 8 inch inner diameter Model DWKL double wall 36 inch length of pipe.

Example 2: SWKL10-90WT-Lt for a 10 inch inner diameter Model SWKL single wall 90° Wye Tee in the –Lt variation.

Example 3: DWKL12-87BT-Rx for a 12 inch inner diameter Model DWKL double wall 87° Boot Tee in the –Rx variation.

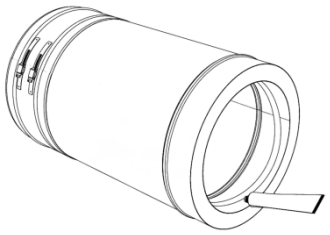
## JOINT ASSEMBLY

The Model DWKL joint system is designed for a quick and easy installation. Follow Steps 1 through 4 for general pipe and fittings assembly.

Figure 1-3, Model DWKL Assembly

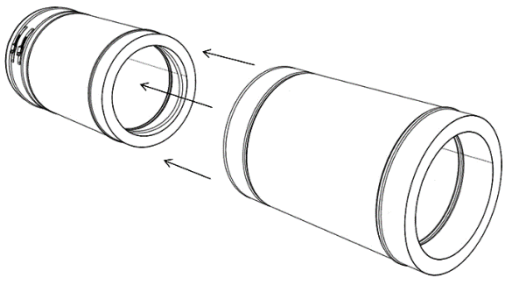
**Step 1**

Clean the inner side of the female end and the outer side of the male end of each inner liner. Apply the KL Paste to the female end.



**Step 2**

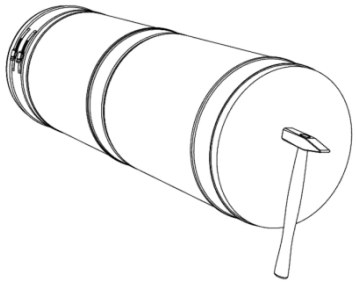
Use your hands to center both pipes in alignment. Connect both pipes and press them together as much as possible by hand.



**Step 3**

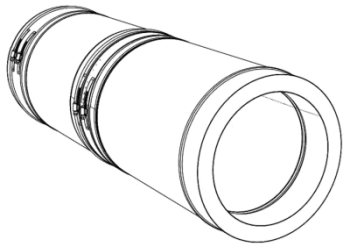
Use the wood plate (supplied with shipment) and place it on the end of the assembly.

Tap 2-3 times. Make sure to press both inner and outer pipes together; the inner should not be more than 1/8" longer than the outer pipe once the male/female conical ends are engaged.



**Step 4**

Install and fix the Locking Band (LB). To ensure the connection is secure, the Locking Band has to be perfectly fitted in both grooves.



The Model SWKL single wall is exactly the same joint as the inner portion of the above Model DWKL. Use the same installation procedures for SWKL as DWKL.

# PART 1 – GENERAL INFORMATION

## KL PASTE

KL Paste is a ceramic lubricating and assembly paste. The purpose is to help guide the pipe connections to assure the best steel to steel connection. It also seals the joint by allowing the ceramic to fill any microscopic steel imperfections. On fittings it will help the installer rotate to the correct position before tapping in place.

Use 1 teaspoon of paste per 24" length of joint perimeter. Example: 10 inch diameter has 31" of perimeter length, so use about 1.3 teaspoons per each 10 inch joint connection. Below table allows for a 20% waste.

Table 1-1, No. (#) of Joints per 3.5 oz. Tube

| Ø | 3" | 4" | 5" | 6" | 7" | 8" | 9" | 10" | 11" | 12" | 13" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # | 42.6 | 32.0 | 25.6 | 21.3 | 18.2 | 16.0 | 14.2 | 12.8 | 11.6 | 10.6 | 9.8 |

| 14" | 16" | 18" | 20" | 22" | 24" | 26" | 28" | 30" | 32" | 34" | 36" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.1 | 8.0 | 7.1 | 6.4 | 5.8 | 5.3 | 4.9 | 4.5 | 4.2 | 4.0 | 3.7 | 3.5 |

## PIPE WEIGHT

The approximate installed weight of the DWKL and SWKL exhaust systems can be found using this table. This table does not include accessories such as supports and guides, nor shipping packaging or palletizing weight.

Table 1-2, DWKL & SWKL Installed Weight in lb/ft (kg/m)

| Inside Diameter | DWKL DWKL-Rx | SWKL | DWKL-Vt DWKL-Lt | SWKL-Vt SWKL-Lt |
|---|---|---|---|---|
| **3"** (76mm) | 3.5 (5.1) | 1.1 (1.7) | 3.0 (4.4) | 0.6 (1.0) |
| **4"** (102mm) | 4.4 (6.5) | 1.5 (2.2) | 3.8 (5.7) | 0.9 (1.3) |
| **5"** (127mm) | 5.3 (7.9) | 1.9 (2.8) | 4.4 (6.5) | 1.1 (1.6) |
| **6"** (152mm) | 6.3 (9.3) | 2.2 (3.3) | 5.4 (8.0) | 1.3 (1.9) |
| **7"** (178 mm) | 7.2 (10.7) | 2.6 (3.9) | 6.1 (9.1) | 1.5 (2.2) |
| **8"** (203mm) | 8.1 (12.1) | 3.0 (4.4) | 6.8 (10.1) | 1.7 (2.5) |
| **9"** (229mm) | 9.1 (13.5) | 3.4 (5.0) | 7.6 (11.3) | 1.9 (2.8) |
| **10"** (254mm) | 10.0 (14.9) | 3.7 (5.6) | 8.4 (12.5) | 2.1 (3.2) |
| **11"** (249mm) | 10.9 (16.3) | 4.1 (6.1) | 9.1 (13.5) | 2.3 (3.5) |
| **12"** (305mm) | 11.9 (17.7) | 4.5 (6.7) | 10.0 (14.9) | 2.6 (3.8) |
| **13"** (330mm) | 12.8 (19.1) | 4.9 (7.2) | 10.7 (15.9) | 2.8 (4.1) |
| **14"** (456mm) | 13.8 (20.5) | 5.2 (7.8) | 11.6 (17.3) | 3.0 (4.4) |
| **16"** (406mm) | 15.6 (23.2) | 6.0 (8.9) | 13 (19.3) | 3.4 (5.1) |
| **18"** (457mm) | 17.5 (26.0) | 6.7 (10.0) | 14.6 (21.7) | 3.8 (5.7) |
| **20"** (508mm) | 19.4 (28.8) | 7.5 (11.1) | 16.2 (24.1) | 4.3 (6.3) |
| **22"** (559mm) | 21.3 (31.6) | 8.2 (12.2) | 17.8 (26.5) | 4.7 (5.0) |
| **24"** (610mm) | 23.1 (34.3) | 9.0 (13.3) | 19.2 (28.6) | 5.1 (7.6) |
| **26"** (660mm) | 23.7 (35.3) | 9.5 (14.1) | - | - |
| **28"** (711mm) | 25.5 (37.9) | 10.3 (15.3) | - | - |
| **30"** (762mm) | 27.2 (40.5) | 11.0 (16.4) | - | - |
| **32"** (812mm) | 29.0 (43.2) | 11.7 (17.4) | - | - |
| **34"** (863mm) | 30.7 (45.7) | 12.5 (18.6) | - | - |
| **36"** (914mm) | 32.5 (48.4) | 13.2 (19.6) | - | - |

## ENCLOSURES & CLEARANCES

Model DWKL chimney is intended to be installed unenclosed or with non-combustible enclosures, and is not for use in one or two story family dwellings.

If the chimney passes through any zone or story of a building outside of which the connected appliance is located, it is to be enclosed in non-combustible construction having a fire rating equal to or greater than that of the wall or ceiling though which it passes. Check with the Authority Having Jurisdiction for material with an appropriate fire rating.

Where, according to local code, no chase enclosure is required, Model DWKL may be installed adjacent to a wall of combustible construction at the minimum clearance specified on each pipe section and in the individual Listing as shown in the following tables.

Model SWKL is meant to be used as an option for "Unlisted Metal Chimneys (Smokestacks) for Nonresidential Applications" and/or "Chimney Connectors and Vent Connectors" as defined in NFPA-211. As such follow all applicable NFPA-211 requirements regarding Uses, Clearances, Termination, and Size.

Table 1-3, DWKL & SWKL Clearances

| Inside Diameter | DWKL 1000°F Building Chimney | DWKL 1400°F Industrial Chimney | SWKL Single Wall Stack & Connector |
|---|---|---|---|
| **3"** (76mm) | 0.50" (12.7mm) | 0.50" (12.7mm) | 18" (457.2mm) |
| **4"** (102mm) | 0.50" (12.7mm) | 0.50" (12.7mm) | 18" (457.2mm) |
| **5"** (127mm) | 0.50" (12.7mm) | 0.50" (12.7mm) | 18" (457.2mm) |
| **6"** (152mm) | 0.50" (12.7mm) | 0.50" (12.7mm) | 18" (457.2mm) |
| **7"** (178 mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **8"** (203mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **9"** (229mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **10"** (254mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **11"** (249mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **12"** (305mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **13"** (330mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **14"** (456mm) | 0.75" (19.1mm) | 0.75" (19.1mm) | 18" (457.2mm) |
| **16"** (406mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **18"** (457mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **20"** (508mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **22"** (559mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **24"** (610mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **26"** (660mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **28"** (711mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **30"** (762mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **32"** (812mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **34"** (863mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |
| **36"** (914mm) | 1.00" (25.4mm) | 1.00" (25.4mm) | 18" (457.2mm) |

For clearances to combustibles for other items such as thimbles, see PART 6 – THIMBLE & FLASHINGS in these instructions.

Do not wrap or place any type of insulation in the required clearances space surrounding the chimney in an effort to reduce the clearance to combustibles or to create some sort of fire protective enclosure.

**Clearance to non-combustibles:**
As required for installation, access, inspection, or per local code.

## OPERATING PRECAUTIONS

### Creosote and Soot – Formation and Need for Removal

When wood is burned slowly, it produces tar and organic vapors which combines with expelled moisture in the flue gases to form creosote. The creosote vapors condense in the cool chimney flue of a slow burning fire. As a result, creosote residue accumulates on the inner pipe. If ignited, this creosote makes an extremely hot fire.

For this reason, the chimney should be inspected at least once every two months during the heating season to determine if a creosote or soot buildup has occurred. If creosote or soot has accumulated, it should be removed to reduce risk of a chimney fire.

# PART 2 – SUPPORT & GUIDING

## SUPPORT AND GUIDE OPTIONS

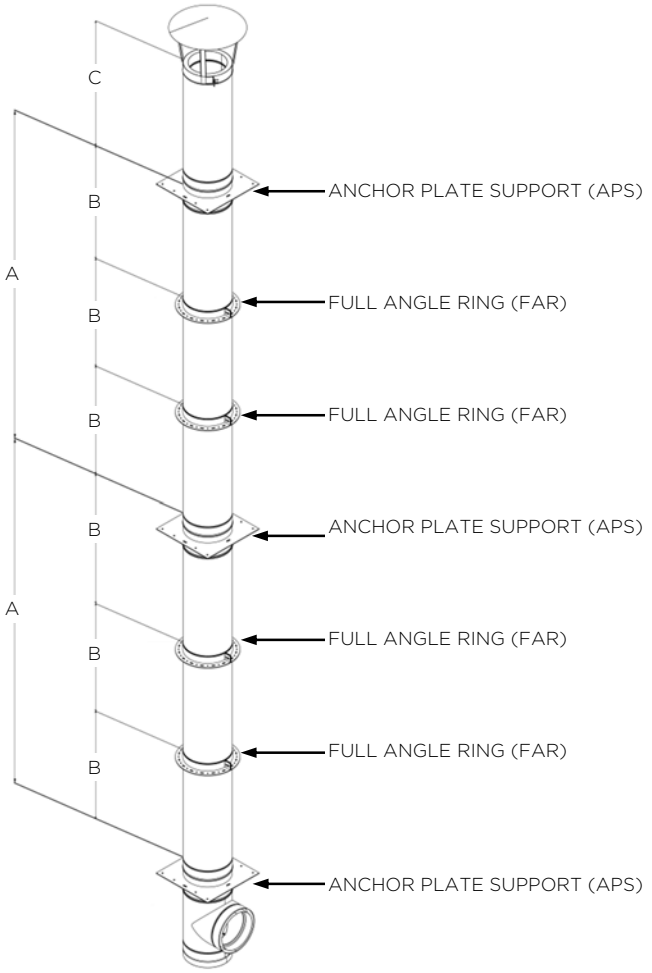
Models DWKL and SWKL are very versatile in nature so there are many options for supporting and guiding, see in great details each option later in this section:

1) Anchor Plate Support (APS)
2) Heavy Duty Base for Support/Ring (HDB)
3) Wall Brackets for Support/Ring (WB)
4) Light Support Band (LSB)
5) Full Angle Ring (FAR)
6) Half Angle Ring (HAR)
7) Guy Wires band (GWB)

## VERTICAL SUPPORT SPACING & LIMITS

Figure 2-1 provides the maximum vertical support spacing for various support options (Dimension A). See Table 2-1 for maximum distances.

Figure 2-1, Maximum Vertical Support Spacing




NOTE: See PART 3 "Lengths for Thermal Expansion" in these instructions for important use of expansion joints between anchor plate support locations.

Table 2-1, Vertical Support Spacing Limitations (Dim A)

| Vertical Support Method / Part Nos. | Dim A - Maximum Support Height | | | | |
|---|---|---|---|---|---|
| Diameter | DWKL DWKL-Rx | DWKL-Lt | DWKL-Vt | SWKL | SWKL-Lt SWKL-Vt |
| **Anchor Plate Support / APS** | | | | | |
| **3" - 6"** (76 - 152mm) | 300' (914m) | 300' (914m) | 300' (914m) | 300' (914m) | 300' (914m) |
| **7" - 10"** (178 - 254mm) | 208' (63.3m) | 248' (75.5m) | 282' (85.9m) | 300' (914m) | 275' (83.3m) |
| **11" - 13"** (279 - 330mm) | 162' (49.3m) | 194' (59.1m) | 223' (67.9m) | 300' (914m) | 200' (610m) |
| **14" - 18"** (356 - 457mm) | 119' (36.2m) | 142' (43.2m) | 166' (50.5m) | 300' (914m) | 200' (610m) |
| **20" - 24"** (508 - 610mm) | 90' (27.4m) | 108' (32.9m) | 127' (38.7m) | 231' (70.4m) | 150' (45.7m) |
| **26" - 30"** (660 - 762mm) | 88' (26.8m) | DNA | DNA | 222' (67.7m) | DNA |
| **32" - 36"** (813 - 914mm) | 86' (26.2m) | DNA | DNA | 213' (64.9m) | DNA |
| **Anchor Plate Support with Heavy Duty Base / APS & HDB** | | | | | |
| **3" - 6"** (76 - 152mm) | 300' (914m) | 300' (914m) | 300' (914m) | 300' (914m) | 300' (914m) |
| **7" - 10"** (178 - 254mm) | 300' (914m) | 300' (914m) | 300' (914m) | 300' (914m) | 275' (83.3m) |
| **11" - 13"** (279 - 330mm) | 300' (914m) | 300' (914m) | 300' (914m) | 300' (914m) | 200' (610m) |
| **14" - 18"** (356 - 457mm) | 224' (68.2m) | 269' (819m) | 300' (914m) | 300' (914m) | 200' (610m) |
| **20" - 24"** (508 - 610mm) | 170' (518m) | 205' (62.4m) | 239' (72.8m) | 300' (914m) | 150' (45.7m) |
| **26" - 30"** (660 - 762mm) | 111' (33.8m) | DNA | DNA | 275' (83.3m) | DNA |
| **32" - 36"** (813 - 914mm) | 93' (28.3m) | DNA | DNA | 230' (70.1m) | DNA |
| **Anchor Plate Support with Wall Bracket / APS & WB** | | | | | |
| **3" - 6"** (76 - 152mm) | 70' (213m) | 81' (24.6m) | 92' (28.0.m) | 200' (60.9m) | 300' (914m) |
| **7" - 10"** (178 - 254mm) | 44' (13.4m) | 52' (15.8m) | 60' (18.2m) | 119' (36.2m) | 208' (63.3m) |
| **11" - 13"** (279 - 330mm) | 34' (10.3m) | 41' (12.4m) | 47' (14.3m) | 90' (27.4m) | 157' (47.8m) |
| **14" - 18"** (356 - 457mm) | 25' (7.6m) | 30' (9.1m) | 35' (10.6m) | 66' (20.1m) | 115' (35.0m) |
| **20" - 24"** (508 - 610mm) | 19' (5.7m) | 23' (7.0m) | 27' (8.2m) | 49' (14.9m) | 85' (25.9m) |
| **26" - 30"** (660 - 762mm) | 12' (3.7m) | DNA | DNA | 29' (8.8m) | DNA |
| **32" - 36"** (813 - 914mm) | 10' (3.0m) | DNA | DNA | 24' (7.3m) | DNA |

## VERTICAL GUIDE SPACING

Table 2-2 provides the maximum vertical guide spacing (Dimension B) for all guide options. Also shown is the maximum freestanding distance above the last support or guide (Dimension C).

Applicable vertical guides are FAR Full Angle Ring, LSB Light Support Band, and GWB Guy Wires Band

Table 2-2, Vertical Guide Spacing (Dim B and C)

| Vertical Guide Spacing | DWKL, DWKL-Rx & SWKL | | DWKL-Vt & DWKL-Lt | | SWKL-Vt & SWKL-Lt | |
|---|---|---|---|---|---|---|
| | B | C | B | C | B | C |
| **3"** (76mm) - **24"** (610mm) | 19.5' (5.9m) | 10.0' (3.0m) | 14.6' (4.4m) | 7.5' (2.2m) | 11.1' (3.3m) | 5.7' (17m) |
| **26"** (660mm) - **36"** (914mm) | 20.2' (6.2m) | 8.2' (2.5m) | DNA | DNA | DNA | DNA |

## HORIZONTAL SUPPORT SPACING

Table 2-3 provides the maximum unsupported horizontal spacing (distance) between guides for an exhaust installed inside the building.

# PART 2 – SUPPORT & GUIDING

Applicable horizontal supports are FAR Full Angle Ring, HAR Half Angle Ring, LSB Light Support Band, and GWB Guy Wires Band.

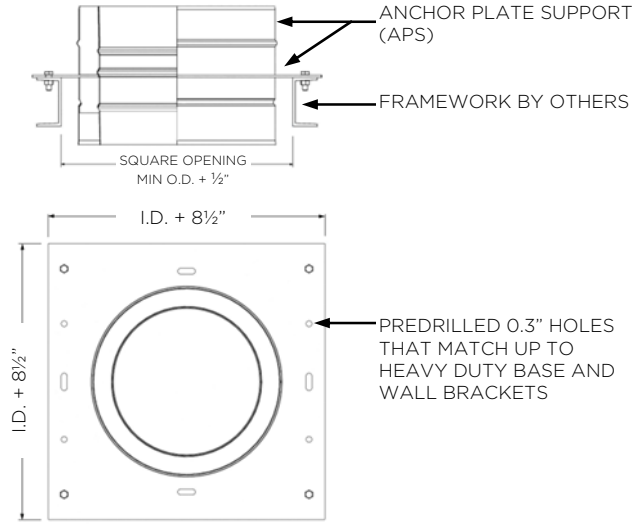
Table 2-3, Horizontal Support Spacing

| Maximum Unsupported Horizontal Spacing | DWKL, DWKL-Rx & SWKL | DWKL-Vt & DWKL-Lt | SWKL-Vt & SWKL-Lt |
|---|---|---|---|
| **3"** (76mm) - **14"** (356mm) | 15.0' (4.5m) | 11.3' (3.4m) | 8.6' (2.6m) |
| **16"** (406mm) - **24"** (610mm) | 12.0' (3.7m) | 6.8' (2.1m) | 5.0' (1.5m) |
| **26"** (660mm) - **36"** (914mm) | 9.0' (2.7m) | DNA | DNA |

## ANCHOR PLATE SUPPORT (APS)

The Anchor Support Plate consists of a short length of pipe that has a single heavy plate factory welded to the inner pipe. It is intended to provide maximum support to vertical sections and to provide an anchor support for horizontal sections.

Figure 2-2, Anchor Plate Dimensions




The plate must be braced back to the building structure or support with rigid structural members by the installing contractor. The structural project engineer should select support members in accordance with good engineering practice to suit each specific application, or follow the guidelines to meet the following figures.

Figure 2-3, Anchor Plate Support for Vertical

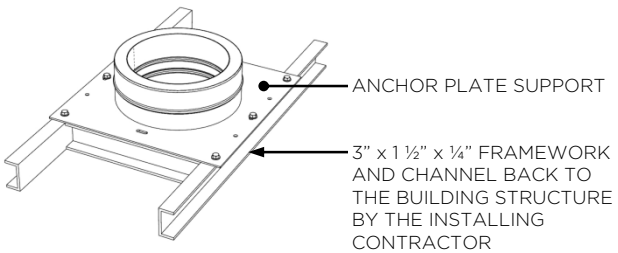
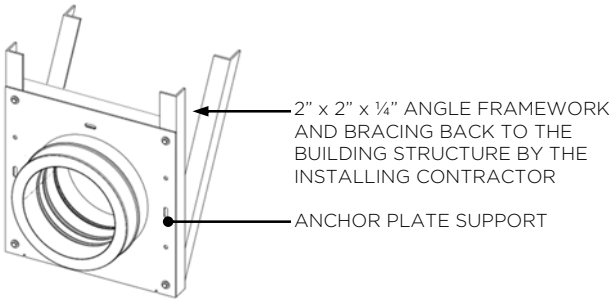



Figure 2-4, Anchor Plate Support for Horizontal




The Anchor Plate Support may only be attached to non-combustible construction such as block, concrete, or steel.

DO NOT ATTACH THE ANCHOR SUPPORT PLATE TO COMBUSTIBLE MATERIALS.

## HEAVY DUTY BASE (HDB)

This is a factory-built base and framework for the Anchor Plate Support allows quick and easy installations when bracing the support back to the building structure. The installing contractor only provides the channel as Heavy Duty Base acts as the framework.

Hardware for attaching the APS Anchor Plate Support to the HDB Heavy Duty Base is supplied with the base.

Figure 2-5, Heavy Duty Base Support for Vertical

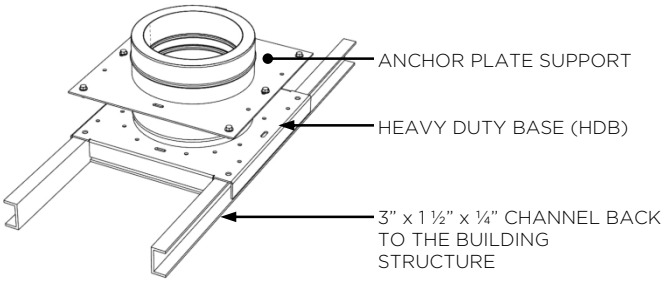
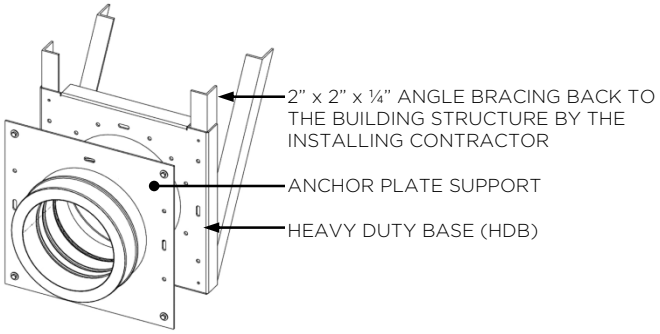



Figure 2-6, Heavy Duty Based Support for Horizontal

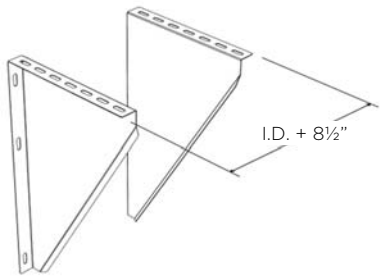


# PART 2 – SUPPORT & GUIDING

## WALL BRACKETS FOR SUPPORT (WB)

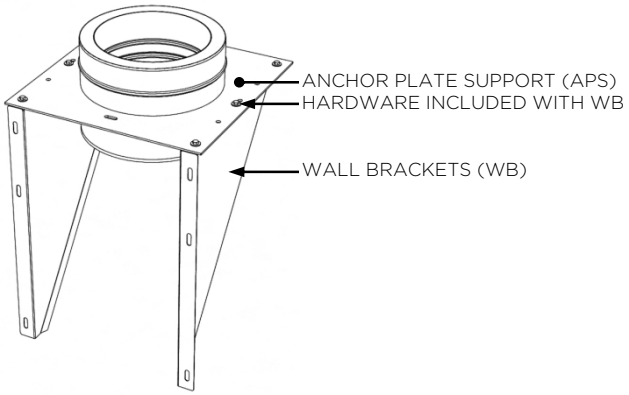
These Wall Brackets will conveniently support the Anchor Plate Support back to a non-combustible wall.

Figure 2-7, Wall Brackets




Hardware for attaching the Anchor Plate Support to the Wall Brackets is supplied with the brackets.
However, hardware for attaching these Wall Brackets to the wall is by others. The structural engineer should select hardware and in accordance with good engineering practice to suit each specific application.

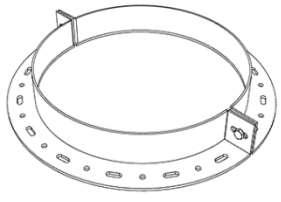
Figure 2-8, Wall Brackets for Anchor Plate Support




## FULL ANGLE RING (FAR)

The Full Angle Ring is used as a vertical guide and is braced to the building structure by the installing contractor. It can also be used in horizontal configurations where exposed to weather (wind) or on vibrating or high pressure applications such as engine exhaust.

Figure 2-9, Full Angle Ring



Also see Figures 2-10 and 2-11, the Heavy Duty Base or Wall Brackets may also be used to help support the Full Angle Ring back to the building structure.

Figure 2-10, Heavy Duty Base for Full Angle Ring Example

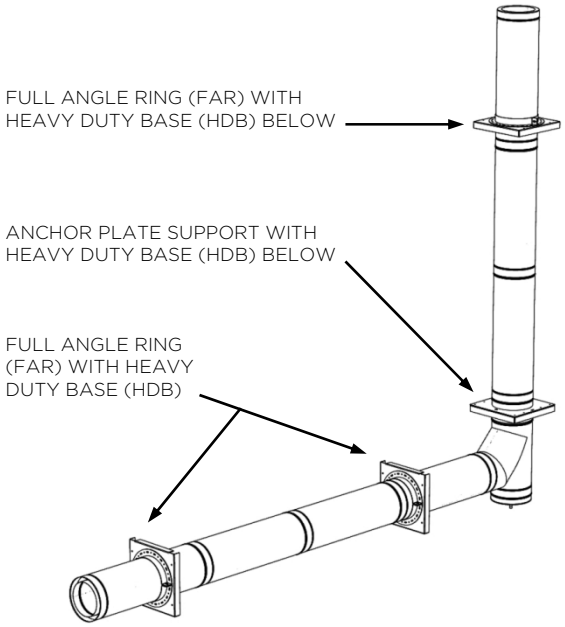
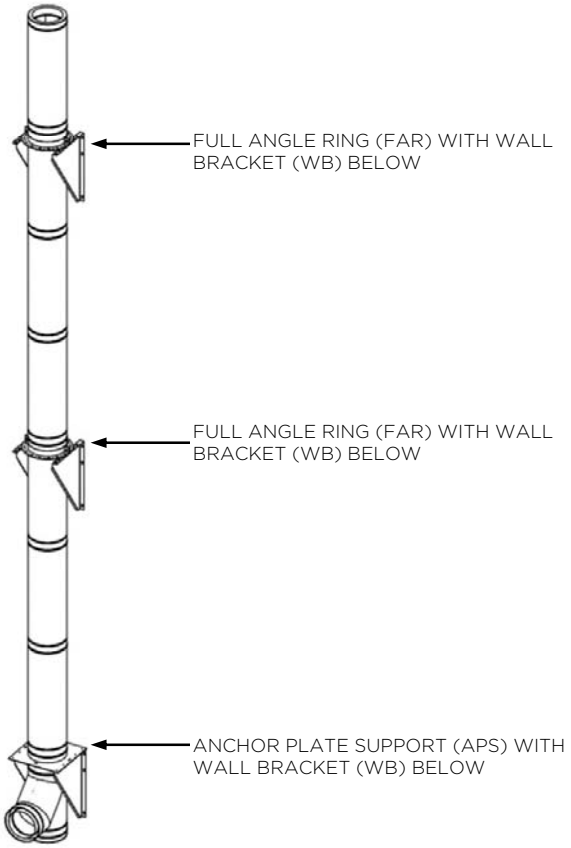



Figure 2-11, Wall Brackets for Full Angle Ring Example

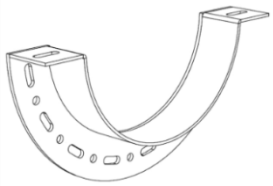


# PART 2 – SUPPORT & GUIDING

## HALF ANGLE RING (HAR)

The Half Angle Ring is used to support/guide horizontal installations and may be suspended by threaded rods. See Full Angle Ring (FAR) for outdoor or vibrating installations.

Figure 2-12, Half Angle Ring



## LIGHT SUPPORT BAND (LSB)

The Light Support Band can be used on low pressure and low temperature applications such as heating boiler stacks (not for use with engine or turbine exhaust) for support/guide in horizontal or vertical installations.

The band firmly clamps around the pipe outer jacket and includes four (4) ¼" x 20 stainless steel nuts and bolts. Remaining hole in the middle where wires or threaded rods (by the installing contractor) are used for support or guiding back to the building structure.

Figure 2-13, Light Support Band

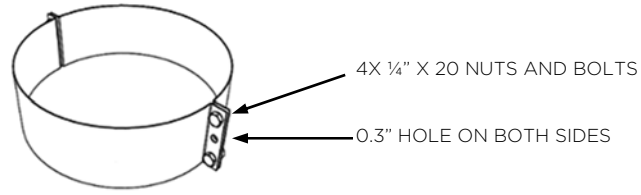
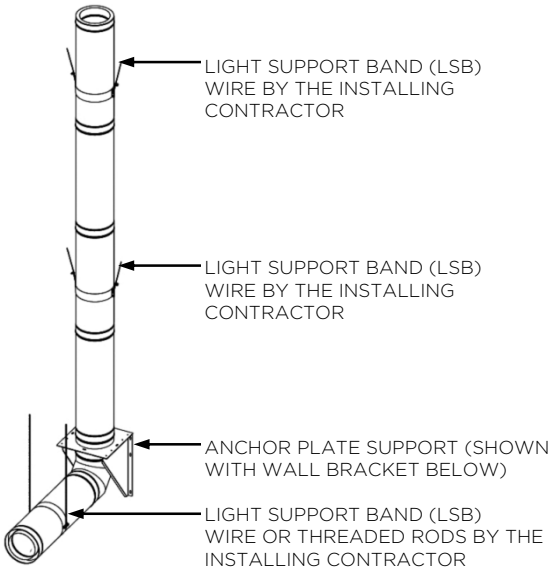



Figure 2-14, Light Support Band Installation Example




## GUY WIRES BAND (GWB)

The Guy Wires Band permits easy connection for three (3) guy wires at 120 degrees apart. The band firmly clamps around the pipe outer jacket and includes three (3) ¼" x 20 stainless steel nuts and bolts.

The actual guy wires are by others, the structural engineer should select wire size in accordance with good engineering practice to suit each specific application.

Figure 2-15, Guy Wires Band

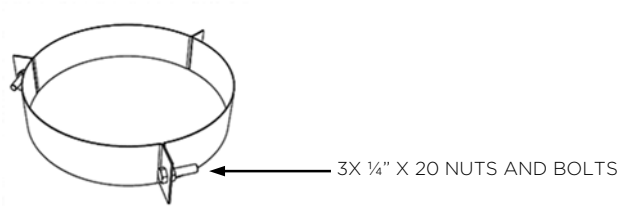
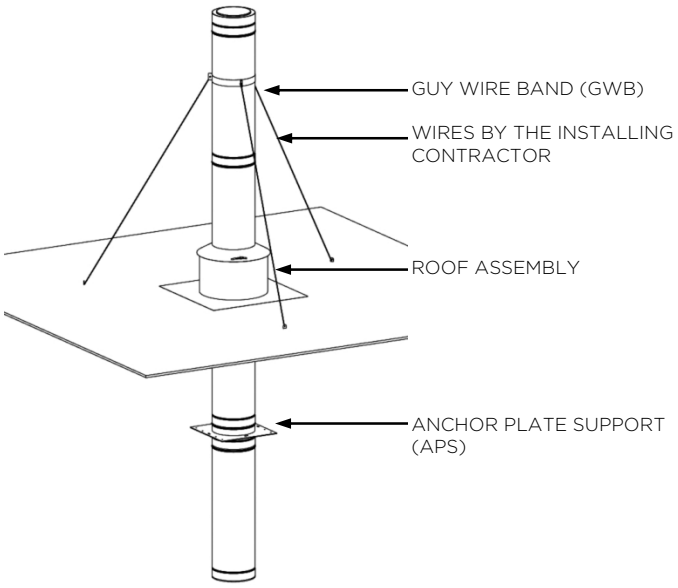



Figure 2-16, Guy Wire Band Installation Example



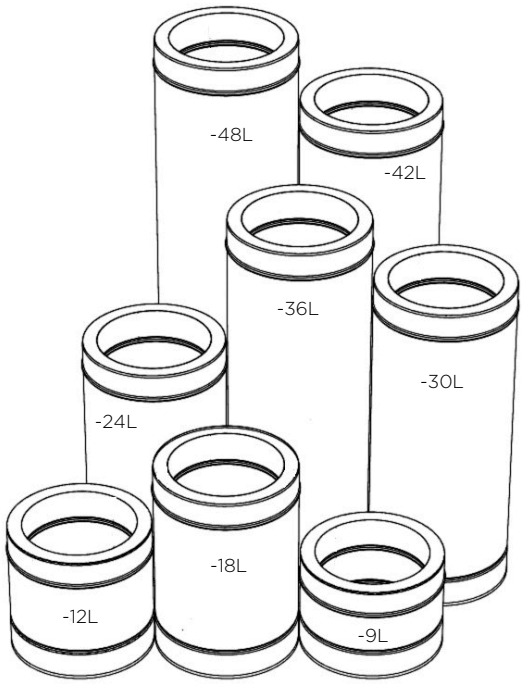
# PART 3 – PIPE & OTHER LENGTHS

## 6”, 9”, 12”, 18”, 24”, 30”, 36”, 42”, & 48” FIXED PIPE LENGTHS (__L)

Models SWKL and DWKL have various fixed lengths of pipe. 6” length is only available in SWKL.

Any custom length may be ordered from Jeremias Inc.

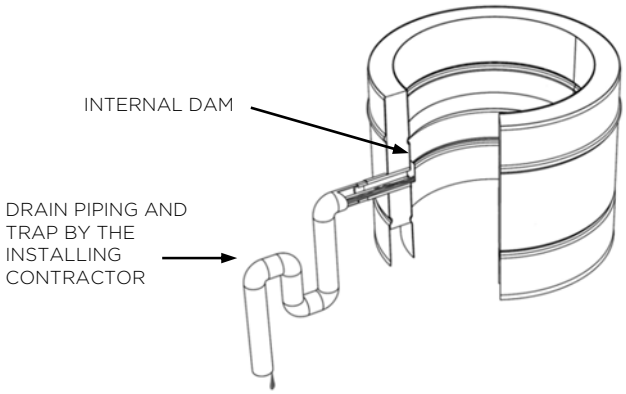
Figure 3-1, Fixed Pipe Lengths




## UNIVERSAL DRAIN LENGTH (UDL)

The Universal Drain Length traps all rain water or condensation inside the pipe via an internal dam and routes to an external 1” NPT drain line. This works in both horizontal and vertical configurations.

Figure 3-2, Universal Inline Drain

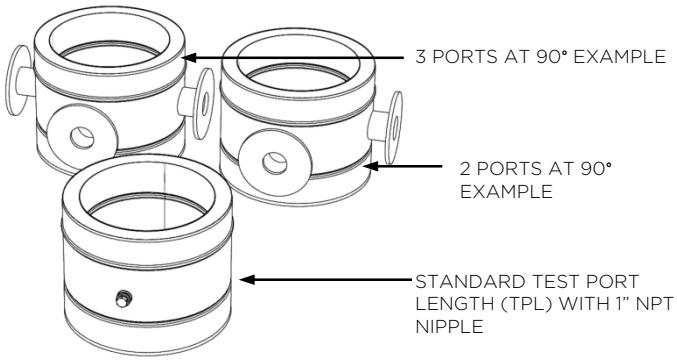



## TEST/NOZZLE PORT LENGTH (TPL)

A Test/Nozzle Port Length can be used for monitoring flue gases, horizontal drain, or implementing internal cleaning equipment inside the pipe. Standard is one 1” NPT nipple, but any size can be factory installed and in multiple configurations.

All ports are continuously welded to the inner pipe. Gaskets or sealant used to connect other equipment and supporting of this equipment is by others.

Figure 3-3, Test/Nozzle Port Section




## LENGTHS FOR THERMAL EXPANSION

Models DWKL and SWKL assembled lengths act like a continuous steel pipe, so thermal expansion must be compensated for between anchored or fixed supports.

The Model DWKL inner is permitted to expand a greater length than the outer jacket as there are no fixed steel connections between the inner and outer.

Any expansion of the inner in excess of 0.375” (9mm) requires one of the following expansion capable lengths between fixed anchor points:

1) Adjustable Length (18AL or 30AL)
2) Adjustable Length with Gasket (18AG or 30AG)
3) Adjustable Length with Graphite Packing (18ALG or 30ALG)
4) Lined Bellows Length (LBL)

## 18” & 30” ADJUSTABLE LENGTHS (__AL)

Adjustable Lengths incorporate a telescoping length that compensates inner thermal expansion. These adjustable lengths ship completely assembled, and no modifications are required in the field.

The minimum installed length of the 18AL is 10.5”.
The maximum installed length of the 18AL is 15.5”.

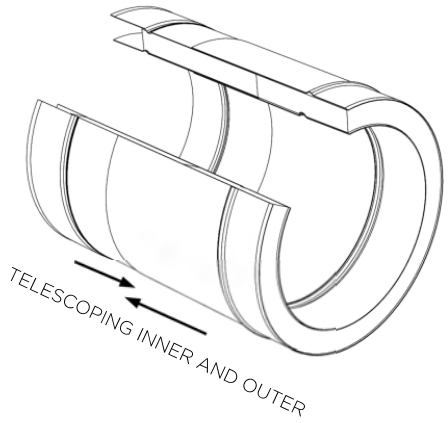
The minimum installed length of the 30AL is 22.5”.
The maximum installed length of the 30AL is 27.5”.

Adjustable Lengths (AL) are intended to be used in negative internal pressure applications only. For positive pressure applications use Adjustable Lengths w/ Gasket (18AG or

# PART 3 – PIPE & OTHER LENGTHS

30AG), Adjustable Lengths w/ Graphite Packing (18ALG or 30AG), or Lined Bellows Length (LBL).

Figure 3-4, 18" & 30: Adjustable Lengths




## 18" & 30" ADJUSTABLE LENGTHS W/ GASKET (__AG)

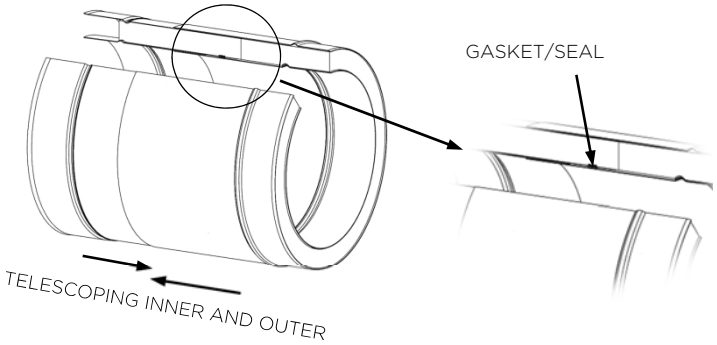
Adjustable Lengths with Gasket incorporate a telescoping length that compensates inner thermal expansion. These adjustable lengths ship completely assembled, and no modifications are required in the field.

The minimum installed length of the 18AG is 10.5".
The maximum installed length of the 18AG is 15.5.

The minimum installed length of the 30AG is 22.5".
The maximum installed length of the 30AG is 27.5".

A gasket is factory installed to provide a maximum 0.8" W.C. (200 Pa) of positive pressure capability. The Adjustable Lengths w/ Gaskets are also limited to natural/propane gas and 400°F (200°C) maximum continuous internal operating temperatures (this part is not for use with solid fuel or oil). For higher positive pressures and/or temperatures use Lined Bellows Length (LBL).

Figure 3-5, 18" & 30" Adjustable Lengths w/ Gasket




## 18" & 30" ADJUSTABLE LENGTHS W/ GRAPHITE PACKING (__ALG)

Adjustable Lengths with Graphite Packing have two functions: to serve as an expansion joint and to make up for a required odd length. The adjustable length incorporates a telescoping inner liner that accommodates thermal expansion in longer runs of pipe. It telescopes into a larger diameter stationary length and is sealed by a heavy gage clamp/graphite packing sealing system. It is finished off with a clam shell outer jacket.

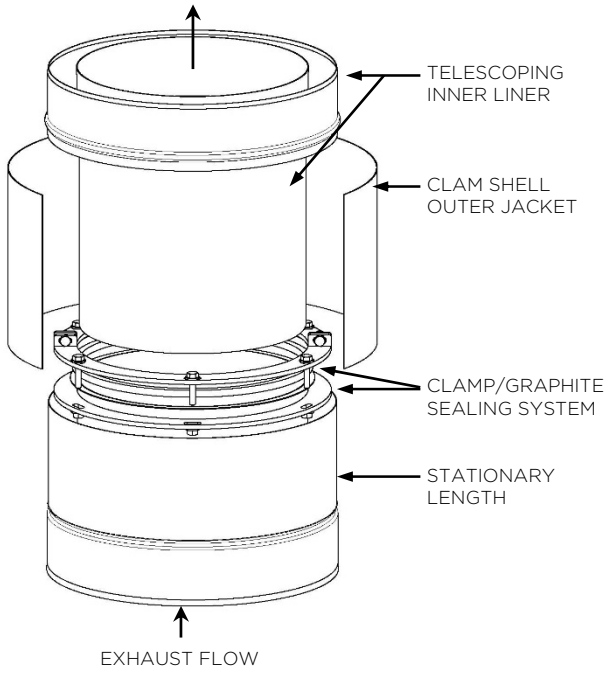
Adjustable Lengths ship completely assembled at the "maximum Installed Length" shown herein, and no modifications are required in the field when used only as an expansion joint.

When also using the Adjustable Length to make up for an odd length, you must remove the outer jacket and loosen the clamp/graphite seal to allow the telescoping inner to easily slide further into the stationary length. The insulation may need to be trimmed back also. Tighten the sealing system back in place.

To assure correct engagement of the inlet and outlet ends, the Adjustable Length must be installed to the connecting pipe or fitting while the graphite seal is tightened (either before loosening as the adjustable ships or after tightening when used to make up an odd length).

The Adjustable Length with Graphite Packing has been evaluated by UL and confirmed suitable for positive internal static pressures up to 8" WC" (2000 Pa).

Figure 3-6, ALG Adjustable Length Model DWKL Assembly



# PART 3 – PIPE & OTHER LENGTHS

Figure 3-7, Adjustable Length Clamp/Graphite Sealing System Detail

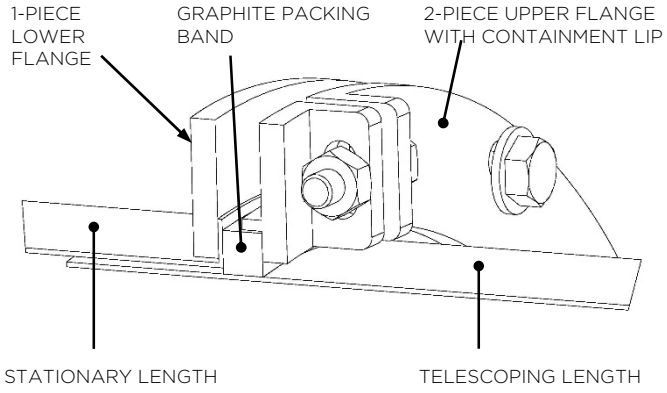
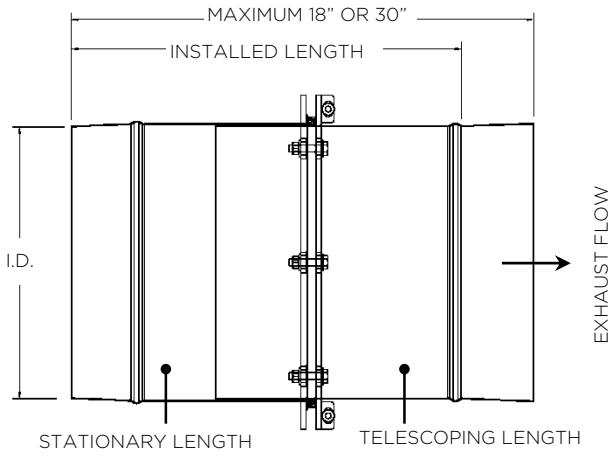



Figure 3-8, 18" & 30" ALG Adjustable Length Dimensions




- The minimum Installed Length of the 18ALG is 11.6"
- The maximum Installed Length of the 18ALG is 15.8"

- The minimum Installed Length of the 30ALG is 15.8"
- The maximum Installed Length of the 30ALG is 27.8"

The above figure shows Model SWKL which is exactly the same as the inner liner of Model DWKL.

Do NOT extend the telescoping inner outwards further away from the stationary length than the above "maximum Installed Length".

In horizontal Adjustable Length installations, add guides near each end to assure correct alignment at all times. In vertical installations, place the Adjustable Length just below a Support as the Adjustable Length is not load bearing.

## 18" LINED BELLOWS LENGTH (LBL)

The Lined Bellows Length (LBL) incorporated as part of the Jeremias Inc. DWKL and SWKL product offering for engine exhaust applications is the same type and construction as bellows lengths that have been used for engine exhaust applications in North America and other parts of the world for decades.

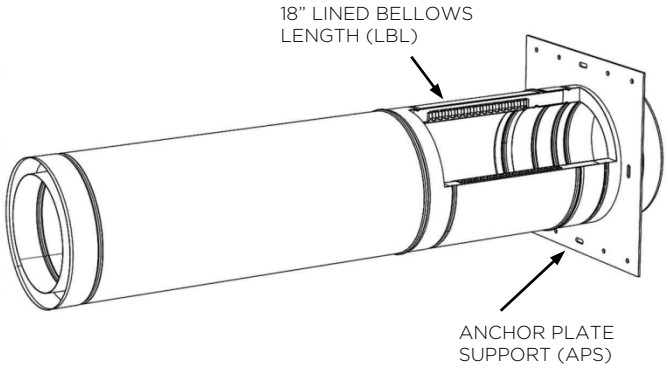
These devices incorporate fully welded tubes (for the inner flue) of the same (stainless steel) material as the rigid chimney lengths and contain corrugations in the tube wall that provide for reducing the effective length via compression when force is applied at each end.

They incorporate a slightly smaller diameter rigid length (internally) through which the exhaust gases pass. Bellows lengths are fitted with the same inlet and outlet end construction and dimensions incorporated in fixed lengths making them completely compatible with other components.

Used between rigidly fixed supports, bellows lengths provide a very important means of accommodating thermal expansion of other parts in the system (due to the high temperature exhaust gas within) by compressing while maintain pressure and temperature capability without leakage.

At present (June 2014), Underwriters Laboratories, Inc. (UL) has no safety standard for these devices so although they are shown in this document and condoned by Jeremias Inc. and others, UL has not independently investigated this product.

Figure 3-9, 18" Lined Bellows Length



# PART 3 – PIPE & OTHER LENGTHS

## 18” & 30” CUT PIPE LENGTHS (__CL)

Cut Pipe Lengths are specifically engineered to be field cut to desired length. This permits the greatest flexibility for complicated installations.

- The minimum installed length of 18CL and 30CL is 5.3”.
- The maximum installed length of the 18CL is 15.8”.
- The maximum installed length of the 30CL is 27.8”.

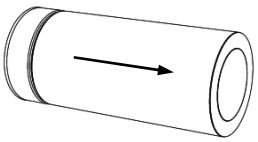
Cut Pipe Lengths are used in all applications and have been evaluated by UL and confirmed suitable for positive internal pressures up to 60” W.C. (15000 Pa).

IMPORTANT: Proper installation of the Cut Pipe Length involves a procedure of very careful measurement and cutting (either in the field or shop) of the outlet end(s) of the Cut Pipe Length with appropriate equipment and technique to achieve a clean, burr free, straight end(s). Experienced sheet metal tradesmen are familiar with such equipment and techniques and should be used for such purpose.

Examples of equipment commonly used for such purpose include:

Type 27 Right Angle Grinder Cutting Wheels for stainless steel and NOGA Model DB1000 double edge deburring tool for thin sheet metal.

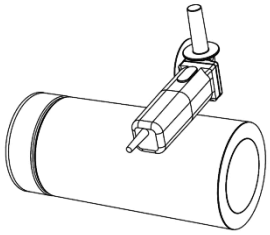
Figure 3-5, Cut Pipe Length Installation



CUT PIPE LENGTH SHIPS AS A STAND ALONE ITEM. ARROW SHOWS DIRECTION OF FLUE GAS FLOW, OR UP DIRECTION.

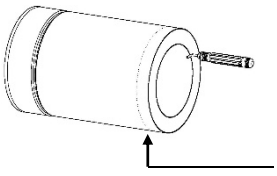
INSTALLATION STEPS:

1) FIELD MEASURE REQUIRED DISTANCE TO FILL BETWEEN TWO PIPE ENDS.



2) ADD 4.4” TO DETERMINE THE OVERALL CUT PIPE LENGTH REQUIRED. THE MINIMUM OVERALL PERMITTED LENGTH IS 7.5”.

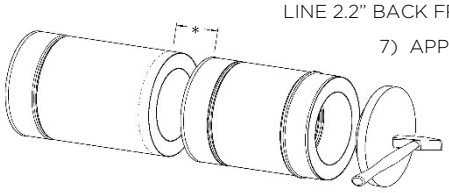
3) MEASURING UP FROM THE INLET END OF THE CUT LENGTH, MARK AND CREATE A LINE AROUND THE PERIMETER OF THE CUT LENGTH AT THE DESIRED LOCATION FOR THE CUT.



4) USING THE LINE AS A GUIDE, CUT THE EXTRA MATERIAL (OUTER WALL, INSULATION, AND INNER LINER) AWAY LEAVING THE DESIRED OVERALL LENGTH.

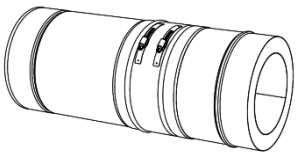
5) DEBURR THE EDGES OF THE INNER AND OUTER CUT.

6) ON THE OUTER WALL OF THE CL, MEASURE AND CREATE A SECOND LINE 2.2” BACK FROM THE CUT END.



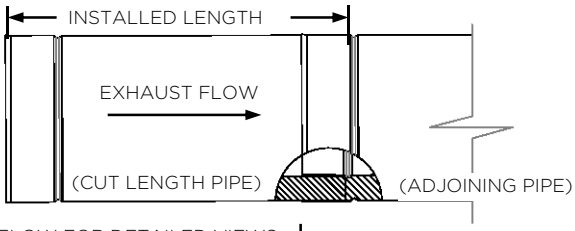

7) APPLY KL PASTE TO THE OUTER SURFACE OF THE CONNECTING INNER PIPE.

8) TAP THE ADJOINING LENGTH OR CUT LENGTH INTO PLACE USING THE SUPPLIED WOOD PLATE. PROPER ENGAGEMENT IS ACHIEVED WHEN THIS DIMENSION (*) BECOMES ZERO.

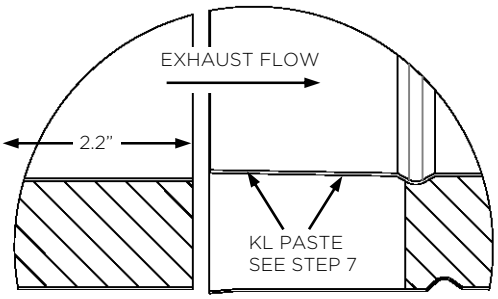


9) INSTALL THE LOCKING BAND (LB) FROM THE ADJOINING PIPE SECTION OVER THE FIELD CUT JOINT LOCATION.

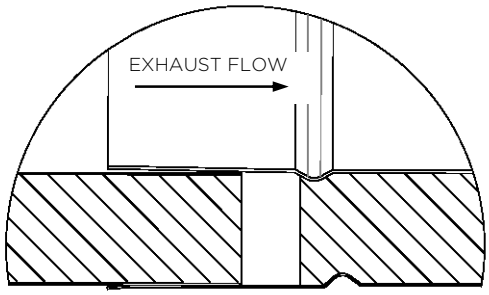
Figure 3-6, Cut Pipe Length Joint Detail



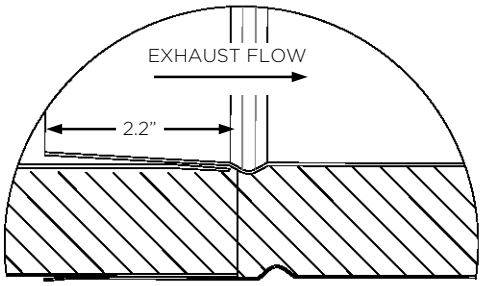

SEE BELOW FOR DETAILED VIEWS OF THE JOINT ASSEMBLY.




MARK 2.2” FROM THE END OF CUT BEFORE BEING INSERTED INTO THE CONNECTING PIPE CONICAL INLET.




CUT END STARTS TO ENGAGE AT 1.2” INTO OTHER PIPE.




CUT END IS FULLY ENGAGED (2.2”) BY TAPPING THE PIPES TOGETHER UNTIL THE OUTLET END OF THE CUT LENGTH IS FULLY ENGAGED (CREATING A TIGHT SEAL) INTO THE CONICAL INLET OF THE CONNECTING PIPE. FOR DWKL THIS OCCURS WHEN THE OUTER WALL OF THE CONNECTING PIPE ENGAGES TO THE CUT LENGTH OUTER WALL LINE CREATED IN STEP 6.

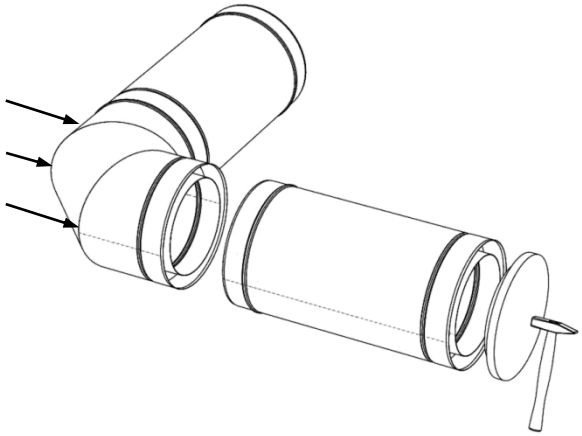
LOCKING BAND IS NOT SHOWN FOR CLARITY.

# PART 4 – FITTINGS, TEE CAPS, & INCREASERS

## SPECIAL CONSIDERATION FOR INSTALLING FITTINGS

When tapping the pipe length into the fitting, 2nd person must hold the fitting in place from behind.

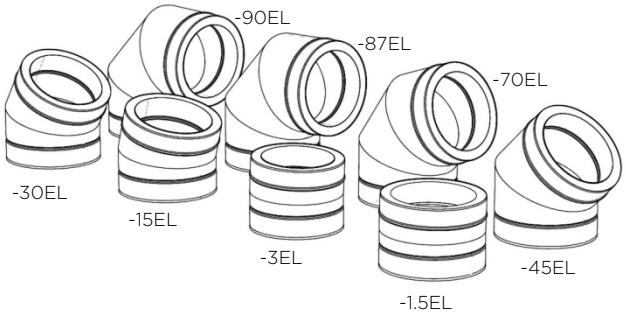
Figure 4-1, Special Consideration for Fittings



## 1.5°, 3°, 15°, 30°, 45°, 70°, 87°, & 90° ELBOW (__EL)

Elbows may be used singular or in combination to provide changes in direction.

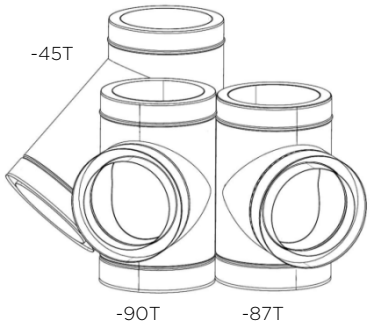
Figure 4-2, 1.5°, 3°, 15°, 30°, 45°, 70°, 87°, & 90° Elbows




## 45°, 87°, & 90° TEE (__T)

Used as a manifold entry Tee, offset with one of the access cap options, or base Tee with one of the drain tee caps options. Snout can be same or any size smaller than the body.

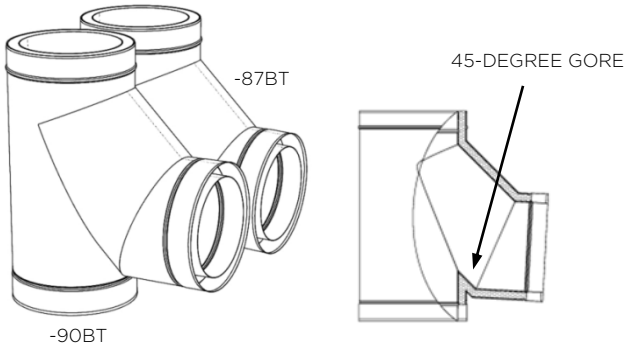
Figure 4-3, 45°, 87°, & 90° Tees




## 87° & 90° BOOT TEE (__BT)

Jeremias Boot Tees offer the added 45-degree gore that directs the flue gases towards the outlet at a 45-degree angle. Most others still allow the flue gases to enter the outlet branch at 90-degrees. Snout can be same or any size smaller than the body.

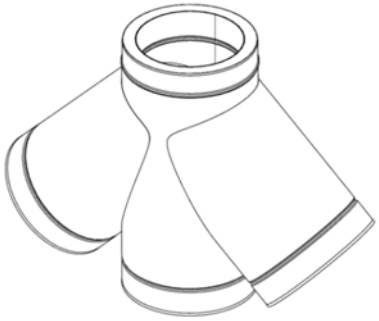
Figure 4-4, 87° & 90° Boot Tee (__BT)




## 45° DOUBLE TEE (45DT)

Used as a two-way manifold entry Tee, offset with one or two of the access cap options, or base Tee with one of the drain tee caps options. Snouts can be any size smaller than the body.

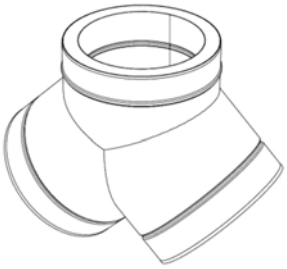
Figure 4-5, 45° Double Tee



## 90° WYE TEE (90WT)

Used for two-way entries where a tee cap or access cannot be used due to the application or as a 90° that can have an access cap at the middle.

Figure 4-6, 90° Wye Tee



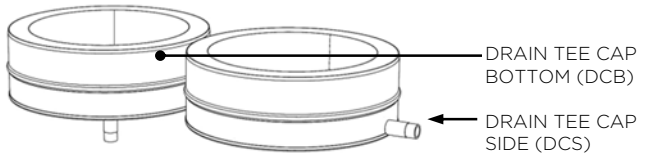
# PART 4 – FITTINGS, TEE CAPS, & INCREASERS

## DRAIN TEE CAPS (DCB & DCS)

Two styles of Drain Tee Caps are available. Each includes a 1" NPT Nipple for a drain line attachment by the installing contractor.

The DCB (B for Bottom) has the nipple at the base. The DCS (S for Side) has the nipple on the side which is convenient in certain applications where the horizontal appliance outlet is very low to the floor.

Figure 4-7, Drain Tee Caps

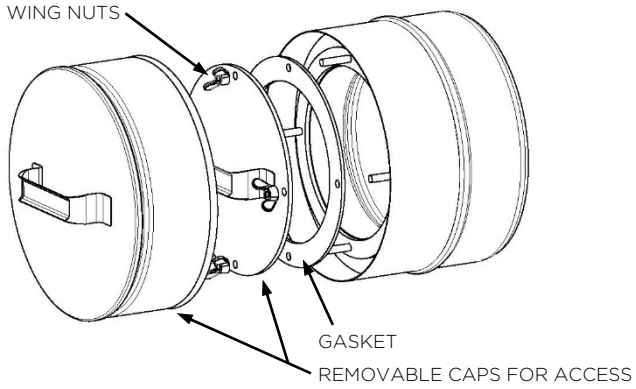



## TEE CAP ACCESS (TCA)

Tee Cap Access permits access to the inside flue for inspection and/or cleaning. It can be placed at the end of a snout of any three or four-way fitting.

Gasket and hardware are included so that the internal cap may be removed and reinstalled.

Figure 4-8, Tee Cap Access



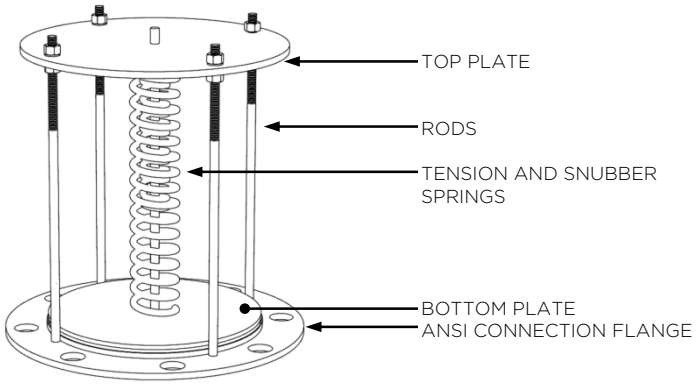

## PRESSURE RELIEF VALVE (PRV)

The Pressure Relief Valve (PRV) incorporated as part of the Jeremias Inc. DWKL and SWKL product offering for engine exhaust applications is the same type and construction as pressure relief valves that have been used for engine exhaust applications in North America and other parts of the world for decades.

Pressure relief valves are recommended by Jeremias Inc. and (other chimney manufacturers) on their chimneys - when used for engine exhaust applications - in order to provide protection in the unlikely, but possible, event of a delayed ignition of unburnt fuel in the system due to a malfunction of the engine. NFPA37 the "Standard for Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines" specifies the use of such a device in chimneys used for engine exhaust applications.

At present (June 2014), Underwriters Laboratories, Inc. (UL) has no safety standard for these devices so although they are shown in this document and condoned by NFPA, Jeremias Inc. and others, UL has not independently investigated this product.

Figure 4-9, Pressure Relief Valve




## OPTION TO REINFORCE FITTINGS

An option to requiring the use the Pressure Relief Valve in engine exhausts is to add external reinforcement to each fitting in the system.

This is accomplished by using the Anchor Plate Support (APS) on the entry and exit sides and then reinforcing with external 2" x 2" x ¼" angle. Use the Heavy Duty Base (HDB) to minimize field supplied framework.

Figure 4-10, Example of Reinforcing an Elbow

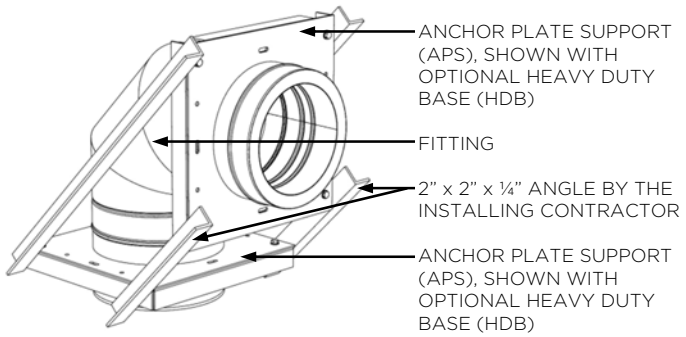
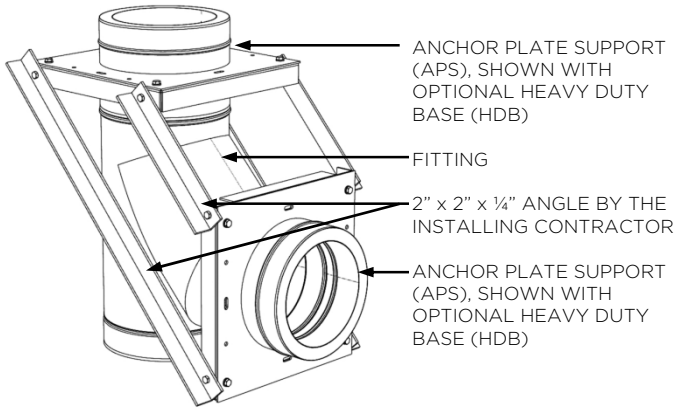



Figure 4-11, Example of Reinforcing a Boot Tee



# PART 4 – FITTINGS, TEE CAPS, & INCREASERS

## INCREASERS AND REDUCERS

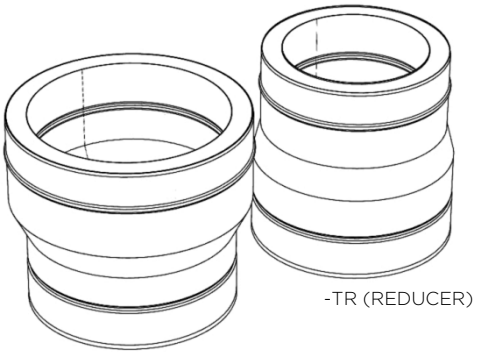
Reduction fittings are typically used in manifold applications when needed. There are many options for increasers and reducers.

## TAPERED INCREASER & REDUCER (TI & TR)

Tapered Increasers and Reducers keep the same centerline.

Be cautious of using these in the horizontal, due to increased or decreased diameter changes this will cause a low point in the exhaust where condensate can trap. Use the Eccentric increaser and reducer in horizontal installations instead.

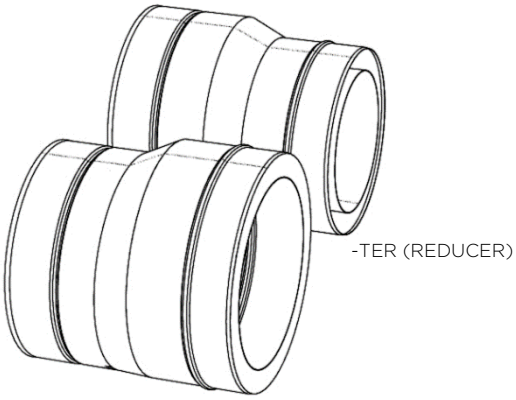
Figure 4-12, Tapered Increaser and Reducer




## TAPERED ECCENTRIC INCREASER & REDUCER (TEI & TER)

Tapered Eccentric Increasers and Reducers keep the same low point, or are flat on bottom. They also create a slight centerline offset if used in the vertical installation.

Figure 4-13, Eccentric Increaser and Reducer

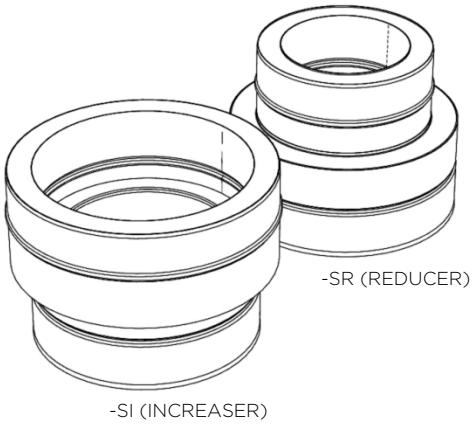



## STEPPED INCREASER & REDUCER (SI & SR)

Stepped Increasers and Reducers can be used in tight situations and are available in all steps.
The stepped increasers and reducers are non-structural part and must not be subject to loads in either the axial or lateral directions.

Be cautious of using these in the horizontal. Increased or decreased diameter changes will cause a low point in the exhaust where condensation can trap. Use the Eccentric increaser and reducer parts in horizontal installations instead.

Figure 4-14, Stepped Increaser & Reducer

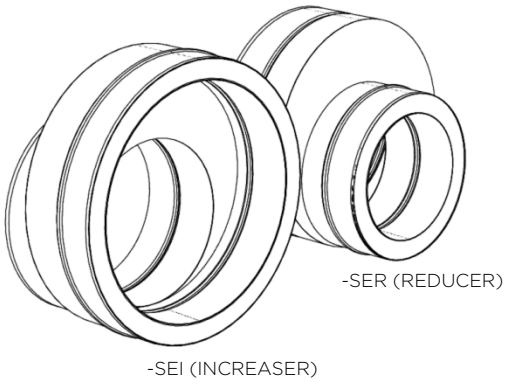



## STEPPED ECCENTRIC INCREASER & REDUCER (SEI & SER)

Stepped Eccentric Increasers and Reducers can be used in tight situations and are available in all steps.

The Stepped Eccentric Increasers and Reducers are non-structural part and must not be subject to loads in either the axial or lateral directions.

Figure 4-15, Stepped Eccentric Increaser and Reducer



# PART 5 – ADAPTERS & TERMINATIONS

## START & END ADAPTERS

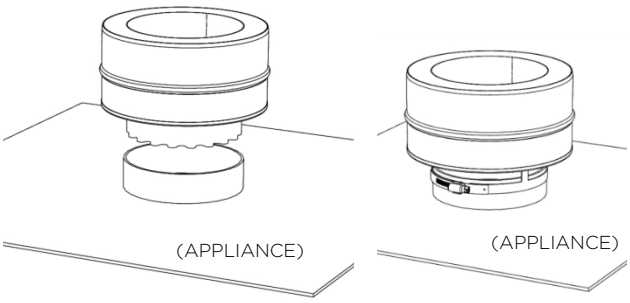
Since Models DWKL and SWKL are directional with flow, both START and END adapters are typically used in every application.

Up to 550°F flue gas temperatures use Dow Corning 736 or equivalent sealant. Above 550F use only appliance approved gaskets/blanket (that comes with equipment you are connecting to such as ANSI flange connections on engine and power generation equipment)

## RAW COLLAR ADAPTER (INSIDE) START & END (RCIS & RCIE)

Connects Models DWKL and SWKL to a nominal collar via flashing inside the appliance collar. Has a support clamp around the outside that rigidly holds the adapter in place. Use approved sealant for gas tight connection.

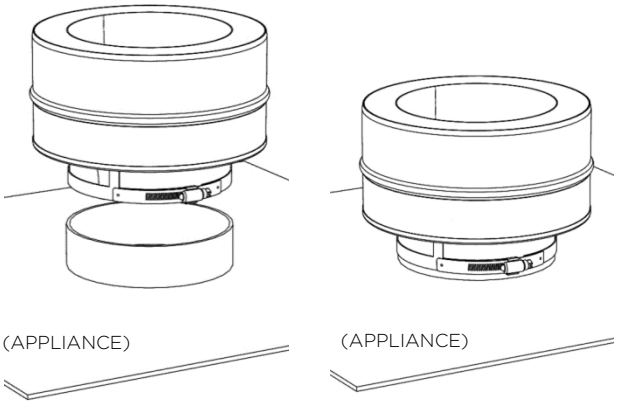
Figure 5-1, Raw Collar Adapter (Inside) Start & End




## RAW COLLAR ADAPTER (OUTSIDE) START & END (RCOS & RCOE)

Connects Models DWKL and SWKL to a nominal collar on the outside of the appliance collar. The adapter is split and uses hardware to tighten against the outside of the collar. Use approved sealant for gas tight connection.

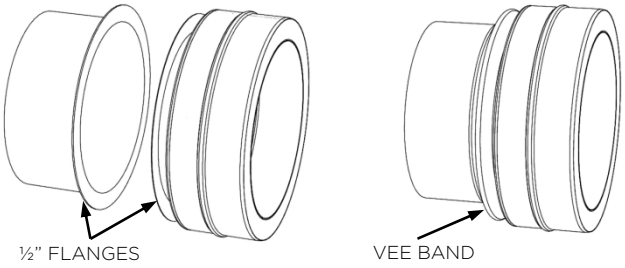
Figure 5-2, Raw Collar Adapter (Outside) Start




## FLANGE COLLAR ADAPTER START & END (FCS & FCE)

Connects SWKL and DWKL to any ½" flange, typical for many accessories and appliance connections. An optional vee band may be added to secure the flange in place. Use approved sealant for gas tight connection.

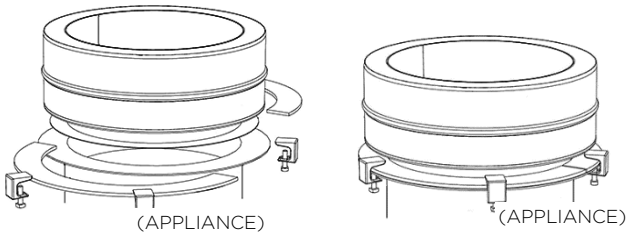
Table 5-3, Flange Collar Adapter with Optional Vee Band




## FLANGE COLLAR KIT (FCK)

Connects SWKL and DWKL to any flanged appliance outlet and includes a split plate and beam clamps. Use approved sealant for gas tight connection

Table 5-4, Flange Collar Kit

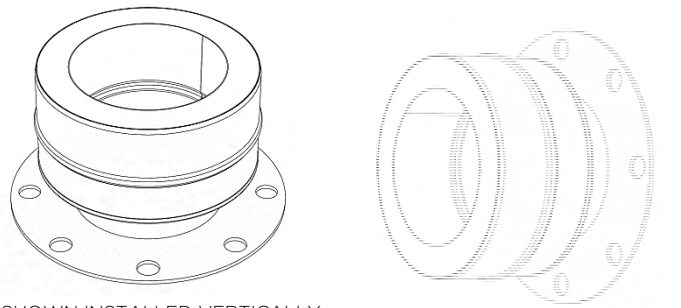



## 125/150 LB. ANSI FLANGE START & END (AFS & AFE)

125/150 ANSI Flange Start and End are typically used to connect to and from engine and cogeneration equipment.

These items do not come with hardware and gasket for the ANSI flange connection. These are typically supplied by the equipment you are connecting to.

Figure 5-5, 125/150 Lb. ANSI Flange Start & End



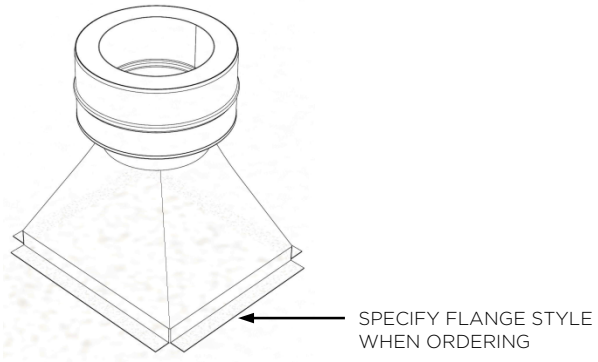
# PART 5 – ADAPTERS & TERMINATIONS

## TRANSITION TO ROUND START & END (TRS & TRE)

Used to connect to and from rectangular or square outlets on hood, fans, or auxiliary equipment. Transitions are custom made to order for project requirements.

The rectangular or square base can be made in accordance with NFPA-96 no-weld hood connection, or may be field welded by the installing contractor.

Figure 5-6, Transition to Round Start & End

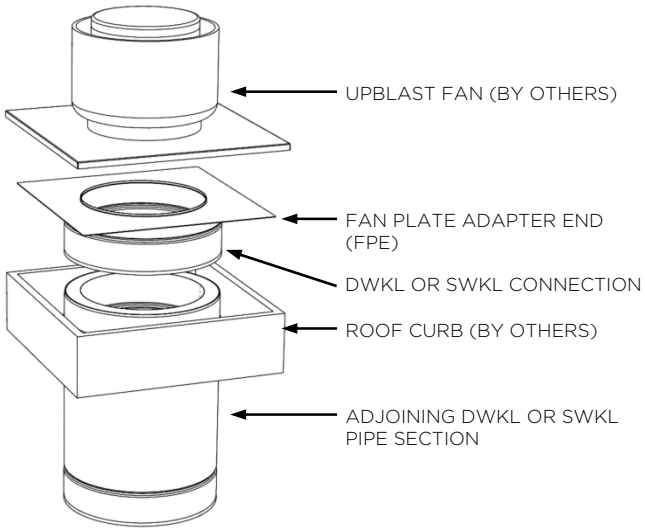



## FAN PLATE ADAPTER START & END (FPS & FPE)

This is a heavier gauge flat plate that can be used to start at a masonry fireplace outlet, or to attach a chimney fan or fan curb housing at the termination.

When used as a Fan Plate Adapter End (as shown in below Figure 5-7), the flat plate is designed to set directly on top of the roof curb (by others). The installing contractor uses bolts or screws through the plate into the curb.

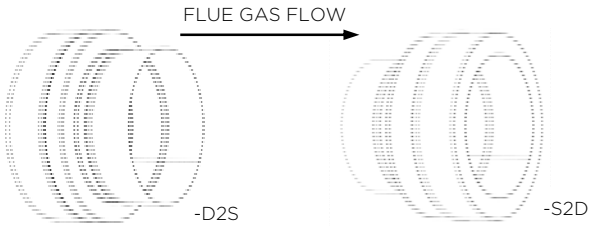
Figure 5-7, Fan Plate Adapter End




## DWKL TO SWKL & SWKL TO DWKL ADAPTERS (D2S & S2D)

These adapters allow a smooth transition to and from DWKL double wall and SWKL single wall. They may be installed vertically or horizontally.

Figure 5-8, DWKL/SWKL Adapters




## TERMINATIONS

See GENERAL INFORMATION for termination height above roof requirements.

There are two options to most terminations:
1) No Screen (N) or With Screen (S)
2) Low Temperature or High (H) Temperature

Jeremias uses 1" x 1" x 0.059" thick stainless steel wire mesh for termination screens. The purpose of a screen is to not allow debris or personnel into the exhaust and also used to restrict rodents or birds from entering the exhaust.

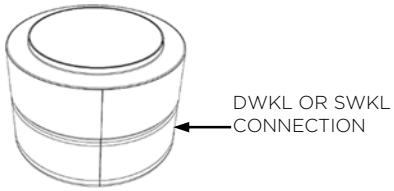
Model DWKL inner pipe will expand to a much greater length than the outer jacket. Some terminations are purposely designed to compensate for this expansion. Low temperature means any application that would have less than ½" expansion. High temperature means where expansion could be more than ½" but not greater than 6" of expansion between the inner and outer pipes.

## OPEN TERMINATION (OTN, OTNH, OTS, & OTSH)

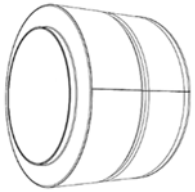
An Open Termination that is unrestrictive. Used in both vertical and sidewall scenarios. Use the Universal Drain Length (UDL) or Drain Tee Cap (DCB or DCS) below to drain rainwater from the exhaust.

The open Termination connects to the Model DWKL or SWKL pipe using a standard Locking Band (LB)

Figure 5-9, Open Termination




OTN SHOWN INSTALLED VERTICALLY



OTN SHOWN INSTALLED HORIZONTALLY

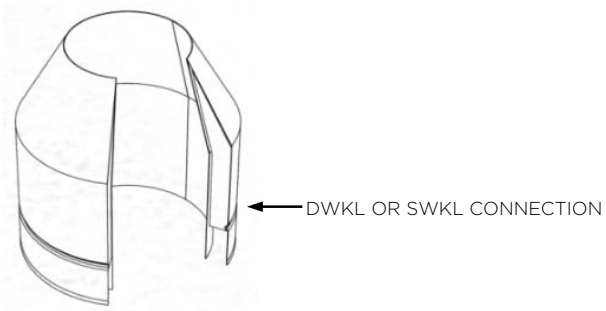
# PART 5 – ADAPTERS & TERMINATIONS

## EXIT CONE (EC & ECH)

The Exit Cone increases velocity by 50%. Use the Universal Drain Length (UDL) or Drain Tee Cap (DCB or DCS) below to drain rainwater from the exhaust.

The Exit Cone connects to the Model DWKL or SWKL pipe using a standard Locking Band (LB).

Figure 5-10, Exit Cone



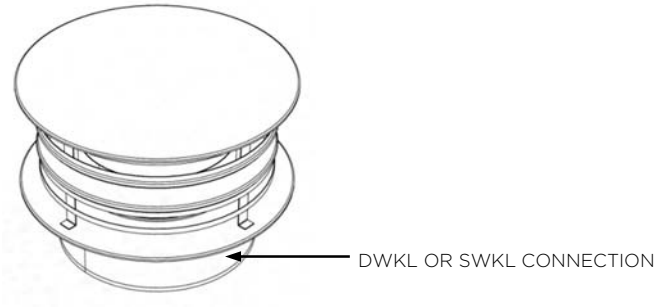

ECH SHOWN INSTALLED VERTICALLY

## HIGH WIND RAIN CAP (WRC)

This cap helps to reduce downdraft on gravity equipment and provides best rain protection.

The High Wind cap connects to the Model DWKL or SWKL pipe using a standard Locking Band (LB).

Figure 5-12, High Wind Cap



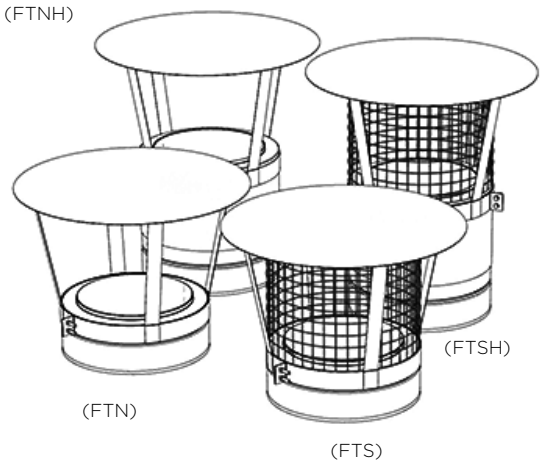

## FLAT TOP RAIN CAP (FTN, FTNH, FTS, & FTSH)

A basic flat top rain cap.

Part includes an Open Termination (OTN or OTNH) and shipped completely assembled. The top may be field removed if access is required

The Flat Top Rain Cap connects to the Model DWKL or SWKL pipe using a standard Locking Band (LB).

Figure 5-11, Flat Top Rain Cap options



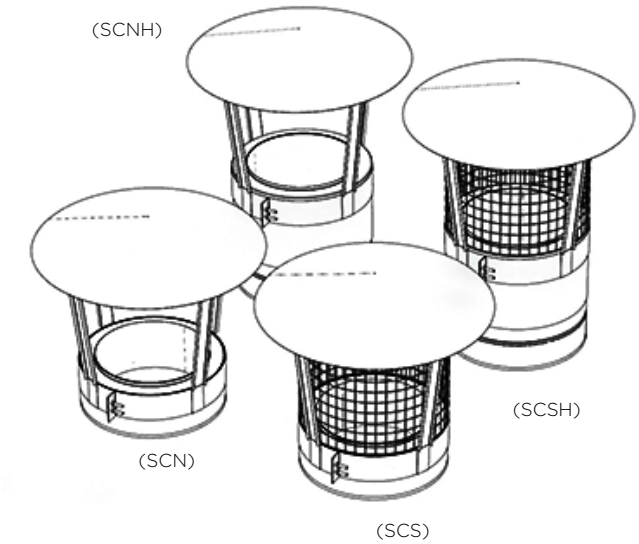

## STACK CAP (SCN, SCNH, SCS, & SCSH)

An ASHRAE style of rain cap, also known as china cap, has an inverted cone to help disperse flue gases and to provide a lower pressure drop.

Part includes an Open Termination (OTN or OTNH) and shipped completely assembled. The top may be field removed if access is required.

The Stack Cap connects to the Model DWKL or SWKL using a standard Locking band (LB).

Figure 5-13, Stack Cap options



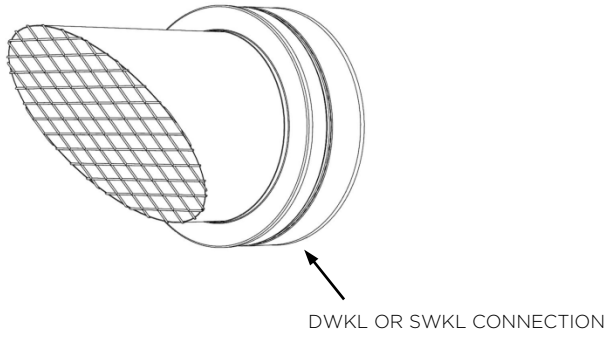
# PART 5 – ADAPTERS & TERMINATIONS

## MITER CUT TERMINATION W/ SCREEN (MCS & MCSH)

The Miter Cut Termination is typically used in horizontal venting and engine exhaust systems.

The Miter Cut Termination connects to the Model DWKL or SWKL using a standard Locking band (LB).

Figure 5-14, Miter Cut Termination




## ENGINE FLIP TOP (EFT & EFTH)

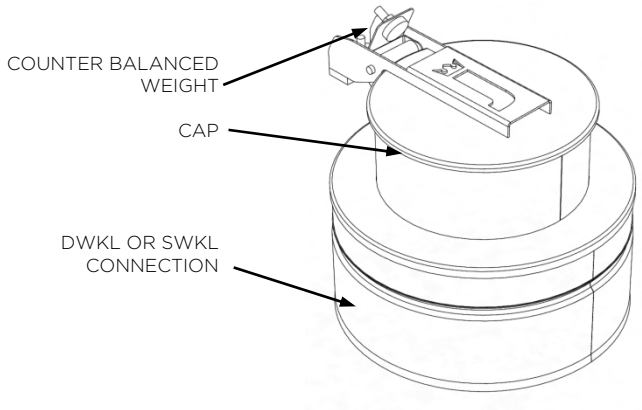
The Engine Flip Top / termination cap (EFT) shown herein and incorporated as part of the Jeremias Inc. DWKL and SWKL product offering is the same type and construction of cap that has been used for engine exhaust applications in North America and other parts of the world for decades.

At present (June 2014), Underwriters Laboratories, Inc. (UL) has no safety standard for these devices, so although they are shown in this document and condoned by Jeremias and others, UL has not independently investigated this product

The Engine Flip Top is designed to be installed either on a vertical or horizontal exhaust. If installed in a horizontal configuration, the hinge must be on the top side. A counter balanced weight opens the cap when there is a slight exhaust pressure.

The Engine Flip Top connects to the Model DWKL or SWKL using a standard Locking band (LB).

Figure 5-15, Engine Flip Top




## NO-LOSS WEATHER HEAD (NLWH)

The No-Loss Weather Head (NLWH) incorporated as part of the Jeremias Inc. DWKL and SWKL product offering is the same type and construction as no loss weather head style terminations used for chimney applications in North America and other parts of the world for decades.

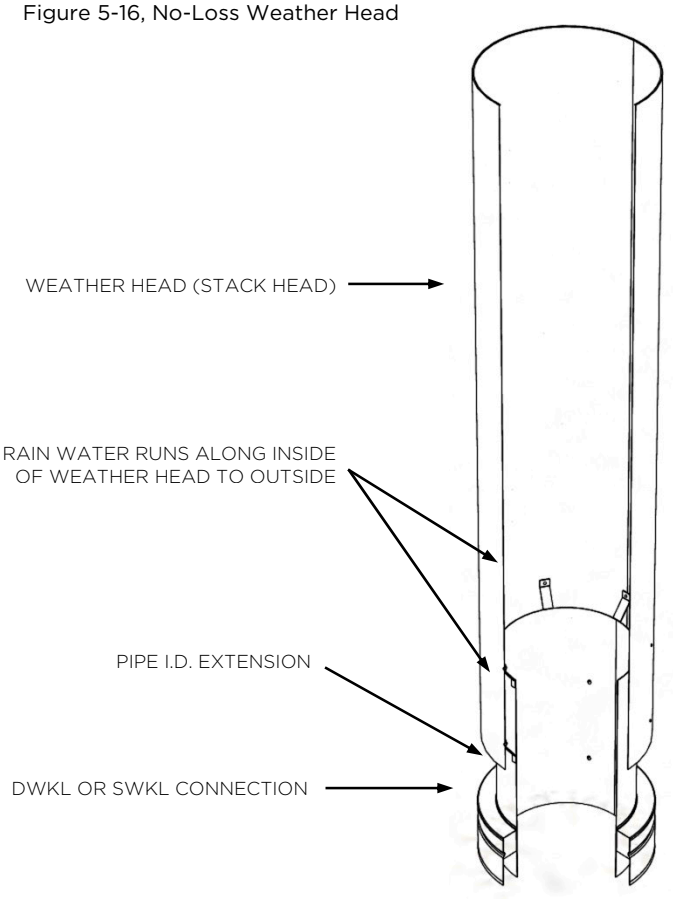
It is a very popular style of termination that provides the unique combination of appreciable rain protection without any obstruction to the vertical exit of the flue gases. It is detailed in American Conference of Governmental Industrial Hygienists (ACGIH) and American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) handbooks.

At present (June 2014), Underwriters Laboratories, Inc. (UL) has no safety standard for these devices so although they are shown in this document and condoned by NFPA, Jeremias Inc. and others, UL has not independently investigated this product.

If the total height exceeds the freestanding distance (Dimensions C) as shown in Section 2 – Support and Guiding, the structural engineer should support and guy the No-Loss Weather Head in accordance with good engineering practice to suit each specific application.

The No-Loss Weather Head incorporates the Open Termination (OTN) at the base and connects to the DWKL or SWKL pipe using a normal Locking Band (LB).

Figure 5-16, No-Loss Weather Head



# PART 6 – THIMBLE & FLASHINGS

## THIMBLE IS FOR DOUBLE WALL ONLY

The thimble in this section is for Model DWKL Double Wall chimney applications only. Model SWKL Single Wall has not been evaluated by UL for use with any thimble. See NFPA-211 for requirements and limitations of use of Model SWKL as a chimney.

## THIMBLE & FLASHINGS OPTIONS

Thimble, Flashings and Storm Collars – Use / Selection

1) **High Temperature Thimble** (HTT) – Required for all chimney applications passing through combustible roofs.
2) **Flat Roof Flashing** (FRF) – For flat roofs. Fits over HTT and used for 1000F max continuous applications. Also permitted for use when the entire roof penetration is non-combustible.
3) **Pitched Roof Flashing** (PRF) – For sloped roofs. Fits over HTT and used for 1000F max continuous applications. Also permitted for use when the entire roof penetration is non-combustible.
4) **Storm Collar** (SC) – For use with FRF and PRF.
5) **Flat Cone flashing** (FCF) – For flat roofs. Permitted for use when the entire roof penetration is non-combustible.
6) **Pitched Cone flashing** (PCF) – For sloped roofs. Permitted for use when the entire roof penetration is non-combustible.
7) **Storm Collar for Coned Flashings** (SCCF) – For use with FCF and PCF.
8) **Ventilated Roof Flashing** (VRF) – For flat roofs. Fits over HTT and used for 1400F max continuous applications. (This version is required if flue gases exceed 1000F)
9) **Ventilated Storm Collar** (VSC) – For use with VRF.

## HIGH TEMPERATURE THIMBLE (HTT)

This roof thimble provides safe installation against combustible materials. It is part of the Unvented and Vented Roof Assemblies (see Figures 6-6 and 6-7).

The thimble is fiber insulated and includes a lateral pipe guide with hardware at the top. The thimble extends down 12" from the installation brackets. Hardware to connect brackets to the roof is not included.

Figure 6-1, High Temperature Insulated Thimble (HTT)

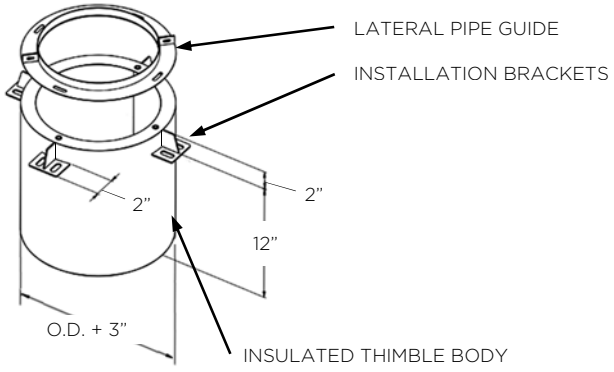
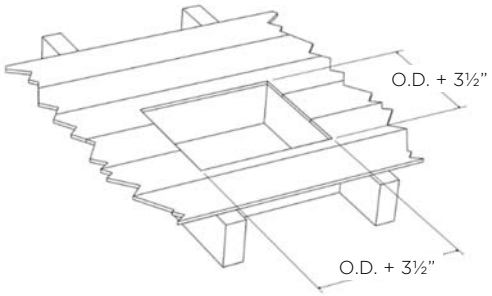



Figure 6-2, Roof Framing for Insulated Thimble




## ROOFS WITH A SLOPE OR PITCH

When using the roof thimble with sloped roof construction, the installing contractor has two choices:

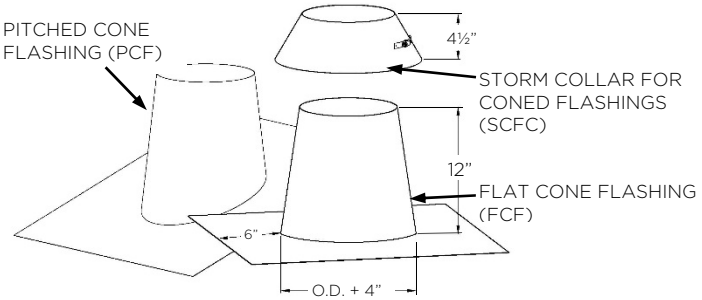
1) Fabricate a flat, horizontal curb for installation of the roof thimble shown. The curb extends out from the high side of the roof opening.
2) Order a special version of the roof thimble that has the brackets factory installed to match the desired roof pitch.

In all cases, it is important to insure that the thimble body extends down at least 1" past the lowest portion of the roof framing when installed. Thimbles with extended length bodies are available on special request from the factory.

## FLAT & PITCHED CONE FLASHINGS (FCF & PCF) & STORM COLLAR (SCCF)

The Flat Cone Flashing and Pitched Cone Flashing can be used for non-combustible construction. The Storm Collar for Coned Flashings flashes above the Cone Flashings and is sealed to the outer jacket (but not attached to the flashing permitting expansion).

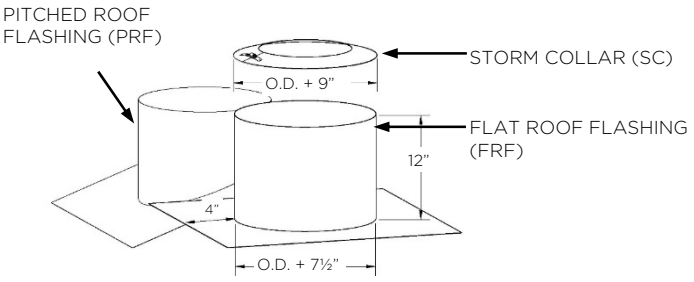
Figure 6-4, Flat & Pitched Cone Flashings and Storm Collar




## FLAT & PITCHED ROOF FLASHINGS (FRF & PRF) & STORM COLLAR (SC)

The Flat Roof Flashing and Pitched Roof Flashing can be used for non-combustible construction and also fit over the High Temperature Thimble (HTT) as part of the Roof Assembly with Thimble. The Storm Collar flashes above the roof flashing and is sealed to the outer jacket (but not attached to the flashing permitting expansion).

Figure 6-3, Flat & Pitched Roof Flashing and Storm Collar



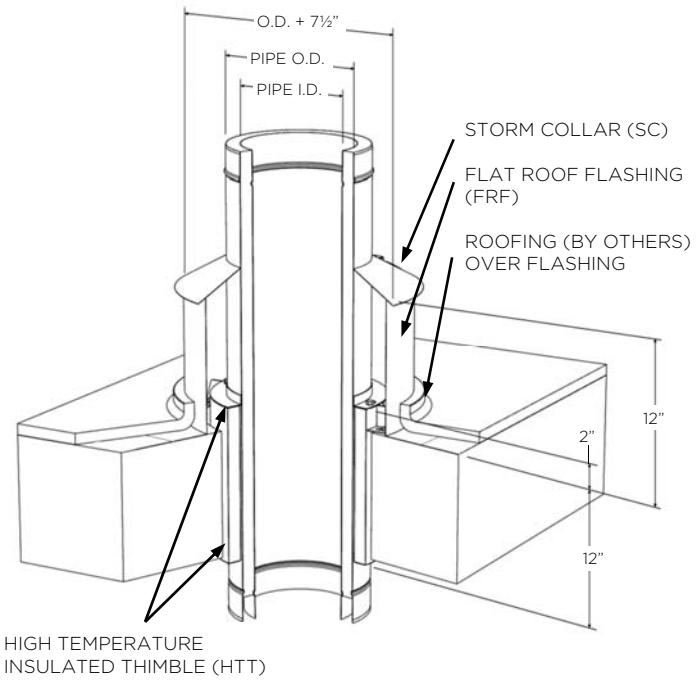
# PART 6 – THIMBLE & FLASHINGS

## UNVENTED ROOF ASSEMBLY

For all UL-103 applications (1000°F maximum continuous temperature), UL has determined the High Temperature Insulated Thimble (HTT) alone, without ventilation, provides a safe installation through a combustible roof or wall.

In this manner, the Flat Roof Flashing (FRF) in conjunction with the standard Storm Collar (SC) is used.

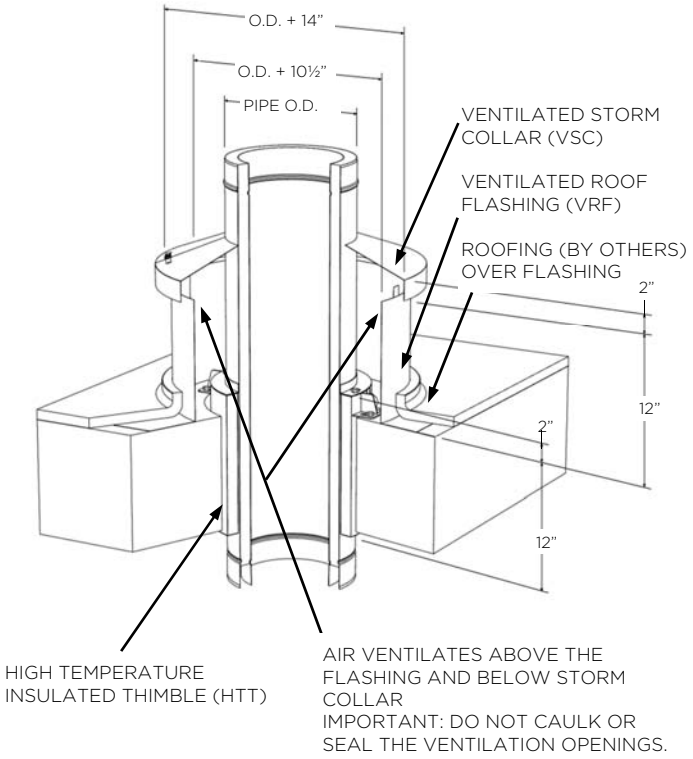
Figure 6-6, Unvented Roof Assembly




## VENTILATED ROOF ASSEMBLY

Ventilated Roof Flashing (VRF) and the Ventilated Storm Collar (VSC) are used in conjunction with the HTT High Temperature Insulated Thimble to provide a safe penetration through a combustible roof for all UL-2561 applications (1400°F maximum continuous temperature).

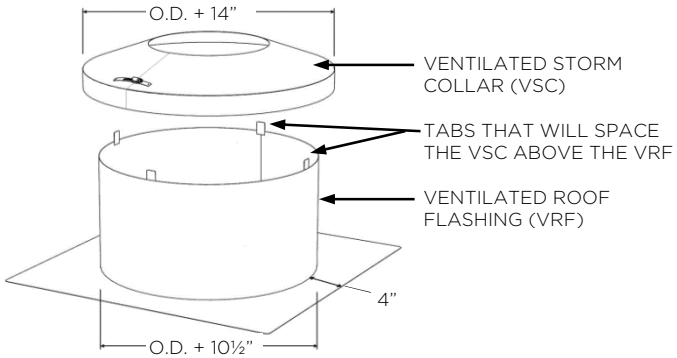
Figure 6-7, Ventilated Roof Assembly




## VENTILATED ROOF FLASHINGS (VRF) & VENTILATED STORM COLLAR (VSC)

The Ventilated Roof Flashing is larger than the Flat Roof Flashing and incorporates tabs to allow air to flow under the Ventilated Storm Collar

Figure 6-5, Ventilated Roof Flashing and Storm Collar



# PART 6 – THIMBLE & FLASHINGS

## HEAT SHIELD FOR DWKL (HSDW)

The Heat Shield is a light weight ventilated shield intended to lower the skin temperature of an installed DWKL double wall exhaust system where personnel might be able to touch the installed exhaust system.

The Heat Shield has been UL evaluated to provide a maximum of 70°F rise skin temperatures with flue gas temperatures at 1000°F continuous or less.

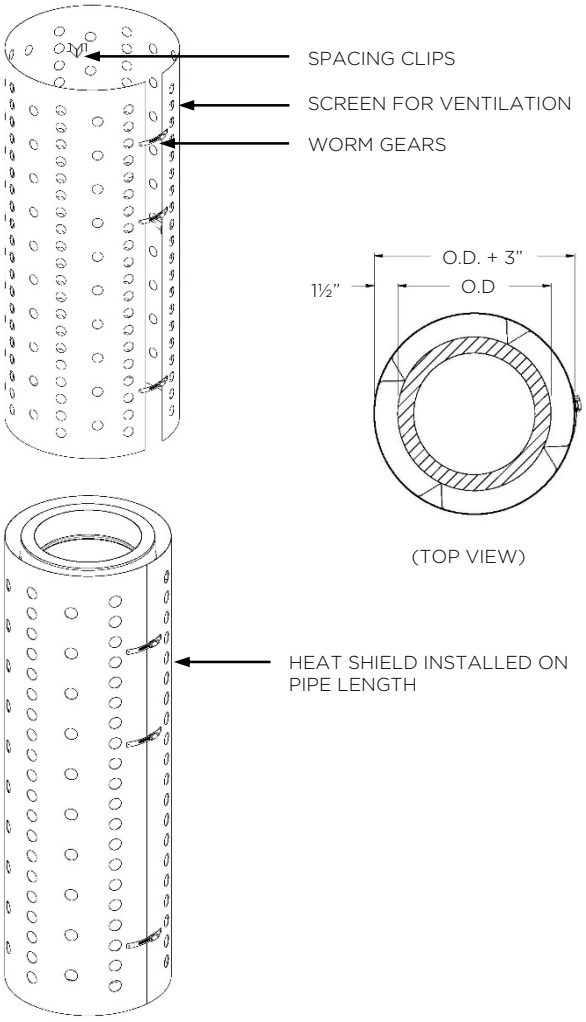
IMPORTANT:

- Not for use with single wall SWKL system.
- Not used to change required surroundings and air space clearance to combustibles as shown in Part 1 General Information.

The Heat Shield consists of a ventilated shell that wraps around an installed DWKL pipe. Spacing clips center the Heat Shield around the DWKL pipe.

The Heat Shield increases the DWKL outside diameter by 3". Total width of the DWKL insulation and added Heat Shield, or distance from inside of pipe to outside of installed Heat-Shield is 2¾".

Figure 6-8, Heat Shield




Installation Steps:

1. The DWKL system must be completely assembled and supported before installing the Heat Shield.
2. Unwrap the Heat Shield. The Heat Shield is factory packaged and delivered in a tighter roll (typically inside a DWKL pipe length, or by itself with straps holding its cylindrical shape).
3. Place Heat Shield around the installed DWKL pipe.
4. Tighten the worm gears to a snug fit, the spacing clips will hold the Heat Shield in place in both horizontal and vertical installations.

Multiple Heat Shields may be butted at ends or overlapped. If overlapped insure all holes remain open.

Figure 6-9, Vertical Installation Example

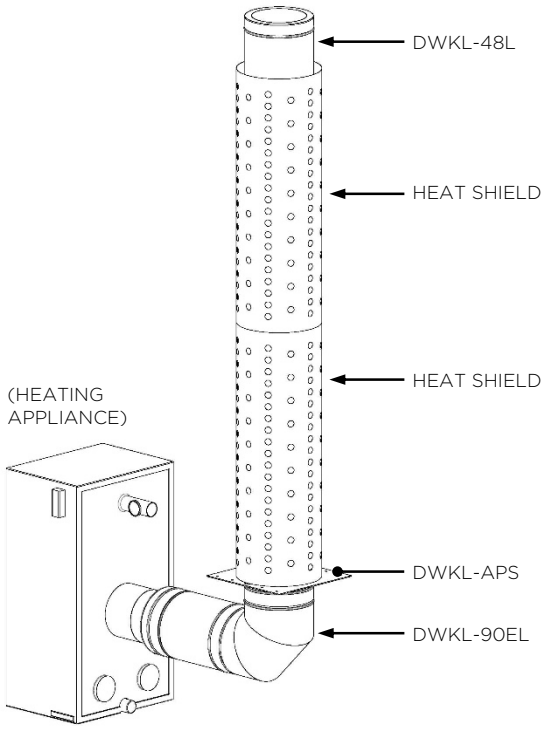
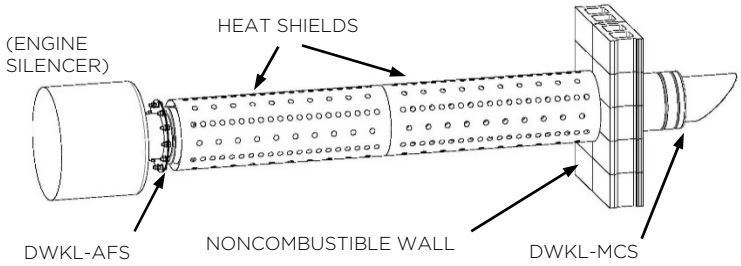


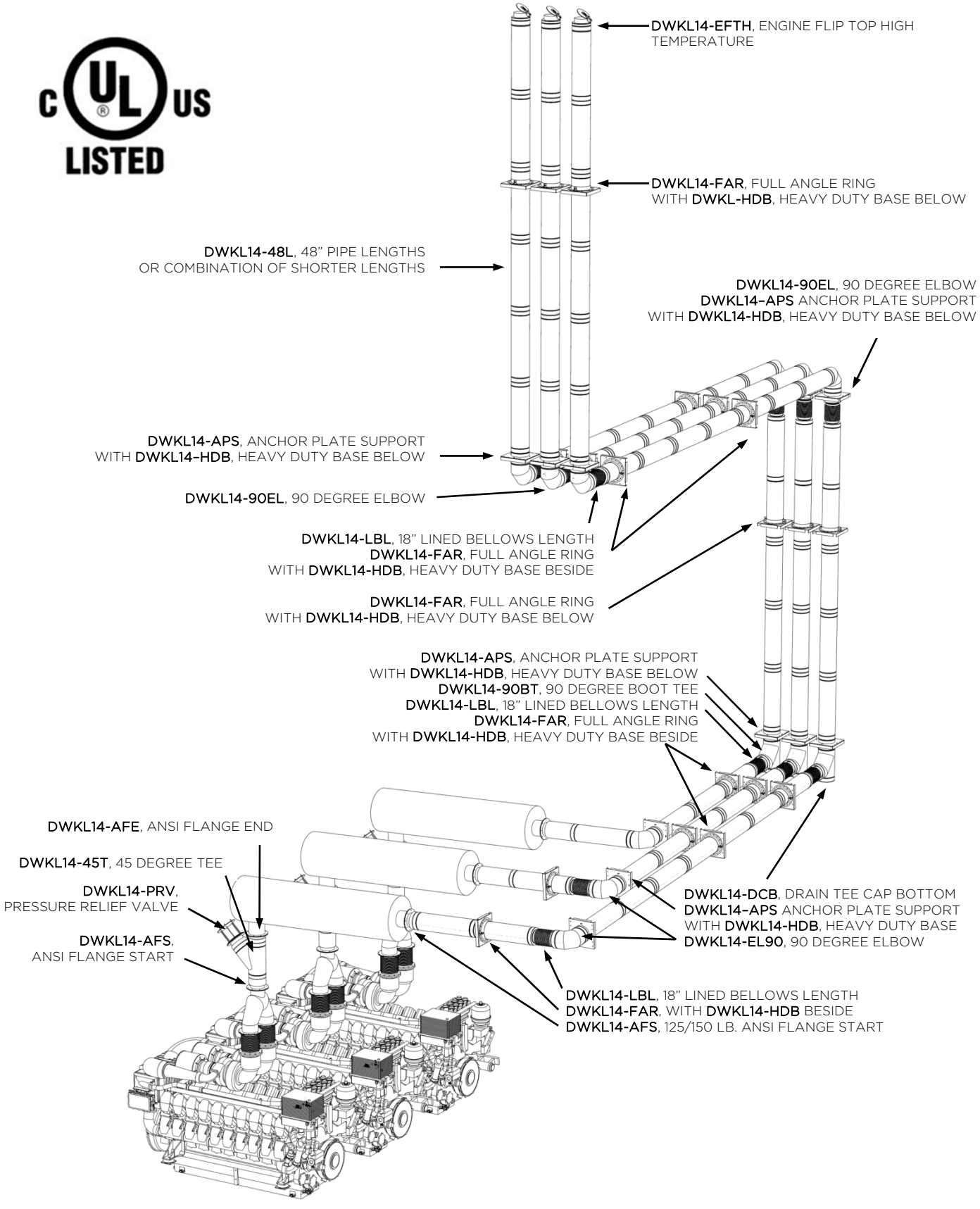

Figure 6-8, Horizontal Installation Example



# PART 7 – SAMPLE SYSTEMS

## DWKL ENGINE EXHAUST

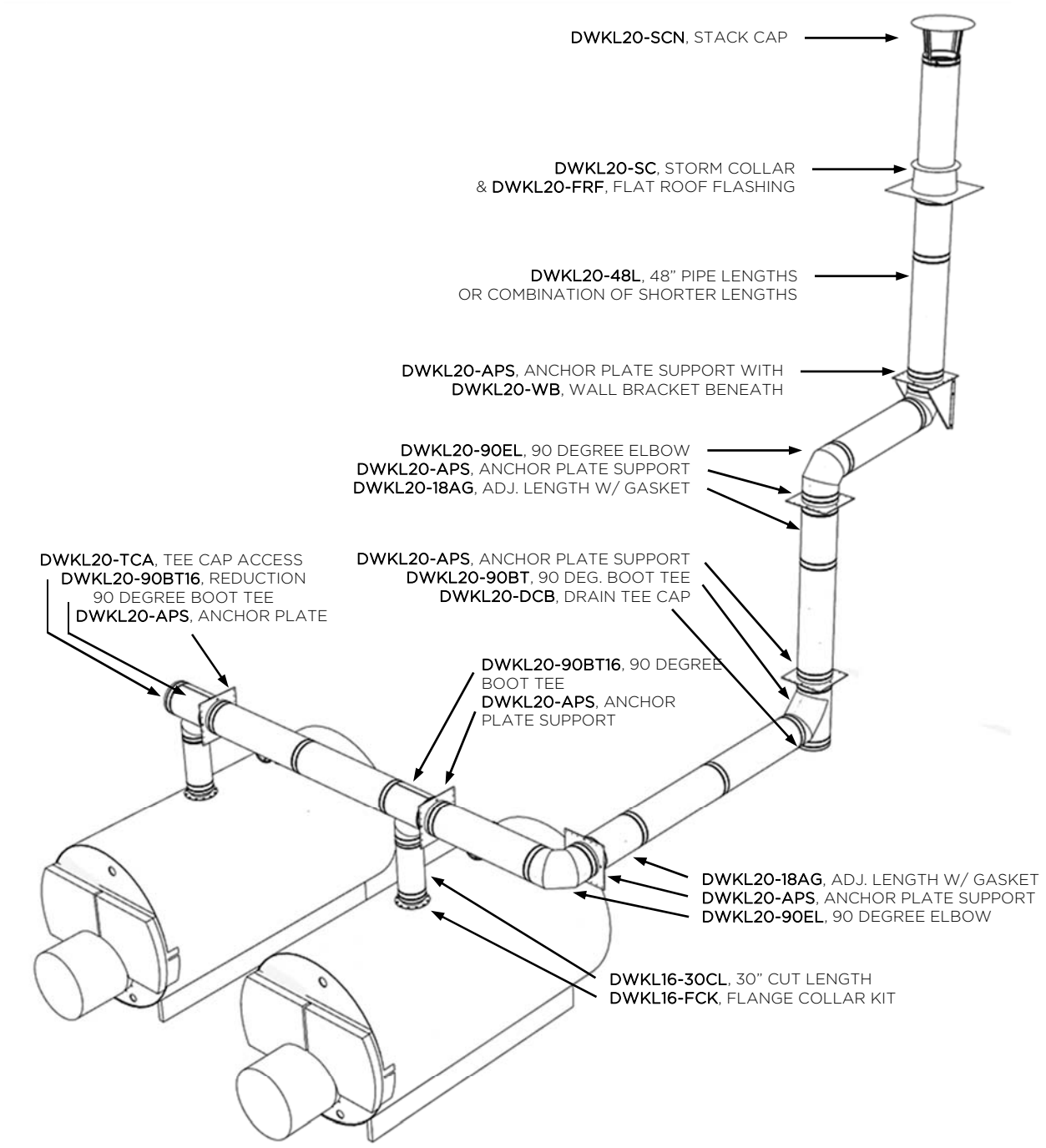
### THREE (3) 14" I.D. / 16 ½" O.D. EXHAUST SYSTEMS



# PART 7 – SAMPLE SYSTEMS

## DWKL BOILER STACK

**TWO (2) 16" I.D. INTO 20" I.D. / 22 ½" O.D. STACK**

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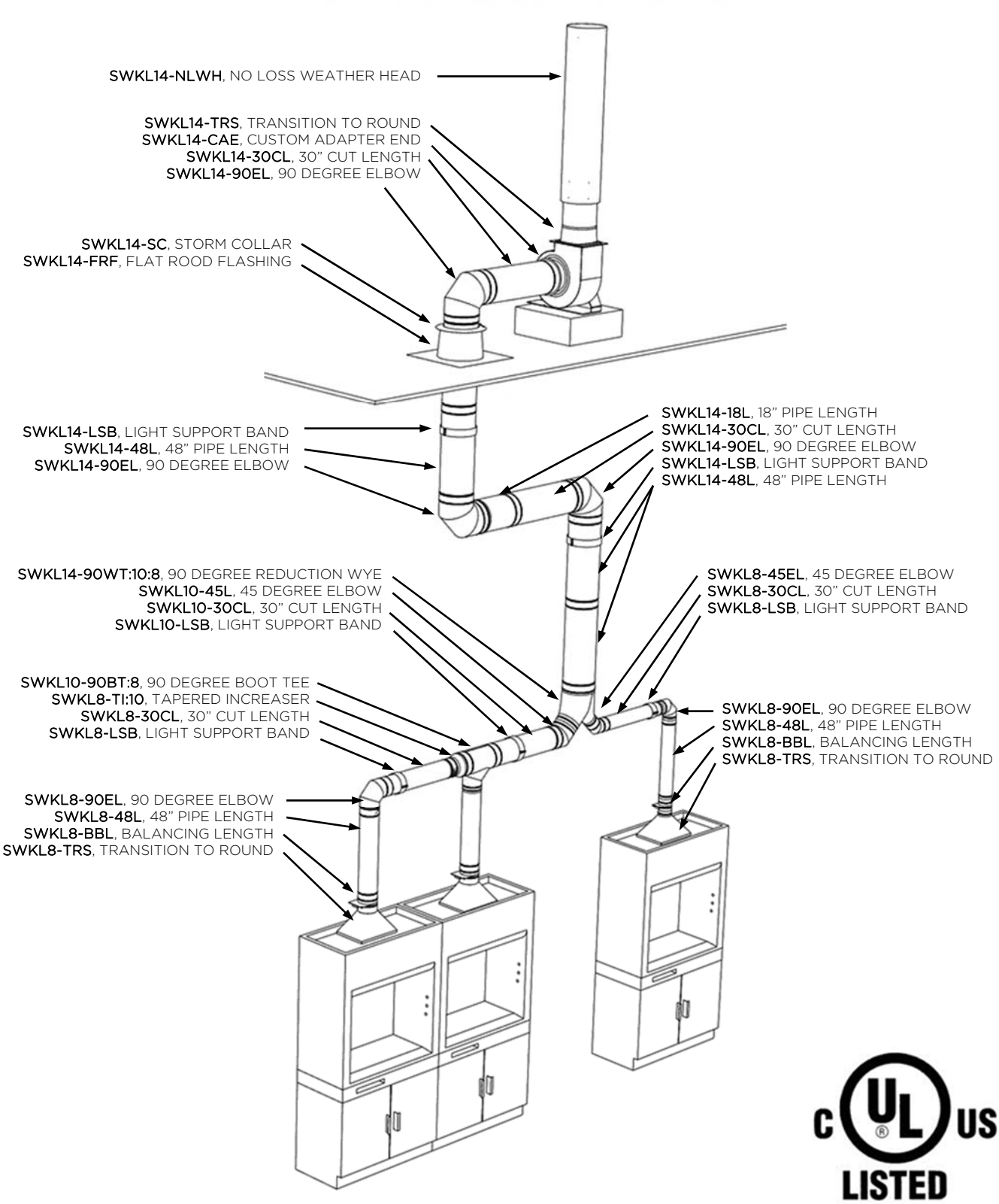
# PART 7 – SAMPLE SYSTEMS

## SWKL FUME HOOD EXHAUST

### THREE (3) 8" I.D. INTO 10" I.D. AND 14" I.D. SINGLE WALL EXHAUST

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# WARRANTY STATEMENT

## I. 1-Year Limited Warranty

Jeremias Inc. ("Jeremias") provides a 1-year limited warranty ("1-Year Limited Warranty") for its high pressure and high temperature exhaust systems, all variations of Models DWKL and SWKL (collectively, the "Products") for any defect in workmanship or materials under normal use from the date of shipment to the purchaser of Products ("Purchaser"), subject to the following conditions:

- Product sizing and specifications have been performed in accordance with generally accepted engineering practices.
- Correct installation and maintenance in full compliance with Jeremias' installation and maintenance instructions as published at the time of installation.

## II. Extended 25-Year Limited Warranty

Jeremias provides for an extended 25-year limited warranty ("25-Year Limited Warranty") for any defect in workmanship or materials under normal use from the date of shipment to the Purchaser, subject to the satisfaction of the following conditions:

- Products must have been designed and sized by Jeremias' personnel.
- Availability of a written inspection report from the time of installation, or timely thereafter, by a Jeremias inspector or an inspector authorized by Jeremias, that the Product assembly and installation conformed to all of Jeremias' assembly and installation instructions.
- Products were at all times operated and maintained in full compliance with Jeremias' operation and maintenance instructions as published at the time of installation or as later provided to Purchaser by Jeremias.

## III. Exclusion of Limited Warranty

The 1-Year Limited Warranty and the 25-Year Limited Warranty (collectively the "Limited Warranty") shall not cover (i) damages to: wear parts, e.g. seals; demonstration units; paintwork; moving parts, including but not limited to compensators, flue gas dampers, draught regulators, chimney, doors; flexible piping; insulation; consumables, such as granulates; minor Product deviations which do not effect functionality; or (ii) damages caused by: contamination of ambient air or combustion air by chlorinated hydrocarbons or other vapors which may cause excessively severe acid condensate to form within the Products; merchandise provided by other manufacturers; installation, transport or commissioning; Purchaser, an installer or other third parties; normal wear and tear; any party other than Jeremias in a willful manner; force majeure, including, but not limited to flood, fire or frost; non-compliance with the assembly, installation, operation and maintenance instructions available at www.JeremiasInc.com; assembly, installation, maintenance or repair by unqualified personnel; improper commissioning; use of Products not in accordance with their intended purpose; exposure of Products to any metals of an inferior quality; contamination of the Products between unpacking and assembly; burning of wood other than unpainted, natural wood, which has been stored for at least 3 years and which moisture level does not exceed 20%; or burning of chipboard or domestic waste.

## IV. Remedies

If a valid Limited Warranty claim arises, Jeremias shall, it its sole discretion, either repair the Product or deliver a properly functioning Product. This Limited Warranty is limited to repair or replacement of the Product plus shipping cost to the location of the defective Product. The Limited Warranty does not cover labor costs for removal or replacement of the defective Product, unless such labor shall be carried out by Jeremias itself in its sole discretion.

## V. Filing of a Limited Warranty Claim

Limited Warranty claims may only be asserted during the term of the applicable Limited Warranty period. Any extension of the term of the Limited Warranties shall be excluded, regardless of the legal basis. If Purchaser believes that there is a justified Limited Warranty claim, Purchaser shall notify Jeremias to that effect in writing. Any claims stemming from or relating to a Limited Warranty shall be asserted in detail within eight weeks after the discovery of the defect (the time when the notification is received by Jeremias will be the basis for determining whether a claim has been reported within this deadline) or else shall be excluded and not be recognized by Purchaser. Such notification shall include a description of the defect, original proof of purchase, and a copy of the written inspection report as described in Section II above (if applicable).

## VI. No Other Warranty

EXCEPT AS SET FORTH EXPRESSLY THEREIN, JEREMIAS MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, REGARDING THE PRODUCTS, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## VII. Damages Disclaimer and Limitation

IN NO EVENT SHALL JEREMIAS BE LIABLE TO ANY CLIENT OR ANY OTHER PERSON FOR ANY (A) INDIRECT, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, INCLUDING LOSS OF PROFIT OR GOODWILL OR (B) DIRECT DAMAGES TO BODY, HEALTH OR PROPERTY FOR ANY MATTER ARISING OUT OF OR RELATING TO THE PRODUCTS, WHETHER SUCH LIABILITY IS ASSERTED ON THE BASIS OF CONTRACT, TORT OR OTHERWISE EVEN IF JEREMIAS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL JEREMIAS' TOTAL AGGREGATE LIABILITY FOR DAMAGES EXCEED THE GREATER OF THE AMOUNT OF (A) TOTAL COMPENSATION PAID BY PURCHASER TO JEREMIAS FOR THE PRODUCTS, OR (B) PROCEEDS AVAILABLE FROM ANY INSURANCE POLICY IN EFFECT AND APPLICABLE TO THE EVENT GIVING RISE TO SUCH LIABILITY.

## VIII. Notice

Any notice or other communication hereunder to Jeremias shall be sent postage prepaid, by certified mail, by courier such as United Parcel Service or e-mail, to the following: Jeremias Inc., 983 Industrial Park Drive, Marietta, GA 30062, E-mail: Info@JeremiasInc.com. Notices shall be effective upon receipt.

## IX. Terms and Conditions of Sale

Purchaser's Terms and Conditions of Sale as currently in effect shall govern these Limited Warranties, including without limitation the rights and responsibilities granted hereunder.

NOTES


jeremias®
EXHAUST SYSTEMS

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