

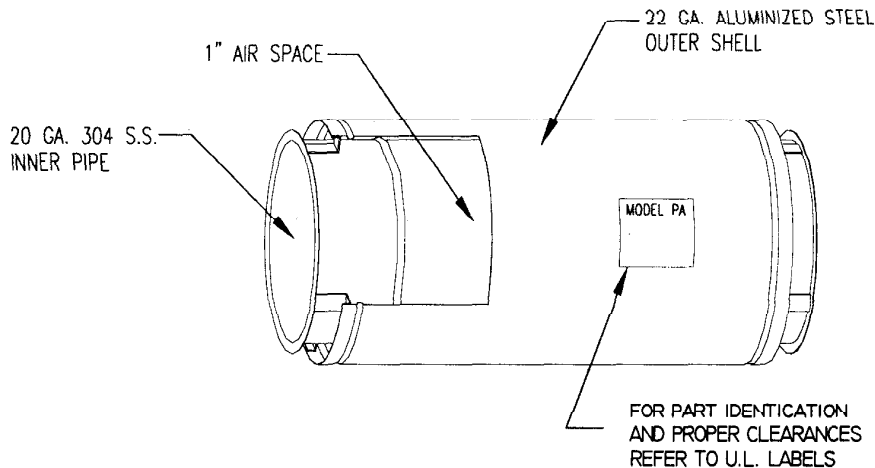
The Schebler Co. c 

INSTALLATION INSTRUCTIONS

OPERATION AND MAINTENANCE MANUAL

MODELS PA, P1, P2, P2A and P4 Chimney System

MODELS SW, PA, P1, P2, P2A and P4 Grease Duct System



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.

IMPORTANT: DO NOT INSTALL CHIMNEY WITHOUT FIRST READING THESE INSTRUCTIONS.

TABLE OF CONTENTS

General	3
UL Listing USA and Canada	3
Chimney Applications	3
Termination Height Requirements	3
Chimney Environment	3
Part Identification	3
Clearances and Enclosures	4
Support Limits	4
Individual Part Installation	5
Basic Pipe and Fitting Assembly	5
Joint Sealant	6
Adjustable Lengths (18AL, 22AL, 30AL and 45AL)	6
Bellows Sections	7
Boiler Adapter Kits (BKF and BKR)	7
90 Degree Tee (90T)	8
Elbows (30L, 45L and 90L)	8
45 Degree Lateral Tee (45LT)	8
90 Degree Wye (90Y)	8
Support Plate (SP)	9
Wall Support (WS)	9
Wall Guide (WG)	10
Floor Roof Guide (FRG)	10
Full Angle Ring (FR)	10
Half Angle Ring (HR)	10
Flashing (FL)	11
Rain Collar (RC)	11
Insulated Thimble (IT)	11
Rain Cap (CC)	11
Top Section (TS)	12
Exit Cone (EXC)	12
Guy Section (GS)	12
End Cap (EC)	13
Drain Tee Cap (DTC)	13
Engine Exhaust Installation	13
Joint Sealant	13
Expansion	13
Support	13
Variable Length vs. Special Length Sections	13
Pressure Relief Valve	14
System Layout	14
Manifold Systems	14
Operating Precautions	14
Maintenance	14
Grease Ducts	15
Applications	15
Clearances	16
Inspection and Cleanout	17
Hood Transitions	17
Roof Terminations	18
Wall Terminations	18
Proper Maintenance and Safety	19
Automatic Cleaning Systems	19
Fire Extinguishing Equipment	19
Grease Traps	19
Maintenance	20

GENERAL

These instructions cover Schebler Chimney and Grease Duct Models SW, PA, P1, P2, P2A and P4. For the purposes of this manual, all models will be treated together. Differences in clearances and installation of the various models will be shown where needed.

UL LISTING – USA and CANADA

Models PA, P1, P2, P2A and P4 are UL Listed under file number MH17739 as Building Heating Appliance Chimneys (1000°F), 1400°F Chimneys and as Grease Duct. They are also approved to bear the UL Mark for Canada as 560°C Chimneys, 760°C Chimneys and as Grease Duct. Model SW is for Grease duct only!

CHIMNEY APPLICATIONS

Models PA, P1, P2, P2A and P4 Chimneys are suitable for use with Building Heating Appliances and other Low Heat Appliances as described in the Chimney Selection Chart of the NFPA 211, which produce exhaust flue gases not exceeding 1000°F (560°C) under continuous operation. They are also suitable for exhaust stacks, industrial ovens, furnaces, and process ducting which does not exceed the 1400°F (760°C). Model SW is for Grease duct only!

These chimneys are to be installed as required for metal chimneys. They are not to be enclosed within combustible construction. An unenclosed chimney may be placed adjacent to walls of combustible construction at the clearances specified on each chimney section and in the individual listing. Consult the Authority Having Jurisdiction about restrictions and installation inspection in your area.

These Chimneys are intended for use as complete systems connecting the appliance to the outdoors, while operating under positive forced draft, negative induced draft or neutral gravity flow internal pressure conditions.

This chimney system is rated for a maximum 60 inches water column internal pressure when used in Positive Pressure Applications.

Chimney systems are to be sized in accordance the ASHRAE Handbook, Equipment Volume, the appliance manufacturer's instructions, or by contacting The Schebler Company, Chimney Systems, PO Box 1008, Bettendorf, Iowa 52722.

Refer to The Schebler Company Chimney Systems catalog for description of all necessary parts.

TERMINATION HEIGHT REQUIREMENTS

Chimneys are to terminate a minimum of 3-ft. (0.92 m) above the highest point of the roof penetration and 2-ft. (0.61m) minimum above any portion of a building within 10-ft (3.1 m)

horizontally. Consult the Authority Having Jurisdiction about restrictions in your area. See NFPA 211.

CHIMNEY ENVIRONMENT

It is suggested that a chimney being installed in a corrosive atmosphere be constructed of Type 316 stainless steel or a more corrosive resistant material. Use of chemicals containing chlorine or chlorides in the vicinity of equipment or the presence of these substances in the fuel or combustion air supply may lead to early deterioration of the chimney. Chemicals which may cause attack on chimney materials are:

- chlorinated or halogenated dry cleaning solutions
- fluorocarbon refrigerants
- hydrochloric, sulfuric and other acids
- fluorocarbon aerosol propellants
- vinyl plastics when burned
- chlorine bleach and cleaning solutions
- titanium tetrachloride
- plating or etching baths and solutions

Any of these chemicals passing through the combustion process produce acids which can corrode heating equipment and the chimney. If a corrosive environment is suspected, please contact The Schebler Company for suggestions on alternate materials for liners and shells which will safely handle corrosive environments.

PART IDENTIFICATION

These instructions and the catalog identify parts by name followed by a part code. Part numbers are made up of the model, part code, flue inside diameter and material code. The part number is shown on the UL label. EXAMPLE: The part number for a Model PA (PA), 47" long Straight Section (47S), 8" ID (08), with a 304 stainless steel liner and an aluminized steel shell (A) would be PA47S08A. Material Codes are shown in the following chart:

CODE	LINER / SHELL MATERIAL
A	304 Stainless Steel / Aluminized Steel
B	316 Stainless Steel / Aluminized Steel
C	304 Stainless Steel / 304 Stainless Steel
D	316 Stainless Steel / 304 Stainless Steel
E	316 Stainless Steel / 316 Stainless Steel
F	Galvanized Steel
G	Aluminized Steel
H	Painted Carbon Steel

GREASE DUCT

Refer to the Grease Duct Installation Supplement, beginning on page 15 for information specific to grease duct installation. The basic installation information in these instructions apply to both chimneys and grease duct.

CLEARANCES AND ENCLOSURES

CAUTION – DO NOT ENCLOSE IN A CHASE OR PASSAGEWAY MADE FROM WOOD OR ANY OTHER COMBUSTIBLE MATERIAL. DO NOT PLACE ANY TYPE OF INSULATION OR COMBUSTIBLE MATERIALS IN THE REQUIRED CLEARANCE SPACES SURROUNDING THE CHIMNEY. These chimneys are intended to be installed unenclosed or with non-combustible enclosures. Schebler Chimney Models SW, PA, P1, P2, P2A and P4 are not for use in one or two-family dwellings.

If the chimney passes through any zone or story of a building above that on 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 floor or roof assemblies through which it passes. NOTE: Always check with the Authority Having Jurisdiction for material with an appropriate fire rating. If a portion of the chimney passes between a dropped ceiling and roof, that portion is to be enclosed in a fire rated enclosure. Chimneys are not intended to pass through combustible walls. Any wall through which the chimney passes must be of non-combustible construction.

Chimneys installed in open rooms or fully ventilated areas on the same story as the equipment connected to it shall have a minimum clearance to combustibles as shown in the following tables: Refer to grease duct section for applications and clearances.

MODELS PA, P1 AND P2 CHIMNEY CLEARANCES			
Inside Diameter		Building Heating Appliance (1000°F) (560°C) Chimney	1400° Fahrenheit (760°C) Chimney
inches	mm		
5-6	127-152	6" (152mm)	7" (178mm)
7-12	178-305	7" (178mm)	8" (203mm)
13-16	330-406	8" (203mm)	9" (229mm)
17-20	431-508	9" (229mm)	10" (254mm)
21-24	533-610	10" (254mm)	11" (279mm)
25-28	635-711	11" (279mm)	12" (305mm)
29-32	736-813	12" (305mm)	13" (330mm)
33-36	838-914	13" (330mm)	14" (356mm)
37-40	940-1016	14" (356mm)	15" (381mm)
41-44	1041-1118	15" (381mm)	16" (406mm)
45-48	1143-1219	18" (457mm)	20" (508mm)

MODELS P2A AND P4 CHIMNEY CLEARANCES			
Inside Diameter		Building Heating Appliance (1000°F) (560°C) Chimney	1400° Fahrenheit (760°C) Chimney
inches	mm		
5-6	127-152	1" (25mm)	2" (51mm)
7-16	178-406	2" (51mm)	3" (76mm)
17-20	431-508	3" (76mm)	4" (102mm)
21-24	533-610	4" (102mm)	5" (127mm)
25-28	635-711	5" (127mm)	6" (152mm)
29-32	736-813	6" (152mm)	7" (178mm)
33-36	838-914	7" (178mm)	8" (203mm)
37-40	940-1016	8" (203mm)	9" (229mm)
41-48	1041-1219	11" (279mm)	12" (305mm)

Clearances to non-combustibles shall be as necessary for installation, inspection and maintenance.

LIMITATIONS

Maximum height above top lateral brace or guy	
Chimney Inside Diameter	Maximum Height
6" - 10" (152-254mm)	8 feet (2.44m)
12" - 48" (305-1219mm)	12 feet (3.66m)

If the height above the roof line is less than that specified above, no guying or bracing is required. However, a Floor/Roof Guide (FRG), Support Plate (SP) or Full Ring (FR) at the roof line is necessary to protect the Flashing (FL) from side loads caused by wind. For heights above the roof line greater than that shown above, the chimney must be guyed or braced. Guying or bracing is accomplished by use of the Guy Section (GS) Full Ring (FR) or Wall Guide (WG). Guy wires or braces are to be attached to the horizontal flanges of the Guy Section. While 3 guys are usually sufficient, it is recommended that 4 equally spaced wires at an angle of 45° from the vertical be utilized. The cables and guys must be slightly loose to allow for the thermal expansion. Rigid bracing requires two braces with not less than 60° angle between them. The braces must be attached to a Guy Section (GS) or Full Ring (FR).

MODEL SW SUPPORT LIMITS					
SECTION INSIDE DIA.		SUPPORT PLATE (SP)		WALL SUPPORT (WS)	
Inches	mm	feet	Meters	feet	meters
6	152	306	93.27	193	58.83
8	203	269	81.99	171	52.12
10	254	255	77.72	164	49.99
12	305	237	72.24	153	46.63
14	356	227	69.19	148	45.11
16	406	213	64.92	140	42.67
18	457	201	61.26	134	40.84
20	508	192	58.52	129	39.32
22	559	180	54.86	123	37.49
24	610	172	52.43	119	36.27
26	660	161	49.07	113	34.44
28	711	151	46.02	108	32.92
30	762	142	43.28	103	31.38
32	813	161	49.07	120	36.58
34	864	151	46.02	114	34.75
36	914	113	34.44	88	26.82
38	965	101	30.78	81	24.69
40	1016	93	28.35	77	23.47
42	1067	85	25.91	73	22.25
44	1118	76	23.16	68	20.73
46	1168	68	20.73	64	19.51
48	1219	60	18.29	60	18.29

MODEL PA SUPPORT LIMITS					
SECTION INSIDE DIA.		SUPPORT PLATE (SP)		WALL SUPPORT (WS)	
Inches	mm	feet	Meters	feet	meters
6	152	306	93.27	193	58.83
8	203	269	81.99	171	52.12
10	254	255	77.72	164	49.99
12	305	237	72.24	153	46.63
14	356	227	69.19	148	45.11
16	406	213	64.92	140	42.67
18	457	201	61.26	134	40.84
20	508	192	58.52	129	39.32
22	559	180	54.86	123	37.49
24	610	172	52.43	119	36.27
26	660	161	49.07	113	34.44
28	711	151	46.02	108	32.92
30	762	142	43.28	103	31.38
32	813	161	49.07	120	36.58
34	864	151	46.02	114	34.75
36	914	113	34.44	88	26.82
38	965	101	30.78	81	24.69
40	1016	93	28.35	77	23.47
42	1067	85	25.91	73	22.25
44	1118	76	23.16	68	20.73
46	1168	68	20.73	64	19.51
48	1219	60	18.29	60	18.29

MODEL P2 SUPPORT LIMITS					
SECTION INSIDE DIA.		SUPPORT PLATE (SP)		WALL SUPPORT (WS)	
inches	mm	feet	meters	feet	meters
6	152	270	82.30	171	52.12
8	203	244	74.37	156	47.55
10	254	230	70.10	147	44.81
12	305	213	64.92	138	42.06
14	356	202	61.57	132	40.23
16	406	192	58.52	127	38.71
18	457	180	54.86	120	36.58
20	508	172	52.43	116	35.36
22	559	163	49.68	111	33.83
24	610	155	47.24	107	32.61
26	660	146	44.50	103	31.39
28	711	136	41.45	97	29.57
30	762	128	39.01	93	28.35
32	813	145	44.20	108	32.92
34	864	135	41.15	102	31.09
36	914	103	31.39	80	24.38
38	965	94	28.65	75	22.86
40	1016	86	26.21	71	21.64
42	1067	78	23.77	67	20.42
44	1118	71	21.64	63	19.20
46	1168	63	19.20	59	17.98
48	1219	56	17.07	56	17.07

MODEL P1 SUPPORT LIMITS					
SECTION INSIDE DIA.		SUPPORT PLATE (SP)		WALL SUPPORT (WS)	
inches	mm	feet	meters	feet	meters
6	152	270	82.30	171	52.12
8	203	244	74.37	156	47.55
10	254	230	70.10	147	44.81
12	305	213	64.92	138	42.06
14	356	202	61.57	132	40.23
16	406	192	58.52	127	38.71
18	457	180	54.86	120	36.58
20	508	172	52.43	116	35.36
22	559	163	49.68	111	33.83
24	610	155	47.24	107	32.61
26	660	146	44.50	103	31.39
28	711	136	41.45	97	29.57
30	762	128	39.01	93	28.35
32	813	145	44.20	108	32.92
34	864	135	41.15	102	31.09
36	914	103	31.39	80	24.38
38	965	94	28.65	75	22.86
40	1016	86	26.21	71	21.64
42	1067	78	23.77	67	20.42
44	1118	71	21.64	63	19.20
46	1168	63	19.20	59	17.98
48	1219	56	17.07	56	17.07

MODEL P2A SUPPORT LIMITS					
SECTION INSIDE DIA.		SUPPORT PLATE (SP)		WALL SUPPORT (WS)	
inches	mm	feet	meters	feet	meters
6	152	190	57.91	120	36.58
8	203	183	55.78	117	35.66
10	254	177	53.95	113	34.44
12	305	170	51.82	110	33.53
14	356	163	49.68	107	32.61
16	406	157	47.85	103	31.39
18	457	150	45.72	100	30.48
20	508	143	43.59	97	29.57
22	559	137	41.76	93	28.35
24	610	130	39.62	90	27.43
26	660	123	37.49	87	26.52
28	711	117	35.66	83	25.30
30	762	110	33.53	80	24.38
32	813	103	31.39	77	23.47
34	864	97	29.51	73	22.25
36	914	90	27.43	70	21.34
38	965	83	25.30	67	20.42
40	1016	77	23.47	63	19.20
42	1067	70	21.34	60	18.29
44	1118	63	19.20	57	17.37
46	1168	57	17.37	53	16.15
48	1219	50	15.24	50	15.24

MODEL P4 SUPPORT LIMITS					
SECTION INSIDE DIA.		SUPPORT PLATE (SP)		WALL SUPPORT (WS)	
inches	mm	feet	Meters	feet	meters
6	152	135	41.15	85	25.91
8	203	132	40.23	84	25.60
10	254	129	39.32	83	25.30
12	305	128	39.01	83	25.30
14	356	125	38.10	81	24.69
16	406	122	37.19	80	24.38
18	457	116	35.36	78	23.77
20	508	111	33.83	75	22.86
22	559	107	32.61	73	22.25
24	610	103	31.39	71	21.64
26	660	99	30.18	69	21.03
28	711	93	28.35	66	20.12
30	762	75	22.86	54	16.46
32	813	85	25.91	63	19.20
34	864	80	24.38	61	18.59
36	914	75	22.86	58	17.68
38	965	71	21.64	57	17.37
40	1016	65	19.81	54	16.46
42	1067	60	18.29	51	15.54
44	1118	54	16.46	48	14.63
46	1168	48	14.63	45	13.72
48	1219	43	13.11	43	13.11

INDIVIDUAL PART INSTALLATION

These instructions identify Models SW, PA, P1, P2, P2A and P4 by name and part number or part code. See the section titled "Part Identification" on page 2 of these instructions for part number details. When referring to parts always include the model and flue size to avoid confusion. Some parts are the same for all models, while others are different for each model.

These instructions comprise both general and specific requirements for all parts in the Model SW, PA, P1, P2, P2A and P4 product lines. *Before beginning an installation, thoroughly review these instructions.*

For Grease Duct installations, see page 15 of these instructions.

BASIC PIPE AND FITTING ASSEMBLY

The joint for the Schebler Chimney and Grease Duct allows quick and easy installation. All flange to flange inner pipe joints identical, thus eliminating special installation requirements. Because each end is the same, sections are not directional unless otherwise noted.

The basic step-by-step joint installation procedures in the following section apply to all pipe sections.

Joint assembly is accomplished in the following manner (see figure 1):

1. Apply a continuous ¼" bead of the proper sealant (S600, S2000 or S2001) to one of the flanges being joined.
2. Join the two flanged ends of the sections.
3. Fill the "V" in the inner band with the proper sealant.
4. Install the inner band around the flanges, install the nuts and screws and tighten the screws tightly with a screwdriver. **NOTE:** A rubber or rawhide mallet can be used to seat the band while tightening by lightly tapping around the band.
5. **On Models P1, P2, P2A and P4 only** install the provided insulation strip or sections over the inner band ensuring that there are no gaps in the insulation.
6. Place the outer band over the joint, covering the space between the shells. The flanges on the outer band fit into the grooves on the shells. Install the nuts and screws and tighten the screws tightly with a screwdriver. **NOTE:** For outdoor installation or areas subject to moisture, apply a bead of S600 sealant in the groove at the upper end of the outer band and at the band overlap.

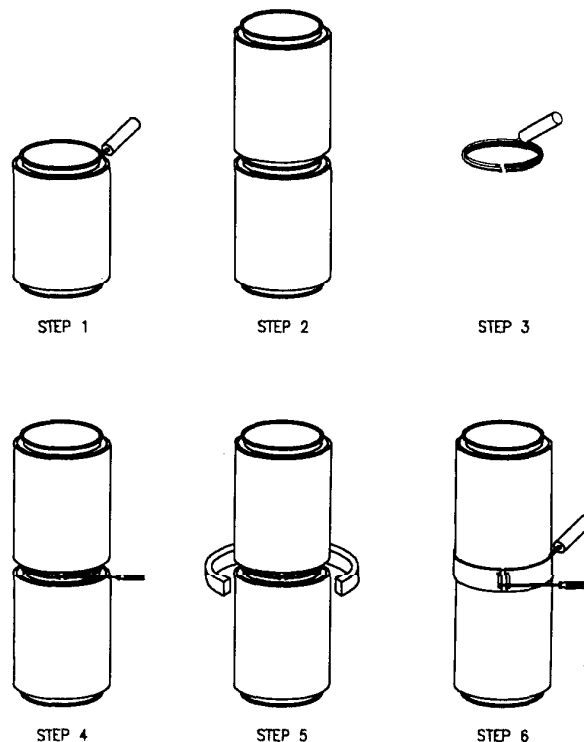


Figure 1 – Section Joint Installation

For flue gas temperatures up to 600°F (315°C) use S600 Sealant. For flue gas temperatures exceeding 600°F (315°C) use S2000 sealant on inner connections and S600 sealant, when needed, on outer bands and assemblies. Use only S2000 on Grease Duct systems (see page 15).

Positive Pressure Applications

For installations operating under positive pressures the S2001 sealants should be used. S2001 is a 2 part sealant requiring mixing in the field. Mixing instructions are as follows:

1. Weigh out 5.5 parts sealant and 1 part water
2. Thoroughly mix all the water with 80% of the powder.
3. Then add balance of the powder and mix to a thick creamy paste.
4. Apply with an applicator, caulking guns, etc.
5. Joint assembly is as previously described with the exception of curing time. Allow 24 to 48 hours at room temperature and 1 to 4 hours at 250°F (121°C).

All non-stainless steel metal parts exposed to outdoor weather conditions should be protected by a minimum of one base coat and 1 finish coat of corrosion resistant paint.

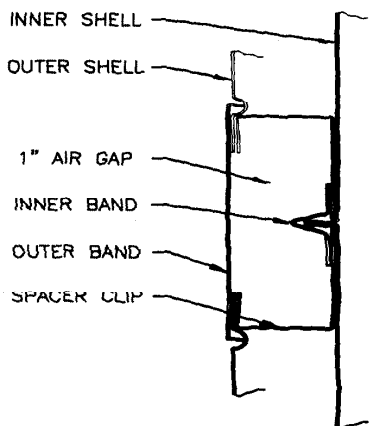


Figure 2 - Model PA Joint

THERMAL EXPANSION

ADJUSTABLE LENGTHS (18AL, 22AL, 30AL, 45AL)

Good chimney installation practice requires that any length of chimney over five feet installed between two fixed points, i.e., boiler outlet, Support Plate, and Wall Support, etc., must be provided with an Adjustable Length (part number AL) to compensate for expansion and contraction during operation and shutdown. It is important to provide proper guidance and support to the Adjustable Length to prevent binding or bending movements.

The Adjustable Length has two major functions. It is used to make up odd lengths during installation and to absorb the expansion effects of the chimney. The Adjustable Length cannot be used to correct misalignment, nor should it be installed adjacent to fittings such as tees, wyes or elbows without proper support.

Do not install the section in its fully compressed or fully extended position as it will not be able to operate properly.

The adjustable section will collapse to its minimum length if a load is applied from above. Therefore if an adjustable section is utilized in a vertical position a support plate or wall support must always be placed just above.

In vertical installations it is very important that the adjustable section be installed so that water running down the inner or the outer shell is not directed between the shells.

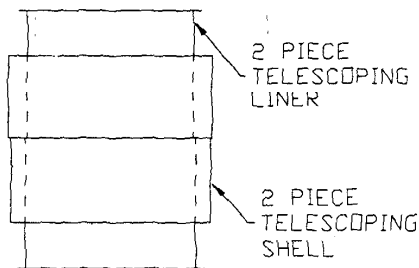


Figure 3 - Adjustable Section

BELLOWS SECTIONS (BS)

The Bellows Section is used to compensate for thermal expansion in high-pressure applications. It will not expand or contract to compensate for field fit. But it will compensate for up to 3" (76.2 mm) of thermal expansion.

The Bellows Section is installed with typical inner band connections and sealant. The cover comes in two halves and is fitted over the section and bolted into place with the provided 1/4" x 1 1/2" stainless steel bolts.

Bellows Sections should only be used between two fixed points. Fittings such as Tees and Elbows should be isolated from the Bellows Section by a Support Plate or Wall Support as shown in Figures 13 and 15. Lengths of chimney or breeching containing a Bellows Section must be properly guided using Full Rings, Wall Guides or Floor Roof Guides spaced at no more than 12 feet (3.66 m) apart.

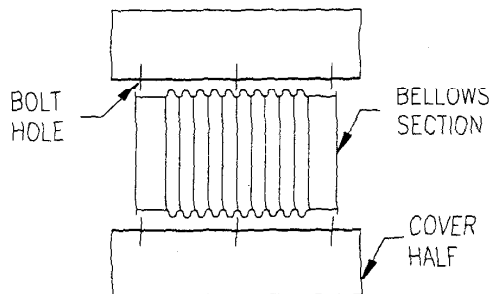


Figure 4 - Bellows Expansion Joint

BOILER ADAPTER KITS (BKF and BKR)

For flanged appliance outlets, the Boiler Kit Flanged (BKF) should be used. The Boiler Kit Flanged consists of a split starter ring, starter section and the required number of "C" clamps for the installation. The Boiler Kit Flanged is installed in the following procedure:

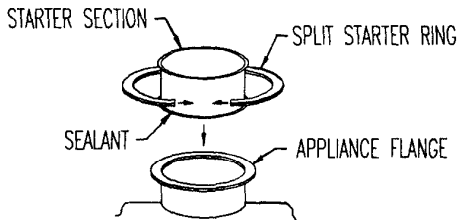


Figure 5 - Flanged Boiler Adapter

1. Apply a continuous bead of the proper sealant to the inner flange on one end of the Starter Section.
2. Center the starter section on the boiler flange and place the two piece Split Starter Ring over the bottom flange on the Starter Section. Be sure that the tabs on the Split Starter Ring overlap and all parts fit snug.
3. Place the required number of "C" clamps over the boiler flange and starter ring and tighten clamps. The flange can be field drilled to match the appliance outlet if desired. All other chimney parts can now be installed (see joint assembly for the proper procedure)

For a raw appliance outlets the Boiler Kit Raw (BKR) should be used. The Boiler Kit Raw consists of a collar type starter section. The Boiler Kit Raw is installed in the following procedure:

1. Apply a continuous bead of the proper sealant to the inner flange of the appliance outlet.
2. Place the starter section on the appliance outlet and tighten in place with the hardware provided. All other chimney parts can now be installed (see joint assembly for the proper procedure)

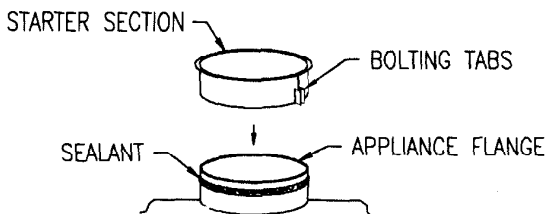


Figure 6 - Raw Boiler Adapter

The boiler kits include a seal ring that will cover the gap between the inner and the outer shell. The seal ring clamps around the outer shell pipe and is held in place with (4) 1/4" x 1 1/2" bolts.

90 DEGREE TEE (90T)

When properly supported, the 90-Degree Tee will support 50 feet of vertical chimney. This fitting is used to connect horizontal pipe runs into the vertical chimney as well as a drain and/or inspection opening. Where access for a drain or an inspection opening is required, the following method for support can be used:

- A. Suspended Tee - Support Plate or Wall Support at upper tee joint as shown in Figure 7.

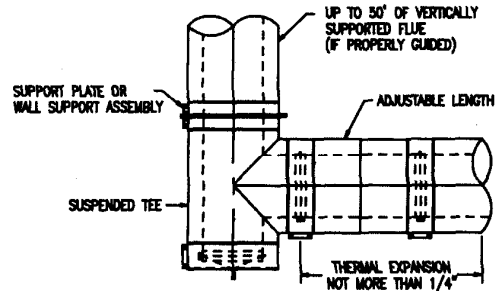


Figure 7 - Suspended Tee

- B. Two axis support - This method is recommended if the total thermal expansion is expected to be above 1/4" as shown in Figure 8. This allows the Adjustable Length section to function properly.

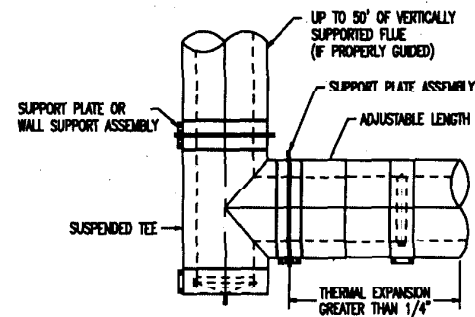


Figure 8 - Two Axis Supported Tee

The Drain Tee Cap must be connected at all times to a suitable drain. Upon entering the chimney, rain will wash down and remove any corrosive combustible residue. The Drain Tee Cap must be installed with sealant at its mating surfaces with the flanged joint. This will ensure that moisture is drained through the drain as intended and will provide a tight seal. The Tee Cap can be installed for inspection access as required.

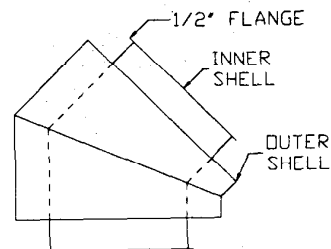


Figure 9 - Elbow

30, 45 AND 90 DEGREE ELBOWS (30L, 45L AND 90L)

These elbows must be protected from the effects of thermal expansion. Both ends are flanged for the standard joint installation.

45 DEGREE LATERAL TEE (45LT)

For chimney systems that require a 45 degree entry to the vertical chimney, the 45 Degree Lateral Tee (45LT) may be used. The 45 Degree Lateral Tee should be supported in the same way as the 90 Degree Tee. When properly supported, the 45 Degree Lateral Tee will support 50 feet of vertical chimney and may be installed with a Drain Tee Cap or Tee Cap.

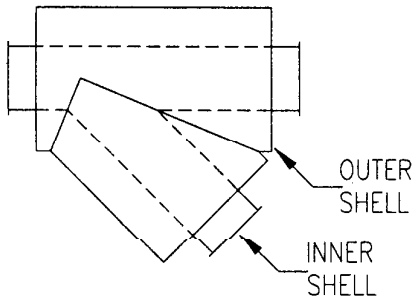


Figure 10 - Lateral Tee

90 DEGREE WYE (90Y)

The Wye fitting is used when the vertical chimney is located between two boilers and a low-pressure loss system is required. The Wye should be installed with the usual precautions observed for thermal expansions.

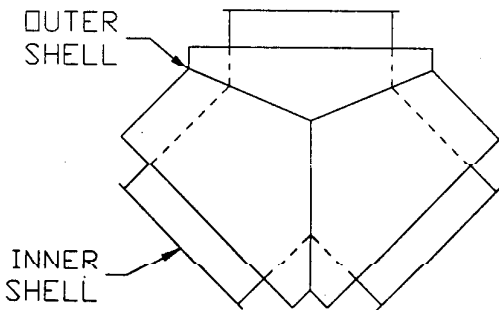


Figure 11 - 90Y

SUPPORT PLATE (SP)

The Support Plate offers the greatest strength for support of the Model PA Chimney System. It will provide vertical support and will provide for joint alignment and support for horizontal applications. Between any two fixed points in a system or whenever an adjustable length must be used to prevent the bending of tees and other fittings, locate and secure the Support Plate as necessary by means of structural ties to the building.

The Support Plate should also be used for support at the roof line. The Support Plate must be secured to structural members

of the building, which can adequately support the weight of the chimney (See Figure 12).

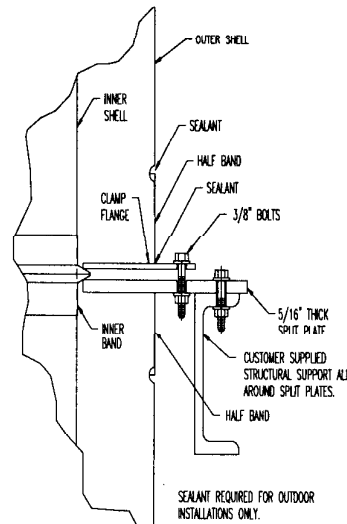


Figure 12 - Support Plate Attachment

The Support Plate consists of a split clamp flange, split plate and necessary hardware. The split clamp flange and the split plate are used to clamp the inner flanges together and are turned 90 degrees apart. The notches in the split plate and in the clamp flange are to accommodate the inner band end clips, allowing the "V" to rest solidly on the split plate. The installation procedure is as follows:

1. Connect the joint to be supported by use of the inner band as previously discussed.
2. Connect the split clamp flange to the split plate with the provided hardware. The split plate should be below the finished joint and the clamp flange should be above the finished joint.
3. 3/8" x 1 1/2" bolts should be used in all of the inner clamp flange holes. Tighten all bolts.

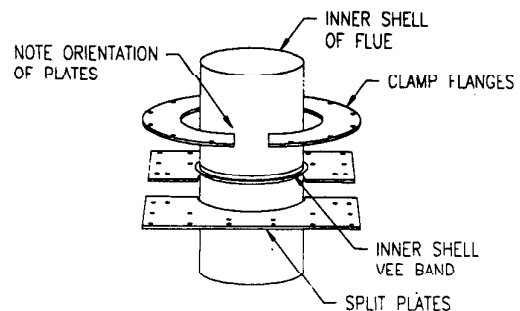


Figure 13 - Support Plate Assembly

4. Install the insulation strips provided over the exposed inner flue and ensure that no gaps in the insulation are present.
5. Install the special outer bands provided and seal with sealant.

Proper performance and long service life of the Schebler Model PA Chimney System requires that the chimney be rigidly braced and supported. Every installation offers unique support and bracing requirements and the following guidelines will provide minimum acceptable sizes for the mechanical hardware supplied by others. When the support plate is bolted to framework $3/8''$ bolts should be used in all of the holes on the perimeter of the support plate.

PA Size	Framework	Bracing
6" - 20"	2 x 1 x 3/16 to 5 x 2 x 3/16 or equivalent	2 x 2 x 3/16
22" - 36"	5 x 2 x 3/16 to 6 x 2 x 3/16 or equivalent	3 x 3 x 1/4
38" - 48"	6 x 2 x 3/8 or equivalent	4 x 4 x 3/8

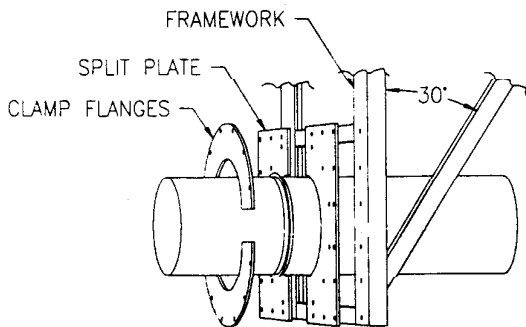


Figure 14 - Support Plate Bracing

WALL SUPPORT (WS)

The Wall Support consists of two split plates, brackets and all necessary hardware. The notches in the split plates on the Wall Support are to accommodate the inner band end clips, allowing the "V" to be clamped between the split plates. Installation for the Wall Support is accomplished with the following procedure:

1. Connect the joint to be supported by use of the inner band as previously discussed.
2. Connect the split clamp flange to the split plate with the provided hardware. The split plate should be below the finished joint and the clamp flange should be above the finished joint.
3. $3/8'' \times 1 \frac{1}{2}''$ bolts should be used in all of the inner clamp flange holes. Tighten all bolts.
4. Install the insulation strips provided over the exposed inner flue and ensure that no gaps in the insulation are present.
5. Bolt the wall brackets to the split plate assembly with the (6) $3/8'' \times 1 \frac{1}{2}''$ bolts as provided.
6. Locate and bolt the entire assembly to the wall with (8) $1/2''$ dia. bolts.

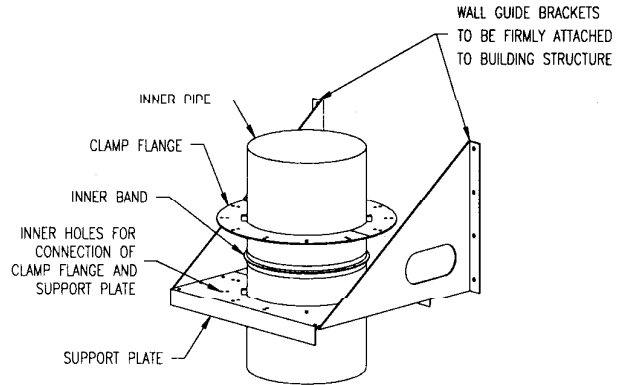


Figure 15 - Wall Support

The Wall Support is intended for attachment to non-combustible structures. When attached, the Wall Support provides a fixed point in the chimney system. Install an Adjustable Length below a Wall Support to provide the necessary expansion compensation. The Wall Support, when properly installed, will allow for the required clearances to combustibles along the wall and will support the length of pipe outlined on pages 4 and 5.

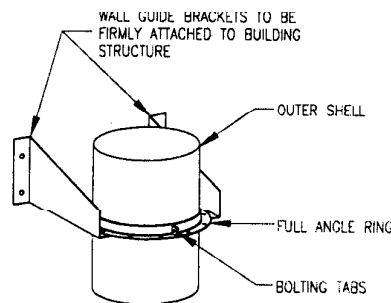


Figure 16 - Wall Guide

WALL GUIDE (WG)

The wall guide is used to protect the vertical chimney from lateral wind loads and to allow for thermal expansions. When assembled, the proper installation location is at a joint but below the outer band. The outer wall of the chimney must be able to move away from the outer ring of the wall guide. When properly attached to a combustible wall, the Wall Guide will maintain the proper clearances to combustibles. Wall Guides should be equally spaced between Wall at spacings no greater than 16' for 6" through 10" diameters and 24' for 12" through 48" diameters.

FLOOR ROOF GUIDE (FRG)

Floor Roof Guides are used to provide lateral support for the chimney in the roof and floor opening. The Floor Roof Guide is to be bolted to non-combustible construction in (4) four places.

CAUTION: Always maintain proper clearances to combustibles when installing all guides and supports. Keep all insulation away from required clearance (air) spaces surrounding the chimney. Guides and supports are only suitable for attachment to non-combustible construction due to possible heat conduction.

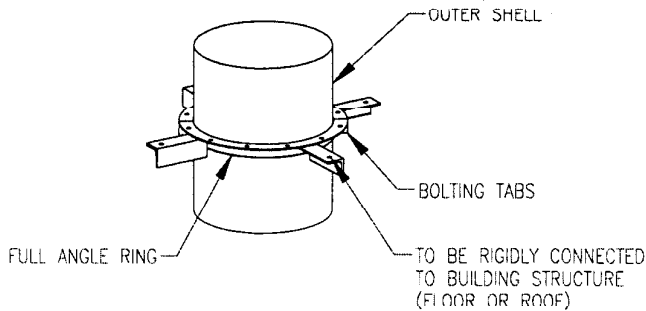


Figure 17 - Floor Roof Guide

FULL AND HALF ANGLE RINGS (FR AND HR)

The full and half rings are used to guide the chimney either vertically or horizontally. The rings should be placed at 12' intervals and securely connected to the building structure. The diameter of the Full Ring is slightly larger than the pipe. This will allow the pipe to slide within the ring. This movement must be allowed to compensate for thermal expansion.

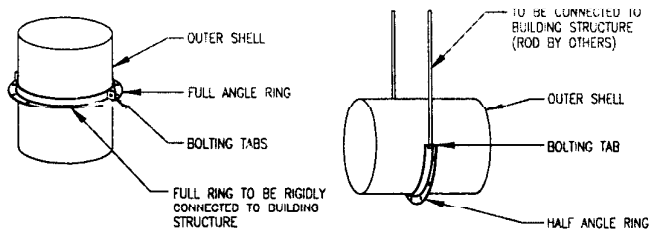


Figure 18 - Full Ring and Half Ring

FLASHING AND RAIN COLLAR (FL AND RC)

Both the Flashing and the Rain Collar are designed to fit the outside of the Model PA Chimney. They are constructed of galvanized steel and should be protected from corrosion by cleaning and painting. The Flashing is non-ventilated and for non-combustible and combustible flat roofs. Flashings of a special pitch are available upon request.

The Flashing should be protected from lateral movement of the stack by use of the Support Plate or the Roof Guide.

The Rain Collar is secured around the pipe immediately above the flashing and should be sealed with a silicon sealant.

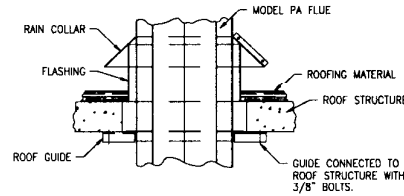


Figure 19 - Roof Penetration

INSULATED THIMBLE (IT)

The insulated thimble is used in conjunction with the flashing and rain collar when clearances to combustibles cannot be maintained at a roof penetration.

The Insulated Thimble should be dropped through the roof opening. The (4) four tabs will set upon the roof deck and nailed or bolted down. The flashing is then set over the Insulated Thimble.

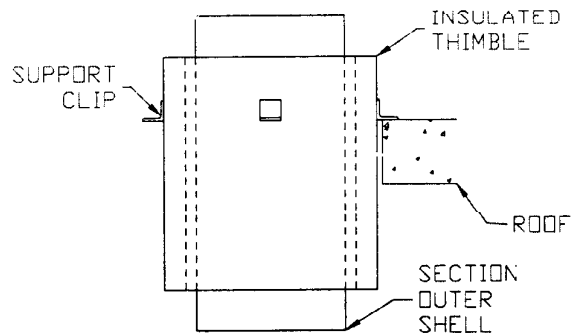


Figure 20 - Insulated Thimble

RAIN CAP (CC)

The Rain Cap provides partial protection from rain and debris. The Rain Cap is mounted on the end of a standard pipe section with the use of an inner band. A closure ring is provided to close off the space between the inner and outer liners. A minimum clearance of 8 feet (2.44 m) is recommended to ensure that all exhausted products are dispersed away from the building and intakes. To install the Rain Cap, the following procedure should be used:

1. Apply a bead of the proper sealant to the flange of the inner pipe to receive the Rain Cap.
2. Place the Rain Cap on the existing inner flange and attach the "V" band as previously mentioned.
3. Install the provided collar as shown.
4. Apply a silicon sealant to fill any gaps and joints on the collar and tighten all bolts.

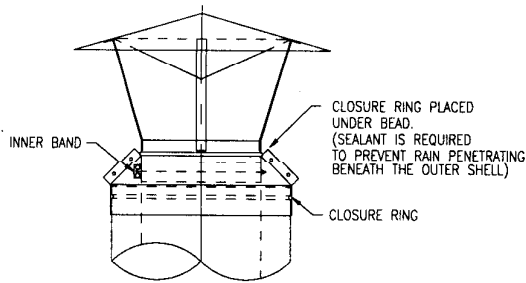


Figure 21 - Rain Cap Assembly

To clean the flue or replace the Rain Cap, reverse the above procedure. To reinstall, follow the installation procedure.

TOP SECTION (TS)

The Top Section is installed exactly the same as a Rain Cap (CC).

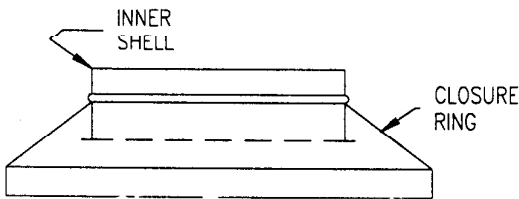


Figure 22 - Top Section

EXIT CONE (EXC)

The Exit Cone is installed using the same procedure as the Rain Cap (CC) above.

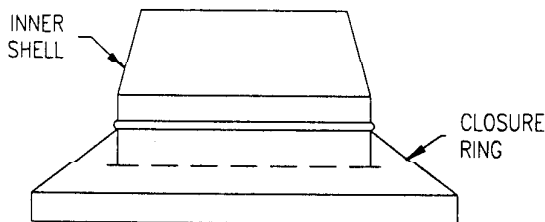


Figure 23 - Exit Cone

GUY SECTION (GS)

When the height above the roof line exceeds 12 feet, a Guy Section is recommended. The inner flanges of the Guy Section are connected in the same procedure as the typical pipe sections. The outer shell is then sealed by using special half bands and sealant. Guy wires or braces are to be attached to the horizontal flanges of the Guy Section (See Figure 24). The cables and pipe guys must be slightly loose to allow for thermal expansions. To reduce the thermal expansion effects on rigid bracing or guy wires, a Support Plate (SP) or Wall Support

(WS) may be installed at or below the roof line. Guy tensioners may be required if the thermal expansion exceeds the allowable slack in cables.

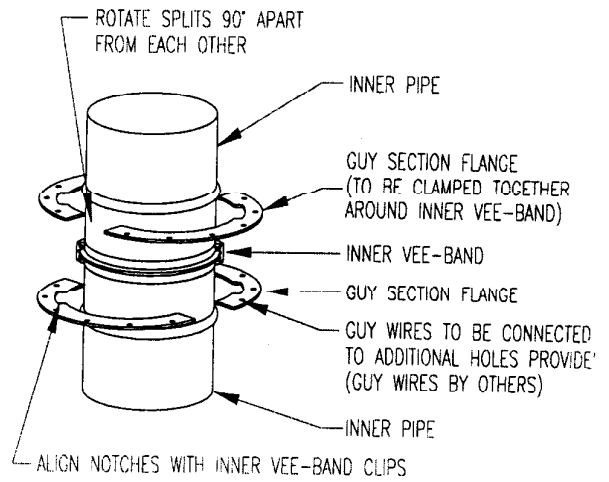


Figure 24 - Guy Section

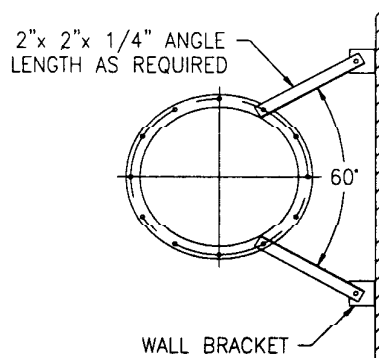
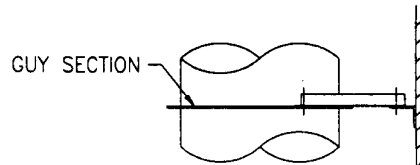


Figure 25 - Rigid Guying Angle

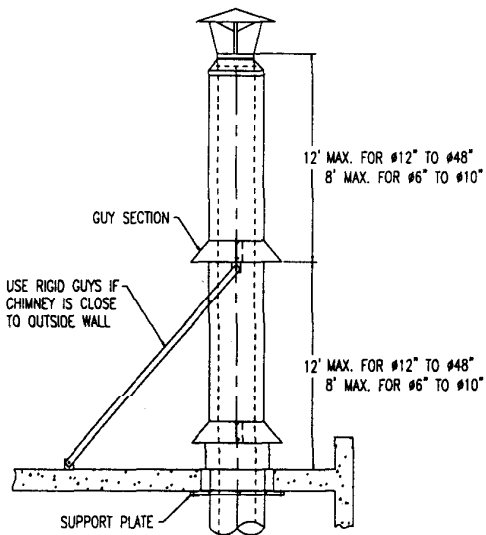


Figure 26 - Bracing Requirements

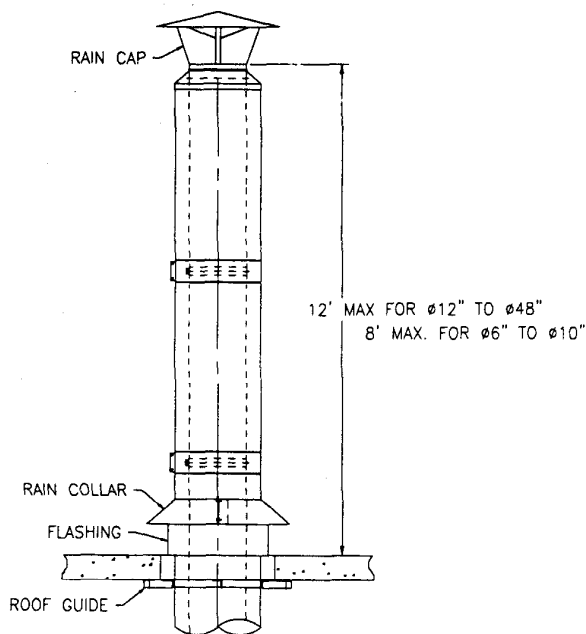


Figure 27 - Maximum Freestanding Height

END CAP (EC)

The end cap is used to cap off a tee and to allow a means to enter the system for inspection and cleaning.

The end cap is installed by connecting the inner cone to the adjacent pipe section with an inner band and sealant. The outer cover piece is then fitted over the outer shell and bolted into place with (2) 1/4" x 1 1/2" stainless steel bolts.

Whenever the end cap is removed for inspection purposes the flanges must be cleaned and resealed when reinstalling the part.

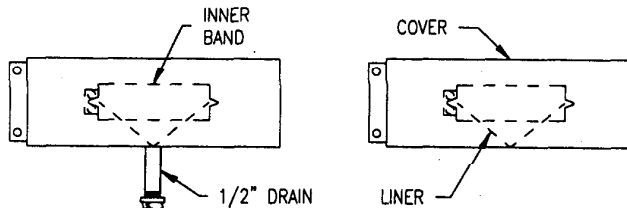


Figure 28 - Drain Tee Cap and End Cap

DRAIN TEE CAP (DTC)

The drain tee cap is installed exactly the same as the end cap.

The drain tee cap has a 1/2" drain pipe that must be connected to a suitable drain. A trap should be utilized in the piping to prevent flue gas spillage.

ENGINE EXHAUST INSTALLATION

Joint Sealant. Because of the high temperatures associated with engine and turbine exhaust, use only S2000 or S2001 high temperature sealant.

Expansion. Only Bellows Joints (BS) should be used in engine and turbine exhaust systems. Adjustable Lengths (18AL, etc.) are not made to withstand the pressures associated with these applications. Each Bellows Joint will accommodate up to 3 inches (7.62 cm) of expansion.

Support. High temperature systems need to be supported so that the Bellows Joints (BS) are pushing against Support Plates (SP) and not against fittings such as tees and elbows. In runs with BS's, SP's should be placed at or near each tee, elbow, etc. and solidly attached to the building structure. Bellows Joints should be placed near an SP and a Full Ring (FR) should be used near the opposite end of the BJ as a guide to keep it straight. Supports should be spaced no more than 12 feet (3.66 m) apart. Full Rings (FR) and Half Rings (HR) may be used in long runs between SP's.

Variable Length vs. Special Length Sections. In most instances, it is better to use special length sections or fittings with extended ends to made up odd lengths in the system. This minimizes the possibility of leaks. If Variable Length Sections (VS) must be used, special care must be taken to assure a leak-free installation.

Pressure Relief. A Pressure Relief Valve (PRV) should be included in the exhaust system, located as near to the engine outlet as possible, before any mufflers, heat recovery units, catalytic converters, etc. The purpose of the PRV is to relieve pressure which may be caused by an engine backfire. *Exhaust gases are hot with temperatures in the 800-1100°F (426-593°C) range.* PRV's must be installed so that in the event of a backfire, personnel will not be injured and combustible materials will not be ignited.

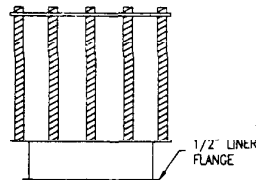


Figure 29 - Pressure Relief Valve

Vibration Isolation (Flex connector). A flexible connector (usually provided by the engine supplier) must be installed at the engine outlet and isolated from the rest of the exhaust system to minimize vibration in the exhaust system.

System Layout. Engine exhaust systems should run as directly as possible to the outside of the building with the fewest possible fittings. Long lengths, offsets and fittings impose increased friction losses, increasing the back pressure at the engine outlet, as well as adding the need for more supports and expansion joints.

Manifold Systems. Each engine and turbine should be exhausted separately. Manifold systems should not be used. Exhaust gases from an operating engine could be forced into non operating appliances, causing damage from heat or condensation, and possibly leaking harmful gases into the equipment room.

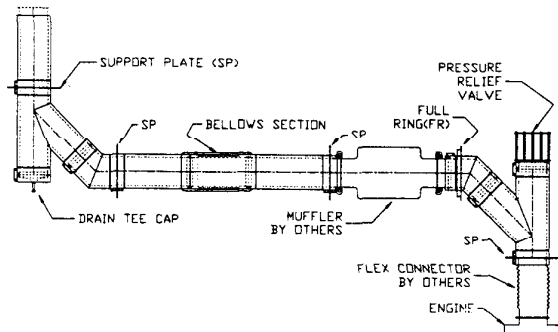


Figure 30 - Engine Exhaust Installation

OPERATING PRECAUTIONS

CREOSOTE AND SOOT - Formation and need for removal

NOTE: These chimneys are not suitable for use on solid fuel fired appliances in Canada.

When wood is burned slowly, it produces tar and other organic vapors which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. 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 the risk of chimney fire.

A licensed or qualified chimney sweep should be contacted to clean the chimney. Contact local building or fire officials about restrictions and installation inspection in your area.

For tee caps, adequate clearance is required around clean-outs to assure accessibility for removal of caps and products accumulated within the chimney.

It is recommended that exterior mounted chimneys located in geographical areas which experience sustained low ambient temperatures be enclosed to reduce or limit condensation, creosote buildup and poor draft.

MAINTENANCE

Chimney and Exhaust Systems

1. After the installation of the chimney or exhaust system, ensure that the required clearances are maintained and that the system continues to be supported properly.
2. The chimney system should be inspected if there is any evidence of damage to the chimney system, and at least annually, for internal deposits, soundness and correct clearances. Cleaning and repairs shall be as needed.
3. Caulking on exterior portions of the chimney, flashing, rain collar, etc. should be inspected and repaired or replaced as needed to prevent leakage.
4. Painted portions of the chimney shall be cleaned and touched-up or repainted as required to prevent corrosion.
5. Supports, guys, braces, etc. should be inspected at least annually to make sure bolts are tight.
6. For appliances burning solid fuel, see information under CREOSOTE AND SOOT above.
7. For further information see NFPA 211, latest edition, chapter titled Maintenance.

Models SW, PA, P1, P2, P2A and P4

DIRECTIONS FOR INSTALLATION, OPERATION AND MAINTENANCE OF GREASE DUCT IN COMMERCIAL AND INSTITUTIONAL FOOD COOKING EQUIPMENT AND SIMILAR SYSTEMS

Schebler Grease Duct Models SW, PA, P1, P2, P2A, and P4 are listed by Underwriters Laboratories for Grease Duct Applications to 500°F continuous and 2000°F intermittent use. (UL File No. MH17739).

Schebler Models SW, PA P1, P2, P2A, and P4 installed in accordance with the instructions in these directions are acceptable for use in removal of smoke and grease laden vapors from commercial and institutional food cooking equipment and similar systems.

Installation of Schebler Model SW, PA, P1, P2, P2A and P4 shall be in accordance with NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Equipment.

Important: DO NOT INSTALL GREASE DUCT WITHOUT CAREFULLY READING THESE INSTRUCTIONS.

ADVANTAGES

All of Schebler double-wall insulated and non-insulated Grease Duct systems offer distinct benefits over field welded fabricated systems.

DUAL-WALL PROTECTION

Schebler's PA, P1, P2, P2A and P4 Grease Duct Systems give you the assurance that comes with dual-wall construction. The inner shell of stainless steel gives you an airtight seal when installed in accordance with Schebler's instructions. The outer shell in the PA system is separated from the inner shell by a 1-inch air gap. P1 has 1-inch of ceramic fiber; P2 has two inches of ceramic fiber; P2A has two inches of ceramic fiber and one inch air space, and the P4 has four inches of ceramic fiber.

CONSISTENT QUALITY ASSURED

Schebler's Grease Duct systems are fabricated in the factory and under strict quality standards, assured by the UL Follow-up service and an in house quality assurance program.

LOWER CLEARANCES TO COMBUSTIBLES.

Please refer to **TABLE 1** in each model's clearance to combustibles.

FAST, EASY FIELD INSTALLATION

No on-site welding is required. Schebler's easy-to-use band joining system makes installation fast and easy, using com-

mon tools. The Product's light weight makes installation easier.

EFFICIENT AIR FLOW DESIGN

Schebler's round Grease Duct shape provides more efficient airflow and lower friction loss than square or rectangular duct systems.

STRONG, LIGHTER WEIGHT DESIGN

The Schebler Grease Duct system requires fewer reinforcements and guide pieces than square or rectangular ducts. Also the round design prevents low places or dips in the system. This means faster, lower-cost installation as well as less stress on the adjoining structure.

THERMAL EXPANSION NOT A PROBLEM

Schebler's adjustable lengths handle thermal expansion. Field-fabricated and welded square or rectangular ducts have little or no ability to accommodate expansion.

APPLICATIONS

Schebler Grease Duct systems are complete systems that connect the type I or II hood or extractor to the outdoors. A blower fan or exhaust located at or near the system's outdoor termination point draws smoke and vapors through the ducting thereby creating a negative operating pressure within the system.

PART NUMBERS

A part number identifies all standard parts manufactured by Schebler, which describes their makeup and function.

The part numbers are made up as follows:

1. The first series is the model designation SW, PA, P1, P2, P2A or P4.
2. This is followed by the name, i.e. 47S (47" long straight section of pipe: 90T is a 90 degree tee.)
3. Next is the part's internal diameter (ID) in inches, i.e, 06,12,etc.
4. Last in the inner and outer material designation.

Code	Inner/outer material
A	304/Aluminized
B	316/Aluminized
C	304/304 or all 304
D	316/304
E	316/316 or all 316
F	Galvanized
G	Aluminized
H	Painted Carbon Steel

EXAMPLE: Part number for an 8" ID, Model PA, 47" long straight section with a 304 stainless steel inner and an aluminized steel outer is a PA47S08A.

For SW the part number is SW47S08 C or E. C is for 304 stainless steel and E is for 316 stainless steel.

GENERAL INSTALLATION GUIDELINES

These guidelines are a supplement to the Schebler Chimney Systems Installation Instructions. Refer to the Installation Instructions provided for proper assembly of each part.

- **Grease Duct Systems must utilize Schebler's S-2000 joint sealant.** This sealant is rated to 2000° F (1093°C).
- Ducts shall not pass through firewalls or fire partitions.
- All ducts shall lead as directly as possible, to the exterior of the building.
- Duct systems shall not be interconnected with any other building ventilating or exhaust systems.
- All ducts shall be installed without forming dips or traps that might collect residues.
- All interior surfaces of ducts shall be accessible for cleaning and inspection purposes. See the section on *Inspection and Cleanout* for further information.
- A sign shall be placed on all access panels stating:
ACCESS PANEL - DO NOT OBSTRUCT

CLEARANCES

Clearance to noncombustible construction as specified in NFPA 96 is 0". In order to prevent interference and possible damage Schebler recommends that the flue be installed with a 1" (25mm) minimum air space between the duct outer wall and any adjacent building materials.

Grease ducting installed in an open room that does not require use of an enclosed chase must have a minimum clearance to combustibles as shown in TABLE 1. Also refer to the SURROUNDINGS section below.

SURROUNDINGS

Schebler Model PA and SW are primarily intended to be used in non-combustible surroundings.

Refer to TABLE 1 for necessary clearances when the Grease duct is installed in an open room where no enclosure is required. The duct may be located in a corner formed by combustible material using the clearances stated in TABLE 1.

Interior installation in all buildings should be as follows:

1. If a ceiling or wall does not have a fire resistance rating and is penetrated by a Schebler grease duct installed at the appropriate clearances for unclosed duct, then no enclosure is required. (includes drop ceilings)
2. When a grease duct extends through a ceiling or wall having a fire resistance rating, it shall be enclosed with a continuous enclosure from the point of penetration to or through the roof in a manner that maintains the integrity of the fore separations required by the building code which applies.
3. When a Schebler grease duct extends through any story of a building above that in which the connected appliance is located it shall be enclosed in the upper stories by an enclosure of not less than one hour for building higher under 3 stories in height. For buildings higher than 4 stories in height, the enclosure must be rated for not less than 2 hours.
4. Combustible ceilings or roofs may be penetrated using an insulated thimble assembly ventilated thimble. This is the only part to be used with combustible construction. All other parts, such as plate and wall supports are to be attached to non-combustible construction.

SW				PA			
Inside Diameter		Clearance		Inside Diameter		Clearance	
inches	mm	inches	mm	inches	mm	inches	mm
5" - 6"	127-152	18"	457	5" - 6"	127-152	6"	152
7" - 12"	178-305	18"	457	7" - 12"	178-305	8"	203
13" - 16"	330-406	18"	457	13" - 16"	330-406	10"	254
17" - 20"	431-508	18"	457	17" - 20"	431-508	11"	279
21" - 24"	533-610	18"	457	21" - 24"	533-610	12"	305
25" - 28"	635-711	18"	457	25" - 28"	635-711	14"	356
29" - 32"	736-813	18"	457	29" - 32"	736-813	16"	406
33" - 48"	838-1219	18"	457	33" - 48"	838-1219	18"	457

P1				P2			
Inside Diameter		Clearance		Inside Diameter		Clearance	
inches	mm	inches	mm	inches	mm	inches	mm
5" - 6"	127-152	6"	152	5" - 6"	127-152	6"	152
7" - 12"	178-305	8"	203	7" - 12"	178-305	8"	203
13" - 16"	330-406	10"	254	13" - 16"	330-406	10"	254
17" - 20"	431-508	11"	279	17" - 20"	431-508	11"	279
21" - 24"	533-610	12"	305	21" - 24"	533-610	12"	305
25" - 28"	635-711	14"	356	25" - 28"	635-711	14"	356
29" - 32"	736-813	16"	406	29" - 32"	736-813	16"	406
33" - 48"	838-1219	18"	457	33" - 48"	838-1219	18"	457

P2A and P4				P1 Grease Duct*			
Inside Diameter		Clearance		Inside Diameter		Clearance	
inches	mm	inches	mm	inches	mm	inches	mm
5" - 6"	127-152	2"	51	5" - 10"	127-254	4"	102
7" - 12"	178-305	3"	76	11" - 16"	279-406	6"	152
13" - 16"	330-406	4"	102	17" - 20"	431-508	7"	178
17" - 20"	431-508	5"	127	21" - 24"	533-610	8"	203
21" - 24"	533-610	6"	152	25" - 28"	635-711	9"	229
25" - 30"	635-762	7"	178	29" - 32"	736-813	10"	254
31" - 34"	787-864	8"	203	33" - 48"	838-1219	11"	279
35" - 38"	889-965	9"	229				
39" - 42"	991-1067	10"	254				
43" - 48"	1092-1219	11"	279				

* P1 Grease Duct uses 6 lb. density insulation for improved clearances. Standard P1 has 4lb. insulation.

Table 1: Open room clearances

CLEARANCES WITHIN ENCLOSURES

Grease duct shall not be enclosed in combustible material. When grease ducts are installed at a minimum of 1-inch clearance. Grease duct wrap systems that are approved for direct application to the duct shall be permitted.

WARNING

When a Schebler Grease Duct system is installed in accordance with the Installation Instructions provided and this guideline and the joints are sealed properly with the correct sealant, the system will contain a grease fire within the duct itself. However, if a grease fire should occur within this duct, the section(s) of the duct that sustained the fire damage should be replaced and the joints sealed according to the instructions provided herein. This will insure that the

system maintains its integrity against subsequent fire conditions.

The Schebler Company cannot be responsible for grease duct systems that are not properly maintained or that have been subjected to one or more fires within the duct system without proper repairs being made.

INSPECTION AND CLEANOUT

Provisions must be made in the system design for the inspection, clean openings must be provided at each change in direction of the grease duct, except in installations where the entire length of the duct can be inspected and cleaned from either the hood or discharge end or both ends of the system.

On horizontal ducts when flue size is less than 20" ID (508mm) cleanouts shall be provided at 12-ft. (3.66m) intervals. Ducts over 20 inches ID cleanouts shall be provided every 20 feet.

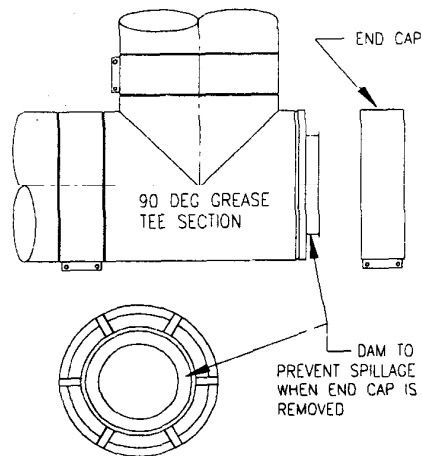


Figure 31 - Grease Tee

Exhaust fans with ductwork connected to both sides shall have an access for cleaning and inspection within 3-ft. (0.93m) on each side of the fan.

Horizontal cleanouts must utilize a grease tee (part 90GT). The grease tee includes a 1-1/2" dam to prevent spillage of grease when removing the end cap. Cleanouts installed in long horizontal runs should have the cap installed on the I top or above the centerline to prevent leakage while cleaning.

Systems should be installed with a 3-inch pitch per 100 ft. of horizontal run.

HOOD TRANSITIONS

The transition between the grease hood or listed ventilator and the Schebler Co. duct is made using a transition constructed of 18 gauge or heavier stainless steel. The transition can be single wall or double wall, air or ceramic fiber insulated. The transition should be attached to the hood with a liquid tight weld or by the hood with a liquid tight weld or by the bolt method described in NFPA 96 or IMC 2000. If the transition is manufactured by others, The Schebler Co. can supply a boiler kit (part # BKF) with a single or double flange for welding to the top of the transition.

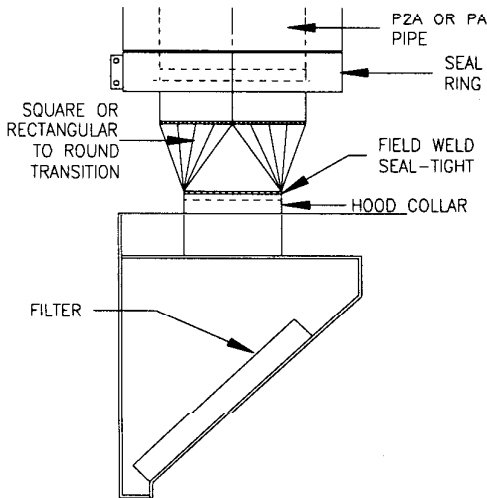


Figure 32 - Connection to hood or extractor

PENETRATING A ROOF OR WALL

Schebler Model PA, P1, P2A and P4 Grease Duct systems used in grease duct applications can penetrate combustible roofs or exterior walls without the need of an insulated thimble provided proper clearances are maintained. (TABLE 1) Clearance can be reduced to a 0 by using the insulated roof thimble. (part # IT or IPT)

All models must use all support plates, full rings, roof or wall guides designed into the system by The Schebler Co. as dictated by the UL listing.

Schebler Flashing (Part FL) and Rain Collar (Part RC) can be used to provide a weather seal at combustible or noncombustible roof penetrations.

ROOF TERMINATIONS

Duct shall terminate with a minimum of 10-ft. (3.048m) of clearance from the outlet to adjacent buildings, property lines and air intakes located within 10-ft. (3.048m) horizontally.

The exhaust shall be directed up and away from the surface of the roof and a minimum of 40" (1016mm) above the roof surface.

Schebler offers a fan adapter (part FA) that can be used for connecting duct to the curb of an up-blast fan. Schebler also offers special fittings to terminate with an utili-I-set fan.

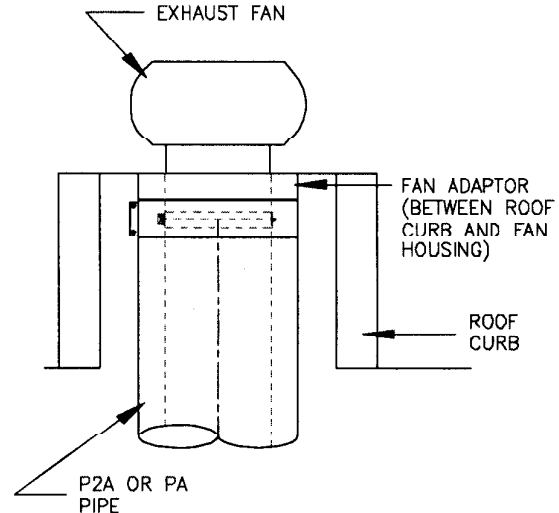


Figure 33 - Connection to curb mounted rooftop fan

WALL TERMINATIONS

Grease duct shall terminate through a masonry wall with a minimum of 10 ft. (3.048m) of clearance from the outlet to adjacent buildings, property lines, grade level, combustible construction, electrical equipment or lines, and the closest point of any air intake at or below the plane of the exhaust termination. The closest point of any air intake above the plane of the exhaust termination shall be a minimum of 10ft. (3.048m) distant, plus 3 inches (76mm) per each degree from horizontal, the angle of degree being measured from the center of the exhaust termination to the center of the air intake.

The exhaust flow shall be directed perpendicularly outward from wall face or upward.

WHY SCHEBLER RECOMMENDS DUAL-WALL GREASE DUCT ASSEMBLIES

Schebler Grease Duct systems are constructed using components of the standard SW, PA, P1, P2, P2A or P4 chimney systems plus selected parts engineered specifically to meet grease duct applications needs.

The Schebler Co. recommends the use of a dual-wall grease duct system in kitchen exhaust applications because of the added benefits that accrue from having inner and outer-wall construction. The 1 inch (25mm) air gap between the shells of the Model PA system, the 1,2 & 4 inches ceramic insulation of the P1, P2 and P4 respectfully, and the addition of 2" (51mm)

of ceramic fiber along with a 1 inch air gap for Model P2A helps protect the inner shell while presenting a lower temperature outer shell to both human exposure and the environment.

DESIGN FEATURES AND CONSIDERATIONS

The Schebler Co. grease duct system components include the following specialized features:

- Horizontal drains, drain fittings and inspection plugs used to inspect and to clean out grease and other residue from within the duct.
- Nozzle sections incorporating fittings for the connection of automatic clean down systems fire suppression systems and fire sensing probes.
- Wall penetration assemblies used to pass ductwork through a combustible exterior wall. Consult your local AHJ. Termination through an outside wall should be planned so the duct exiting the building is at a safe level above ground or street level. It is often easier and more convenient to terminate a grease duct system through an exterior wall that leads to an alley or other low traffic area, if locally permitted.

PROPER MAINTENANCE AND SAFETY

Chapters 7 and 8 of NFPA 96 provide safety, cleaning, maintenance and fire extinguishing guidelines for grease duct systems.

Hoods, grease removal devices, fans and related equipment must be cleaned at frequent intervals to prevent surface buildup of grease or oil sludge. The entire system, including grease extractors, should be inspected on a daily to weekly basis to determine if grease buildup has occurred and if cleanup is required.

Grease duct must be serviced and cleaned per Chapter 8 of NFPA 96 to prevent grease build-up in the system.

When burning solid fuels, mechanical cleaning of the grease duct should be done no less than once every two months of service or more frequently as deemed necessary by the system user.

USE OF AUTOMATIC CLEANING SYSTEMS

Automatic cleaning assumes that the system's drain fittings are connected to piping that leads directly to the main sewer drain or other system capable of handling the volume of wash water generated during cleaning cycles.

Nozzle sections may be used for making connections to automatic cleaning systems. The hot water/detergent solution is then injected through the nozzle section(s) and washes down the inside of the inner piping walls. The wash water is then drained from the system through a drain line connected to drain fittings,

tees, wyes, drain sections, stack base drains, or horizontal drains. Drain lines must not lead to grease traps or buckets of inadequate size to contain the volume of wash water produced through the cleaning process. This may involve rerouting certain drain lines prior to beginning the automatic cleaning process.

FIRE EXTINGUISHING EQUIPMENT

NFPA 96 requires that fire-extinguishing equipment be provided for the protection of duct systems, grease removal devices and Type I hoods.

The use of nozzle sections in your Schebler Grease Duct system allows various types of fire extinguishing equipment and spray nozzles to be fed into the ductwork.

Spray nozzles and piping are passed through the 1" N.P.T. nipple that is factory welded to the pipe's inner wall.

GREASE TRAPS

Grease traps must be checked and cleaned as required to safely maintain the system. The Schebler Co. recommends that all drain fittings and sections be fitted with an external metal grease trap. A metal grease trap allows the grease that runs to all drains during normal operations to be removed from the system and safely isolated until it can be disposed of during regular cleaning cycles. An individual enclosed grease trap should be provided for each grease duct fitting. This applies whether or not the grease duct system uses an automatic cleaning system.

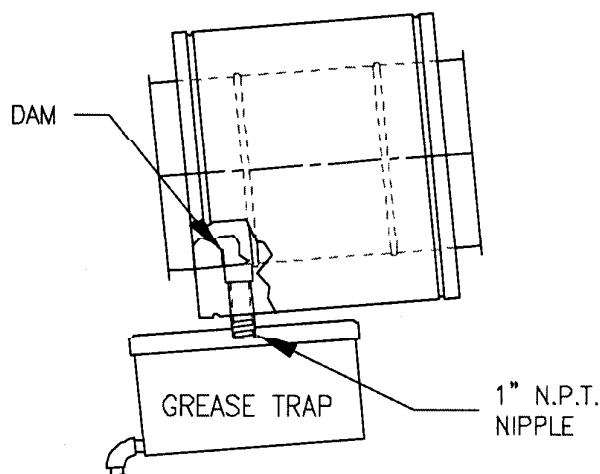


Figure 34 - Grease Trap

The grease trap must be mounted as close as possible to the drain fitting (Figure 34). Extension piping from the nipple to the trap is not allowed. Grease may solidify within the piping and back up into the ductwork.

NFPA 96 recommends that grease traps do not exceed 1-gallon capacity for listed grease extractors.

MAINTENANCE

Schebler Grease Duct systems are designed engineered and manufactured to provide years of highly efficient operation. Every effort has been made to use the finest materials available. Proper maintenance is required to keep the system in optimal condition.

The standard inner shell of the Schebler Grease Duct system is constructed of 304 stainless steel. Type 316 stainless steel is also available. Standard outer shells are fabricated of Aluminized steel. 304 and 316 stainless are also available.

All of these materials will provide long life within an environment free of chemical contaminants. Chemicals containing halogen compounds, chlorine or chlorides, fluorocarbons, dry cleaning or metal cleaning substances can be expected to cause early deterioration of the metals. Care should be taken to avoid contamination of the combustion air with these chemicals or chemical compounds.

The best prevention from premature deterioration of the grease duct system is to ensure that corrosive chemicals are not in the system's immediate environment. Should this not be possible, Type 316 stainless steel wall can be used for the inner and outer walls. Exterior portions of systems with standard aluminized steel outer walls should be painted with one coat of heat and corrosion-resistant metal primer and one finish coat of paint.

Note: Schebler structural supports and guides are manufactured from hot rolled plate or angle and have received a primer coat only. These support and guide pieces MUST be field painted prior to installation using one coat of heat and corrosion-resistant primer followed by a heat and corrosion-resistant topcoat of paint.

If inspection of the grease duct system shows damage the sections involved can be easily replaced. If support or guide assemblies show corrosion, the part(s) affected should be cleaned of all corrosion and repainted.

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