

VOLUME VI: ENDURA® GREASE MANAGEMENT PLUMBING SYSTEMS

MECHANICAL
TECHNICAL MANUAL SERIES



HYDROMECHANICAL GREASE INTERCEPTORS (HGI)

7 to 50 GPM Models

XL 75 to 150 GPM Models

XL Sampling Well

Solids Interceptors

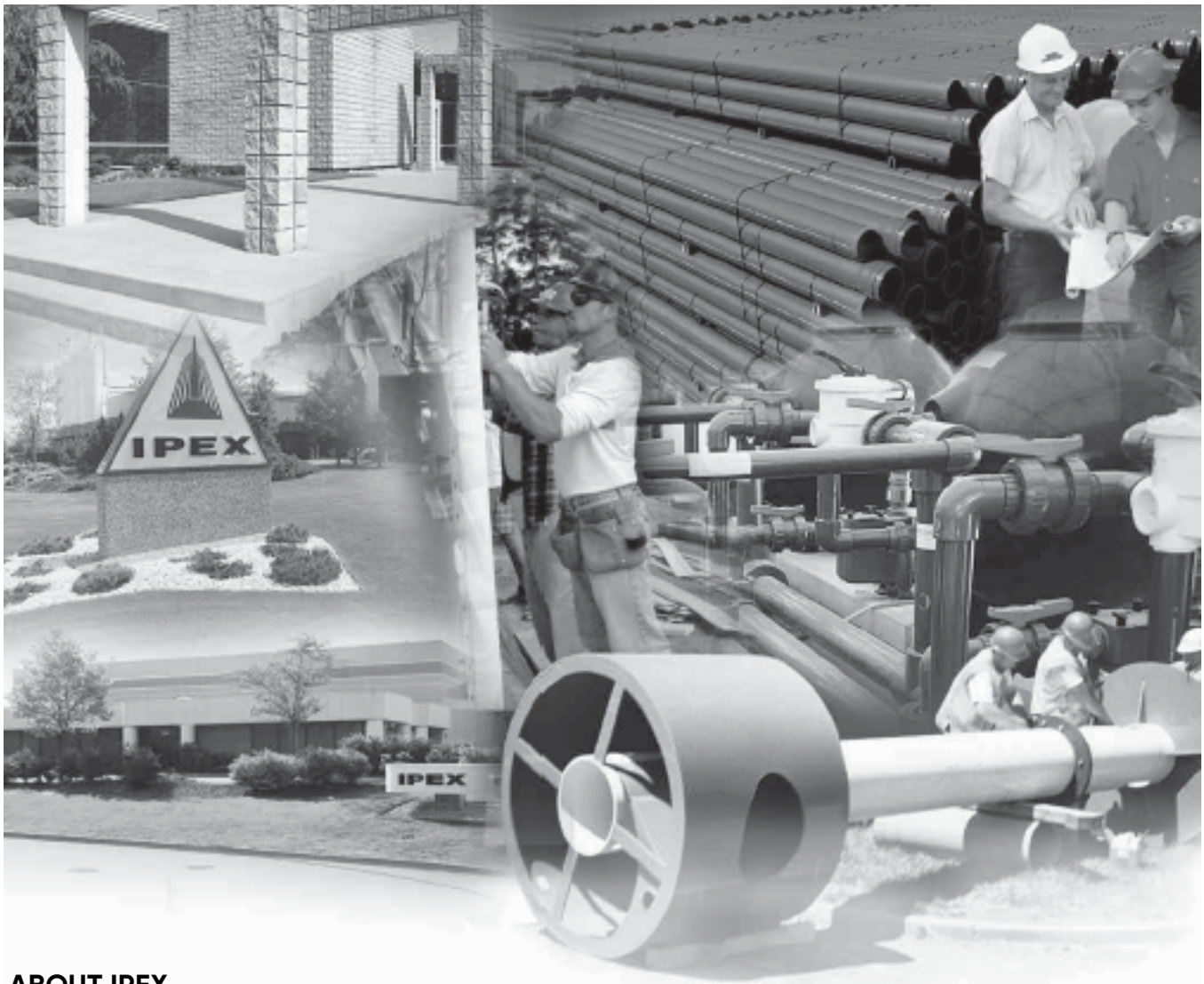
Rethinking Grease Interception

Endura® Grease Management Plumbing Systems

Mechanical Technical Manual Series, Vol. VI

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ABOUT IPEX

At IPEX, we have been manufacturing non-metallic pipe and fittings since 1951. We formulate our own compounds and maintain strict quality control during production. Our products are made available for customers thanks to a network of regional stocking locations throughout North America. We offer a wide variety of systems including complete lines of piping, fittings, valves and custom-fabricated items.

More importantly, we are committed to meeting our customers' needs. As a leader in the plastic piping industry, IPEX continually develops new products, modernizes manufacturing facilities and acquires innovative process technology. In addition, our staff take pride in their work, making available to customers their extensive thermoplastic knowledge and field experience. IPEX personnel are committed to improving the safety, reliability and performance of thermoplastic materials. We are involved in several standards committees and are members of and/or comply with the organizations listed on this page.

For specific details about any IPEX product, contact our customer service department.



Endura® Grease Management products are an effective, efficient and trusted component of our injection molded product family and have demonstrated exceptional performance over the decades.

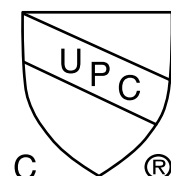
Endura products are multi-patented and built to withstand the toughest environments, providing the flexibility of in-floor, on-floor, and semi-recessed applications. We have been instrumental in changing the traditional practices regarding the installation of grease management solutions; plastic alternatives to metal interceptors are now substantially accepted Nationwide as the new standard for grease management in commercial foodservice applications.

Endura products are thermoplastic Hydromechanical grease interceptor (HGI) designed to provide exceptional grease management solutions for plumbing and food service professionals. HGIs are manufactured in an ISO 9001 and 14001 registered facility. Sizes range from 7 through to 150 GPM units constructed of either Polypropylene (PP) or Polyethylene (PE) compound.

This manual provides installers, designers and engineers with guidance to help ensure the proper usage of Endura products. Readers are encouraged to consult with the Manufacturer or local representative for any additional clarification before using Endura to ensure a successful installation.

At Endura, we think the best way to protect municipalities and our waterways is to put proactive interception practices into place. It's about more than providing better technology and materials—it's about rethinking the entire process. From installation, to maintenance, to durability, we provide a complete solution that is both innovative and proactive.

If you need additional copies of any instructions, or if you have questions about the safe and proper installation of Endura products, contact Endura Toll Free (Canada: 1-800-461-1771) or (USA: 1-888-461-5307). For the most up-to-date information on Endura products, email: tech-support@endurainterceptor.com



SAFETY ALERTS

Engineered thermoplastics are safe inert materials that do not pose any significant safety or environmental hazards during handling or installation. However, improper installation or use can result in personal injury and/or property damage. It is important to be aware of and to recognize safety alert messages as they appear in this manual. The types of safety alert messages are described below.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid personal injury or death.



WARNING

"WARNING" Indicates a hazardous situation which, if not avoided, could result in severe injury or death.



CAUTION

"CAUTION" Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

"NOTICE" Indicates a hazardous situation which, if not avoided, may result in system failure and / or property damage.

The use of the word **"NOTE"** signifies special instructions which are important but are not related to hazards.

ENDURA® SAFETY ALERTS



WARNING

DO NOT PRESSURE TEST. RISK OF SERIOUS INJURY

As a plumbing appurtenance your Endura® grease interceptor **MUST** be isolated from the drainage system in the event that final drain testing or other system pressure testing is required.

DO NOT under any circumstances subject your interceptor to pressure test (AIR, WATER OR OTHERWISE). This action will result in damage to the unit, invalidate your warranty and could cause serious bodily injury.



WARNING

GREASE INTERCEPTORS ARE HAZARDOUS ENVIRONMENTS AND MUST NEVER BE LEFT UNCOVERED AND UNATTENDED, EVEN DURING MAINTENANCE.

- All access covers **MUST** be fully and completely secured
- All required bolts **MUST** at all times be in place and well tightened
- Missing bolts **MUST** be reported to management and replaced immediately
- Covers **MUST** meet the required load rating for the application (see the Technical Information section)
- Do **NOT** use alternate covers

NOTICE

If installed under a sink, make sure there is at least 15" clearance (21" for 50 GPM model) to remove the baffles for cleaning and maintenance. If this is not practical, semi-recessing the tank is an option (Note: 25 GPM Lo-PRO is mean for on floor installation only).

NOTICE

Failure to maintain the grease Interceptor can result in heavy fines from the local authority having jurisdiction and/or flooding as a result of the system backing up

NOTICE

If there is an obstruction in the line, make sure the plugs are installed in the sinks or the recommended upstream ball valve is closed before accessing the waste piping.

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SECTION ONE: GENERAL INFORMATION

OVERVIEW

The grease management industry has developed significantly in the past decade with the continuous advancement of product design, progression of performance standards, and the emergence of HGI's as a mainstream, progressive solution for the future.

Traditionally, the term "Grease Trap" has been used in the industry. In recent years this term is progressively disappearing from vocabulary and technical references based on an industry-wide recognition that the term "trap" would suggest the presence of a water seal integrally located within the interceptor, leading to potential confusion of the function of a grease interceptor. This practice ceased many years ago, modern interceptors being designed to be installed in conjunction with external water seal traps as a standard part of the system.

In addition to this clarification, with publication of the 2006 UPC plumbing code, three generic types of grease interceptors were introduced and have since become the industry standard for designating the type of interceptor being considered.

GREASE INTERCEPTOR (GI):

"A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum fats, oil, and grease (FOG) from a wastewater discharge."

Specific characteristics further classify GI's into one of the three types:

HYDROMECHANICAL GREASE INTERCEPTOR (HGI):

An HGI is sized by flow rate (GPM) and qualified separation/retention efficiency, validated against National performance Standards. An HGI incorporates a defined means of flow control, acts to entrain air to influent, includes interior baffling, or barriers in combination or separately, working to promote hydromechanical separation. HGI's may be installed inside the facility they serve or outside the building, above or below grade.

GRAVITY GREASE INTERCEPTOR (GGI):

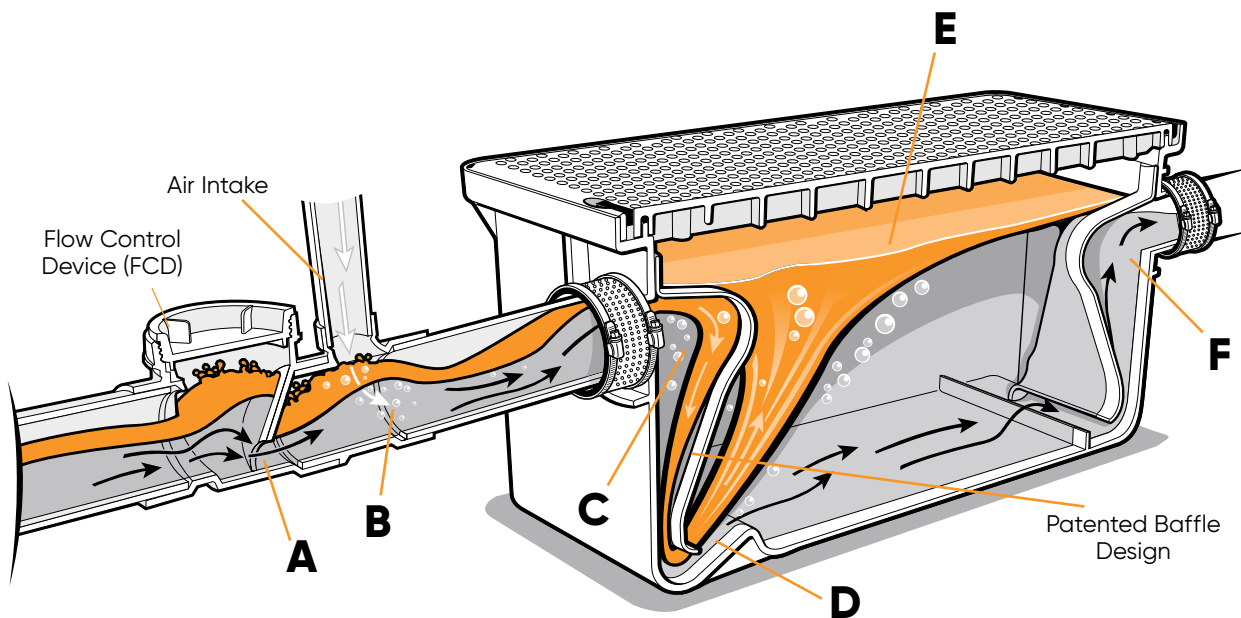
A GGI is characterized by volume, minimum 20 minute retention time, baffle(s), not less than two compartments, a total volume of not less than 350 gallons, and gravity separation. If not recognized by an official body, a GGI will be designed by a registered professional engineer. GGI's are generally installed outside the building they serve and buried below grade.

GREASE REMOVAL DEVICE (GRD):

A GRD is a hydromechanical grease interceptor that mechanically removes nonpetroleum FOG from the separation chamber, the control of which is either automatic or manually initiated and involves maintaining a liquefied state of intercepted FOG by heating. GRD's are installed inside the facility they serve.

HOW DOES IT WORK?

By definition, an HGI is designed to use managed flow, air entrainment, and specifically designed features to provide an enhanced level of separation efficiency, removing non petroleum FOG (Fats, Oil and Grease) from a transition flow of wastewater generated by commercial foodservice activities (Restaurants, cafeterias, institutional kitchens, sandwich shops and coffee houses, for example).



Example of an Endura® grease interceptor 25 GPM unit,

Selection of the appropriate size HGI is critical to the performance of the system. HGIs are sized based on flow rate and their grease carrying capacity. Flow control devices must be installed per plumbing code to ensure the waterflow does not exceed the certified flow rate of the HGI. HGI's are performance tested to National Standards (such as PDI G-101, ASME A112.14.3, CSA B481) offering the end user confidence that the minimum level of efficiency will be achieved.

All models of the Endura grease interceptors employ a similar process to effectively separate grease. An uncontrolled discharge passing through a flow control device (A) which is designed with an integral orifice to manage the flow of discharge into the interceptor, before or at the inlet of the interceptor. Orifice openings are calibrated for each certified unit based on the results of the performance testing during certification. The fluid

experiences a Venturi effect as a result of passing through the constricted section of the fitting. After passing the orifice (A), the fluid experiences a drop in pressure due to the Venturi effect which draws air into the inlet flow via the air intake (B), promoting laminar flow after the point of restriction. The inlet baffle (C) slows the velocity of the influent and further promotes the establishment of laminar flow. Next, the integral ramp (D) will direct the wastewater stream upwards to promote the rise of FOG into the retention area of the tank (E). The diameter of grease globules formed, differences in specific gravity and viscosity of the fluids, and the temperature of the grease and water helps the grease efficiently rise to the surface. Treated effluent within discharge FOG concentration limits will exit (F) into the municipal network while separated grease will be retained in the grease retention area. As the volume of grease stored reaches the capacity of the unit, the lid can be manually removed for regular maintenance and cleaning.

FEATURES AND BENEFITS

DURABILITY

- Fewer installations and replacements result in lower lifetime costs & less landfill waste
- Injection molded in engineered thermoplastics, ENDURA® GREASE INTERCEPTORS will not corrode, chip, or peel even under the most hostile / corrosive conditions
- Endura® units are guaranteed to last, provided with a Limited Lifetime Warranty.



GREEN BY DESIGN

- Lightweight but durable Endura grease interceptor units enable smaller carbon footprints and low-emissions transport
- Injection and rotationally molded thermoplastic requires less energy to produce than metal grease interceptors
- Endura Interceptors are manufactured using up to 100% recycled* recompounded material



*Endura utilizes up to 100% of recompounded material during the manufacturing process.

FULLY CERTIFIED – Endura and Endura XL HGIs are certified to PDI G-101, CSA B481 or ASME A112.14.3 model codes.

LOWER INSTALLATION COSTS – in addition to lower material costs than traditional grease interceptor materials, Endura units can significantly reduce labor and transportation costs on a typical installation.

EASY MAINTENANCE – easy access with convenient cover latches, removable internal components and a smooth internal surface.

ENGINEERED MATERIALS – Endura products are manufactured using engineered thermoplastics that will not corrode, chip or peel. Durability provides consistent operation – no compromise of effectiveness due to deterioration of key parts, ensuring lower maintenance costs. The Endura units are immune to damage from naturally corrosive soil conditions.

LIGHTWEIGHT – compared to traditional grease interceptors of equivalent capacities, Endura offers a significantly lighter alternative.

SIZE RANGE – offered from 7 GPM models through to 150 GPM.

INSIDE OR OUTSIDE BUILDING – Endura units can be used for indoor or outdoor installations, in-floor or on-floor, as well as below grade. Depending on the application, modular riser extensions may simplify installation.

REMOTE PUMP XL MODELS – Endura XL models are designed to support the installation of a remote pump-out configuration.

COMPLETE LINE – Endura offers a complete line of grease interceptors and accessories to satisfy most application. This includes solids interceptors, sample wells, and extensions.

SECTION TWO: SYSTEM DESIGN

DESIGN CONSIDERATIONS

Endura is solely intended for use in non petroleum grease management and separation.

MATERIAL:

All Endura grease interceptors are designed to meet or exceed material standards as published in PDI G-101, CSA B481 and ASME A112.14.3.

PP (Polypropylene)

Endura 7 GPM to 50 GPM

PP offers high operating temperatures 220°F (104°C) making it ideal for point of use applications. PP also offers strong chemical and corrosion resistance from food waste. It is capable of handling a pH ranging from 1 to 13, and is resistant to organic solvents as well as acids and alkalis.

PE (Polyethylene)

Endura XL 75 - 150 GPM models

PE tolerates high operating temperatures 160°F (71°C), PE also offers strong chemical and corrosion resistance from food waste. It is capable of handling a pH ranging from 1 to 13, and is resistant to organic solvents as well as acids and alkalis.

Both materials allow for the units to be used in below grade applications due to their superior resistance to harsh conditions in soil.

CHEMICAL RESISTANCE

Over time as grease collects in the interceptor, the FOG breaks down. Anaerobic bacteria convert the naturally occurring sulfate molecules into sulfides. The sulfides later form hydrogen sulfide gas (H_2S), which is a toxic and corrosive colorless gas with a characteristic foul odor of rotten eggs. Furthermore, airborne aerobic bacteria consume hydrogen sulfide gas, generating sulfuric acid (H_2SO_4) in the wastewater of the interceptor. PP and PE have outstanding resistance to a wide range of chemicals including hydrogen sulfide and sulfuric acid making the materials an ideal choice for these applications.

LAYOUT

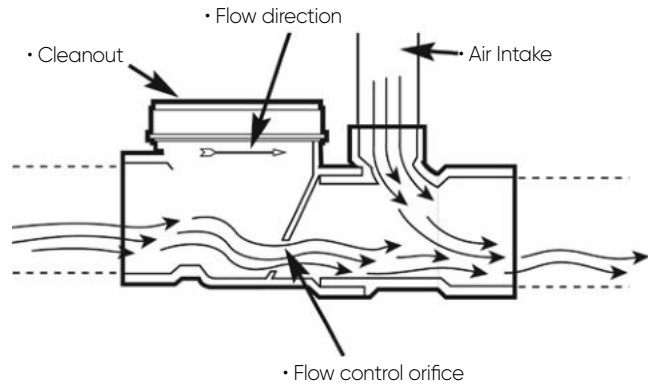
Dependent on the specific grease interceptor model, installation can be indoor or outdoor, above or below ground. It is recommended to have your grease interceptor unit within 25ft (7.6m) of the last sink (discharge fixture). Pipe runs longer than 25ft should be aggressively sloped and/or heat traced to help prevent FOG from building up in the piping system. Access to effluent for sampling may be required by AHJs in some jurisdictions. A sample well may be installed downstream of the grease interceptor to facilitate access. Refer to the examples of typical installations within section 3 of this manual for more detail.

MONITORING

To simplify maintenance, the Endura XL Grease Monitor and Alarm can be installed to alert operators when it is time to schedule service. It also safeguards the food service facility by monitoring for high liquid level events, which may signal a blockage or impending backup.

FLOW CONTROL

Key to hydromechanical function and performance is flow control. If designing for system compliance with PDI-G101, an external flow control(s) shall be required as part of the installation. Where acceptable to the Authority Having Jurisdiction (AHJ), internal means of flow control can be employed providing that the interceptor is approved to the currently published version of ASME A112.14.3 –Type C or D. Any method of flow control shall be accessible once in operation for cleaning and maintenance purposes. The Endura® external flow control device can be recessed into the floor if required. Extension sleeves are available.



FLOW CONTROL FORMATS

EXTERNAL FLOW CONTROL

Hub x Hub format:

Sch40 DWV. Nominal diameters 2", 3" and 4". For solvent weld within ABS or PVC DWV drainage systems, use appropriately approved solvent cement.



Hub Version

Example: 3933125A
2 piece format
- 3" & 4" models (2" available)

Compact Version

Example: 3922125CA
1 piece format

SPIGOT (Suffix 'S'):

Supplied with Spigot format connections for installation with locally approved Mechanical Joint (MJ) couplings.

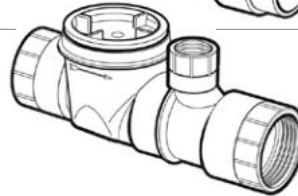


Spigot Version

Example: 3933125AS
2 piece format
- 3" & 4" models (2" available)

THREADED (Suffix 'T'):

Supplied with Female Pipe Thread (FPT) connections. Installed to Male Pipe Thread (MPT) using appropriate (PTFE) thread sealing tape.



Threaded Version

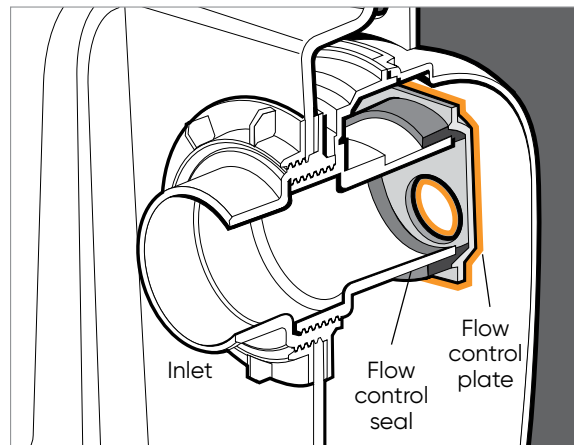
Example: 3933125AT
2 piece format
- 3" & 4" models (2" available)

Note: Supplied standard with all Endura 7 to 50 gpm, and all XL HE models. Can be purchased separately for XL75 and XL100 models installed in accordance with PDI G-101.

INTERNAL FLOW CONTROL

On Endura® XL models, the internal flow control is integrated into the dynamic inlet baffle, affixed to the downstream piece that moves forward when the baffle is opened. This provides full accessibility during maintenance.

Note: Supplied standard with Endura® XL75 to Endura XL150 models.



CONNECTION OF DISHWASHING SYSTEMS

Local plumbing code may require or prohibit a dishwasher discharging into a grease interceptor. Where a dishwashing system is required to discharge into the grease interceptor, it is recommended that it be serviced by a dedicated grease interceptor, separate from the main interceptor.

AIR-BALANCED OPERATION

A hydromechanical grease interceptor is designed to operate as an air balanced environment. This is vital to the function of the interceptor. No modification or removal of any component parts should be made before, during or after installation unless specifically addressed in the respective Installation & Operation document.

VENTING

Grease interceptors must have a vented waste sized in accordance with local code requirements with local requirements to retain a water seal to retain a water seal and prevent siphoning. Endura grease interceptor tanks do not require direct venting.

Most codes dictate that two vents be installed, one upstream and one downstream of the grease interceptor. All connected appliances shall be individually trapped and vented in accordance with local code requirements. The upstream vent must not be placed between the air intake and the grease interceptor. The downstream drain carrying effluent to the municipal wastewater system shall also be vented to atmosphere in compliance with applicable code.

CLEANOUTS

For installations below grade, most codes require the installation of a two way cleanout immediately before and after the respective inlet and outlet connections. These cleanouts will be extended to grade to remain accessible once the interceptor is operational.

HEAD EFFECT

An installation above or below grade that sees a fall equal to or in excess of 10 ft (3.05 m), when measured from the outlet of the highest appliance to the inlet of the interceptor will require the installation of a secondary flow control device to neutralize the effect of head pressure. The first flow control will be located as close as possible to the last appliance discharging to the interceptor, the second being located immediately before the interceptor or by utilizing the manufacturers internal flow control device where available. Refer to your local plumbing and building code for any regionally specific requirements.

ACCESSIBILITY FOR MAINTENANCE

All grease interceptors require regular maintenance. All designs and subsequent installations must ensure that accessibility will be maintained throughout the operation of the interceptor. Installation documents are supplied with every interceptor. Copies are also available by contacting: tech-support@endurainterceptor.com

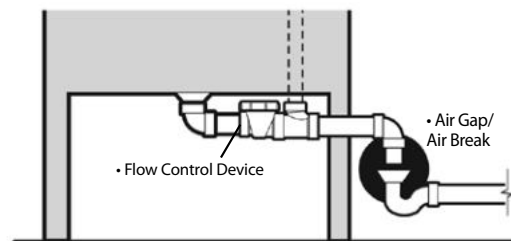
SAMPLING ACCESS

Some municipalities require a sampling port to monitor effluent quality. Any design and subsequent installation should ensure that sampling access is incorporated in accordance with local requirements.

INDIRECT CONNECTIONS/ AIR GAP/ AIR BREAK

Some local jurisdictions require warewashing installations to be made on an indirect basis incorporating an air gap.

For installations with indirect connections, a 1 minute drain down time should be used for flow rate calculations. External flow control devices (where applicable) should be installed upstream of the air gap.



NOTICE

1 min. drain times should be used when sizing a HGI that is downstream of an air gap/ break or indirect connection.

GREASE INTERCEPTOR SIZING

Note: For additional Sizing Tools and Maintenance Interval Optimization, use our Endura® Calculator at enduracalculator.com

THE FOLLOWING TWO-STEP METHOD IS RECOMMENDED FOR SIZING
HYDROMECHANICAL GREASE INTERCEPTORS (HGIS):

STEP 1: DETERMINE MINIMUM SIZE HGI → **STEP 2: OPTIMIZE HGI SIZE FOR CAPACITY & MAINTENANCE SCHEDULE**

STEP 1: DETERMINE MINIMUM SIZE HGI BASED ON DRAINAGE LOAD

Determine minimum size grease interceptor required to accommodate the maximum drainage load of the application. Based on the available data, select one of the three calculation methods below:

A. SIZING BY FLOW RATE

This method calculates the maximum liquid capacity of all fixtures connected to the interceptor and determines the maximum resultant flow rate for the application. The calculation takes 75% of the maximum capacity of all fixtures in the system and, based on a 1 or 2 minute drain down time, determines a design flow rate.

Step	Formula	Example
a.	Determine cubic content of fixture by multiplying length x width x depth	A sink 24" long by 20" wide by 12" deep. Cubic content: $24 \times 20 \times 12 = 5,760$ cu in ($61.0 \times 50.8 \times 30.48$ cm ³)
b.	Determine capacity in gallons 1 gallon = 231 cu in	Contents in gallons: $5,760 / 231 = 24.9$ gallons ($94,451.42 / 1,000 = 94.45$ litres)
c.	Determine actual drainage load The fixture is normally filled to approximately 75% of capacity with water as the items being washed displace about 25% of the total fixture content. Actual drainage load = 75% of fixture capacity	Actual drainage load: $.75 \times 24.9 = 18.7$ gallons ($0.75 \times 94.45 = 70.84$ litres)
d.	Determine flow rate and drainage period In general, good practice dictates a one minute drainage period; however, where conditions permit, a two minute drainage period is acceptable. Drainage period is defined as the actual time required to completely drain the fixture. Flow rate = $\frac{\text{Actual Drainage Load}}{\text{Drainage Period}}$	Calculate flow rate for one minute drainage period: $18.7 / 1 = 18.7$ g.p.m. flow rate ($70.84 / 1 \text{ min.} = 70.84$ l.p.m.) Calculate flow rate for two minute drainage period: $18.7 / 2 = 9.4$ g.p.m. flow rate ($70.84 / 2 \text{ min.} = 35.42$ l.p.m.)
e.	Select Interceptor. From Table B select the interceptor with a flow rating at least equal to the calculated flow rate. When the calculated flow rate falls between two sizes, select the larger of the two interceptors.	For a one minute drainage period: 18.7 g.p.m. (70.84 l.p.m.) flow rate = 20 g.p.m. grease interceptor For a two minute drainage period: 9.4 g.p.m. (35.42 l.p.m.) flow rate = 10 g.p.m. grease interceptor

B. SIZING BY DFU'S

For applications where the drainage load has been provided in terms of DFUs (common for gravity grease interceptor specification), this method can be applied to determine the equivalent design flow rate for HGI sizing. Once the Gravity Grease interceptor volume (USG) is determined per Model Plumbing Codes we can convert to HGI Design Flow Rate by applying a 30 minute retention time. For example, a 500 USG GGI that has been sized for a 30 minute retention time, will have 17 GPM (500 USG/ 30 min) average flow rate into the unit.

Total DFU	Gravity Grease Interceptor Volume (gallons)	Equivalent GPM flow rate
8	500	17
21	750	25
35	1000	33
90	1250	42
172	1500	50
216	2000	67
307	2500	83
342	3000	100
428	4000	133

C. SIZING BY PIPE DIAMETER

When fixtures or DFU data is unknown, the minimum HGI size may be determined by the maximum flow rate through the drainage pipe diameter:

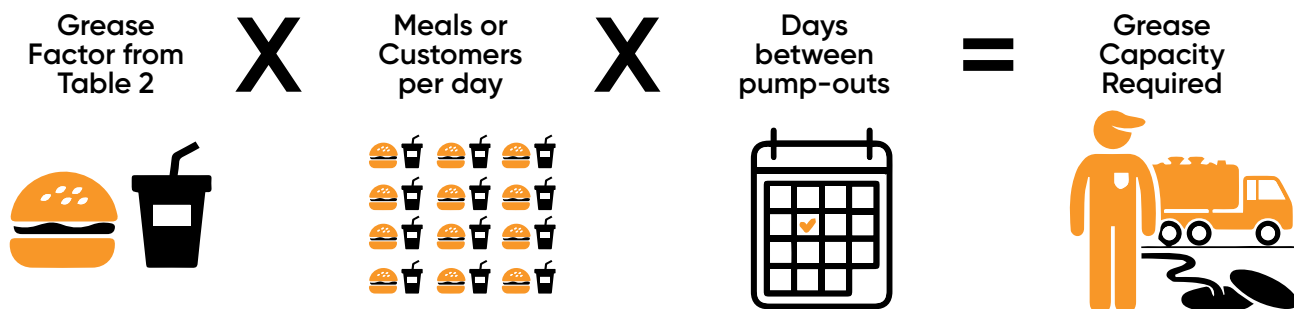
Pipe size (in)	Full pipe flow (GPM)	1-minute drain down time	2-minute drain down time
2	20	20	10
3	60	75	35
4	125	125	75
5	230	250	125
6	375	400	200
8	426	500	250

4 1/4 inch per foot based on Manning's formula with friction factor N = 0.012 (Per Ch. 10 of the Uniform Plumbing Code)

For all methods in Step 1, the determined design flow rate shall be rounded up to the next available size of interceptor. For example, a design flow rate of 16.7 GPM would result in the specification of a 20 GPM grease interceptor.

STEP 2: OPTIMIZE HGI SIZE FOR CAPACITY & MAINTENANCE SCHEDULE

After the minimum size HGI has been determined in Step 1, use the below method to select the appropriate size HGI for the grease capacity needs of the application. It is critical to evaluate the grease capacity needs of each individual application in order to specify a system that will meet the end users needs and desired maintenance frequency.



As published in the 2016 ASPE Design Handbook – Volume 4 Chapter 8, the following factors may be applied in the above formula to determine the grease capacity needs for a given application.

Grease Factors

Grease Factors			
Restaurant Type	Grease Production Values- no flatware	Grease Production Values - flatware	Examples
Low Grease Producer	0.005 lbs (2.268g) per meal	0.0065 lbs (2.948g) per meal	Elementary cafeteria, grocery meat department, hotel breakfast bar, sub shop, sushi, take & bake pizza
Medium Grease Producer	0.025 lbs (11.340g) per meal	0.0325 lbs (14.742g) per meal	Café, coffee shop, convenience store, grocery deli, Greek, Indian, Japanese, Korean, Thai, Vietnamese
High Grease Producer	0.035 lbs (15.876g) per meal	0.0455 lbs (20.638g) per meal	Full-fare family, fast food hamburger, hamburger bar and grill, German, Italian, fast food Mexican
Very High Grease Producer	0.058 lbs (26.308g) per meal	0.075 lbs (34.019g) per meal	Full-fare BBQ, fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian

ASPE Plumbing Engineering Design Handbook – Volume 4 Chapter 8: Table 8-3

Certified grease capacity of Endura® HGIs are provided in Section 2, Product Data Table.

NOTE: HGIs may be sized up from the design flow rate in order to increase capacity. Alternatively, multiple HGIs rated for the design flow rate or greater, may be connected in series to meet the grease capacity requirements.

EXAMPLE:

Consider the following example of a Bar and Grill Restaurant with the following fixtures required to be connected to the GI:

- 3 compartment sink – each bowl is 12" x 14" x 16"
- Hand sink – 11" x 11" x 8"
- Floor Drains – 4 total
- Dishwasher – Manufacturer rated discharge at 5 GPM
- Pre-rinse sink – 12" x 14" x 12"

STEP 1:

a.- calculate the cubic content of fixtures without a defined discharge rate

Fixture	Formula	Calculation	Cubic Inches
3 compartment sink – each bowl is 12" x 14" x 16"	3 (L x W x D)	3 (12" x 14" x 16")	8,064 cu in
Hand sink 11" x 11" x 8"	L x W x D	11" x 11" x 8"	968 cu in.
Pre-rinse sink 12" x 14" x 12"	L x W x D	12 x 14 x 12	2,016 cu in.
GRAND TOTAL			11,048 cu in.

b. Calculate the total volume of the sinks by converting total cubic content into gallons:

1 gallon = 231 cu in;

11, 048 cu in/231 cu in/gal= 47.8 gallons

c. Calculate actual drainage load which is 75% of the total volume (Step 2 Value):

47.8 gallons x 75% = 35.85gal.

d. Assign a drain down time.

35.85gal/ 1min DDT = 35.85GPM

e. Add GPM from additional fixtures (i.e. Dishwasher and floor drains) to determine the design flow rate.

35.85 GPM + 5 GPM (dishwasher) + 4(4 GPM) (floor drains) = 56.85 GPM

f. The minimum size HGI can be determined using the design flow rate in part D. Always round the design flow rate up to the next available HGI to ensure adequate flow capacity.

For this example a 75 gpm hydromechanical grease interceptor would be adequate

4075A04 grease capacity 559 lbs

STEP 2:

Table 8-3 Example Grease Production Values for Restaurants

Restaurant Type	Grease Production Values- no flatware	Grease Production Values - flatware	Examples
Low Grease Producer	0.005 lbs (2.268g) per meal	0.0065 lbs (2.948g) per meal	Elementary cafeteria, grocery meat department, hotel breakfast bar, sub shop, sushi, take & bake pizza
Medium Grease Producer	0.025 lbs (11.340g) per meal	0.0325 lbs (14.742g) per meal	Café, coffee shop, convenience store, grocery deli, Greek, Indian, Japanese, Korean, Thai, Vietnamese
High Grease Producer	0.035 lbs (15.876g) per meal	0.0455 lbs (20.638g) per meal	Full-fare family, fast food hamburger, hamburger bar and grill, German, Italian, fast food Mexican
Very High Grease Producer	0.058 lbs (26.308g) per meal	0.075 lbs (34.019g) per meal	Full-fare BBQ, fast-food fried chicken, full-fare Mexican, steak and seafood, Chinese, Hawaiian

ASPE Plumbing Engineering Design Handbook – Volume 4 Chapter 8: Table 8-3

A Bar and Grill restaurant, with flatware will produce, on average **0.0455lbs** of FOG per meal. Our restaurant will serve, at most **200** meals per day. The FSE operator would like to service the grease interceptor every 30 days.
 $0.0455\text{lbs/meal} \times 200\text{ meals/day} \times 30\text{ days} = 273\text{lbs every month}$

Model selected in Part 1: 4075A04 Endura XL 75 gpm grease interceptor: rated grease capacity 559 lbs

Compare the grease production calculation to the capacity of the model selected in Step 1.. If the grease capacity is not adequate for the application, a larger model can be selected or multiple units can be placed in series. Do not reduce the size of the grease interceptor below the design flow rate from Step 1 of this calculation.

The Grease production values from the ASPE PEDH can also be used to determine the recommended maintenance interval of an FSE by dividing the rated grease capacity of the model by the expected grease production mass per day: **$559\text{ lbs} / (0.0455\text{ lbs/meal} \times 200\text{ meals/day}) = 61\text{ days}$**

Note: This calculation serves as an estimate for FSE operators and should be monitored and adjusted based on the actual findings of maintenance technicians. The maximum maintenance interval should never exceed 90 days and must be in compliance with the requirements of local jurisdiction.

SECTION THREE: PRODUCT DATA

PRODUCT DATA TABLE

CAPACITIES	Endura [®] 7	Endura 10	Endura 15	Endura 20	Endura 25 LO-PRO	Endura 25	Endura 35	Endura 50	Endura XL 75	Endura XL 100	Endura XL 150
Part Number	3907A02	3910A02	3915A02	3920A02	3925A02LO	3925XTA02 (2")	3935A03 (3")	3950A03 (3")	4075A04	40100A04	40150A04
						3925XTA03 (3")	3935A04 (4")	3950A04 (4")	4075A04M	40100A04M	40150A04M
									4075A04C	40100A04C	40150A04C
US Gallons Per Minute GPM (L/Sec)	7 (0.44)	10 (0.63)	15 (0.94)	20 (1.26)	25 LO (1.6)	25 (1.6)	35 (2.2)	50 (3.2)	75 (4.74)	100 (6.3)	150 (9.5)
Grease Capacity Actual (ASME A112.14.3)	31.9 lb (14.49 kg)	38.07 lb (17.28 kg)	35.14 lb (15.94 kg)	76.4 lb (34.65 kg)	62.59 lb (28.39 kg)	72.55 lb (2") (32.90) 73.01 lb (3") (33.11)	138.5 lb (62.8 kg)	122.07 lb (55.3 g) *	559 lb (253 kg) †	1058 lb (480 kg) †	1097 lb (498 kg)
Average Efficiency% (lbs) (ASME A112.14.3)	95.5%	92.5%	90.1%	91.3%	96.3%	98.8% (2") 97.4% (3")	98.6%	93.9%	97%	98%	96.3%
Operating Temperature Capabilities	220°F (104°C)	220°F (104°C)	220°F (104°C)	220°F (104°C)	220°F (104°C)	220°F (104°C)	220°F (104°C)	220°F (104°C)	160°F (71°C)	160°F (71°C)	160°F (71°C)
Cover Load Rating - CSA B481.0	L	L	L	L	L	L	L	L	S M CAST IRON	S M CAST IRON	S M CAST IRON
Unit Weight (Empty)	15.8 lb (7.17 kg)	15.8 lb (7.17 kg)	23 lb (10.4 kg)	23 lb (10.4 kg)	34.35 lb (15.58 kg)	35.61 lb (2") (16.153 kg) 37.77 lb (3") (17.136 kg)	45 lb (20.4 kg)	60 lb (27.2 kg)	233 lb (106 kg)	283 lb (128 kg)	283 lb (128 kg)
Liquid Capacity	12.96 gal (49.06 L)	12.96 gal (49.06 L)	21.6 gal (81.8 L)	21.6 gal (81.8 L)	18.9 gal (71.54 L)	30.6 gal (115.83 L) (2") 29.5 gal (111.67 L) (3")	39.4 gal (149.1 L)	52.0 gal (197 L)	158 gal (598 L)	257 gal (973 L)	257 gal (973 L)
Connection size (mechanical joint only)	2"	2"	2"	2"	2"	2" 3"	3" 4"	3" 4"	4"	4"	4"

PRODUCT
DATA

Min. Cover Load Rating

L	M	S	Cast Iron
PEDESTRIAN RATED 300lb (135 kg)	PEDESTRIAN RATED 2,000 lb (907 kg)	TRAFFIC RATED 10,000 lb (4,536 kg)	ASTM A48 30B**

*Not evaluated to breakdown capacity (PDI-G101)

**Cast Iron Covers (USA) meets H20 loading standards

† NSF ES 15741

DIMENSIONS - ENDURA GREASE INTERCEPTORS

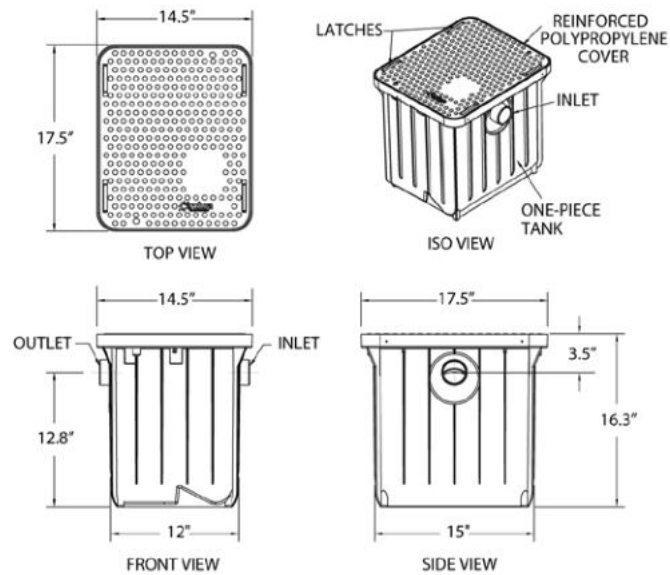
7 GPM COMPACT UNITS

Part Number	Product Code	Connection Type
3907A02	763104	2" HUB
3907A02S	763106	2" SPIGOT
3907A02T	763105	2" THREADED

10 GPM COMPACT UNITS

Part Number	Product Code	Connection Type
3910A02	763096	2" HUB
3910A02S	763098	2" SPIGOT
3910A02T	763097	2" THREADED

Note: Units supplied with a external flow control device, see Flow Control section for dimensions.



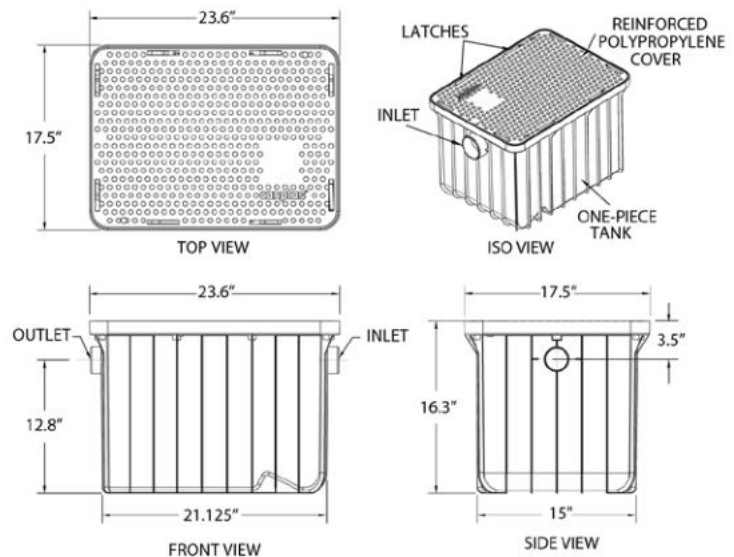
15 GPM UNITS

Part Number	Product Code	Connection Type
3915A02	763064	2" HUB
3915A02S	763068	2" SPIGOT
3915A02T	763069	2" THREADED

20 GPM UNITS

Part Number	Product Code	Connection Type
3920A02	763114	2" HUB
3920A02S	763133	2" SPIGOT
3920A02T	763134	2" THREADED

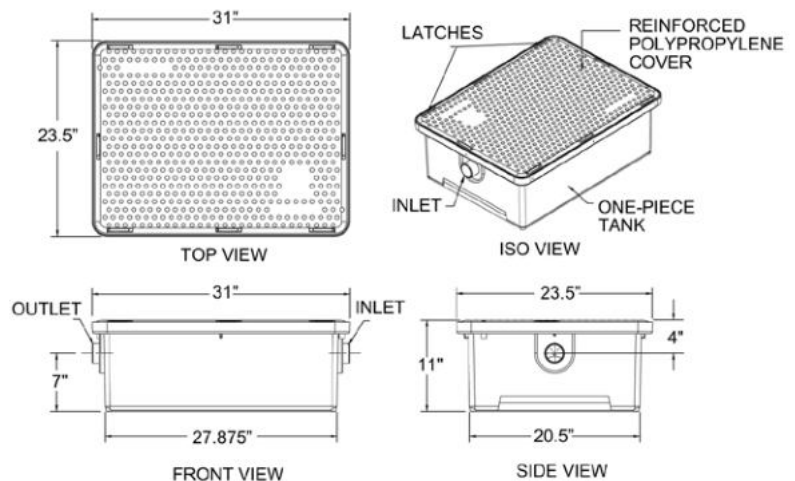
Note: Units supplied with a external flow control device, see Flow Control section for dimensions.



25 GPM LO-PRO UNITS (LOW PROFILE)

Part Number	Product Code	Connection Type
3925A02LO	763231	2" HUB
3925A02LOS	763241	2" SPIGOT
3925A02LOT	763092	2" THREADED

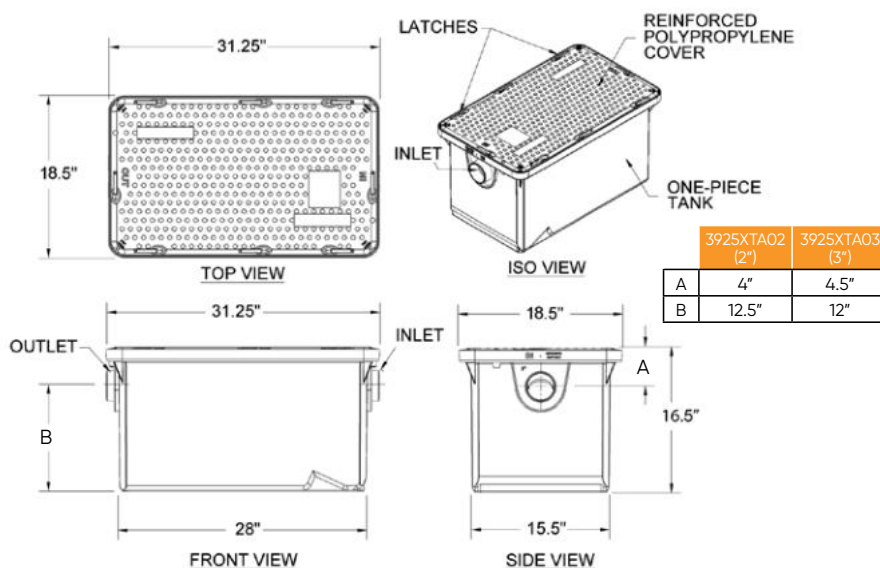
Note: Units supplied with a external flow control device, see Flow Control section for dimensions.



25 GPM UNITS

Part Number	Product Code	Connection Type
3925XTA02	763296	2" HUB
3925XTA02S	763308	2" SPIGOT
3925XTA02T	763333	2" THREADED
3925XTA03	763306	3" HUB
3925XTA03S	763312	3" SPIGOT
3925XTA03T	763334	3" THREADED

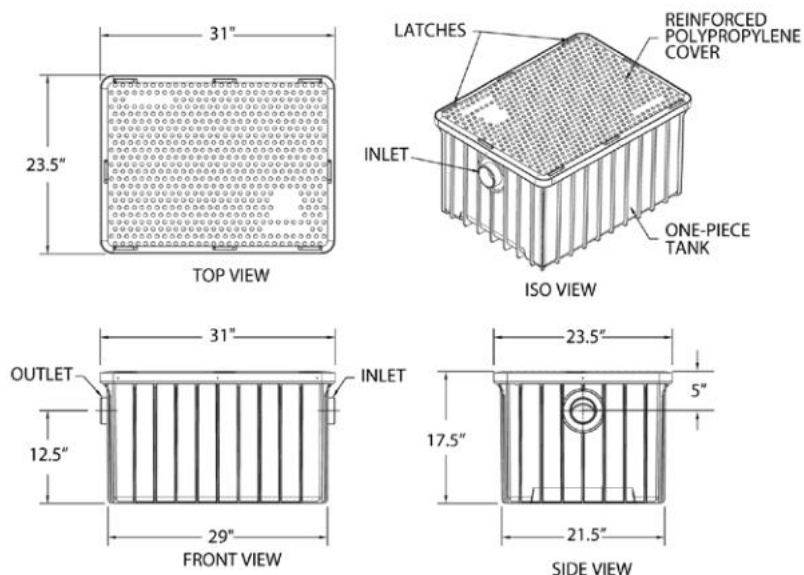
Note: Units supplied with a external flow control device, see Flow Control section for dimensions.



35 GPM UNITS

Part Number	Product Code	Connection Type
3935A03	763519	3" HUB
3935A03S	763535	3" SPIGOT
3935A03T	763536	3" THREADED
3935A04	763541	4" HUB
3935A04S	763550	4" SPIGOT
3935A04T	763551	4" THREADED

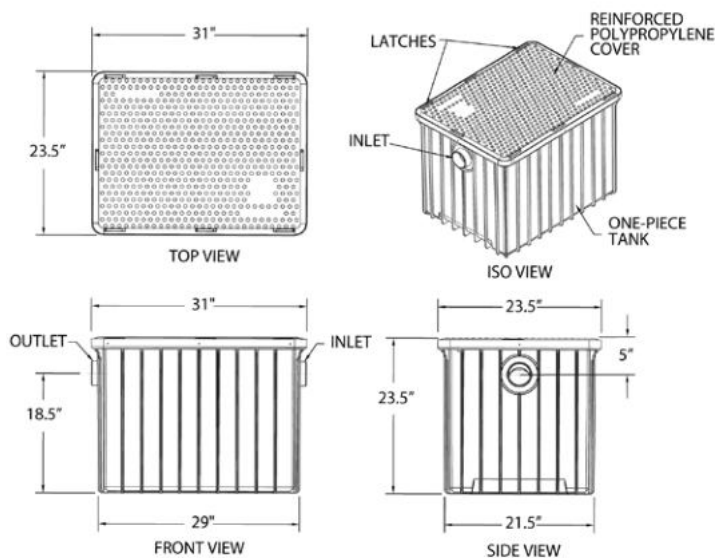
Note: Units supplied with a external flow control device, see Flow Control section for dimensions.



50 GPM UNITS

Part Number	Product Code	Connection Type
3950A03	763646	3" HUB
3950A03S	763663	3" SPIGOT
3950A03T	763664	3" THREADED
3950A04	763668	4" HUB
3950A04S	763673	4" SPIGOT
3950A04T	763674	4" THREADED

Note: Units supplied with a external flow control device, see Flow Control section for dimensions.



XL 75 GPM UNITS

Part Number	Product Code	Connection Type
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TRAFFIC RATED COVERS - "S" RATED

4075A04	766014	4" HUB
4075A04T	766015	4" THREADED

PEDESTRIAN / LIGHT TRAFFIC COVERS - "M" RATED

4075A04M	766080	4" HUB
4075A04MT	766081	4" THREADED

CAST IRON COVERS

4075A04C	766138	4" HUB
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Note: Cast Iron available for US Market

XL 50 GPM MIAMI-DADE 99% HIGH EFFICIENCY UNITS

Part Number	Product Code	Connection Type
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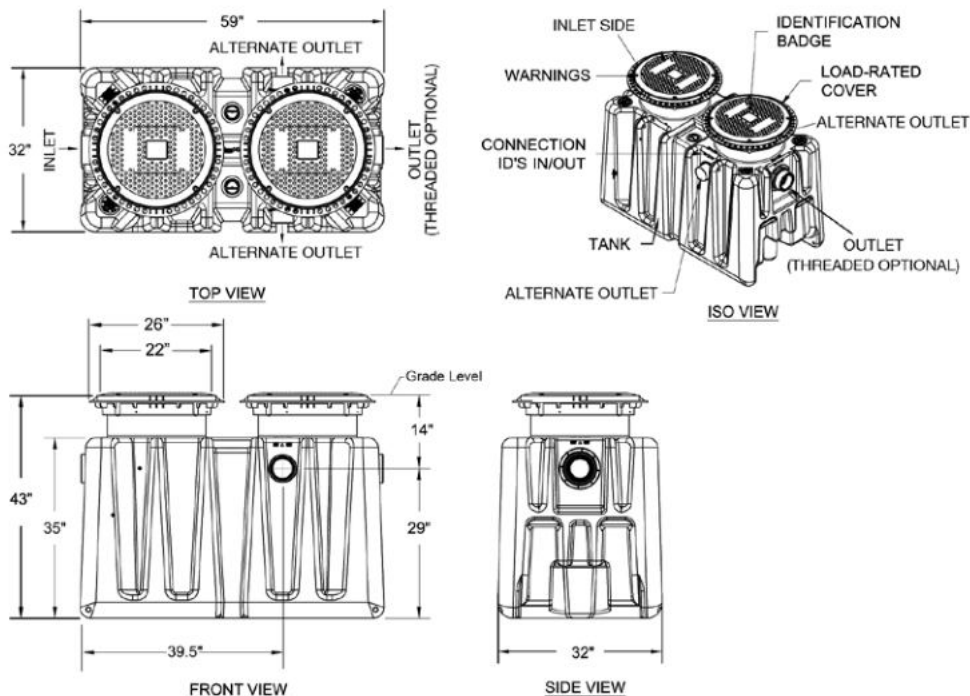
TRAFFIC RATED COVERS - "S" RATED

4050HEA04	766132	4" HUB
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CAST IRON COVERS

4050HEA04C	766140	4" HUB
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Note: High Efficiency Units available for US Market



XL 100 & 150 GPM UNITS

Part Number	Product Code	Connection Type
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TRAFFIC RATED COVERS - "S" RATED

40100A04	766014	4" HUB
40100A04T	766015	4" THREADED
40150A04	766095	4" HUB

PEDESTRIAN / LIGHT TRAFFIC COVERS - "M" RATED

40100A04M	766080	4" HUB
40100A04MT	766081	4" THREADED
40150A04M	766096	4" HUB

CAST IRON COVERS

40100A04C	766139	4" HUB
40150A04C	766158	4" HUB

Note: Cast Iron available for US Market

XL 75 GPM MIAMI-DADE 99% HIGH EFFICIENCY UNITS

Part Number	Product Code	Connection Type
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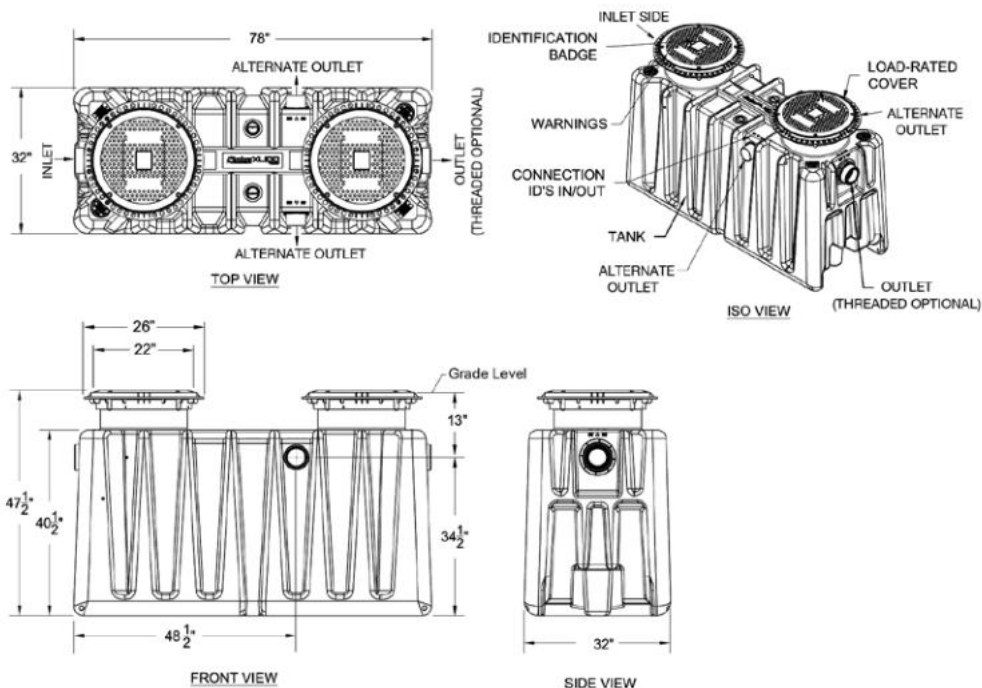
TRAFFIC RATED COVERS - "S" RATED

4075HEA04	766131	4" HUB
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WITH CAST IRON COVERS

4075HEA04C	766141	4" HUB
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Note: High Efficiency Units available for US Market



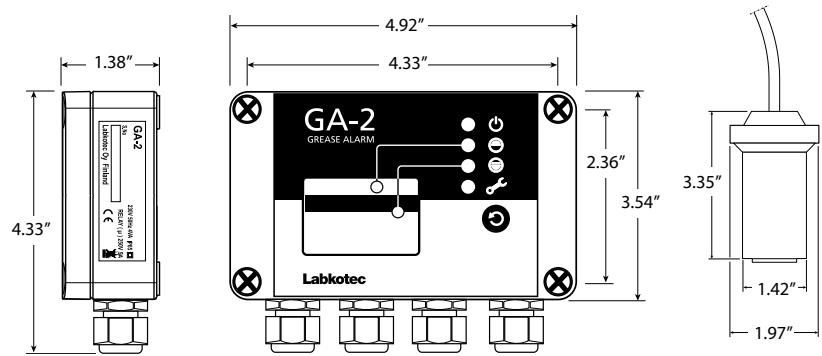
ENDURA XL COVER TYPES

Traffic Rated Covers - CSA B481.0 'S' RATED	With Pedestrian / Light Traffic Covers - CSA B481.0 'M' RATED	With Cast Iron Covers - CAST IRON ASTM A48 30B MEETS H20 LOADING STANDARDS

DIMENSIONS - ENDURA XL MONITORING SYSTEM

MONITORING SYSTEM

Part Number	Product Code
40100MS	766157



DIMENSIONS - ENDURA XL SAMPLING WELLS

XL SAMPLING WELL

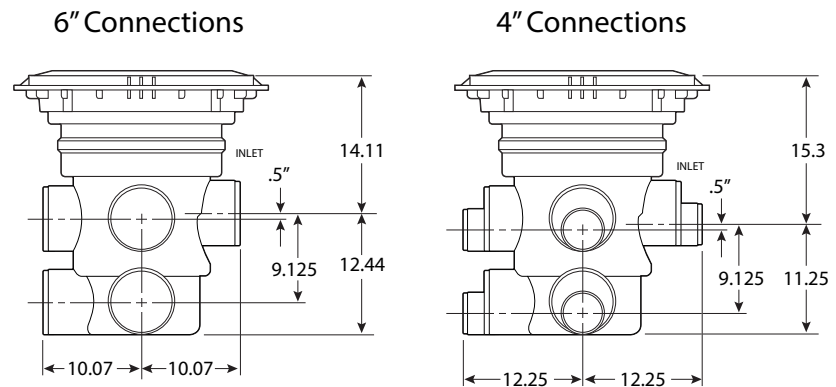
Part Number	Product Code	Connection Type
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WITH TRAFFIC RATED COVERS
- CSA B481.0 'S' RATED

40100SWS	766115	4" & 6" HUB
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WITH PEDESTRIAN / LIGHT TRAFFIC COVERS
- CSA B481.0 'M' RATED

40100SWM	766118	4" & 6" HUB
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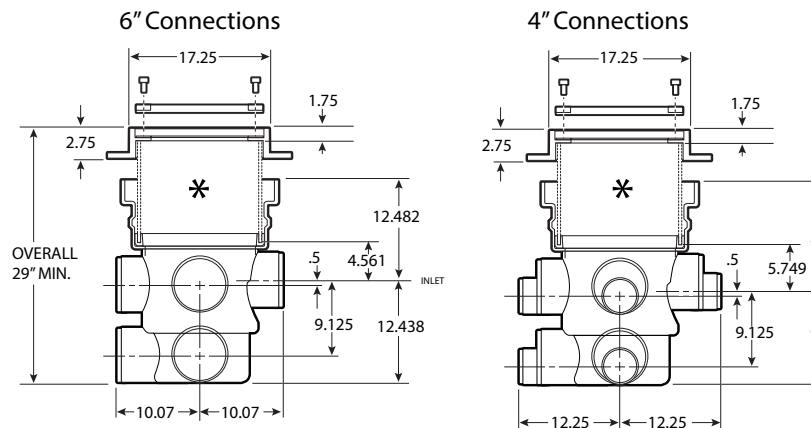
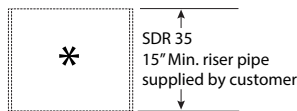


XL SAMPLING WELL WITH CAST IRON COVER

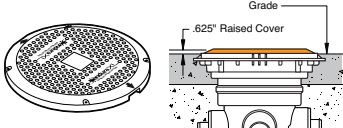
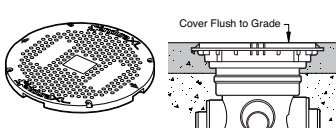
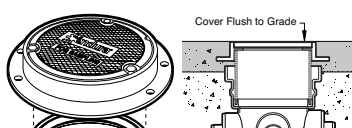
Part Number	Product Code	Connection Type
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WITH CAST IRON COVERS - CAST IRON ASTM A48 30B MEETS H20 LOADING STANDARDS

40100SWC	766136	4" & 6" HUB
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ENDURA XL SAMPLING WELL COVER TYPES

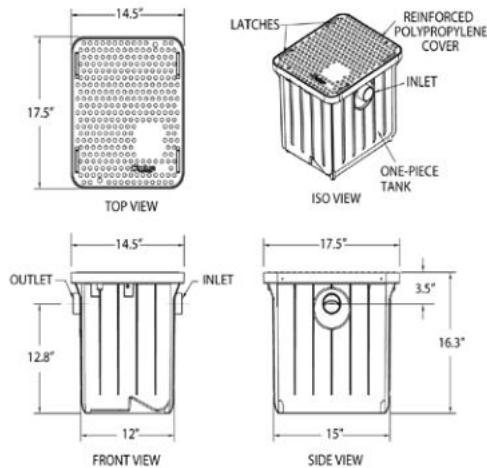
Traffic Rated Covers - CSA B481.0 'S' RATED	With Pedestrian / Light Traffic Covers - CSA B481.0 'M' RATED	With Cast Iron Covers - CAST IRON ASTM A48 30B MEETS H20 LOADING STANDARDS
		

DIMENSIONS - SOLIDS INTERCEPTOR AND SOLIDS BASKET ACCESSORY (SBA)

2" HUB SOLIDS INTERCEPTOR

Part Number	Product Code	Max Flow Rate
3911A02	763096	25 GPM

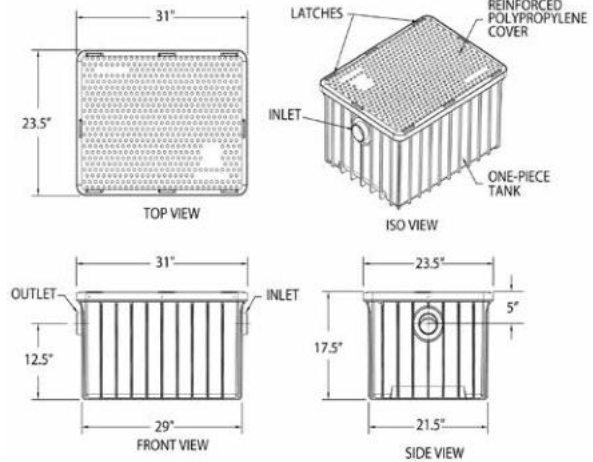
Note: Units supplied with internal Solids Basket Accessory



3" HUB SOLIDS INTERCEPTOR

Part Number	Product Code	Max Flow Rate
3911A03	763467	60 GPM

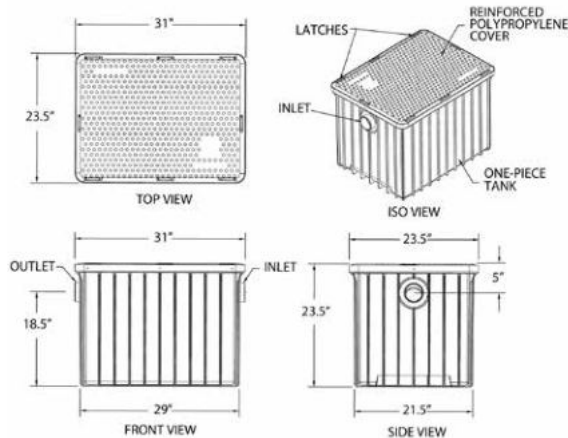
Note: Units supplied with internal Solids Basket Accessory



4" HUB SOLIDS INTERCEPTOR

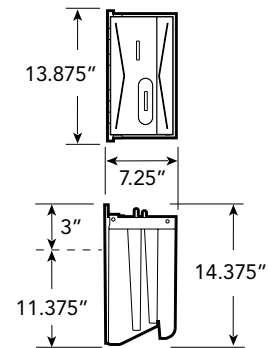
Part Number	Product Code	Max Flow Rate
4011A04	766163	125 GPM

Note: Units supplied with internal Solids Basket Accessory



SOLIDS BASKET ACCESSORY

Part Number	Product Code	Connection Type
3911A-1	763126	N/A



DIMENSIONS - FLOW CONTROL DEVICE ASSEMBLY

1 Piece Compact Flow Control - Standard on 7, 10, 15, 20, 2" 25 GPM UNITS

Dim.	2" h x h	
A	3.94"	
B	3.44"	

Note: For Installations that require sleeve extension for FCD, 2 piece 2" FCD is required.

2 Piece Flow Control - Standard on 3" 25, 35, AND 50 GPM UNITS,

Dim.	2" spg x h	3" spg x h	4" spg x h	XL Models 4" h x h	
A	6.67"	8.4"	min. 17.24"	min. 17.24"	
B	0.27"	0.38"	0.45"	0.45"	
C	1.56"	1.74"	2.1"	2.1"	
D	2"	2"	2"	2"	
Air Intake pipe size					

NOTE: Endura® XL models are supplied as standard with an internal flow control excluding Endura XL HE models for Miami Dade DERM 2.0. 4" External flow controls are available separately.

SECTION FOUR: INSTALLATION

INSTALLATION OVERVIEW

Always follow the complete Endura® installation instructions provided in this manual. **Failure to comply with handling, storage and installation instructions may cause system failure resulting in damage to property or networking municipal systems.**



WARNING

**DO NOT PRESSURE TEST.
RISK OF SERIOUS INJURY**



WARNING

GREASE INTERCEPTORS ARE HAZARDOUS ENVIRONMENTS AND MUST NEVER BE LEFT UNCOVERED AND UNATTENDED, EVEN DURING MAINTENANCE.

- All access covers **MUST** be fully and completely secured
- All required bolts **MUST** at all times be in place and well tightened
- Missing bolts **MUST** be reported to management and replaced immediately
- Covers **MUST** meet the required load rating for the application (see the Technical Information section)
- Do **NOT** use alternate covers

As a plumbing appurtenance, Endura grease interceptor **MUST** be isolated from the drainage system in the event that final drain testing or other system pressure testing is required. **DO NOT** under any circumstances subject the interceptor to pressure test (air, water or otherwise). This action will result in damage to the unit, invalidate the warranty and could cause serious bodily injury.

Proper installation of a grease interceptor is critical to its effectiveness. All installation recommendations are subject to the approval of the local Authority Having Jurisdiction. The Endura grease interceptor may be installed on the floor, partially in the floor or in ground to best suit the situation.

Placement should allow the cover to be easily removed for cleaning and maintenance. For smaller models, a minimum clearance is required above the cover of the grease interceptor to allow removal of the internal baffles for a complete cleanout. With the cover removed, all internal surfaces should be visible. Models up to 50 gpm have specific minimum clearance requirements as outlined in the chart below.

Clearance required	Units
15"	7/10/15/20/25/35 GPM
6"	25 GPM LO-PRO
21"	50 GPM

The Endura grease interceptor is marked with "IN" and "OUT" above the connections to ensure the grease interceptor is installed in the right direction.

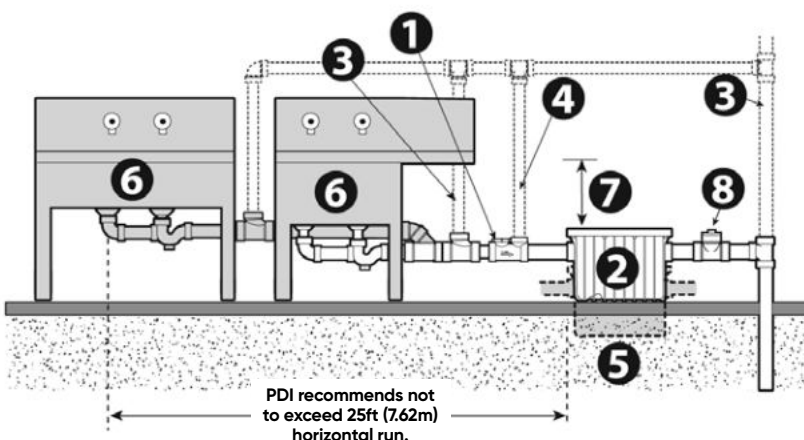
The grease interceptor should be installed as close as possible to the drain of the fixture(s) being served. Piping between the grease source and the interceptor is unprotected and a potential source for grease build-up. Installations requiring long runs of pipe to reach the interceptor will increase the probability of the pipeline becoming clogged with grease before reaching the grease interceptor. Grease waste lines should be piped at a minimum slope of 1/4 inch per foot (6mm per 304mm) to maintain flow in the drain line. Pipe runs greater than 25ft from the fixture to the interceptor should be aggressively sloped and/or heat traced to prevent grease from coagulating in the line.

Consult with the local Authority Having Jurisdiction for additional details regarding dishwasher and food grinders.

ENDURA® 7 to 50 GPM MODELS - TYPICAL INSTALLATION EXAMPLES

NOTICE

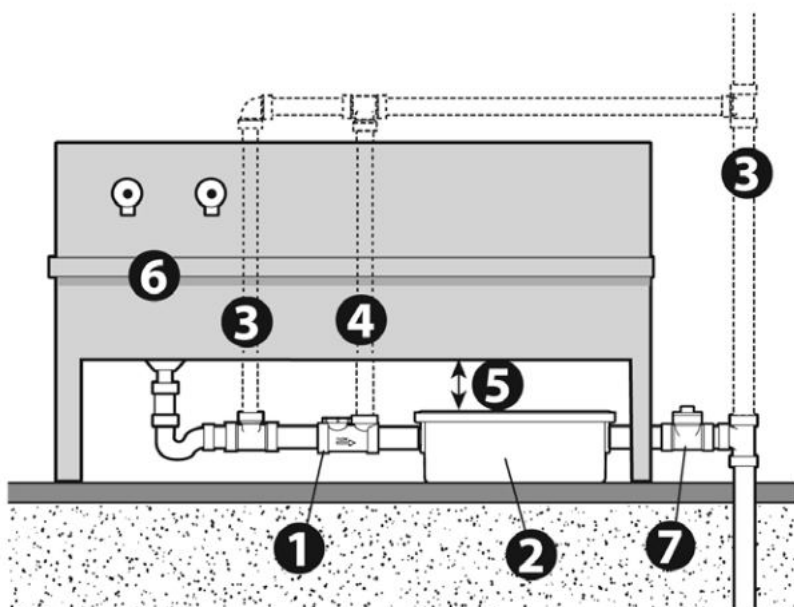
If installed under a sink, make sure there is sufficient clearance to remove the baffles for cleaning and maintenance. If this is not practical, semi-recessing the tank is an option. (See Minimum Clearance Requirements, Installation Overview, Section Four)



TYPICAL ON FLOOR

This illustration represents a typical system design commonly found in food preparation facilities. Adhering to the general installation information presented earlier, select a practical layout to meet the demands of the installation.

- 1 • Flow Control Device 3 • Vented Waste 5 • Semi Recessed Option 7 • Minimum Clearance Required
- 2 • Grease Interceptor 4 • Air Intake 6 • Sink 8 • Cleanout required in most jurisdictions



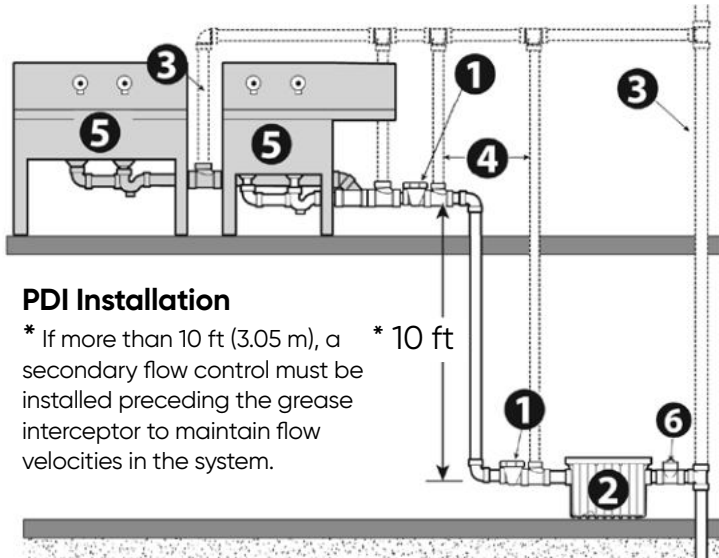
TYPICAL ON FLOOR- LO-PRO

The Endura® Lo-PRO is designed to conveniently fit on-floor installations. Make sure you install the grease interceptor in an area that allows for ease of maintenance. Placement should allow the cover to be easily removed for cleaning.

- 1 • Flow Control Device 2 • Grease Interceptor 3 • Vented Waste 4 • Air Intake 5 • Minimum Clearance Required
- 6 • Sink 7 • Cleanout required in most jurisdictions

TYPICAL MULTI-STORY

TYPICAL INSTALLATION



PDI Installation

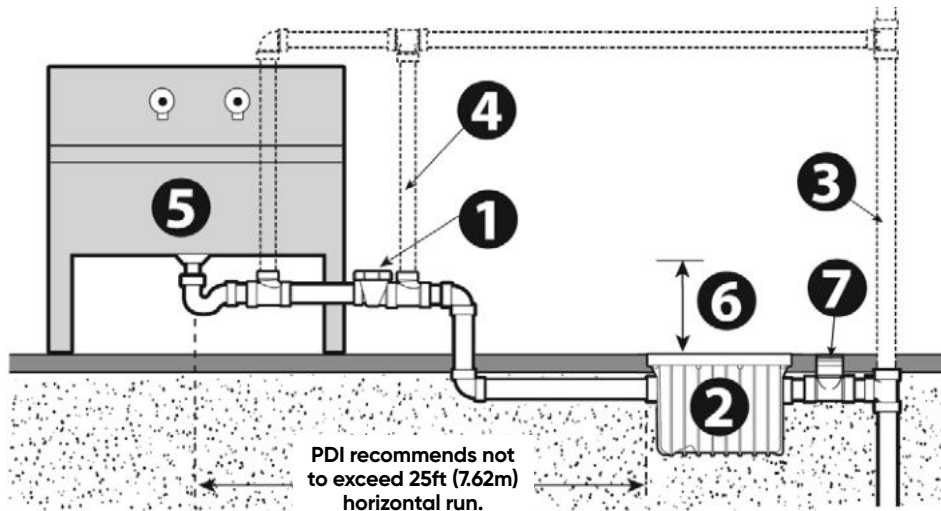
* If more than 10 ft (3.05 m), a secondary flow control must be installed preceding the grease interceptor to maintain flow velocities in the system.

* 10 ft

One interceptor serving multiple fixtures is recommended only when the fixtures are located close together (max 25 ft of developed pipe run). In such installations, each fixture should be individually trapped and back-vented.

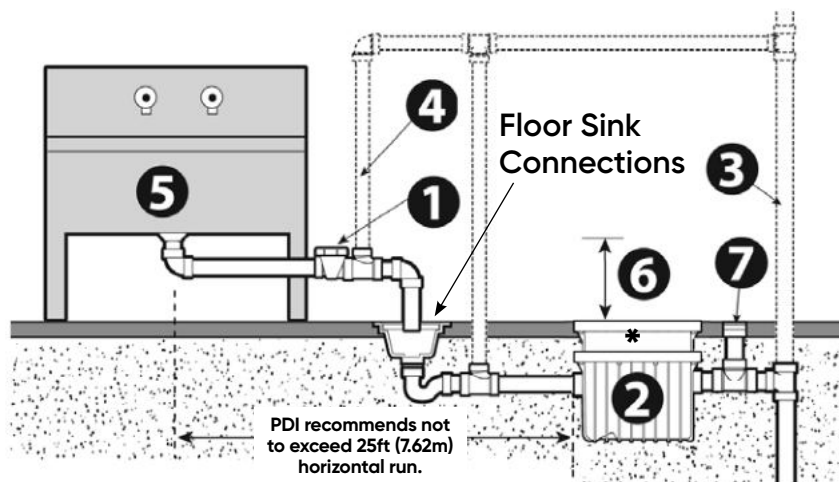
- 1 • Flow Control Device 3 • Vented Waste 5 • Sink
- 2 • Grease Interceptor 4 • Air Intake 6 • Cleanout required in most jurisdictions

TYPICAL IN FLOOR

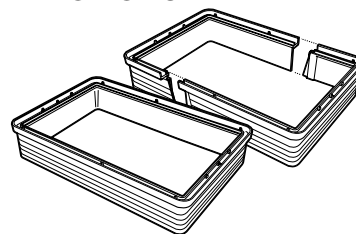


PDI recommends not to exceed 25ft (7.62m) horizontal run.

- 1 • Flow Control Device 2 • Grease Interceptor 3 • Vented Waste
- 4 • Air Intake 5 • Sink 6 • Minimum Clearance 15"-21"
- 7 • Cleanout required in most jurisdictions



TYPICAL IN FLOOR FLOOR SINK/INDIRECT CONNECTIONS



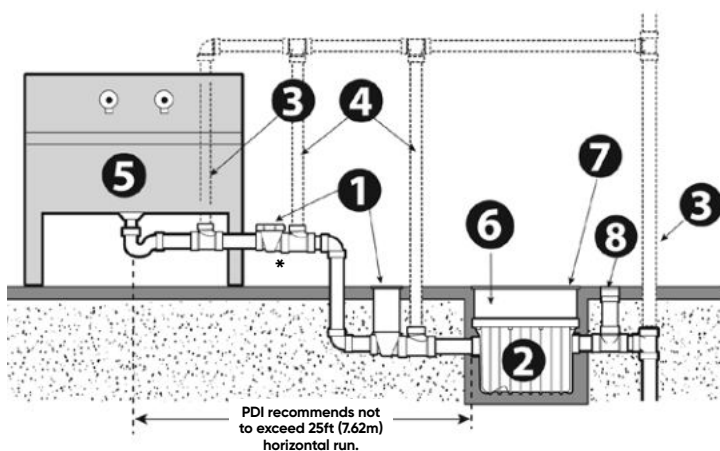
* 6" Modular risers available where deeper installation is necessary to accommodate existing drainage.

Note: Some local jurisdictions require warewashing installations to be made on an indirect basis incorporating an air gap. please consult local AHJ to determine if this installation method is permitted in your jurisdiction before installation.

- 1** • Flow Control Device
* Above grade installation preferred
- 2** • Grease Interceptor
- 3** • Vented Waste
- 4** • Air Intake
- 5** • Sink
- 6** • Minimum Clearance 15"-21"
- 7** • Cleanout required in most jurisdictions

TYPICAL IN FLOOR - FORK LIFT, PUMP TRUCK TRAFFIC AREA

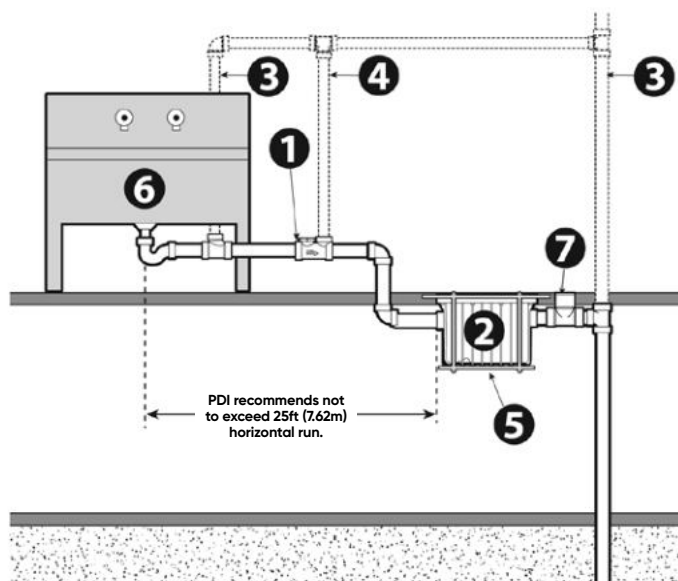
A concrete pit with a load rated access cover will be required where pump trucks or fork lifts travel.



- 1** • Flow Control Device
- 2** • Grease Interceptor
- 3** • Vented Waste
- 4** • Air Intake
- 5** • Sink
- 6** • Concrete pit
- 7** • Metal Access Cover
- 8** • Cleanout required in most jurisdictions

* **Note:** Two flow control devices are shown ONLY to demonstrate that both above grade and below grade installations are possible. Two flow controls are not actually required.

TYPICAL IN FLOOR - SUSPENDED INSTALLATION



- 1** • Flow Control Device
- 2** • Grease Interceptor
- 3** • Vented Waste
- 4** • Air Intake
- 5** • Hanger (Supplied by installer)
- 6** • Sink
- 7** • Cleanout required in most jurisdictions

ENDURA® 7 to 50 GPM MODELS INSTALLATION INSTRUCTIONS

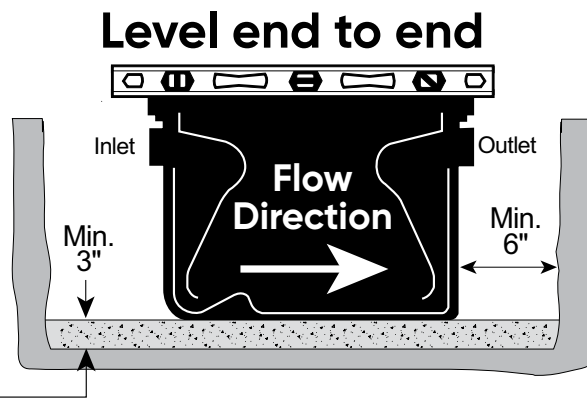
PREPARE YOUR INSTALLATION AREA

1A. BELOW GRADE

Excavate and prepare base as required to accommodate the interceptor.

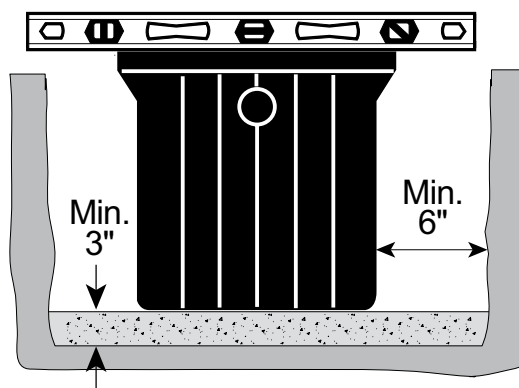
Min. Base

3" Minimum Base of Crushed aggregate material approximately 3/4" size rock, pea gravel or sand



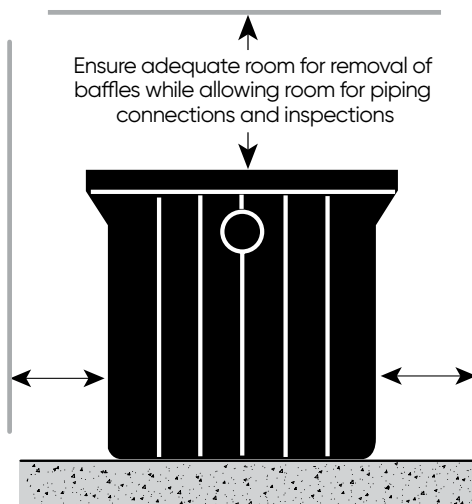
Remove packaging. Confirm flow direction, outlets are marked IN & OUT. Lower in and level interceptor accounting for anticipated surface finish requirements.

Level side to side



1B. ON GRADE

Remove packaging. If installing on-floor, locate the interceptor to allow for accessibility and removal of baffles when conducting maintenance and regular cleaning. Set the interceptor on a firm, level surface.



2. CONNECTIONS

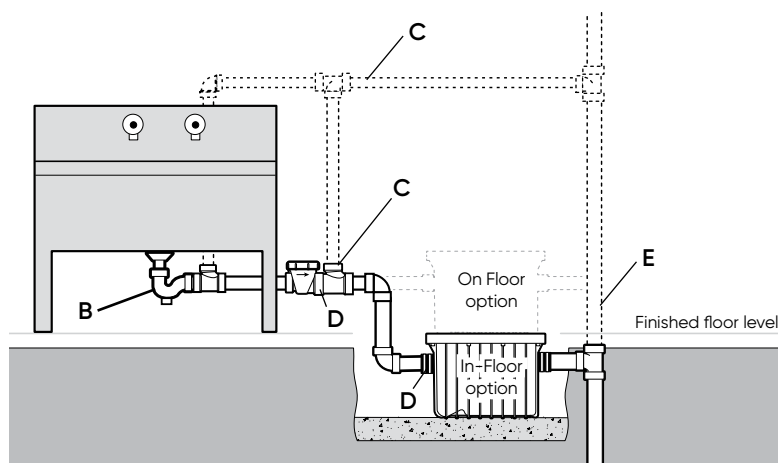
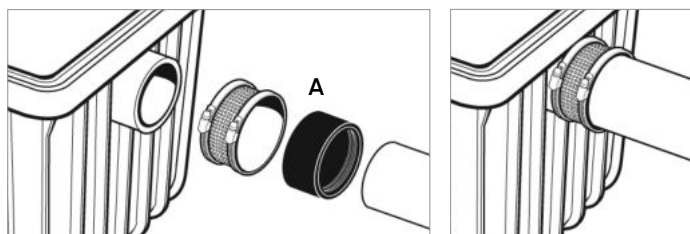
- A. Install mechanical coupling to grease interceptor, do not solvent cement fittings to grease interceptor outlets.
- B. Ensure a P-trap is installed upstream from an interceptor
- C. Ensure that the branch vent line is positioned above the sink flood level.
- D. Install the grease interceptor Flow Control
An arrow on the Flow control indicates flow direction.
- C. Tie in the Air Intake Tee to the to the vent line.
- D. Finish connections from Flow Control Device to grease interceptor. Use mechanical joint for connection to inlet.
- E. Vent after grease interceptor per local code.

3. LEAK TEST

Turn on water supply and fill tank with water to static water level. Check connections made for any leaks.

Test level of grease interceptor one last time then latch on lid.

All Endura Interceptors are manufactured with no hub connections. Standard mechanical joint (MJ) couplings can be used to connect the interceptor to a metal or plastic piping system. If the piping system needs to be resized, use appropriate mechanical joint reducers, but do not decrease pipe diameter across the unit. (i.e. 3 inch inlet , 2 inch outlet.)



NOTE: The installation of a ball valve upstream of the flow control is recommended. A ball valve provides a means of drain line isolation for maintenance.



WARNING

For inspection testing **DO NOT PRESSURIZE** the tank. Plug lines inside interceptor to test upstream and downstream integrity.

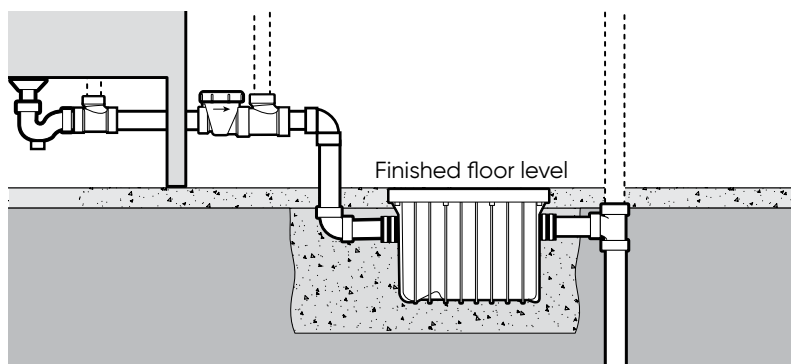
BELOW GRADE

4. RISER EXTENSIONS

Where applicable, install riser extensions (refer to Riser Extension Installation).

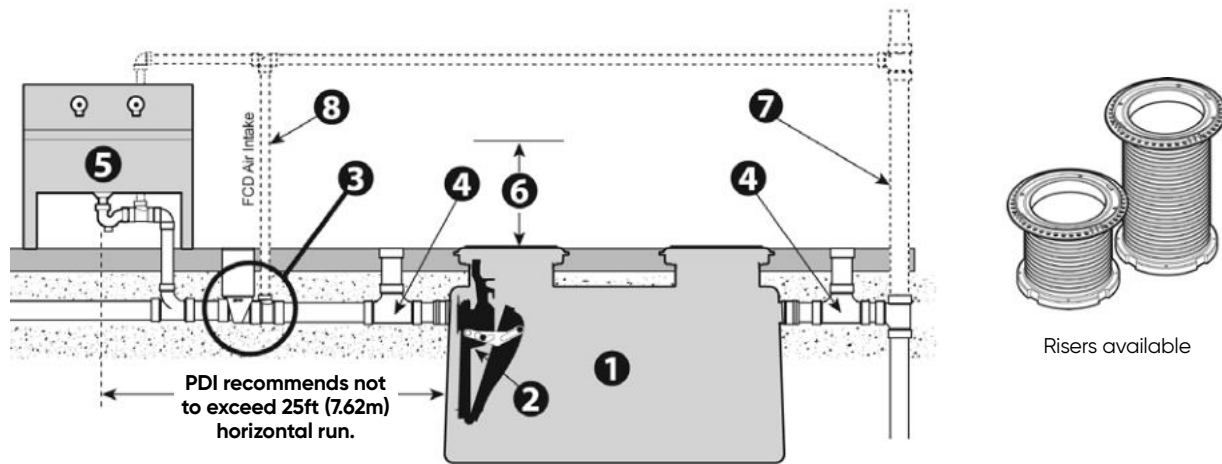
5. BACKFILL AND FINISH TO GRADE

While tank is still filled with water back fill the area around the grease interceptor. Hand Tamp the earth only, do not use a mechanical compactor. Finish to grade.



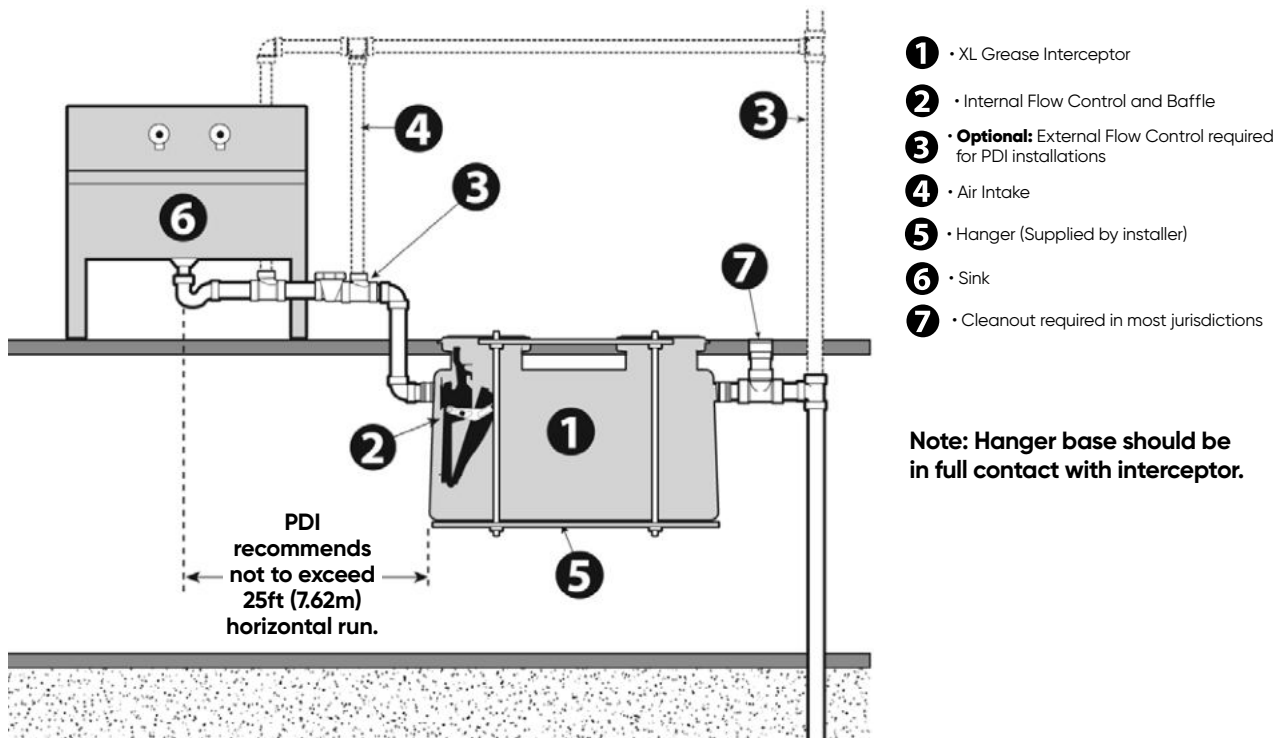
ENDURA® XL 75 to 150 GPM MODELS - TYPICAL INSTALLATION EXAMPLES

TYPICAL IN FLOOR - HIGH CAPACITY



- 1 • XL Grease Interceptor 2 • Internal Flow Control and Baffle 3 • External Flow Control (Optional) required for PDI installations 4 • Cleanout 5 • Sink
- 6 • Clearance Required for Service 7 • Vented Waste 8 • Air Intake

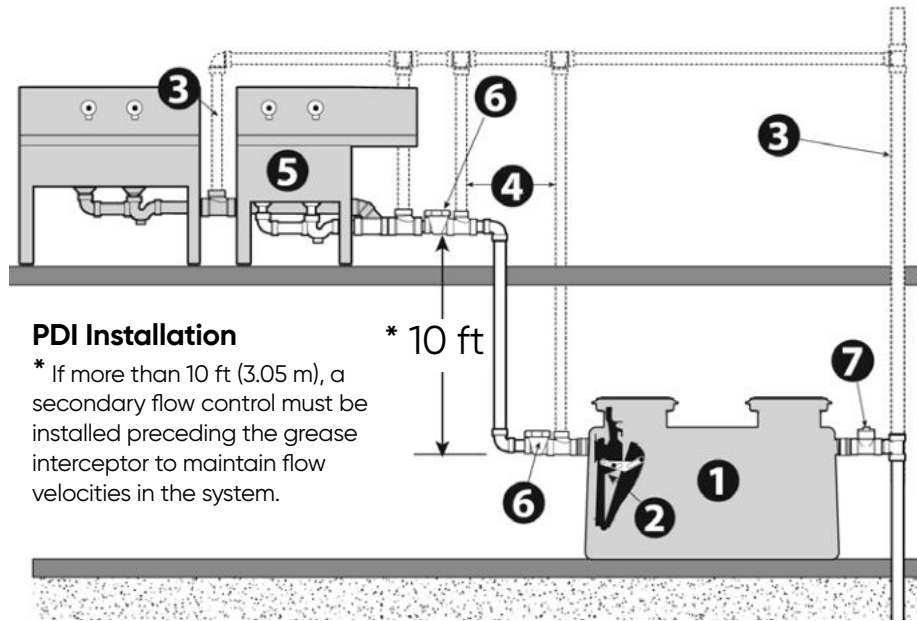
TYPICAL IN FLOOR SUSPENDED INSTALLATION



- 1 • XL Grease Interceptor
- 2 • Internal Flow Control and Baffle
- 3 • **Optional:** External Flow Control required for PDI installations
- 4 • Air Intake
- 5 • Hanger (Supplied by installer)
- 6 • Sink
- 7 • Cleanout required in most jurisdictions

FLOOR BELOW - HIGH CAPACITY, MULTIPLE FIXTURE INSTALLATION

TYPICAL INSTALLATION

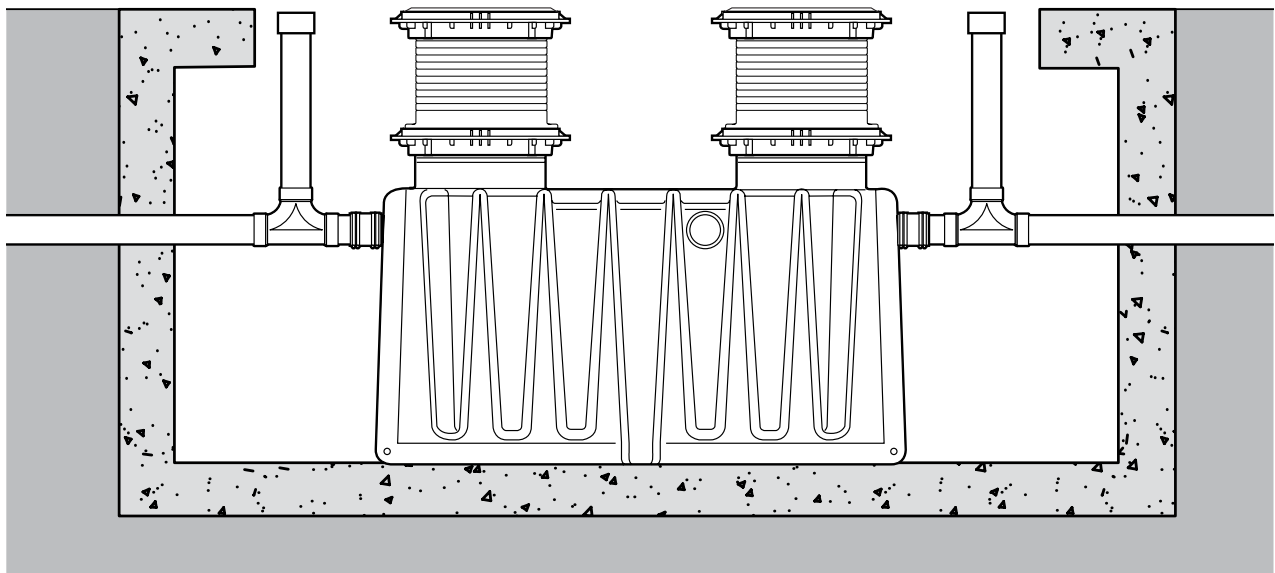


- 1** • XL Grease Interceptor
- 2** • Internal Flow Control and Baffle
- 3** • Vented Waste
- 4** • Air Intake
- 5** • Sink
- 6** • External Flow Control (Optional) required for PDI installations
- 7** • Cleanout required in most jurisdictions

TYPICAL INSTALLATION INSIDE DECOMMISSIONED CONCRETE GGI

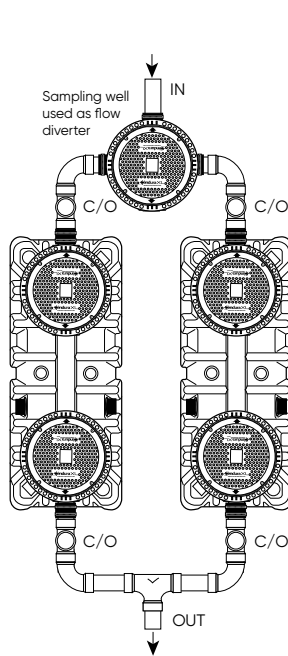
Endura Grease Interceptors may be installed within a decommissioned Concrete GGI.

Please email for support: tech-support@endurainterceptor.com



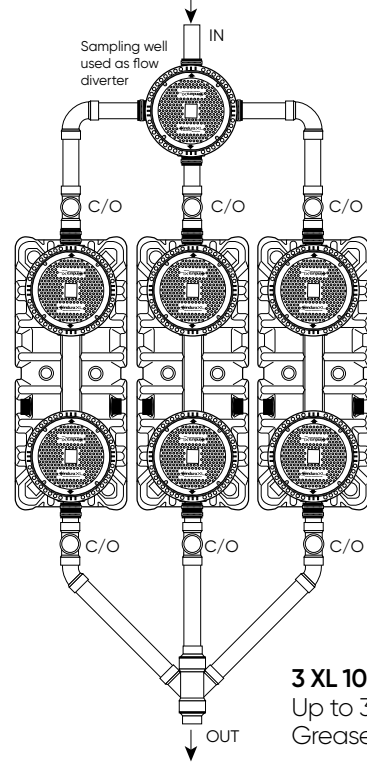
MULTI UNIT INSTALLATION - XL 75 to 150 GPM MODELS

For flow rates exceeding 150 gpm, multiple Endura XL models may be installed in parallel. It is recommended to use the Endura Sampling well to evenly divide flow between multiple units, as illustrated below.



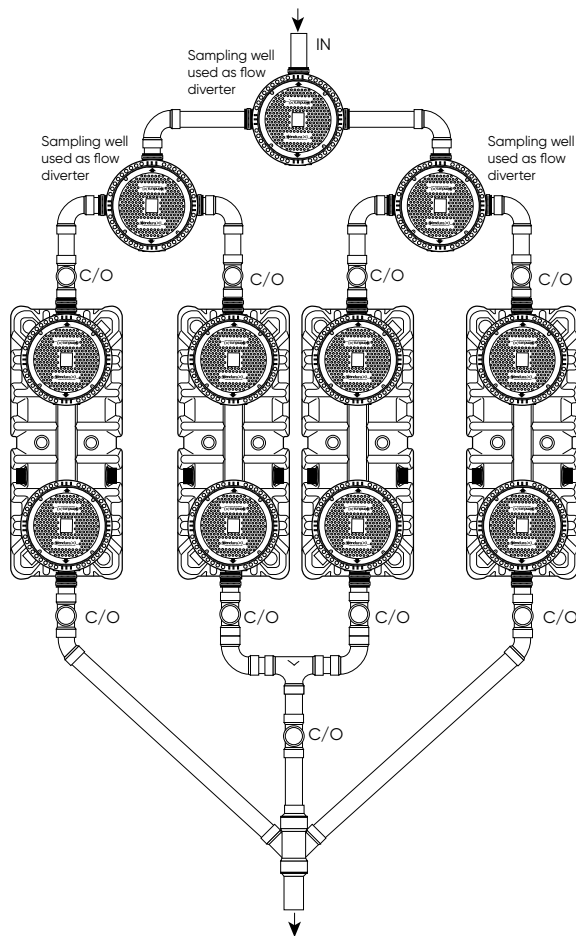
2 XL 100 – PARALLEL
Up to 200 GPM, 2116 lbs
Grease Capacity.

2 XL 150 – PARALLEL
Up to 300 GPM, 2194 lbs
Grease Capacity.



3 XL 100 – PARALLEL
Up to 300 GPM, 3174 lbs
Grease Capacity.

3 XL 150 – PARALLEL
Up to 450 GPM, 3291 lbs
Grease Capacity.



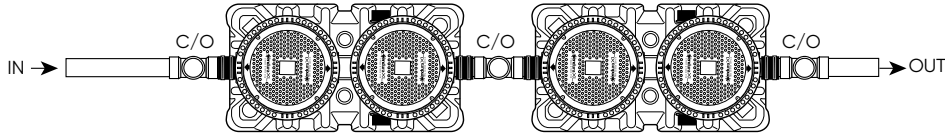
4 XL 100 – PARALLEL
Up to 400 GPM, 4232 lbs
Grease Capacity.

4 XL 150 – PARALLEL
Up to 600 GPM, 4388 lbs
Grease Capacity.

SERIES INSTALLATION:

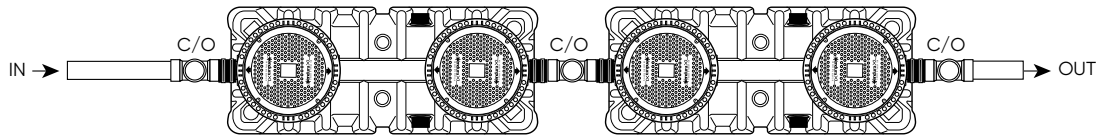
Series installations allow for increased grease capacity. Flow rate is limited to the rated flow of the first interceptor in the series, all subsequent interceptors have the flow control plate removed.

2 XL 75 – SERIES – 75 GPM, 1118 lbs Grease Capacity.



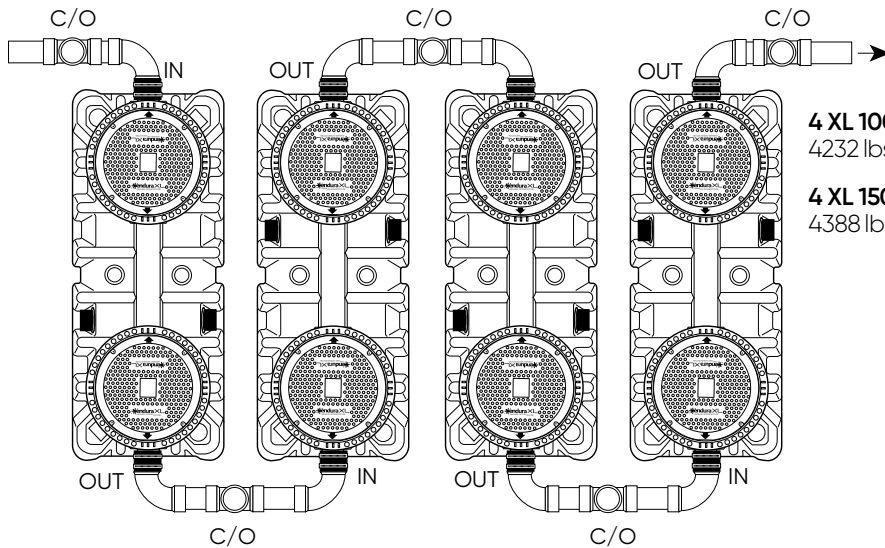
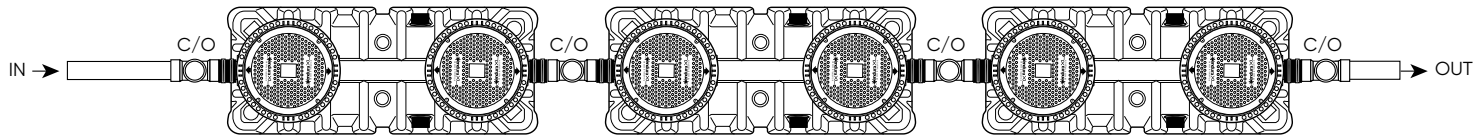
2 XL 100 – SERIES – 100 GPM, 2116 lbs Grease Capacity.

2 XL 150 – SERIES – 150 GPM, 2194 lbs Grease Capacity.



3 XL 100 – SERIES – 100 GPM, 3174 lbs Grease Capacity.

3 XL 150 – SERIES – 150 GPM, 3291 lbs Grease Capacity.



4 XL 100 – SERIES – Up to 100 GPM, 4232 lbs Grease Capacity.

4 XL 150 – SERIES – Up to 150 GPM, 4388 lbs Grease Capacity.

ENDURA® XL 75 to 150 GPM MODELS INSTALLATION INSTRUCTIONS



WARNING

GREASE INTERCEPTORS ARE HAZARDOUS ENVIRONMENTS AND MUST NEVER BE LEFT UNCOVERED AND UNATTENDED, EVEN DURING MAINTENANCE.

- All access covers MUST be fully and completely secured
- All required bolts MUST at all times be in place and well tightened
- Missing bolts MUST be reported to management and replaced immediately
- Covers MUST meet the required load rating for the application
- Do NOT use alternate covers

ENDURA GREASE MONITORING SYSTEM

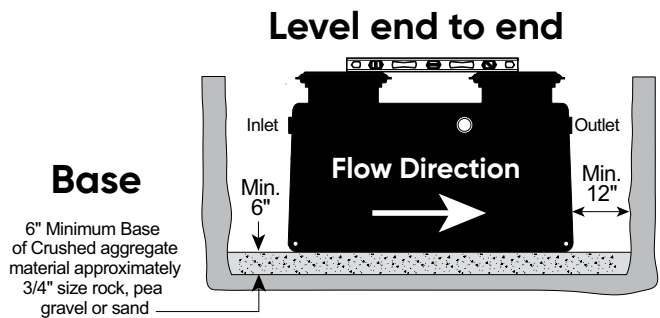
For Installation instructions for the Endura Grease Monitoring System please visit the Endura website for more information.

PREPARE YOUR INSTALLATION AREA

1A. IN GROUND

If installing in-floor or below grade excavate and prepare base as required to accommodate the interceptor.

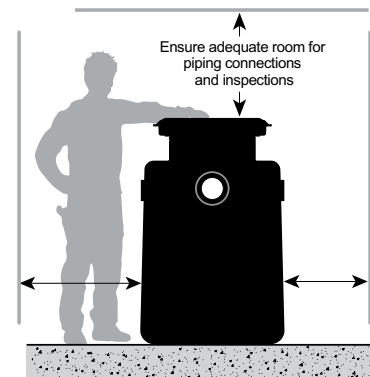
Remove all packaging, including the skid. Confirm flow direction, lower in and level interceptor accounting for anticipated surface finish requirements.



1B. AREA ON FLOOR

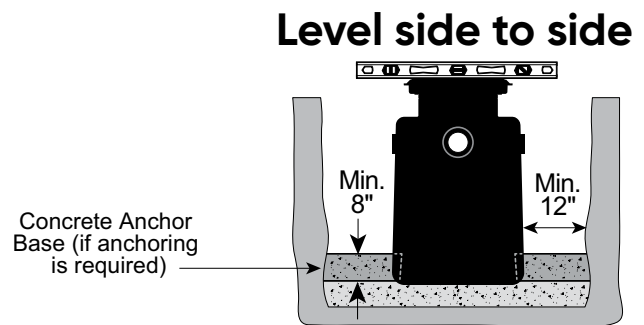
Locate the interceptor to allow for accessibility when conducting maintenance and regular cleaning. Set the interceptor on a firm, level surface.

Remove all packaging, including the skid. Confirm flow direction, position and level interceptor.



Note: For installations where high ground water, tidal surge, or other flooding is a risk, pour at least 8" of concrete on top of your prepared base to fill an area around the perimeter of the tank. This will prevent flotation.

Alternative anchoring options are outlined in the product specifications sheet.

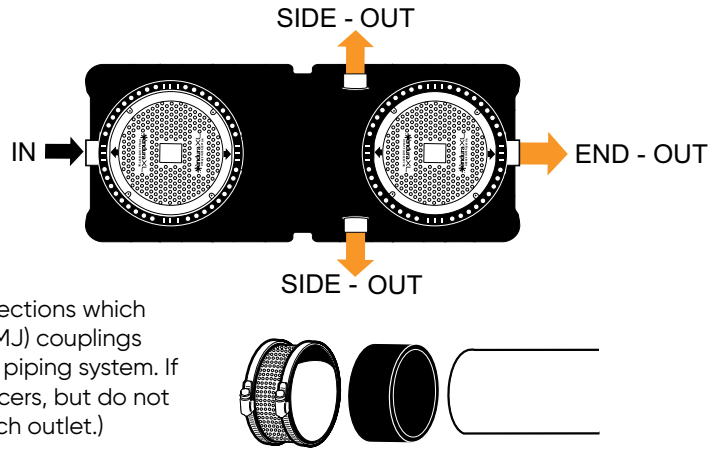


NOTICE

Support heavy piping or equipment to ensure interceptor bulkhead fittings are not damaged.

3. CONNECTIONS

Connect your drain to the tank inlet ("IN"). Select the preferred outlet connection from the pre-plumbed connection ports offered – marked "OUT". Side connection is accessed by removal of the caps that are supplied, that same cap can then be used to seal the other outlet.

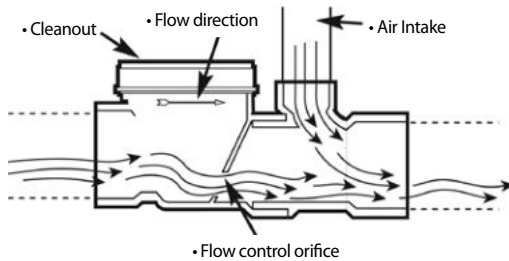
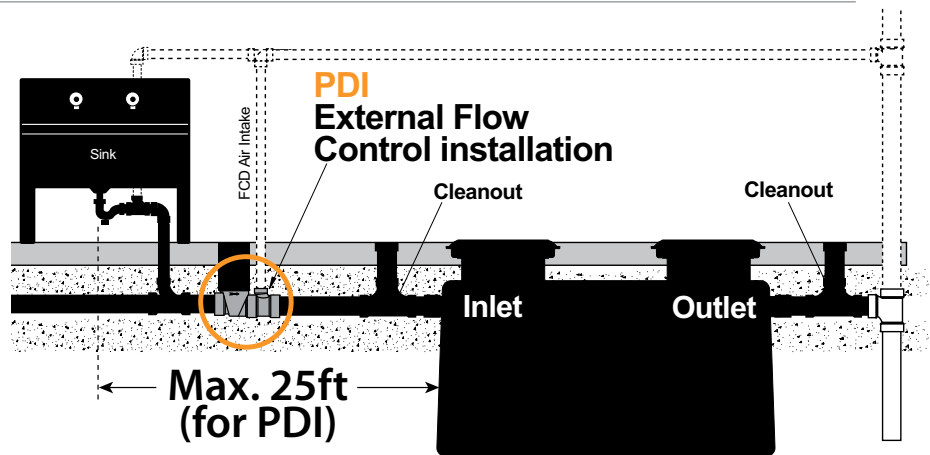


All Endura® Interceptors are manufactured with no hub connections which will not accept solvent cement. Standard mechanical joint (MJ) couplings can be used to connect the interceptor to a metal or plastic piping system. If the piping system needs to be resized, use appropriate reducers, but do not decrease pipe diameter across the unit. (i.e. 6 inch inlet , 4 inch outlet.)

4. EXTERNAL FLOW CONTROL (Optional)

(PDI G-101 / ASME A112.14.3 – Type A)

For PDI G-101/ASME A112.14.3 – Type A (External Flow Control) – Install the flow control device (purchased separately) upstream, after the last branch connection discharging to the interceptor. Install interceptor as close as practical to fixture or fixtures being served, PDI recommends not exceeding 25ft horizontal run.



The flow control fitting is molded in PVC and must be solvent welded using PVC or PVC/ABS transition cement as appropriate. It is to be located in the drain line beyond the last connection from the fixture and as close as possible to the underside of the lowest fixture. When the discharge from two or more sinks or fixtures are combined and served by one interceptor, a single flow control fitting should be used. The flow control device can be recessed into the floor if required and extension sleeves are available to complete a good finish at final floor level.

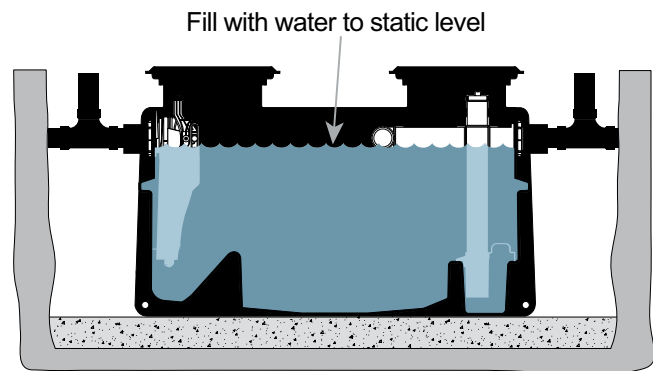
5. LEAK TEST

Fill tank with water to static water level. Inspect interceptor and connections for leaks.



WARNING

For inspection testing DO NOT PRESSURIZE the tank. Plug lines inside interceptor to test upstream and downstream integrity.



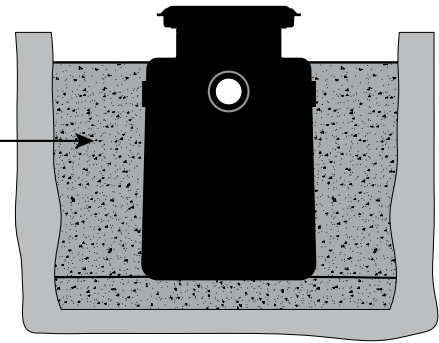
6. REPLACE COVER(S) AND BACKFILL

Note: If installing Remote Pump, Endura XL Monitoring System or Riser Extension options, do so now. Refer to the applicable installation instructions.

Replace covers. For in ground installations, protect covers with cardboard and backfill with crushed aggregate.

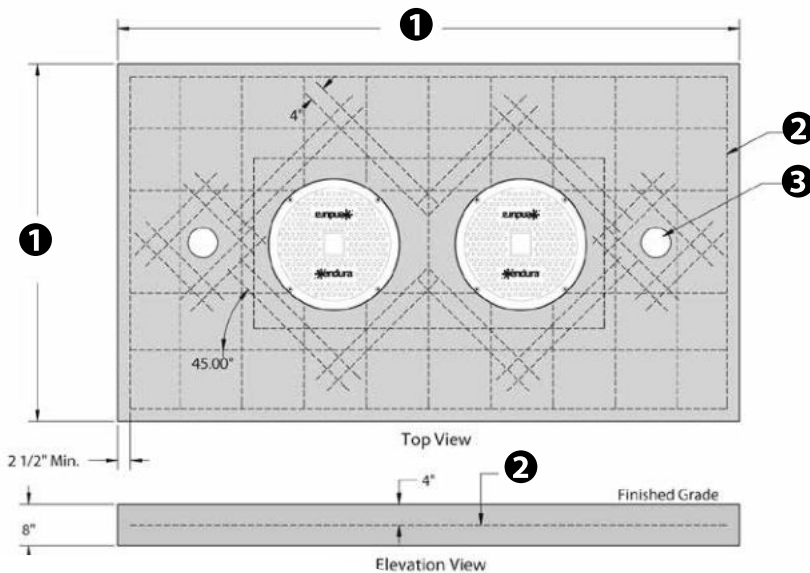
Do not mechanically compact around unit.

Crushed aggregate material approximately 3/4" size rock, pea gravel or sand.



7A. FINISH TO FLOOR

If installing in internal application with tiled floor, ensure adequate protection to prevent mortar from covering bolts, and/or entering around cover perimeter.



7B. FINISH TO GRADE CONCRETE SLAB RECOMMENDATION

Concrete to be 28 day compressive strength to 4000 PSI. Reinforcement with No.4 rebar (1/2") grade 60 steel per ASTM A615: connected with tie wire. Rebar to be 2 1/2" from edge of concrete. Rebar spacing 12" grid. 4" spacing around access openings.

This is a recommendation only, ensure final drawings are stamped and approved before submitting to AHJ.

- ❶ • Concrete Pad must extend min. 18" outside the unit footprint
- ❷ • No.4 rebar (1/2")
- ❸ • 2-Way cleanout tee

NOTE: For installations under a hydrostatic slab, grease interceptor must be installed in concrete vault.

ENDURA 7-50 GPM EXTENSION RISERS INSTALLATION INSTRUCTIONS

The Endura® Extension Risers were designed to be nested on top of one another. In the event that an installation is deeper than 6", follow the procedure described below and nest the extension riser sets into the flange of the previous extension.

Riser Part number	Grease Interceptor Model
3920AX6	15 / 20 GPM
3925AX6	25 XT GPM
3935AX6	25 LO / 35 / 50 / GPM

The flow control device should be installed above floor where possible. If it is required to be installed in-floor, a Flow Control extension kit is required. For 2" models, the 2 part flow control device must be purchased separately.

Flow Control Extension Kit Part number	Flow Control Size
392202W	2"
392203W	3"
392204W	4"

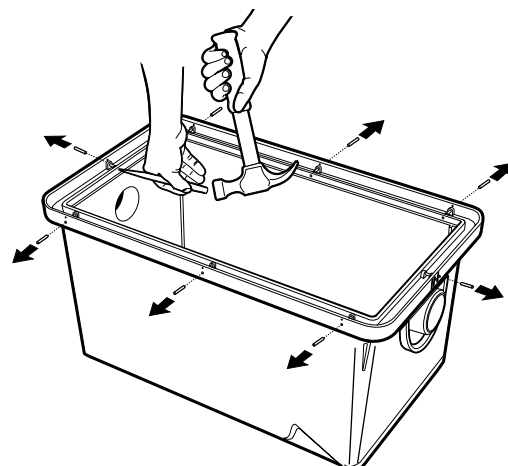
Before beginning, assemble proper materials for the job (silicone sealant, hammer, pliers, nail punch, level, screwdriver, saw and pencil).

1. REMOVE LID

Open the Quick Connect latches and remove the lid from the tank.

2. REMOVE DOWEL PINS

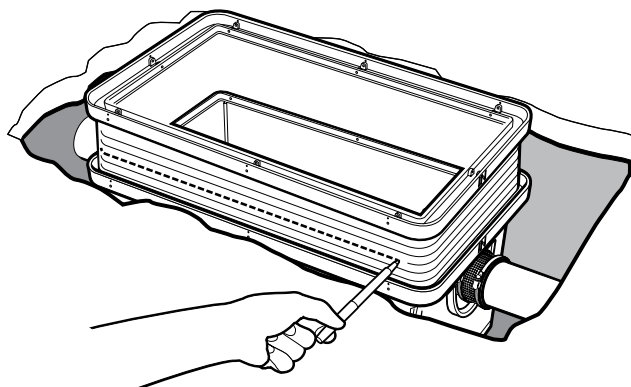
With a hammer and a punch, disengage the dowel pins outward from the tank. Using a pair of pliers, remove the dowel pin.



3. MARK GRADE LEVEL LINE

Place the extension on to the tank ensuring that it is fully seated in the ridge.

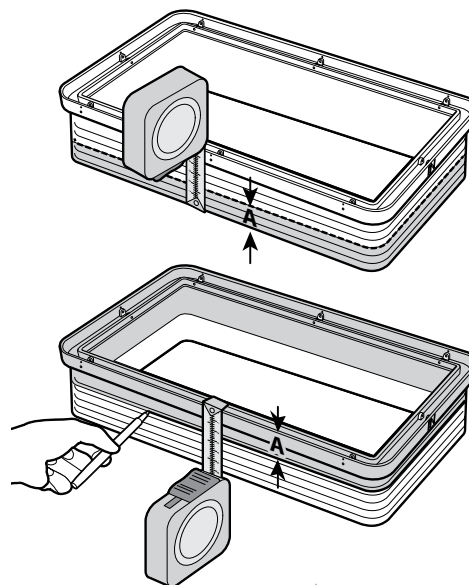
Determine if the extension assembly needs to be shortened and mark **GRADE LEVEL LINE** on extension.



4. MARK CUT LINE

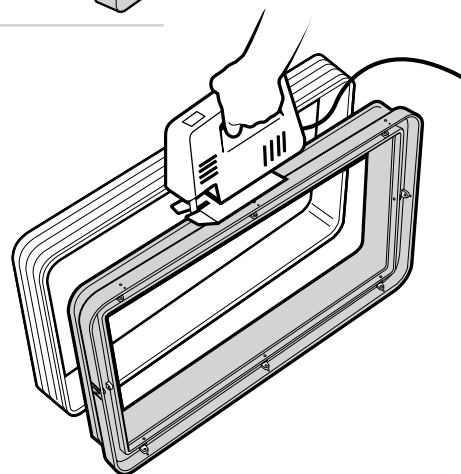
Determine the height from the bottom of the extension to the marked **GRADE LEVEL LINE (A)**.

Using the value of measurement **(A)** measure from the top of the extension down to mark the extensions **CUT LINE**.



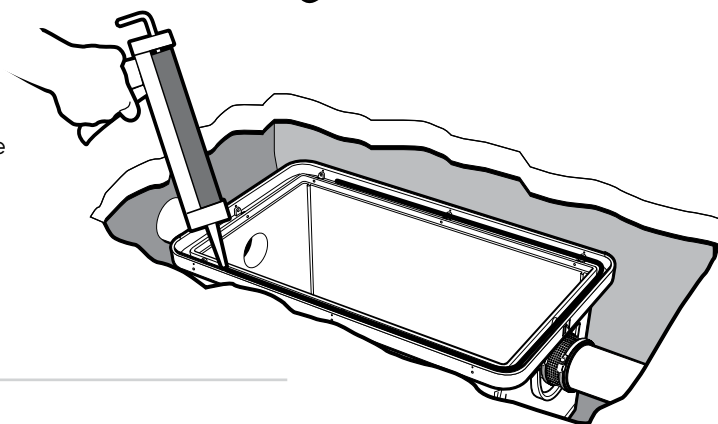
5. CUT

Confirm the height required and cut the extension assembly using a suitable hand or power saw. Horizontal lines are provided as a guide to cutting only.



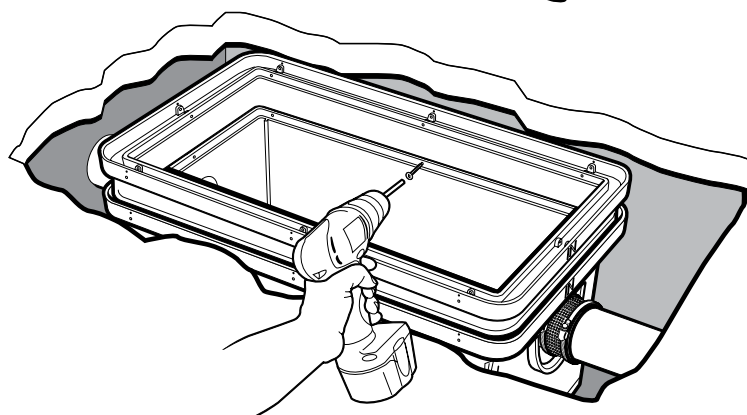
6. APPLY SILICONE

Apply a generous bead of silicone to center of the ridge on the tank. Insert the extension assembly.



7. SECURE EXTENSION TO TANK

With the 1-1/4" screws provided, insert the screws through the existing dowel holes and secure the extension to the tank.



8. BAFFLE EXTENSION HANDLES

If required, an extension handle can be attached to the baffles.

Insert a piece of 1/2" Sch 40 pipe into baffles as shown in Fig A. and secure with screws.

Insert baffles back into the interceptor and mark the pipe 3/8" from the top of the interceptor and cut pipe at that mark (Fig B).

Solvent weld a 1/2" coupling to the top of the pipe. This prevents upward movements of the baffles in operation and provides a positive grip for baffle removal (Fig C).

Fig. A

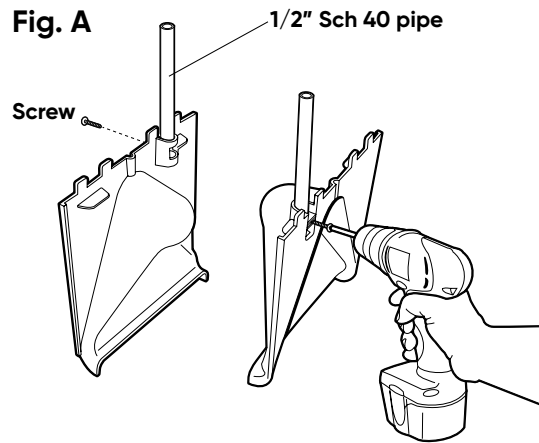
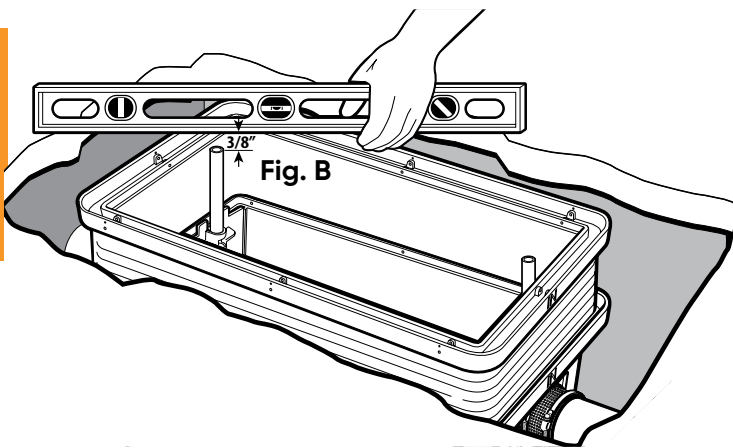
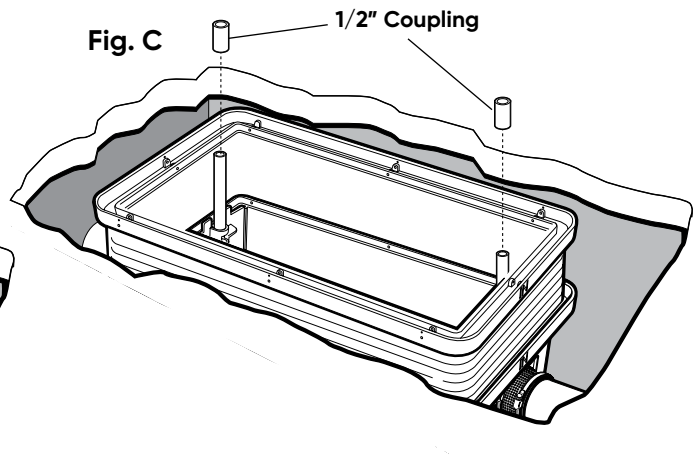


Fig. C



9. LEAK TEST

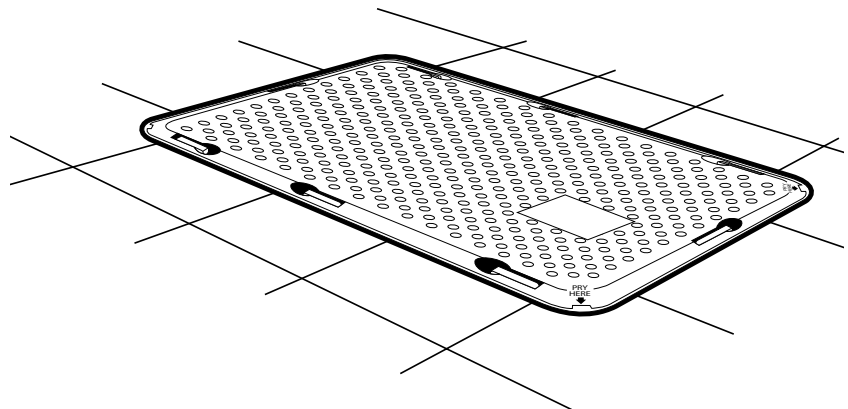
Perform leak test. Turn on water supply and fill tank with water to static water level. Check connections made for any leaks. Test level of grease interceptor one last time then latch on lid.

10. BACK FILL

Back fill the area around the grease interceptor. Hand Tamp the earth only, do not use a mechanical compactor.

11. FINISH

Finish to grade as required.



ENDURA® XL 75 to 150 GPM EXTENSION RISERS INSTALLATION INSTRUCTIONS

Before beginning, assemble proper materials for the job (saw, silicone pipe lubricant, Teflon/ PTFE thread sealing tape).

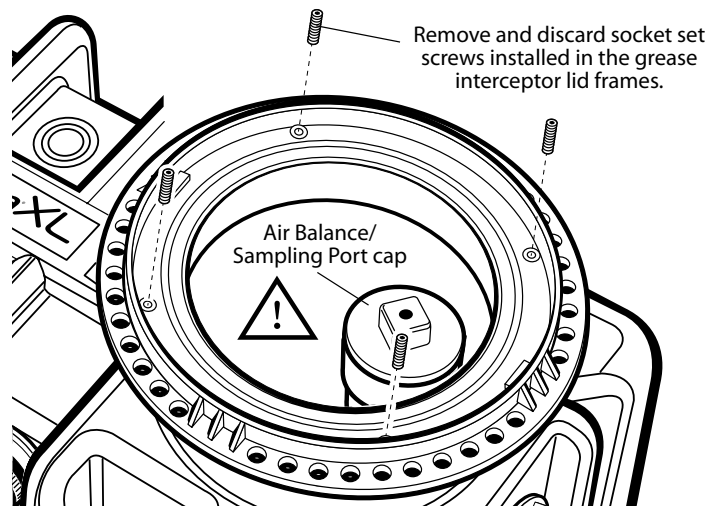
NOTE: The Risers minimum height is to be 6-1/2".

1. REMOVE COVER, CAP AND SCREWS

Install, level and secure the interceptor. Remove access cover(s) and set aside for re-fitting when extension riser assembly has been completed. Remove the 4 socket set screws from each lid frame and discard.

Remove the Air Balance/Sampling Port cap and set aside for later re-fitting.

Note: This cap is essential to the operation of the interceptor and must be reused in assembly (see Step 13).



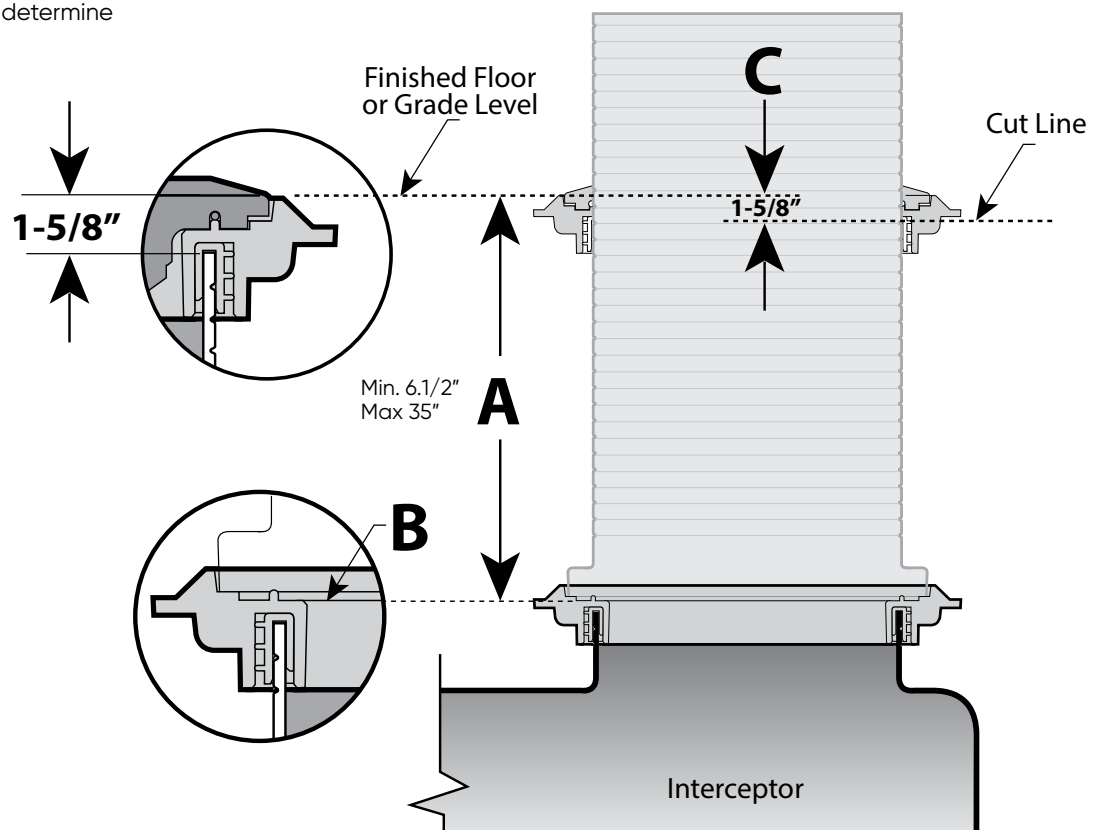
2. MEASURE RISER HEIGHT

Determine the finished floor or grade level desired, accounting for surface finishes. Measure from frame (B) to the finished floor or grade level (A).

Subtract 1-5/8" (42mm) (C) to determine trim cut on riser.

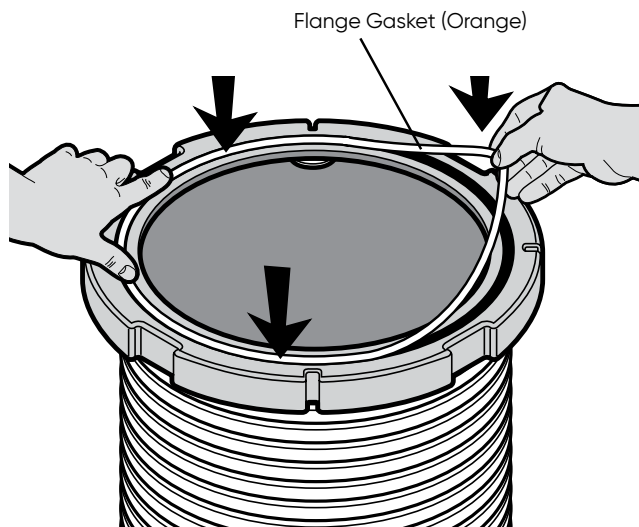


35" Risers and 18" Risers can be combined or cut to length for a maximum of 72" of extension length.



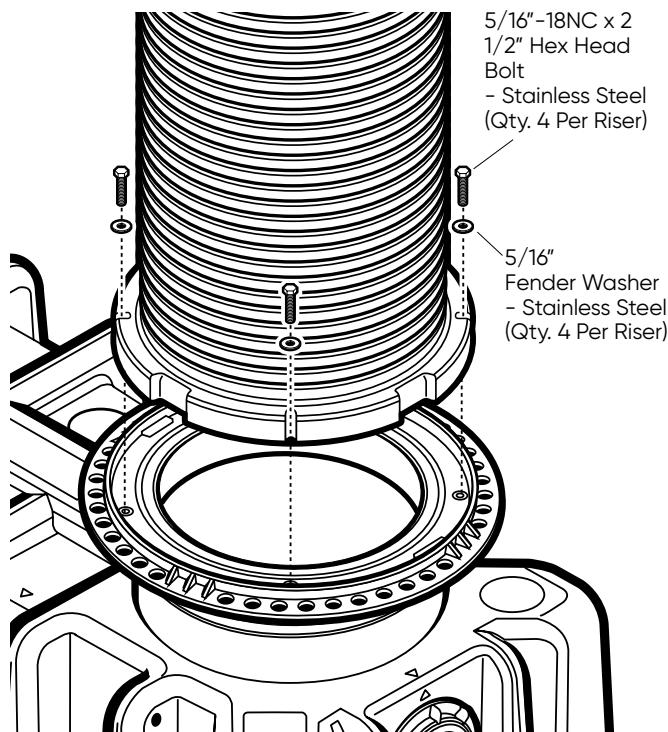
3. INSTALL FLANGE GASKET

Turn the riser over so that the bottom of the flange is facing upwards. Fit the orange flange gasket supplied into the seal channel.



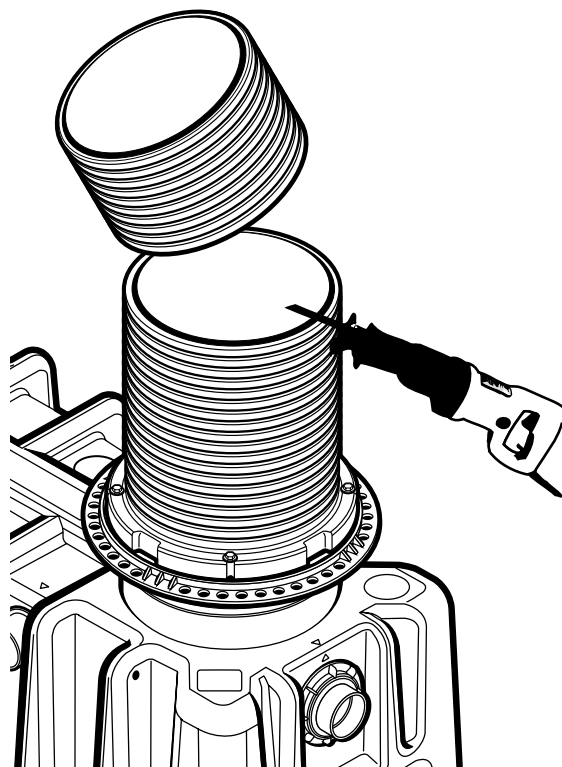
4. INSTALL RISER EXTENSION

With the flange gasket in place, install the riser extension onto the interceptor frame. Visually align the bolt locations and secure the riser using the 4 bolts supplied.



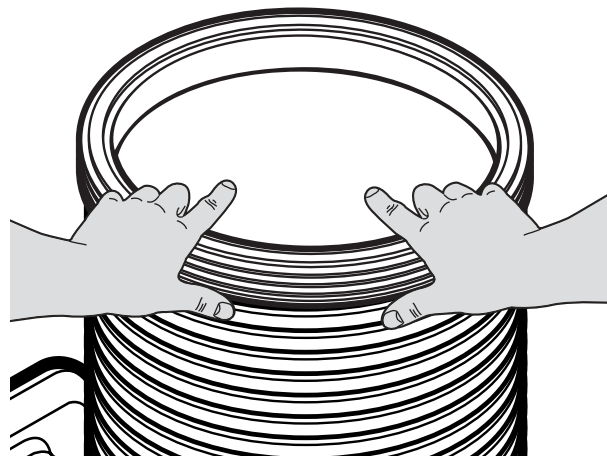
5. CUT RISER EXTENSION

With the riser extension in place, verify measurement then cut the riser extension to desired height. Prepare the cut edge to receive the frame gasket by removing any rough or loose burrs.



6. INSTALL EXTENSION FRAME GASKET

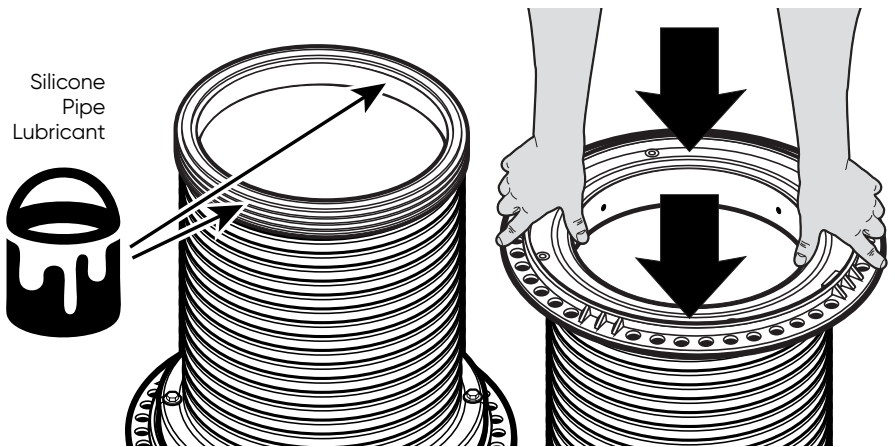
Take the extension frame gasket and fit it over the upper edge of the riser. Push down firmly all around to ensure it is fully seated.



7. INSTALL FRAME

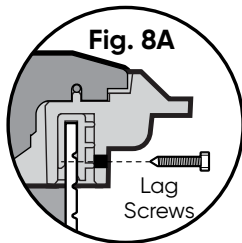
Using a silicone pipe lubricant lubricate the gasket on all external surfaces. Position the Frame on top of the gasket and press down with firm even pressure so that the frame becomes fully seated.

If installing a second riser repeat steps (3 – 7).

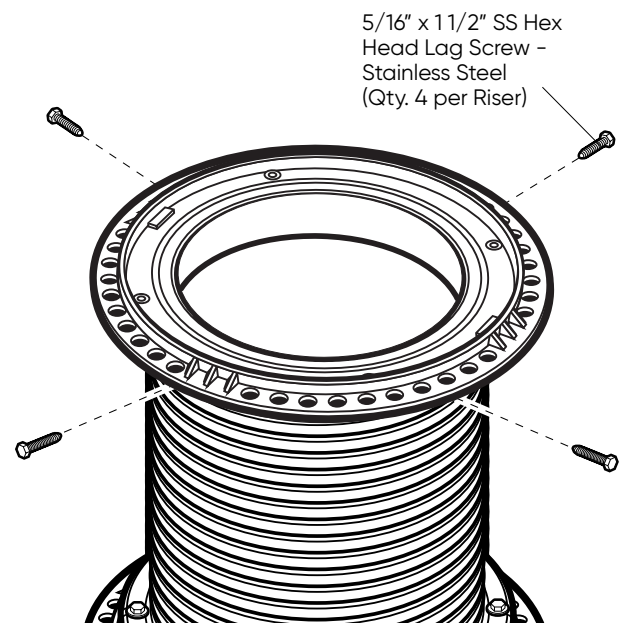


8. FASTEN FRAME

With the extension(s) in place, confirm your finished levels for a final time. Up to 1/2" (12mm) of leveling adjustment can be made by moving the frame relative to the Gasket.



Secure the frame(s) to the riser using the lag screws supplied through holes in Frame as shown in Fig. 8A.

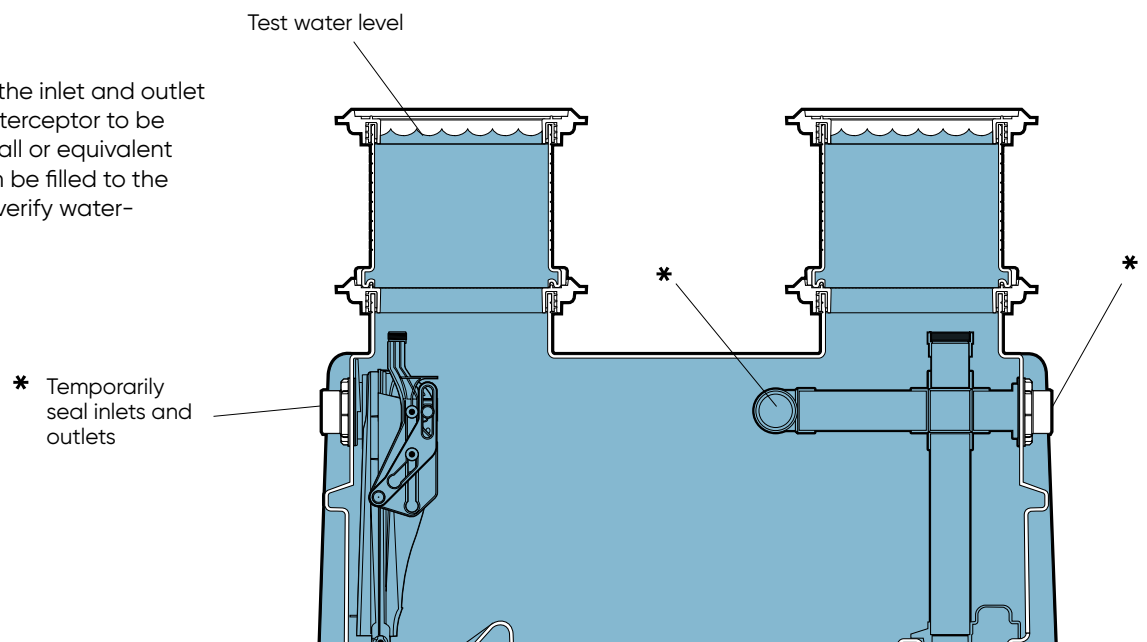


! CAUTION

A firm pressure and low torque setting is recommended to prevent stripping out the thread by the bolts as they are driven through riser wall.

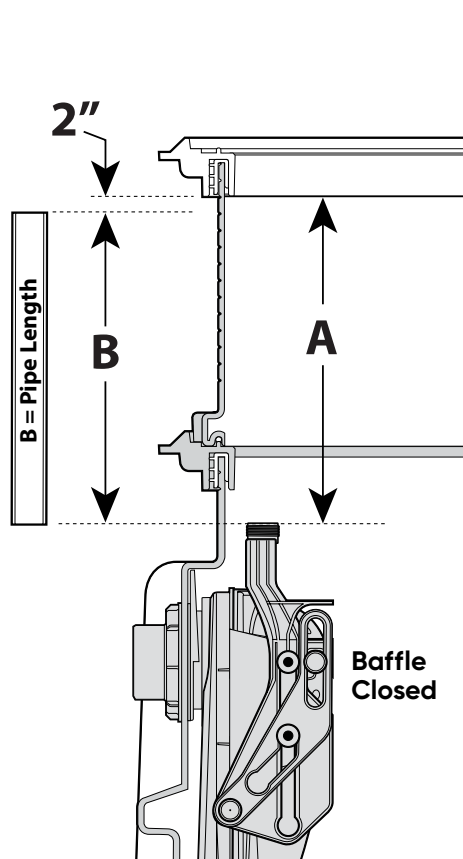
9. LEAK TEST

This will require both the inlet and outlet connections of the interceptor to be sealed using a test ball or equivalent means. The risers can be filled to the uppermost frame to verify water-tightness.



INLET BAFFLE – HANDLE EXTENSION

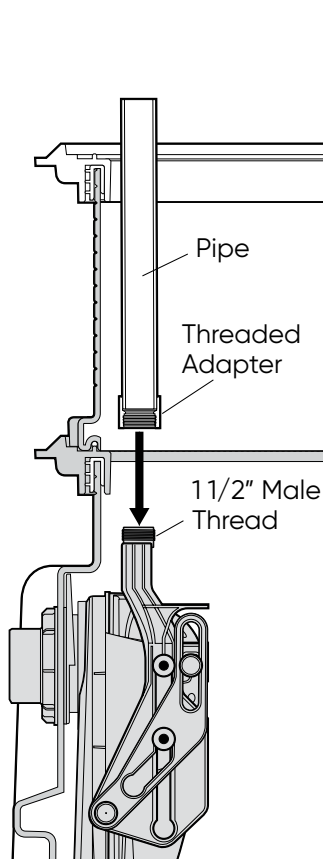
To maintain the function and accessibility of the dynamic inlet baffle when buried below grade, an extension of the pull handle is made using standard 1 1/2" Sch 40 DWV fittings (supplied) and PVC or ABS pipe (purchased separately). The tee and female adapter required are supplied as part of the Riser Extension Kit.



10. MEASURE LENGTH

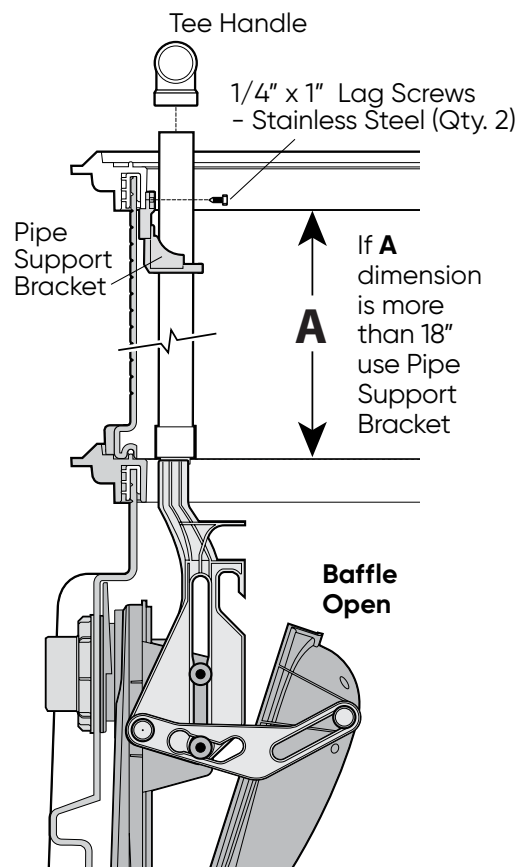
With the Inlet Baffle in the closed position, measure the distance from the top of the threaded connection on the handle to the lower edge of the uppermost frame (dimension A).

Subtract 2" from dimension A. Cut your 1-1/2" pipe at the calculated length (dimension B).



11. INSTALL

Solvent weld the female threaded adapter (supplied) to the end of the pipe. Screw the adapter onto the male thread on the top of the pull handle.



12. PIPE SUPPORT BRACKET

When extending the handle more than 18", the pipe support bracket is required to provide stability for the extended handle.

Slip the oval hoop over your pipe extension and secure it at the lower edge of the respective frame as shown (Fig. 12A) using the 1" Lag Screws supplied. Once installed you should have a 3/4" stub of pipe above the support bracket hoop.

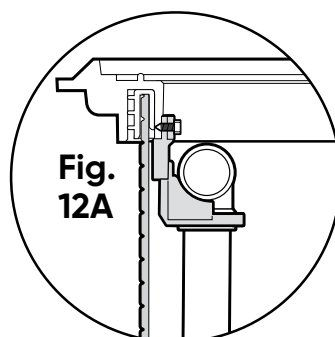
Pull upward on the extension pipe to open the baffle. When in the open position, solvent weld the vent tee supplied onto the top of the pipe to form a handle.

When closed, the hub of the vent tee will sit immediately above the top surface of the pipe support hoop, the inlet baffle being fully closed.



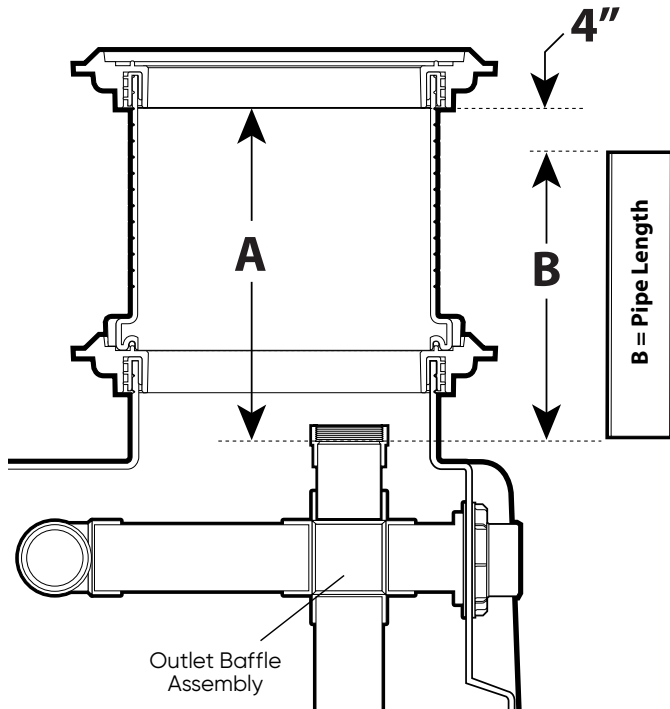
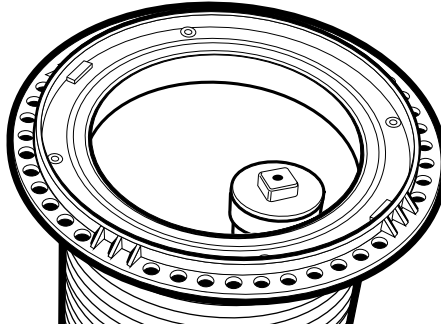
WARNING

Warning! Take care when solvent welding. Do not allow excess cement to run or drip downward as this could damage or partially bond parts of the baffle assembly together.



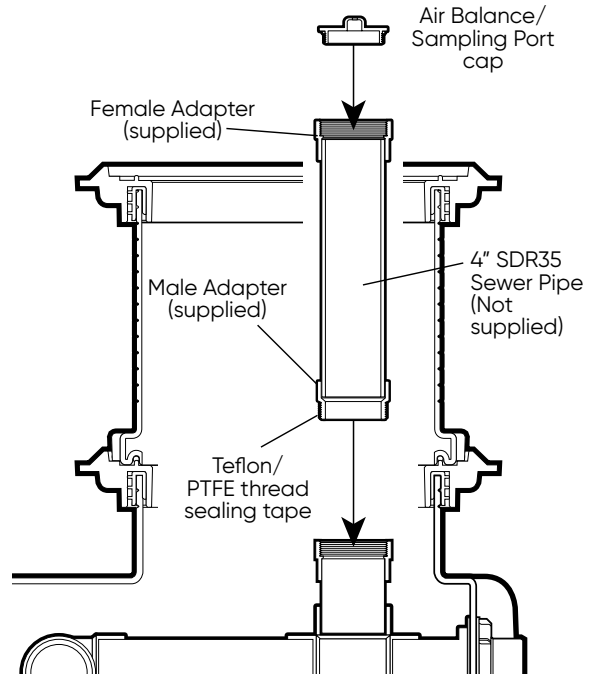
Sampling/Air Balance extension

The outlet assembly is constructed with SDR35 sewer pipe & fittings.



13. MEASURE EXTENSION LENGTH

Measure the distance from the bottom of the female threaded socket, to the bottom edge of the uppermost Frame (A). Subtract 4" from this dimension and cut your SDR pipe (B).



14. INSTALL EXTENSION

Solvent weld the Male Adapter (supplied) and Female Adapter (supplied) on to the ends of the cut pipe.

With the male thread on the lower end, align and thread in the pipe extension assembly, using a Teflon/PTFE thread sealing tape to ensure an airtight connection.

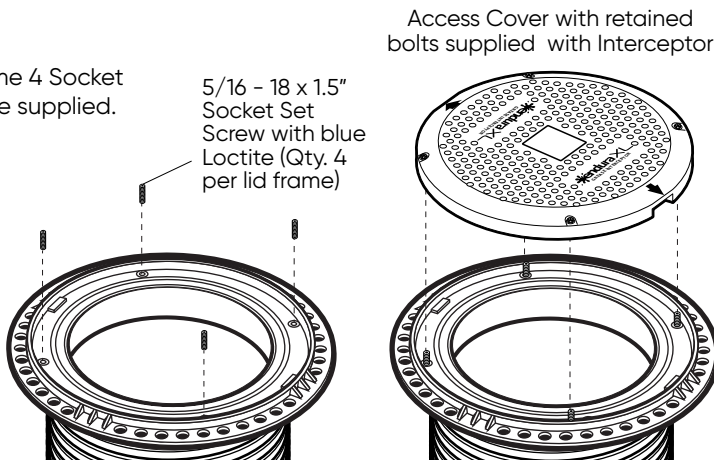
Thread the Air Balance/Sampling Port cap into the Female Adapter.

15. INSTALL COVERS

Install into each top lid frame 4 Socket Set Screws with blue Loctite supplied.

Reinstall the Covers to the Frame.

Protect the Cover and Frame with cardboard or plastic during backfill process to keep dirt and debris out.



NOTICE

With cover installed, ensure that there is between 1/2" - 2" of clearance between the bottom of the cover and the top of the Air Balance/Sampling Port cap.

REMOTE PUMP INSTALLATION INSTRUCTIONS

A remote pump outlet may be installed in the Endura® XL using a 3" DWV Sch40 pipe and a 3" diameter tank penetration seal.

1. ANGLED CUT

Cut the end of a 3" Sch40 DWV pipe (ABS or PVC by preference) at an angle that is no less than 45 degrees.

2. CHAMFER EDGES

The outer edges must be chamfered to at least 45 degrees around the full length of the pipe end to prevent damage to the rubber seal.

3. CUT PIPE LENGTH

Cut pipe to length as shown in Figure A.

4. CUT OUTLET LOCATION

On the top surface of the tank at the center position and on either side of the air balance channel are two "Remote Pump Ready" details, both of which include a drill center (Fig. B). Select which of the two locations best suits your application and using a 4" diameter hole saw, open the respective hole.

5. INSTALL SEAL

Lubricate the tank penetration seal using silicone pipe lubricant and fit into the opening.

6. INSTALL PIPE

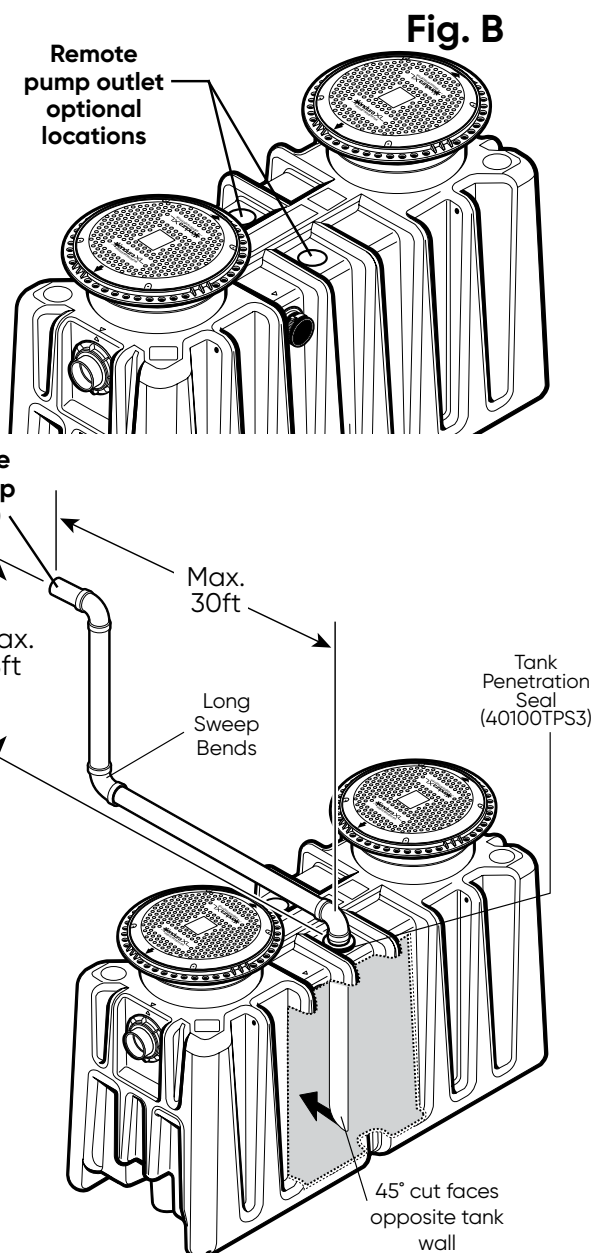
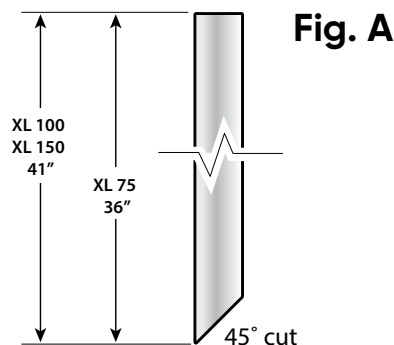
The orientation of the pipe when installed is important. Ensure the angled face is pointed toward the opposite tank wall.

Take your prepared length of pipe and liberally apply silicone pipe lubricant to at least the first 6" of the pipe including the angled surface.

Insert pipe through the seal and into the tank. Apply more lubricant to the next 12-18" and continue to push the pipe downward into the tank until the tip bottoms out, with the angled face in the correct position.

7. INSTALL PUMP OUT LINE

Install your pump out line from the tank using long sweep bends and fittings and making provision for adequate cleanout access. All joints must be solvent welded or threaded. Maximum developed pipe run shall be no greater than 30 feet with a vertical rise of 8 feet max.



ENDURA XL SAMPLING WELL WITH M-RATED AND S-RATED COVERS INSTALLATION INSTRUCTIONS

1. SELECT OUTLET

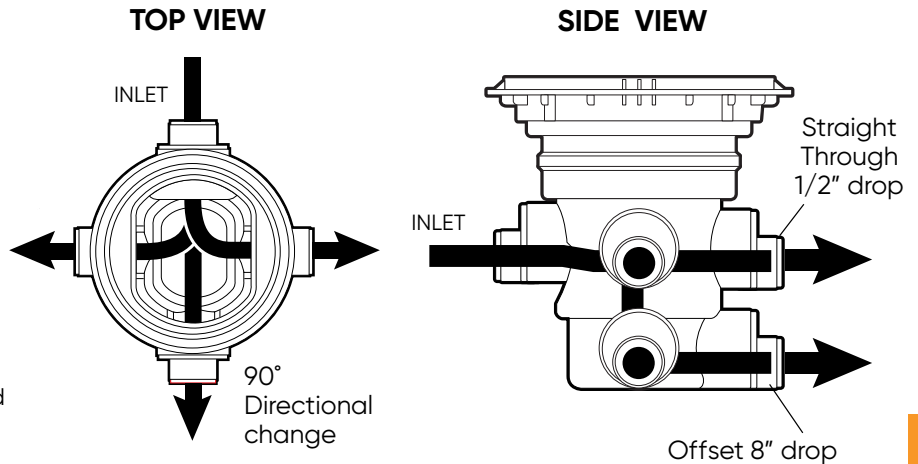
The Endura® XL Sampling Well provides an off-set inlet-outlet with 8" of fall and a straight through inlet/outlet with 1/2" fall.

Consult local codes and standards to confirm which offset is required.



The Endura XL Sampling Well provides a choice of 6 outlets. Select desired outlet and remove internal cap; all other outlets should remain capped off.

NOTE: Only one outlet is to be used when employed as a sampling well.



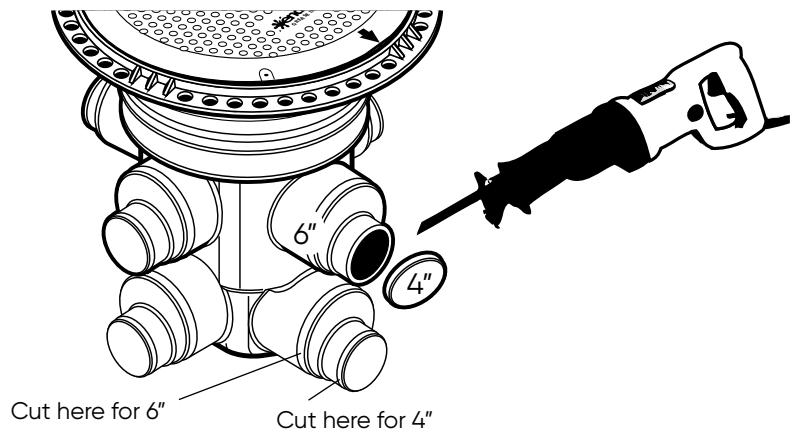
INSTALLATION

2. SELECT CONNECTION SIZE

SELECT CONNECTION SIZE:

The Endura® XL Sampling Well features both 4" and 6" connection sizes. All connections come sealed. Select connection size and cut to open.

NOTE: Do not decrease pipe diameter across the unit.

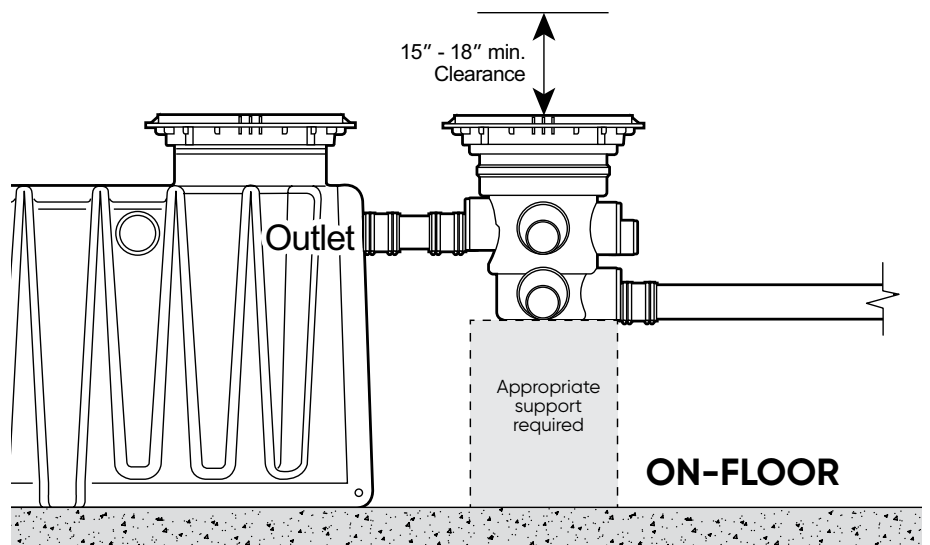


PREPARE YOUR INSTALLATION AREA

3A. ON GRADE

Sampling well should be located as close as possible to the outlet connection of the grease interceptor. Ensure appropriate support is in place to accommodate the sampling well. Remove all packaging, position and level the sampling well in line with the outlet of the interceptor.

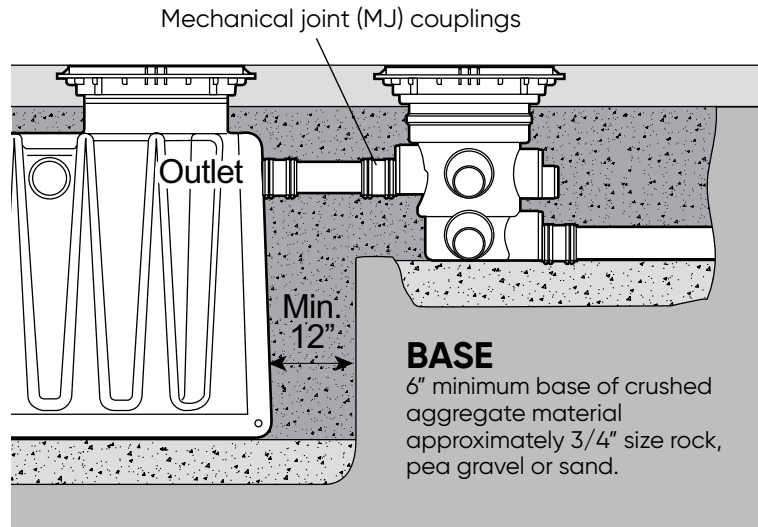
Note: (as it currently appears in the draft)



3B. BELOW GRADE

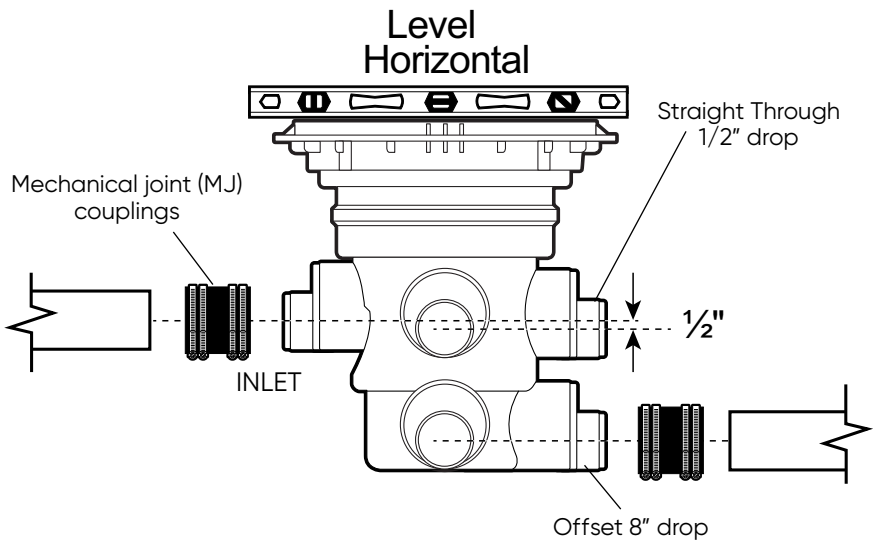
Sampling well should be located as close as possible to the outlet connection of the grease interceptor. Excavate as required to accommodate the sampling well. Remove all packaging, lower in and level accounting for surface finish requirements. Ensure inlet of the Sampling well is in line with the outlet of the interceptor.

Ensure air intake vents and cleanouts are installed as per local codes and standards.



4. MAKE CONNECTIONS

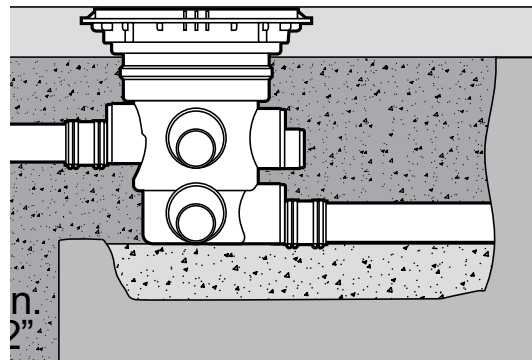
Connect to drainage system using locally approved/accepted mechanical joint (MJ) couplings. Ensure the sampling well body is level.



5. REPLACE COVERS AND BACKFILL

Replace covers. For in ground installations, protect covers with cardboard and backfill with crushed aggregate. For riser extensions, refer to the applicable installation instructions.

Do not mechanically compact around unit.



BASE

6" minimum base of crushed aggregate material approximately 3/4" size rock, pea gravel or sand.

ENDURA XL SAMPLING WELL WITH CAST IRON COVER INSTALLATION INSTRUCTIONS

1. SELECT OUTLET

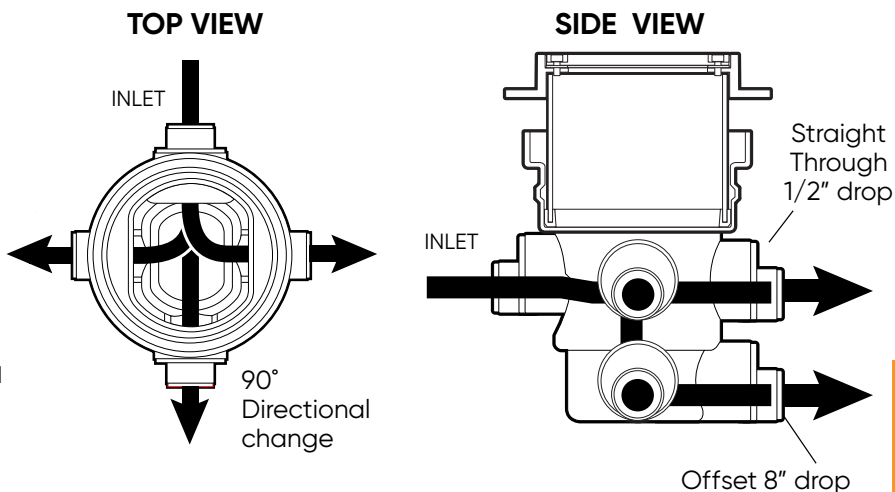
The Endura® XL Sampling Well provides an off-set inlet-outlet with 8" of fall and a straight through inlet/outlet with 1/2" fall.

Consult local codes and standards to confirm which offset is required.



The Endura XL Sampling Well provides a choice of 6 outlets. Select desired outlet and remove internal cap; all other outlets should remain capped off.

NOTE: Only one outlet is to be used when employed as a sampling well.



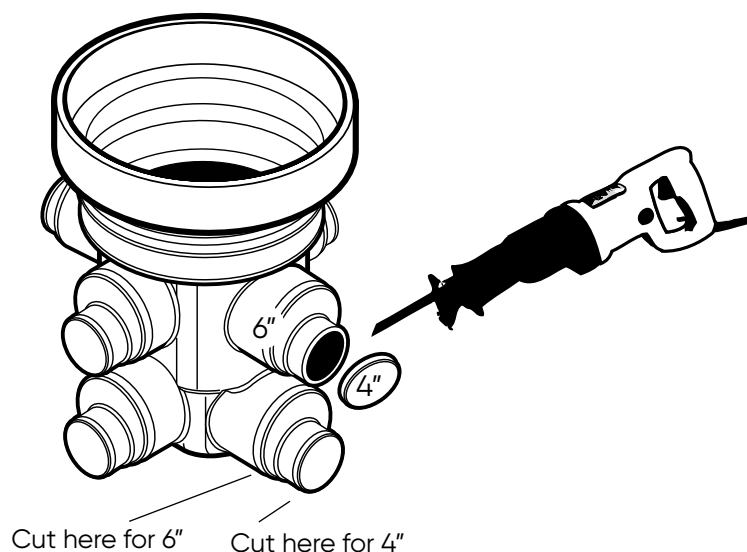
INSTALLATION

2. SELECT CONNECTION SIZE

SELECT CONNECTION SIZE:

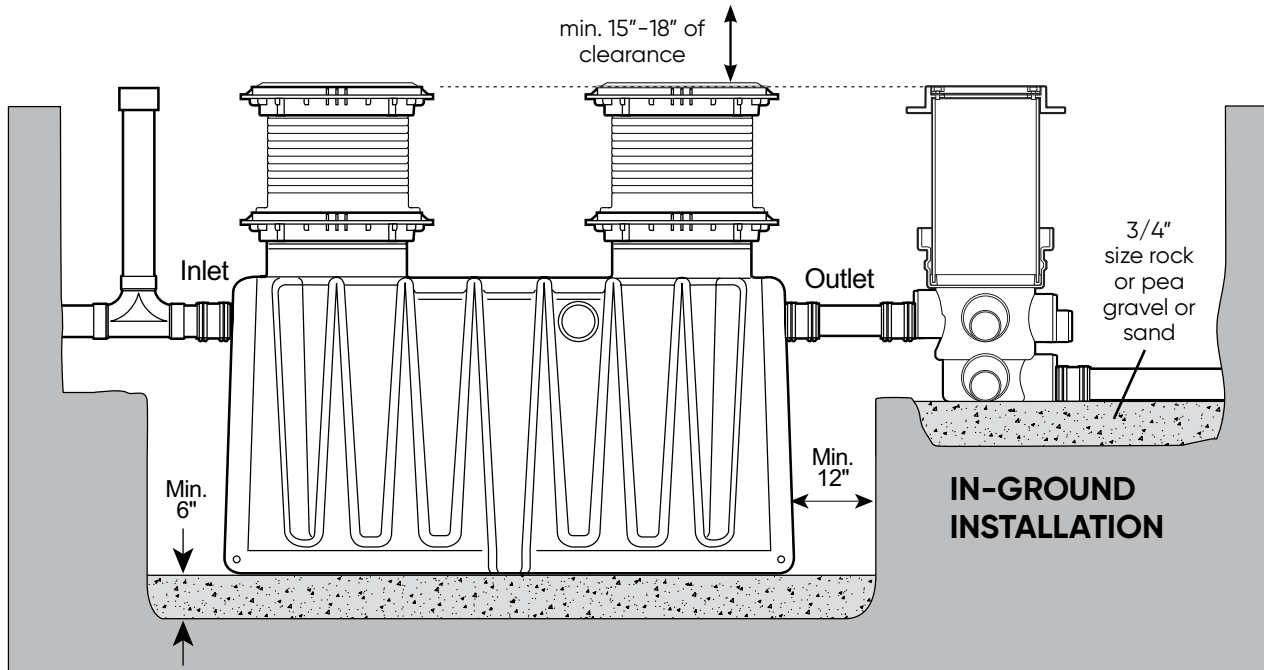
The Endura® XL Sampling Well features both 4" and 6" connection sizes. All connections come sealed. Select connection size and cut to open.

NOTE: Do not decrease pipe diameter across the unit.



3. PREPARE YOUR INSTALLATION AREA

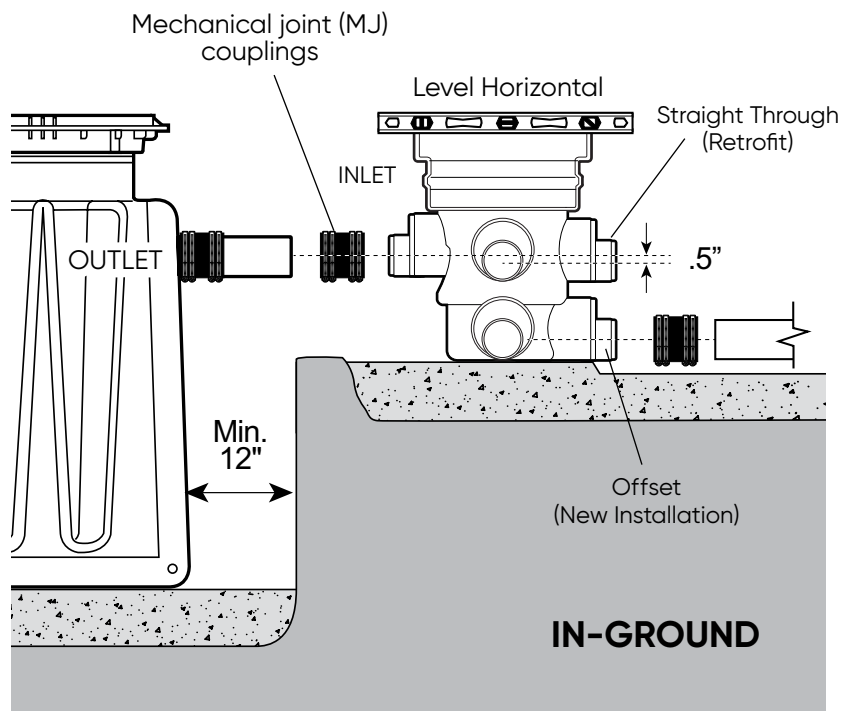
LOCATION: Sampling Well with cast iron lid should be located outdoors and as close as possible to the outlet connection of the grease interceptor. A minimum 15"-18" of clearance above the access cover is recommended to accommodate sampling equipment.



4. MAKE CONNECTIONS

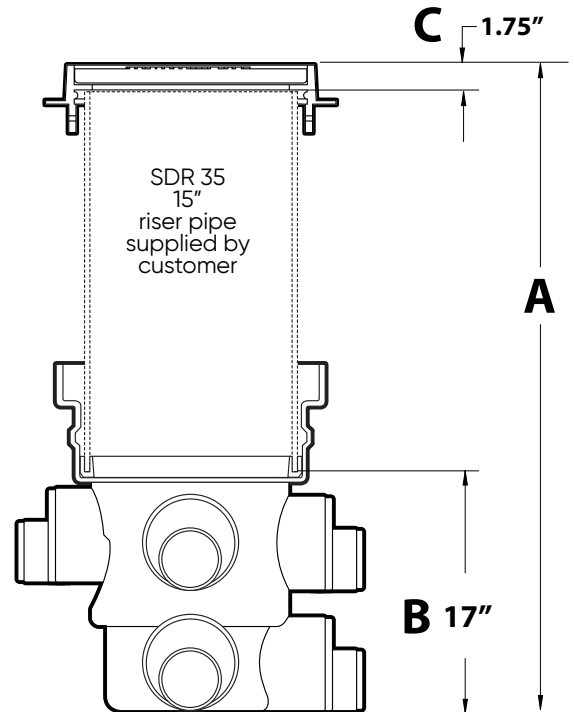
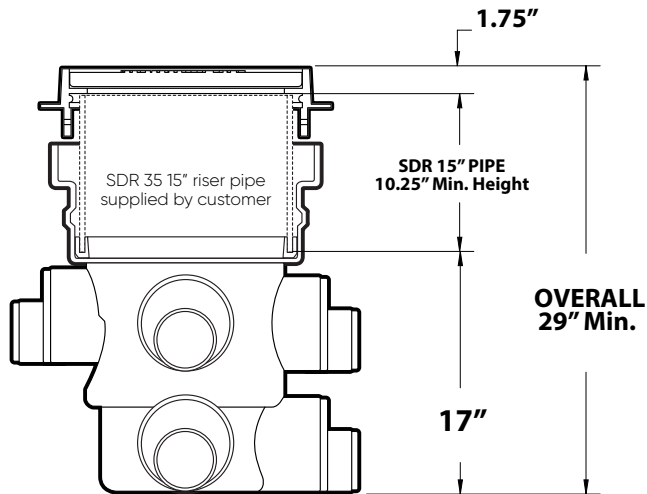
Connect sampling well to drainage system using locally approved/accepted mechanical joint (MJ) couplings. Ensure the sampling well body is level.

For retro-fit installations, a straight through inlet/outlet is also available with $\frac{1}{2}$ " fall.



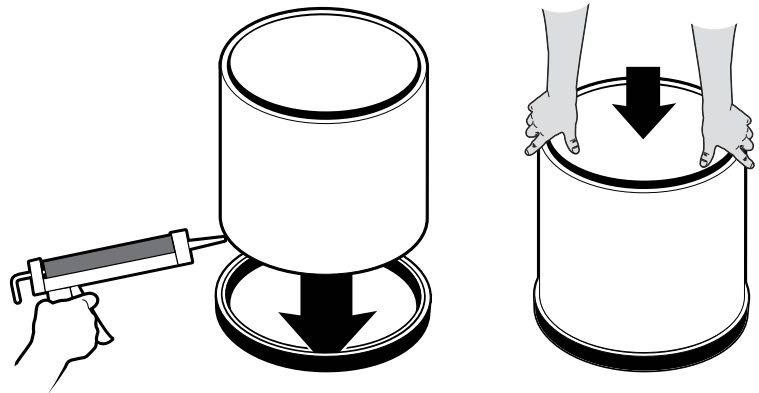
5. MEASURE RISER HEIGHT

The minimum installed height of the cast iron sampling well is 29". Determine the finished floor or grade level desired accounting for surface finishes. Determine height of pipe required by measuring from the sampling well base to the finished floor or grade level. Subtract 17" for sampling well body. Subtract 1.75" for lid frame.



6. INSTALL GASKET

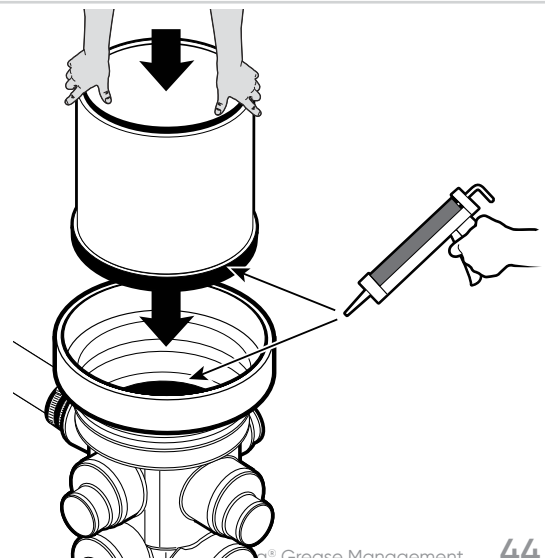
Insert cut pipe into groove on gasket.
Silicone can be applied to pipe edge to aid in assembly.



7. INSTALL RISER PIPE

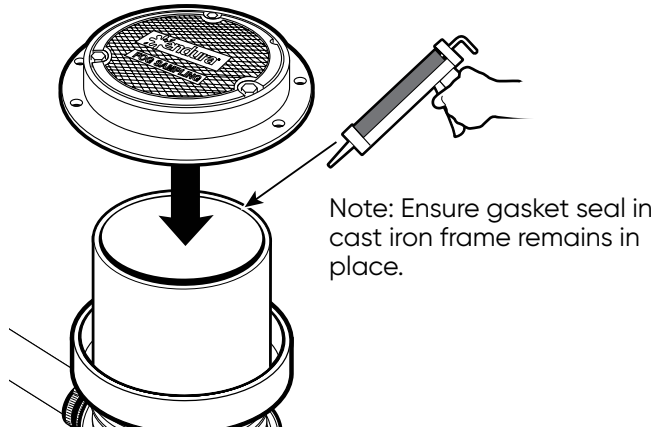
Silicone can be applied to gasket edges to aid in assembly and further create a water tight seal.

Insert the pipe and gasket into the sampling well until seated firmly.



8. INSTALL CAST IRON COVER

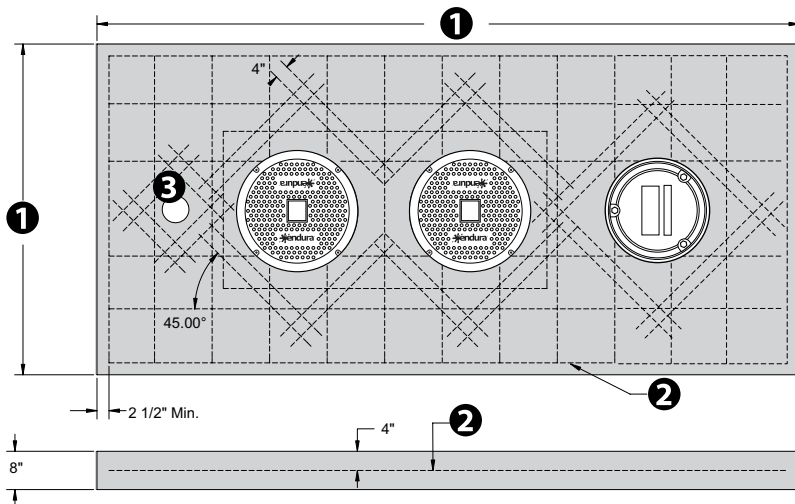
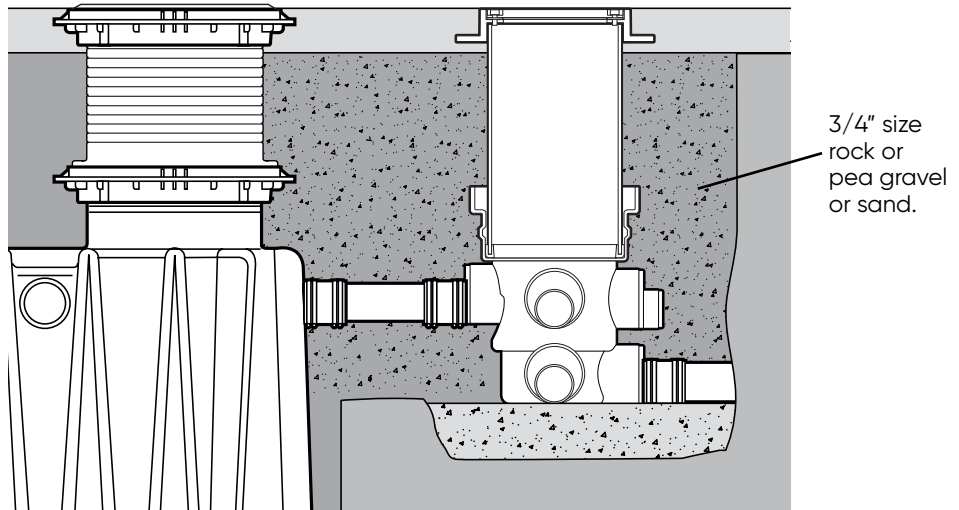
Apply silicon bead to the pipe end. Fit cast iron frame onto the pipe ensuring a firm seal. Let dry 24 hours before back filling.



9. BACKFILL

Backfill with crushed aggregate.

Do not mechanically compact around unit.



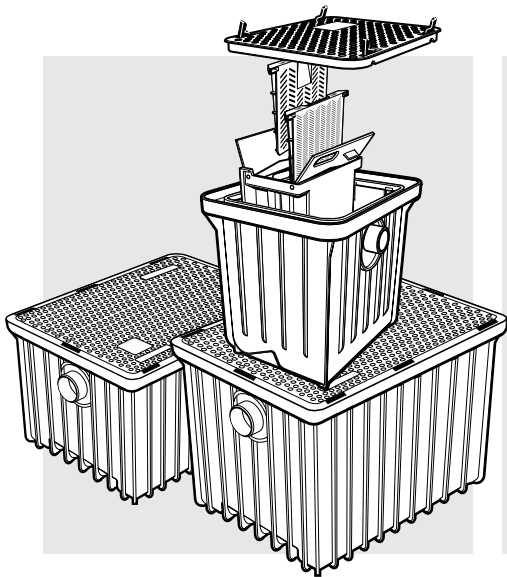
10. FINISH TO GRADE CONCRETE SLAB RECOMMENDATION

Concrete to be 28 day compressive strength to 4000 PSI. Reinforcement with No.4 rebar (1/2") grade 60 steel per ASTM A615: connected with tie wire. Rebar to be 2 1/2" from edge of concrete. Rebar spacing 12" grid. 4" spacing around access openings.

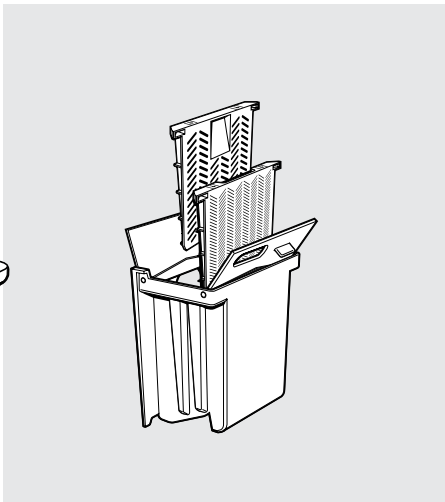
This is a recommendation only, ensure final drawings are stamped and approved before submitting to AHJ.

- ① • Concrete Pad must extend min. 18" outside the unit footprint.
- ② • No.4 rebar (1/2")
- ③ • 2-Way cleanout tee

ENDURA SOLIDS INTERCEPTOR AND BASKET ACCESSORY INSTALLATION INSTRUCTIONS



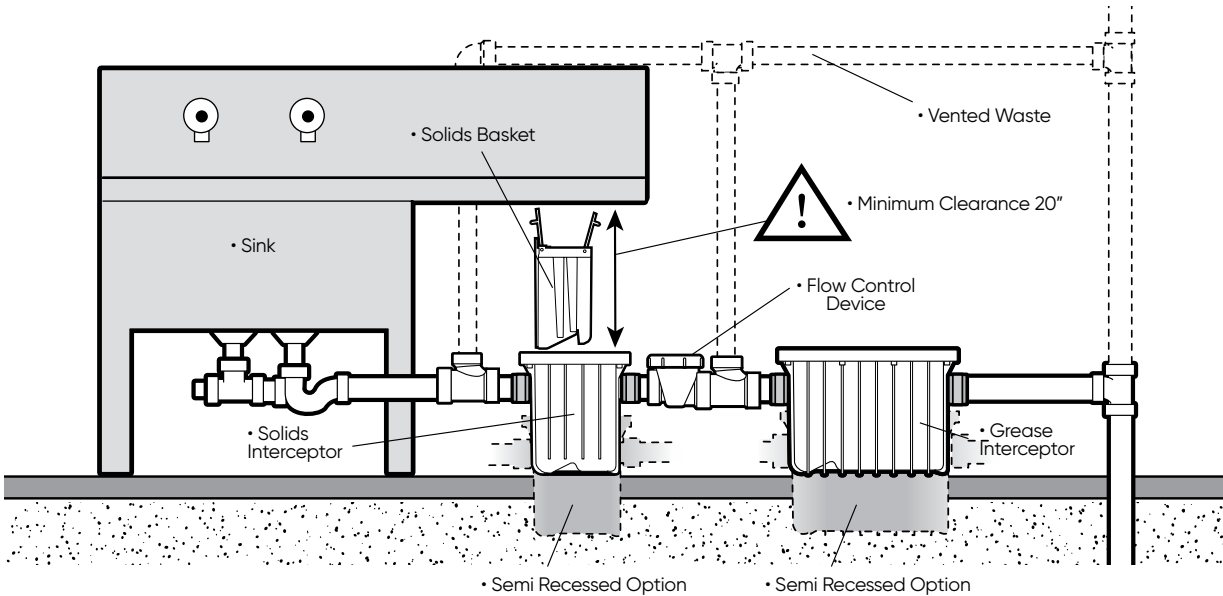
3911A02 to 4011A04
Endura® Solids Interceptor



3911A-1
Endura® Solids Basket Accessory

INSTALLATION

TYPICAL ON FLOOR/ SEMI-RECESSED



NOTE: Solids Interceptor must be installed before flow control device.

ENDURA SOLIDS INTERCEPTOR INSTALLATION INSTRUCTIONS

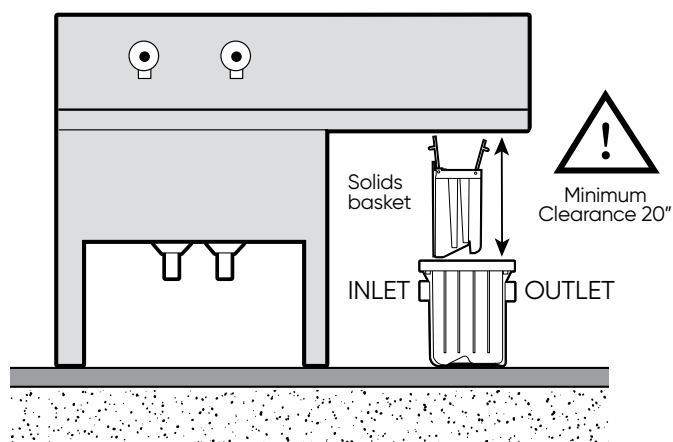
STEP 1. PREPARE YOUR INSTALLATION AREA

Remove all packaging. Confirm flow direction, outlets are marked IN & OUT.

Locate the interceptor to allow a minimum of 20" of clearance for removal of solids basket during maintenance.

The interceptor should be installed as close as possible to the fixture(s) being served to reduce the risk of solids/grease accumulation in extended runs of pipe. Piping should be installed at a slope of $\frac{1}{4}$ " per foot of length or greater to maintain effective drainage.

Set the interceptor on a firm, level surface ensuring tank is evenly supported.

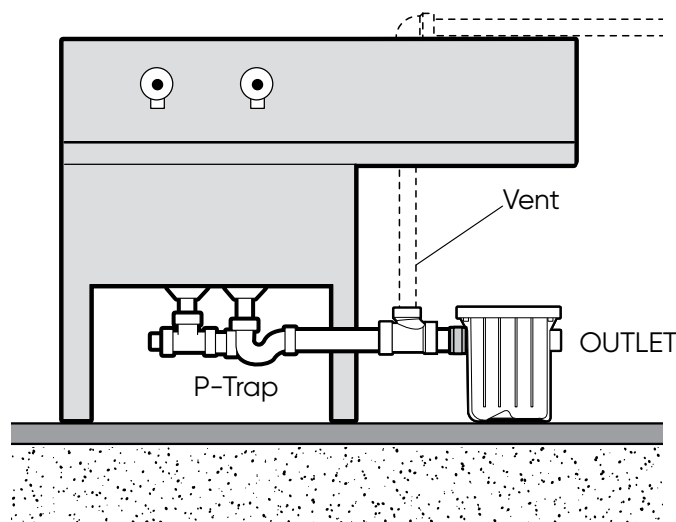


STEP 2. CONNECTIONS

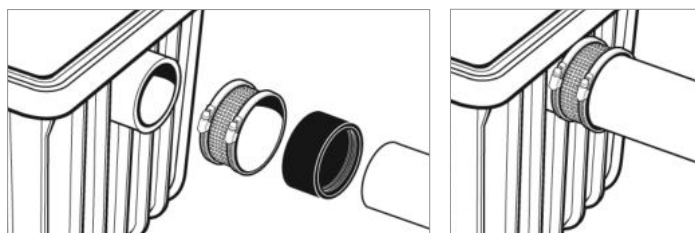
Ensure P-Trap is installed at beginning of connection with a vented Tee connection to a main vent line. Ensure that the branch vent line is positioned above the sink flood level.

Connect pipe to solids interceptor with a mechanical coupling, do not solvent cement fittings to grease interceptor outlets.

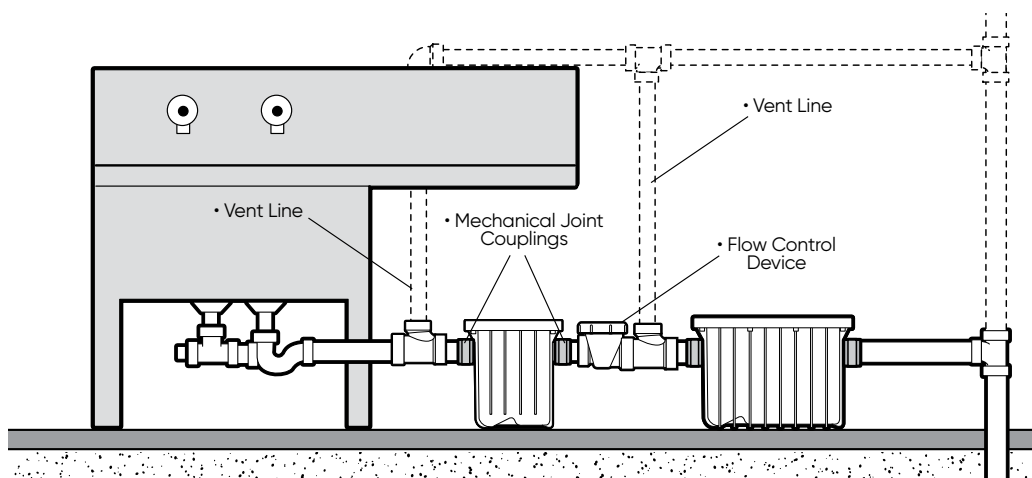
Ensure the solids interceptor is installed before the flow control of the grease interceptor.



All Endura Interceptors are manufactured with no hub connections. Standard mechanical joint (MJ) couplings can be used to connect the interceptor to a metal or plastic piping system. If the piping system needs to be resized, use appropriate mechanical joint reducers, but do not decrease pipe diameter across the unit. (i.e. 3 inch inlet, 2 inch outlet.)



Follow remaining installation instructions of grease interceptor as described earlier in this manual.

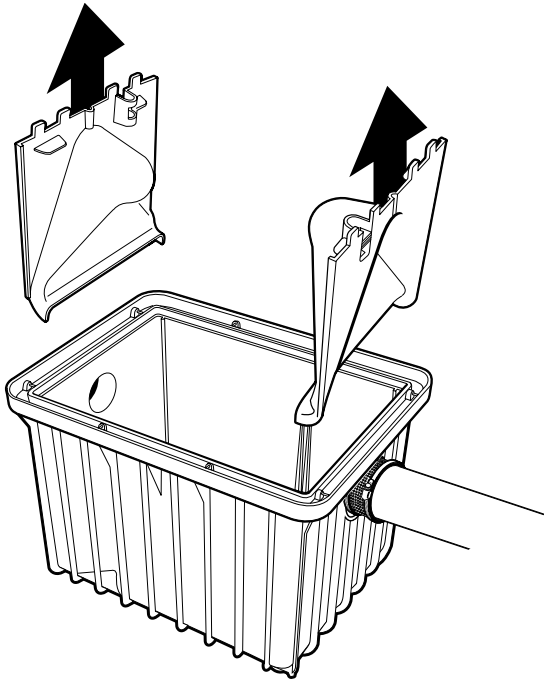


ENDURA® SOLIDS BASKET ACCESSORY INSTALLATION INSTRUCTIONS

The Solids Basket Accessory is designed to be able to replace the inlet baffle of your Endura® grease interceptor. It can be fitted to any full height model from 15 GPM to 50 GPM.

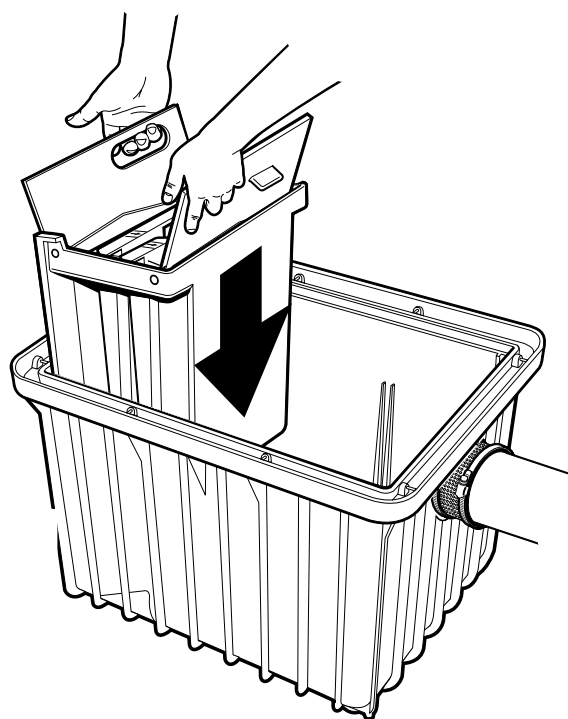
1. REMOVE BAFFLES

Remove the inlet and outlet baffles from the interceptor by pulling vertically on the lifting locations.



2. INSTALL SOLIDS BASKET

Insert the solids basket accessory into the inlet location pushing it all the way down until it bottoms out.



SECTION FIVE: SYSTEM OPERATION, MAINTENANCE AND REPAIRS

KITCHEN BEST MANAGEMENT PRACTICES

RECOMMENDED BEST MANAGEMENT PRACTICES (BMP's) for FOOD SERVICE ESTABLISHMENTS*

Owners and operators of food service establishments are encouraged to implement the following BMP's to help improve the quality of wastewater discharged to drains and sewers. Please check with your municipal plumbing code or wastewater department policies to determine conformance criteria for the proper handling of wastewater.

1. Put signs in the kitchen, particularly over the sink, telling staff what can and what cannot go down the drains.
2. Do not pour oil, grease or large amounts of oily liquids such as gravies, sauces or salad dressings down the drain. Collect this material in a secure waste-grease container for disposal at approved locations.
3. Scrape off greasy trays and pans into a waste-grease container before putting them into a sink or dishwasher.
4. Scrape food waste from pots, pans and dishes into a garbage bin before putting them into a sink or dishwasher.
5. Put a fine basket strainer in sink drains to catch solids as well as dishwasher discharge to catch items such as rice and corn.
6. Install a special-purpose solids interceptor upstream of the grease interceptor to capture solid particles. Solids take up space and interfere with oil and grease separation. Also, food-waste solids that collect in a grease interceptor will decay and cause odor problems.
7. Do not pour coffee grounds or tea leaves down the drain.
8. Develop and implement a plan to reduce, reuse and recycle waste
 - Use a recycling service for your used cooking oil. Used cooking oil can be recycled into useful products such as soap, animal feed and biodiesel products.
 - Separate out food waste for delivery to a centralized composting site.

9. Cleaning grease off kitchen exhaust systems. Grease that builds up on exhaust hoods, filters, ducts and fans is usually removed and cleaned to the bare metal by a certified service company. The following cleaning procedure is recommended:

- Use hand scrapers to remove as much grease as possible from the exhaust system. Collect and store the grease in a separate container labeled "waste grease."
- Wash the exhaust system with a caustic cleaning solution, collecting the water in a bucket.
- Neutralize the wash water in the bucket by adding a weak acid such as lemon juice, citric acid or a little vinegar.
- Skim off any grease floating in the bucket and store it in the waste-grease container.
- Pour the neutralized water from the bucket into a drain that is connected to a grease interceptor. Be careful not to pour the solids at the bottom of the bucket into the drain. Store the solids in the waste-grease container.

* Greater Vancouver Regional District (GVRD), "Best Management Practices & Code Practices for Waste Water Management at Food Sector Establishments", Nov. 2001, pp 8, 10.

CLEANING & MAINTENANCE

All grease interceptors must be cleaned regularly to maintain efficient operation. Endura® recommends a licensed and locally approved service provider manage the regular removal, cleaning and disposal of the fats, oil and grease that is captured in your interceptor.

For point of use units (7 GPM – 50 GPM) that will be maintained by Food Service Establishment FSE staff, make sure training is provided in:

- proper function, operation and maintenance of grease interceptors outlined in this manual
- proper storage, handling and disposal of wastes
- proper separation and storage of materials
- proper use and handling of cleaning aids
- proper housekeeping
- local code requirements and Best Management Practices for food sector facilities.



Failure to maintain the grease interceptor can result in back-ups, flooding and property damage.

MAINTENANCE FREQUENCY

The frequency of grease removal is dependent upon a variety of factors; the type of food served, the capacity of the grease interceptor and the concentration of grease in the water. Increasing the frequency of cleaning will reduce odor problems associated with grease interceptors and improve retention efficiency.

For tools to help determine the optimal maintenance frequency, visit enduracalculator.com.

Once an optimal grease removal interval has been established for a specific installation, regular cleaning at this interval is necessary to maintain the rated efficiency of the interceptor. Some municipalities require cleaning logs be maintained and kept for a minimum of 2 years.

ENDURA XL MONITORING SYSTEM

The Endura XL Monitoring System is available for installation into grease interceptors 75, 100, and 150 gpm. The monitor has a high liquid level probe to alert the user of potential backups and a grease sensor that can alarm when grease depth reaches a pre-determined level in the tank.

MEASURING GREASE LEVELS USING A DIP TUBE

A commercially available core sampler may be used to measure the grease depth of the unit. The depth found may be used to determine maintenance frequency when compared to Maximum Grease Height.

The maximum depth of grease allowed to accumulate prior to servicing shall not exceed max rated capacity per Table below.

Unit	Part Number	US Gallons Per Minute GPM (L/Sec)	Maximum Grease Capacity lb (kg)	Maximum Grease Height in.
Endura® 7	3907A02	7 (0.44)	31.95 (14.49)	5
Endura 10	3910A02	10 (0.63)	38.07 (17.27)	7
Endura 15	3915A02	15 (0.94)	35.14 (15.94)	3
Endura 20	3920A02	20 (1.26)	76.40 (34.65)	5
Endura 25 LO-PRO	3925A02LO	25 LO (1.6)	62.59 (28.39)	3
Endura 25	3925XTA02 (2") 3925XTA03 (3")	25 (1.6)	72.55 (32.91) 73.01 (33.12)	5
Endura 35	3935A03 (3") 3935A04 (4")	35 (2.2)	138.50 (62.82)	5
Endura 50	3950A03 (3") 3950A04 (4")	50 (3.2)	122.07 (55.37)	6
Endura 75	4075A04 4075A04M	75 (4.74)	559.00 (253.56)	12.25
Endura 100	40100A04 40100A04M	100 (6.3)	1058.00 (479.90)	17.5
Endura 150	40150A04 40150A04M	150 (9.5)	1097.00 (497.59)	18

MAINTENANCE PROCEDURES 7-50 GPM

! CAUTION

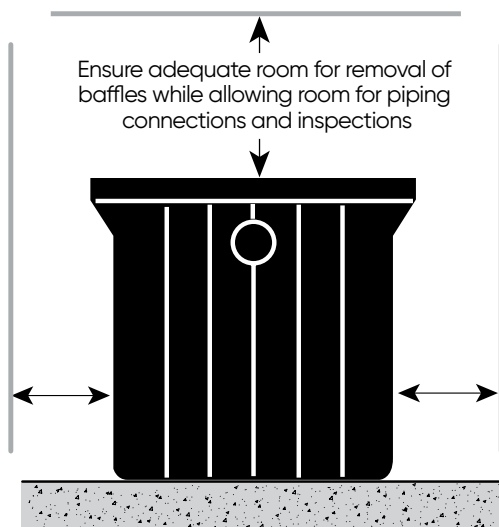
If there is an obstruction in the line, make sure the sinks are plugged or, if equipped, the upstream ball valve is closed before accessing the waste piping.

1. SAFETY FIRST!

It is recommended that protective gloves, eyewear and a mask are worn during maintenance activities.

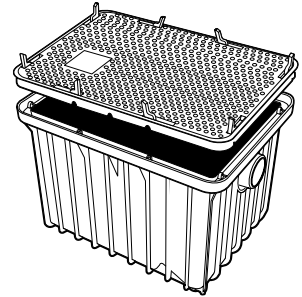
2. ACCESSIBILITY

It is the responsibility of the restaurant operator to maintain safe, clear and unobstructed access to the interceptor at all times.



3. REMOVE COVER

Open latches to remove cover, ensure the seal recessed in the underside of the cover remains in place.

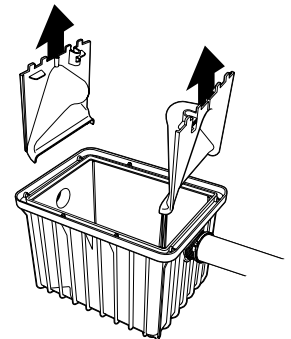


4. PUMPING AND CLEANING

All solids, grease, and water must be removed at every cleaning.

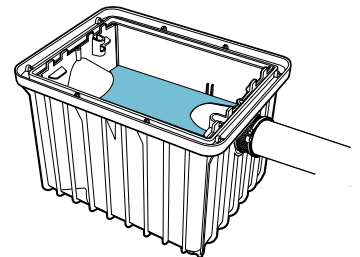
5. BAFFLES

Remove all internal baffles and wash with low pressure warm water. Replace when done.



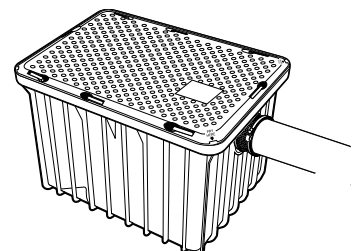
6. REFILL INTERCEPTOR

Re-insert baffles and refill interceptor with water to prepare for operation.



7. SECURE COVER

Secure cover and fasten.



MAINTENANCE PROCEDURES 75-150 GPM

! CAUTION

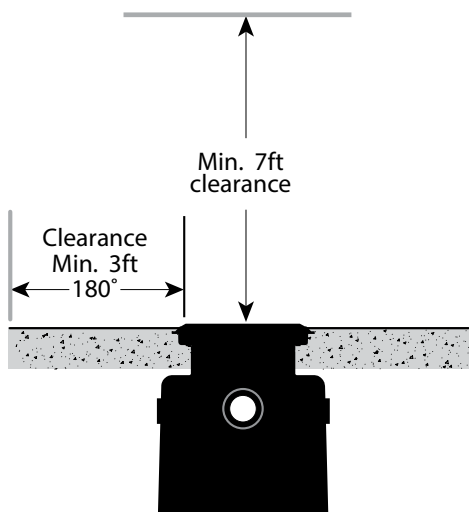
If there is an obstruction in the line, make sure the sinks are plugged or, if equipped, the upstream ball valve is closed before accessing the waste piping.

1. SAFETY FIRST!

It is recommended that protective gloves, eyewear and a mask are worn during maintenance activities.

2. ACCESSIBILITY

It is the responsibility of the restaurant operator to maintain safe, clear and unobstructed access to the interceptor at all times.



3. REMOVAL OF ACCESS COVER:

The covers that provide access to the XL interceptors are retained with four (4) hex head fasteners which are removed with a ½" socket/driver.

Covers incorporate pry points for ease of removal. Always set aside the cover on a flat surface when removed.

Visually check the seal recessed in the underside of the cover. Maximum bolt torque is 80 - 100 ft/lb.

4. PUMPING AND CLEANING:

All solids, grease and water must be removed at every pump out.

Remove residue with a hot water source rinsing the walls and internal components into the tank before making a final vacuum extraction.

Notice: For models equipped with Endura XL Monitoring System, locate the suspended sensors in the outlet manhole prior to starting maintenance. Lift sensors out of the interceptor, wipe clean and set safely aside.

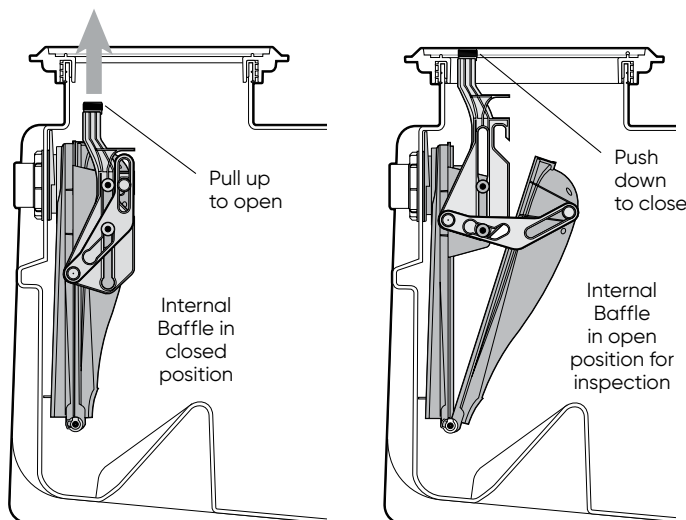
5. DYNAMIC INLET Baffle

The dynamic inlet baffle is a unique element of Endura® XL allowing access to the inlet and flow control plate for maintenance, inspection and cleaning.

To open the baffle, take a firm grip on the handle and pull vertically upward.

Once open, visual inspection can be made inside the baffle. Remove debris with a low pressure source of warm water.

To close the baffle, push vertically downward on the handle until it returns to the fully closed position.



6. OUTLET:

The outlet is accessed by the removal of the Sampling/Air Balance Cap. Any accumulation can be cleaned by vacuum or pressurized water.

During the maintenance of your interceptor, it is important to check that the hole in the outlet vent (see diagram) is unobstructed. This feature ensures that the operating efficiency is maintained.

If you do not see a gray cap on top of the outlet system, contact your installer/maintenance contractor immediately, and if necessary, purchase a replacement.



7. REFILL INTERCEPTOR

Refill Interceptor with water to prepare for operation.

Notice: For models equipped with Endura XL Monitoring System, consult operators instructions for the repositioning of sensors and testing of the system before completing maintenance.

8. SECURE COVER

Secure cover and fasten.

REMOTE PUMP OUT (OPTIONAL):

Where a remote pump out option is installed, the interceptor should be physically opened and inspected at least every third pumping, or twice a year, whichever is sooner. This is to ensure that the internal parts are in good working order and that there is no undue build-up of residue or solids remaining in the tank once it has been emptied. Any residue will be removed with a warm water source.



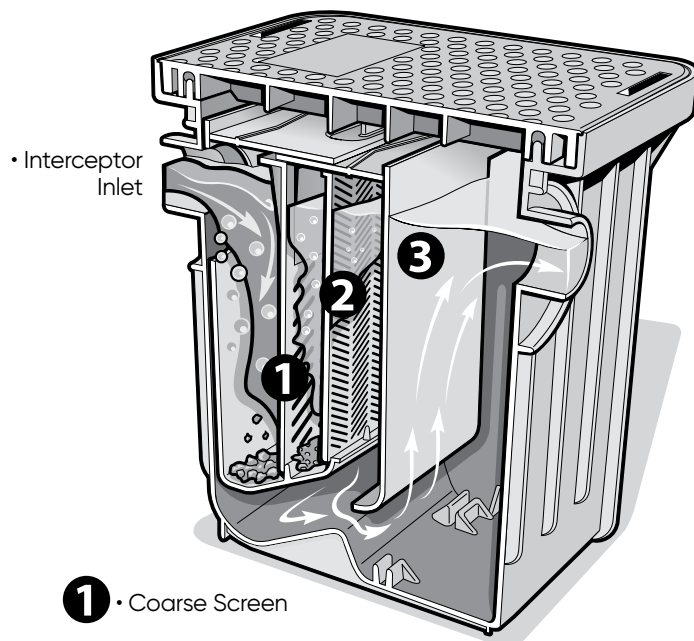
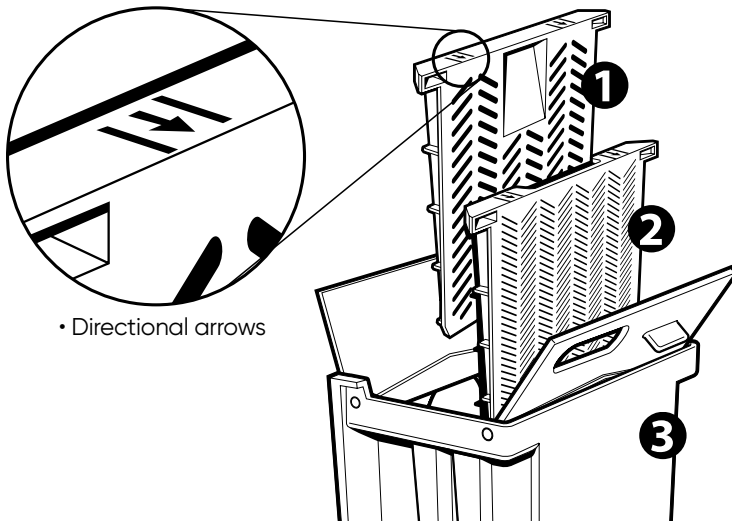
WARNING

GREASE INTERCEPTORS ARE HAZARDOUS ENVIRONMENTS AND MUST NEVER BE LEFT UNCOVERED AND UNATTENDED, EVEN DURING MAINTENANCE.

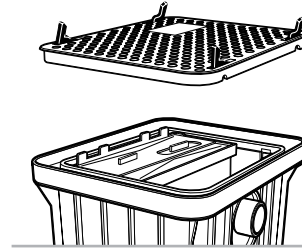
- All access covers **MUST** be fully and completely secured
- All required bolts **MUST** at all times be in place and well tightened
- Missing bolts **MUST** be reported to management and replaced immediately
- Covers **MUST** meet the required load rating for the application (see the Technical Information section)
- Do **NOT** use alternate covers

SOLIDS INTERCEPTOR MAINTENANCE PROCEDURES

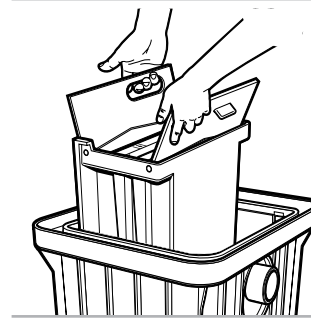
The solids interceptor has two removable screens, the first that separates coarse material (1), followed by a finer screen for smaller debris (2). These have molded details to ensure they are fitted in the correct location and have flow direction arrows molded onto the top surface. The coarse screen (large openings) is always located upstream (sink side) of the fine screen (small openings).



- 1** • Coarse Screen
- 2** • Fine Screen
- 3** • Solids Container

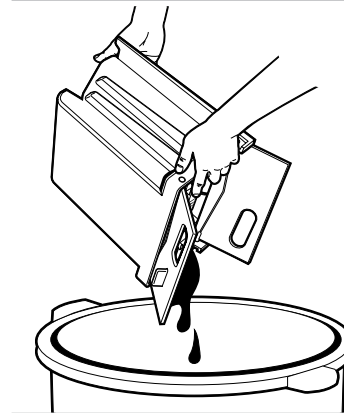


- 1.** Remove grease interceptor or solids interceptor cover.



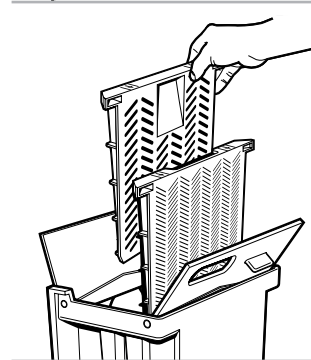
- 2.** Remove the solids basket using the molded details in cover panels.

Allow excess water to drain over the interceptor tank.

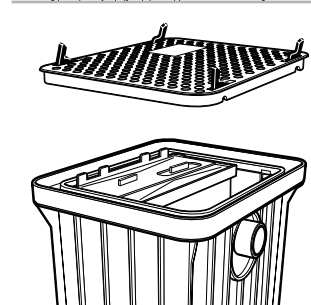


- 3.** To empty the solids basket remove the two screens and tip the contents into the waste container.

Clean both the basket and screens.



- 4.** Replace the screens and basket inside the interceptor.



- 5.** Refill interceptor with water to prepare for operation.

Secure cover.

SECTION SIX: FREQUENTLY ASKED QUESTIONS AND TROUBLESHOOTING

DO ENDURA® XL TANKS NEED TO BE DIRECTLY VENTED?

Unless specifically mandated by local code or bylaw, Endura® XL tanks DO NOT require direct venting. Venting is required on the downstream drain like most plumbing appliances and fixtures.

DO I NEED TO INSTALL A CLEAN OUT BEFORE OR AFTER AN INTERCEPTOR?

Most plumbing codes require an upstream and downstream cleanout immediately before and after the interceptor.

DO I HAVE TO INSTALL THE FLOW CONTROL DEVICE?

The Flow Control is essential to the performance of the interceptor. It must be installed as indicated. Without it, the interceptor does not meet the requirements of the applicable standards.

MY JURISDICTION REQUIRES EFFLUENT SAMPLING VIA A DOWNSTREAM ACCESS. WHAT DO I DO?

For those jurisdictions that require the capability to sample, Endura XL incorporates a sampling port within the outlet assembly. This is accessed by the removal of the air balance/sample port cap allowing water quality samples to be taken for analysis. Some AHJ's may require a separate downstream sampling point. The Endura sampling well can provide a flexible solution for these applications.

WHAT FIXTURES SHOULD BE CONNECTED TO THE INTERCEPTOR?

A grease interceptor should never receive sanitary wastewater discharge. Wastewater discharge to a grease interceptor will be from foodservice activities only. The requirements for appliances and fixtures that must and must not be connected to a grease interceptor is typically defined by your local plumbing codes and or jurisdictional by-laws.

HOW OFTEN SHOULD AN INTERCEPTOR BE CLEANED?

Cleaning frequency depends on several factors. We recommend using the maintenance interval calculator at enduracalculator.com to help anticipate cleaning frequency.

HOW MUCH WILL IT COST TO MAINTAIN MY ENDURA XL INSTALLATION?

Endura XL units are significantly more compact (less internal volume) than their equivalent GGI counterparts. Pumping is typically charged by the volume of gallons removed, so the ongoing maintenance will be proportionally less as well. Rates will vary significantly by region and by contractor. Always use a licensed or approved contractor to maintain your interceptor.

CAN I INSTALL MORE THAN ONE ENDURA XL UNIT IF MY JURISDICTION NEEDS A MINIMUM CAPACITY BY CODE?

Depending on your jurisdiction, Endura XL may be installed in parallel and series installations. Consult local requirements.

I HEARD THAT PLASTIC TANKS CAN FLOAT IN HIGH WATER TABLE AREAS, PARTICULARLY WHEN PUMPED OUT FOR CLEANING. IS THIS TRUE?

Yes it is, however Endura® XL is specifically designed to address this challenge. The Endura XL tanks are narrower at the top than the bottom and feature corrugations along the sides. The broad base provides stability and substantial resistance to being forced upward by water or freeze-thaw action. These features anchor the tank in the ground once backfilled. For areas of particular concern, an 8" concrete slab can be poured around the base to introduce further resistance.

Troubleshooting		
Symptoms	Cause	Corrective Actions
Strong pungent odor	<ul style="list-style-type: none"> Cover not replaced and/or properly secured Cover seal missing or damaged Insufficient or incorrect venting Insufficient cleaning frequency 	<ul style="list-style-type: none"> Secure cover fully – check that there is no dirt/debris in the threaded insert Replace appropriate seal Verify installation is made per manufacturer's instructions and local plumbing code Reduce interval between cleaning – 6 to 8 weeks is typical for extended capacity, but each installation is different
Sink or drain has backed up with water	<ul style="list-style-type: none"> Interceptor maintenance is overdue Accumulation of grease/debris between kitchen and interceptor The flow control orifice is blocked The flow control and grease trap is improperly sized The grease trap is full of solids and/or grease 	<ul style="list-style-type: none"> The grease trap close to, at or beyond its capacity of solids and/or grease, clean and service grease interceptor Seek emergency plumbing assistance to remove restriction/blockage Isolate drain, access flow control and clear blockage Close the ball valve or plug the sink then remove the obstruction via the flow control access lid Replace with a properly sized grease interceptor Increase cleaning frequency or consider the addition of a solids interceptor upstream
I think I have missing components	<ul style="list-style-type: none"> Parts have been removed or lost during prior servicing 	<ul style="list-style-type: none"> Check exploded drawing in the installation guide to confirm the parts that are supposed to make up your interceptor model If missing parts are identified, order replacements
Excessive solids or grease accumulation	<ul style="list-style-type: none"> The grease interceptor is full/requires cleaning Food waste on pots, plates & utensils are not being scraped into the garbage & is being flushed down the sink. This food waste accumulates on the bottom of the tank Grease interceptor has not been in operation for a period of time 	<ul style="list-style-type: none"> Increase cleaning frequency Provide Good Kitchen Practice training for food service staff Install a solids interceptor upstream of the interceptor. Use screens on floor drains and sinks Contact a licensed service professional to re-commission your interceptor
My indirect connection leaks all over the floor when I empty the sink(s)	<ul style="list-style-type: none"> Incorrectly installed/located flow control device 	<ul style="list-style-type: none"> Move flow control device to a location upstream of the indirect connection
The XL inlet baffle is not working/is broken	<ul style="list-style-type: none"> Damaged/broken parts 	<ul style="list-style-type: none"> For technical assistance email tech-support@endurainterceptor.com
I can't get the bolts to thread back in.	<ul style="list-style-type: none"> Bolt cross threaded Grit / debris in threaded insert 	<ul style="list-style-type: none"> Examine and clear debris in threaded insert. Use light lubricating oil as applicable If thread is damaged, replace insert

SECTION SEVEN: SPECIFICATIONS

7-50 GPM ENDURA® INTERCEPTORS

MATERIAL

- The body, lid and internal components shall be made of corrosion resistant, high impact PP compound that can withstand operational temperatures up to 220 degree F

CONNECTIONS

- Shall be no-hub mechanical joint PP end connectors, IPS spigot PP end connectors or female NPT threaded PP end connectors

DESIGN FEATURES

- Lid shall utilize a quick access latching system and be rated to support 300lbs
- Internal features shall be removable or allow access for easy cleaning
- Risers shall allow for below grade installations of 15 – 50 GPM interceptors to be extended to grade, up to a maximum of 18"
- A flow control device with integrated air intake shall be provided with the interceptor for external flow control type installations

EFFICIENCY RATING

- All interceptors shall be rated to an average efficiency per ASME A112.14.3
- The maximum grease capacity of each grease interceptor shall be provided per ASME A112.14.3

MARKINGS

- All interceptors shall be marked with the manufacturers name or trademark, model number, rated flow(s), "inlet" and "outlet", nominal inlet size, applicable standard designations, access cover load classification, efficiency at the minimum grease capacity per ASME A112.14.3, and flow control model number for external flow control type installations

STANDARDS AND LISTING

- All interceptors shall be certified to ASME A112.14.3, PDI-G101, or CSA B481.1, and have UPC listing

75-150 GPM ENDURA XL INTERCEPTORS

MATERIAL

- The body, lid and internal components shall be made of corrosion resistant thermoplastics that can withstand operational temperatures up to 160 degree F.
- The interceptor body shall be constructed of high density polyethylene

CONNECTIONS

- Shall be hub mechanical joint PP end connectors or female NPT threaded PP end connectors

DESIGN FEATURES

- Lids shall be Special duty traffic rated Type 'S' to support 10,000lbs or Medium duty (light vehicular traffic) rated Type 'M' to support 2,000lbs, per CSA B481.0 or Cast iron ASTM A48 30B lids meeting H2O loading standards
- Internal features shall be removable or allow access for easy cleaning
- Risers shall allow for below grade installations of 75 – 150 GPM interceptors to be extended to grade, up to a maximum of 72"
- A flow control device with integrated air intake shall be provided with the interceptor for external flow control type installations

EFFICIENCY RATING

- All interceptors shall be rated to an average efficiency per ASME A112.14.3
- The maximum grease capacity of each grease interceptor shall be provided per ASME A112.14.3

MARKINGS

- All interceptors shall be marked with the manufacturers name or trademark, model number, rated flow(s), "inlet" and "outlet", nominal inlet size, applicable standard designations, access cover load classification, efficiency at the minimum grease capacity per ASME A112.14.3, and flow control model number for external flow control type installations

STANDARDS AND LISTING

- All interceptors shall be certified to ASME A112.14.3, PDI-G101, or CSA B481.1, and have UPC listing

SECTION EIGHT: WARRANTY

WARRANTY AND LIMITATION OF LIABILITY REG/INFO

Limited Lifetime Warranty

Effective March 16, 2020, Canplas® Industries Ltd. ("**Manufacturer**") guarantees to the original purchaser ("**Purchaser**") or to a subsequent owner of the Endura® Grease Management Products manufactured by the Manufacturer ("**Products**") that Manufacturer will, at its discretion, replace, refund or repair any such Products that were purchased after the effective date and that are defective in materials or workmanship, subject to the limitations detailed herein.

THIS EXPRESS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS EXPRESS WARRANTY SPECIFICALLY EXCLUDES INSTALLATION AND/OR REPAIR COSTS, INCLUDING LABOR.

The Products have a Limited Lifetime Warranty (the "Warranty") against defects in workmanship and materials from the date of purchase of the Products for the lifetime of the plumbing system in which the Products are originally installed. Within ten (10) days of discovery of an alleged defect, the Purchaser or the subsequent owner must notify the Manufacturer and promptly return the Product believed to be defective to the Manufacturer facility located at 31 Patterson Road, Barrie, Ontario, Canada L4N 3V9 with freight prepaid. At Manufacturers' sole discretion, an on-site inspection may be arranged.

Warranty and Liability Limitations

This Warranty applies provided that: (i) within 90 days from the date of purchase, Manufacturer has received from the Purchaser or from the subsequent owner a proof of purchase of the Product and a duly completed Warranty Registration Card. The Warranty Registration Card is reproduced below and can also be found included with the Products or on Manufacturer's website; (ii) the Products have been installed and used in strict compliance with Manufacturer's written instructions as published and updated from time to time by Manufacturer, with the state of the art industry standards and practices, with all local codes and standards as well as with all applicable laws and regulations; (iii) the Products have passed all of the installation tests referred to in the Manufacturer's written instructions as published and updated from time to time by Manufacturer; (iv) the Products were installed by a licensed plumber and (v) the Products were not modified, repaired or altered without Manufacturer's authorization or do not show any evidence of disassembly or tampering.

ANY LIABILITY IN RESPECT TO THE PRODUCTS IS STRICTLY LIMITED TO THE REFUND, REPAIR OR REPLACEMENT OF THE PRODUCT AND THERE SHALL NOT, IN ANY EVENT, BE ANY LIABILITY FOR ANY LABOR CHARGES (INCLUDING THOSE REQUIRED FOR FIELD REPAIR, REPLACEMENT OR REMOVAL OF THE PRODUCTS) OR DAMAGES INCLUDING, WITHOUT LIMITATION, DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES.

In addition, and without limiting the generality of the foregoing, there shall be no Warranty or Liability for damages or defects relating to or resulting from:

- misuse (e.g. by running a pressure test) or abuse;
- the Products having been used in more than one installation, installed in improper applications or in a place susceptible to damages from traffic exceeding intended loads per lid load rating specified in Manufacturer's written instructions as published and updated from time to time by Manufacturer;
- normal wear and tear, discoloration, UV degradation, extreme temperature or pH levels, freeze-related damage;
- acts of nature (e.g. fire, hail, hurricane, etc.), incidents (e.g. building settling, structural failures of walls or foundations) or accidents;
- improper or faulty installation, storage, handling or maintenance;
- failure to properly care for and maintain the Products or the plumbing system where the Products are installed;
- failure to abide by Manufacturer's warnings, safety instructions, or other precautionary guidelines;
- any other cause outside the control of Manufacturer.

Manufacturer reserves the right to discontinue or modify any of its Products at its absolute discretion, and shall not be liable as a result of such discontinuation or modification. Manufacturer shall not be liable in the event that replacement Products vary in color in comparison to the original Product or as a result of normal weathering.

NOTICE

This warranty is offered by the Manufacturer. No claim should be placed upon the Installer or Service Company if properly installed and serviced.

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SALES AND CUSTOMER SERVICE

IPEX INC.

Toll free: (866) 473-9462

ipexna.com

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centres across North America, we have earned our reputation for product innovation, quality, end-user focus and performance.

Markets served by the IPEX Group of Companies include:

- Electrical systems
- Telecommunications and utility piping systems
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems
- PVC, CPVC, PP, PVDF, PE, ABS, and PEX pipe and fittings

Endura® is a registered trademark

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A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.