

INTEGRIFRAME™

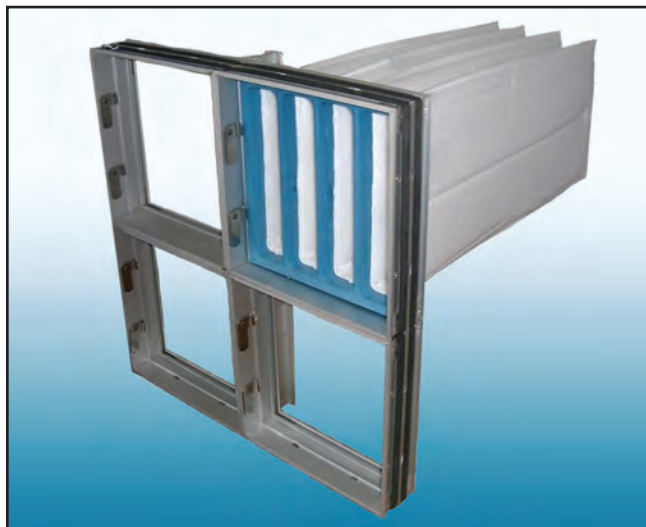
AIRTIGHT FLEXIBLE PERFORMANCE

Maximize Your Filter System Performance

Building quality air filtration systems with inferior filter frames is a waste of time and money. Performance will suffer as contaminants pass by your high efficiency filters, leaking through gaps that occur at frame joints and between filter and frames. INTEGRIFRAME™ solves these limitations with a new and innovative design that offers True Seal, True Flexibility and True Performance Enhancement.

Key Advantages Over "Track" Type Frames

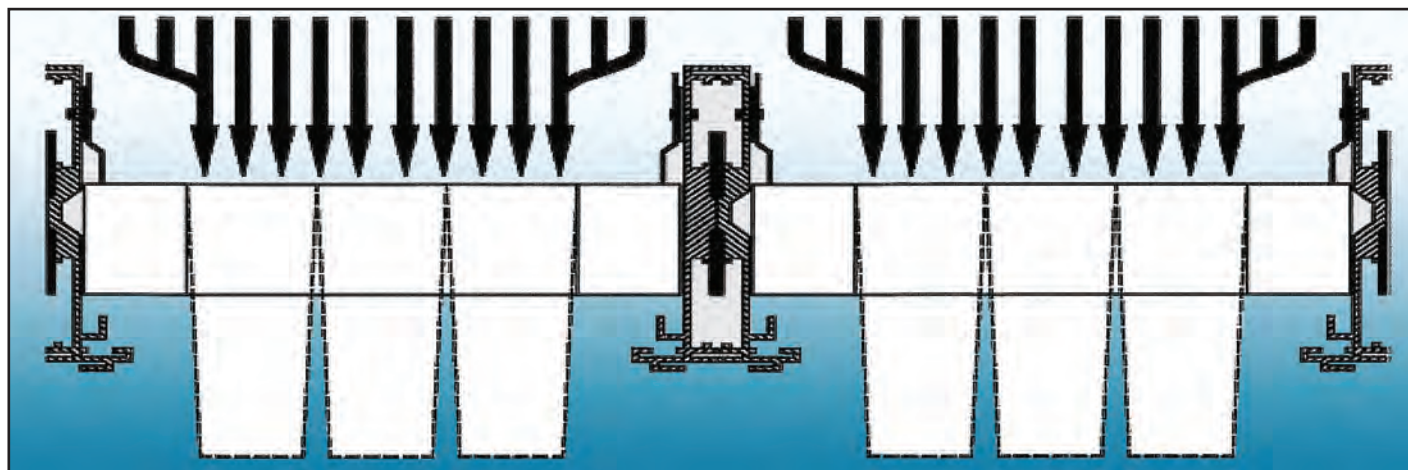
- "Track" type frames place filter frame against filter frame. INTEGRIFRAME™ True Seal design completely seals each filter frame on all four sides.
- Extruded aluminum shapes with integral vertical I-beam supports yield superior structural integrity. "Track" type frames use mechanically fastened stiffeners.
- Clear Anodized Finish is standard for all extruded aluminum material used on INTEGRIFRAME™ products and is safer for use in corrosive environments. "Track" type frames use untreated mill finish aluminum.
- Closed Cell Neoprene on INTEGRIFRAME™ products provides better protection against hydrocarbons and CFC's than the fast degrading open-cell poly foam used on many "Track" type frames.



INTEGRIFRAME™ series frames come in standard 24" x 24", 24" x 12" and 12" x 12" configurations

Key Features for Design Professionals

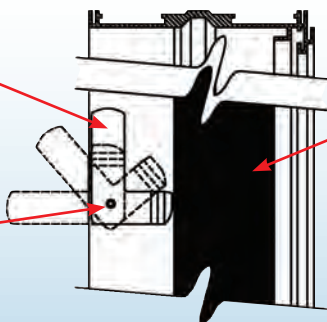
- True Seal design prevents contaminants from leaking past frame joints.
- Knife edge contact point and neoprene gasketing on each filter header maintain complete Filter-to-Frame integrity.
- Anodized extruded aluminum material safer for use in corrosive environments.
- Low installation costs. Installation requires only a Phillips head screwdriver and light labor with no field caulking.
- Fits filters with 1" nominal Headers.
- No system shut down when replacing pre-filters on Upstream Access units.
- No field welding. Assemblies installed using countersunk screws at frame perimeter and clips at integral stiffeners.



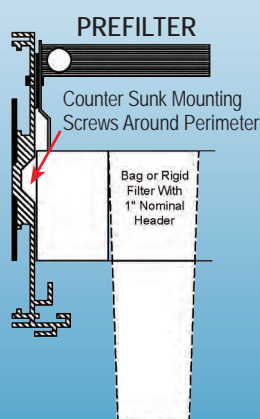
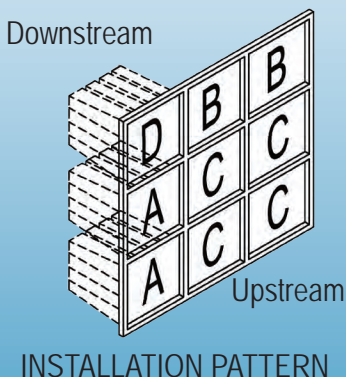
INTEGRIFRAME™

16 Gauge Stainless Steel
Cam-Lock lever
(4 per frame)

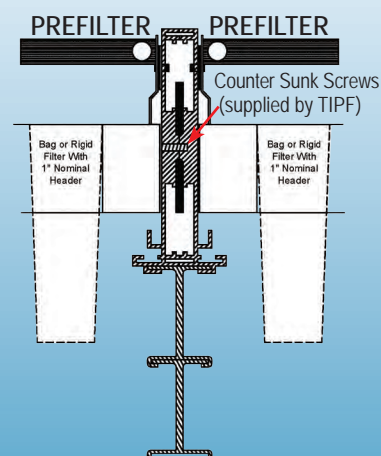
3/16" Stainless Steel Rivet
with Nylon Washer



Filter with 1" nominal header
and 1/8" neoprene header
gasket. Gasket compressed
against extruded aluminum
knife edge of frame at all
four sides.



1. Jamb Detail



2. Vertical Joint and
Heavy Duty I-beam Stiffener

RESEARCH FINDINGS

Source: "Modeling Filter Bypass; Impact on Filter Efficiency."
ASHRAE Transactions 2005, Part 1.

...bypass tends to have a larger effect on high performance filters. The results provided here suggest that bypass can dramatically affect filter performance.

For most of the filters, a 10 mm gap completely negates the added efficiency from dust loading, and a clean filter with no gap performs better than a loaded filter with a 10 mm gap. Overall efficiency reductions are 2 - 5 percentage points for 1 mm gaps and 10 - 30 percentage points for 10 mm gaps. For most of the filters, a 10 mm gap completely negates the added efficiency from dust loading, and a clean filter with no gap performs better than a loaded filter with a 10 mm gap. For the 10 mm gaps, the effective efficiency degrades by 20 - 40 percentage points for the clean Pleated Paper Media Filter and 30 - 40 percentage points for the Pocket Filter.

Note: when loaded, and with no bypass, the Pocket Filter has a measured efficiency of over 90% for the entire particle size range. With a 10 mm bypass crack, the effective efficiency drops to between 50 and 60% over the same range. For most of the filters, a 10 mm gap completely negates the added efficiency from dust loading, and the clean filter with no gap

performed better than the loaded filter with a 10 mm gap. The results have important implications for understanding filter performance. They suggest that most HVAC filters with sizable bypass gaps actually perform worse with age, which is opposite to the assumption of conventional knowledge. Moreover, high efficiency filters may not justify their expense if they have sizable gaps.

Filter	1 mm gap, 2 bends	1 mm gap, 0 bends	10 mm gap, 2 bends	10 mm gap, 0 bends
MERV 6	6	6	5	<5
MERV 11	11	11	8	8
MERV 15	14	14	8	8

TIFA

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