1. Identify Problem or Need

Status	Completed
↗ Sub-task	1.1 Problem Research, 1.2 Create Problem Statement, 1.4 Project Proposal, 1.3 Verify & Justify Problem Statement

Brain-dump

There is a need for a draw latch. I have been unable to find one that fits my needs. It needs to be surface mounted, under-center, and the handle should cover and hide the mechanism of the latch.

Constraints

- Take-up ≥10mm
- Latch style = Under Center
- Mounting
  - Style = Surface Mount
  - Screw size = M3
- Overall
  - Length ≥40mm
  - Width ≥20mm
- Projection ≤13mm

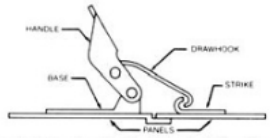
1.1 Problem Research

Camloc Tension Latches

Light Duty, Medium Duty and Heavy Duty

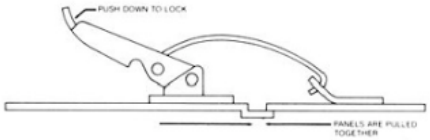
Design and Features

Basic Components:

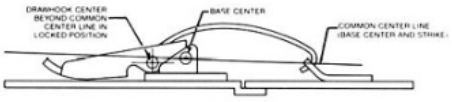


Typical Tension Latch Unlocked Position

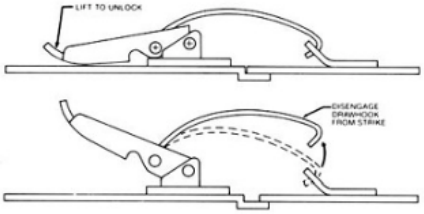
How It Operates:



With drawhook engaged in strike, a downward force is applied to handle causing draw hook to pull mating panels together.



Positive lock is achieved when drawhook center is beyond the common center line of the base and strike. Panels are held in place with tension load on latch.

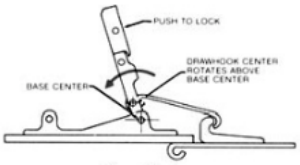


To unlock, simply pull up on handle and disengage drawhook from strike.

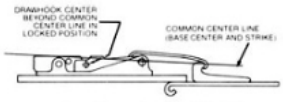
Operating Action:

Over-Center and Under-Center.

There are two distinct operating actions for tension latches: over-center and under-center. Both provide positive lock-up.



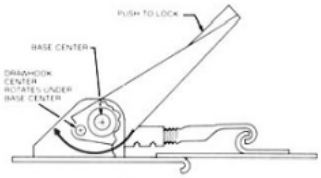
Over-Center Operating Action



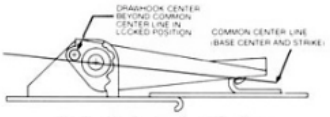
Over-Center Locked Position

Over-center operating action rotates drawhook center over base center and comes to a locked position below the common center line of the base and strike. Its advantages are: low profile and large take-up.

Note: Strike must be mounted on same (or lower) panel plane as base of latch to insure positive lock-up.



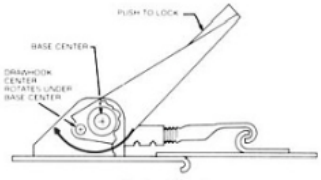
Under-Center Operating Action



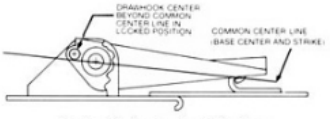
Under-Center Locked Position

Under-center operating action rotates the drawhook center under the base center and comes to a locked position above the common center line of the base and strike. Its advantages are: handle covers drawhook, short length and latch not sensitive to strike position.

Take-Up:



Under-Center Operating Action



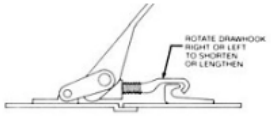
Under-Center Locked Position

Take-up is the distance latch pulls two mating sections or panels together.

H-4

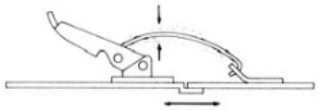
Camloc Tension Latches

Adjustment:

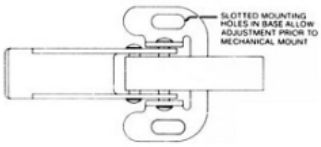


Typical Threaded Drawhook

Many latches are provided with threaded drawhooks. Adjustment of drawhooks' relative position to the strike is made by rotating the drawhook.



Self-compensating spring-steel drawhooks provide limited self-adjustment.



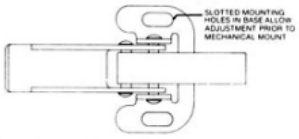
Strength: Ultimate and Working.

Ultimate strength is the load in pounds at which the latch's function is permanently impaired. Working strength is the maximum load in pounds which can be repeatedly applied without impaired function.

Special Purpose Bases:

Many special purposes are available.

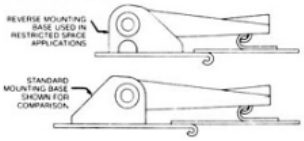
• Adjustable Slotted Base Versions.



• Radiused or Curved Base Versions.

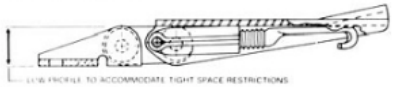
Side View

• Reverse Base Versions.



- Mechanical or Weld Mounting Base Versions. Base versions available for mechanical (rivet or bolt)mounting or weld (spot or conventional) mounting.

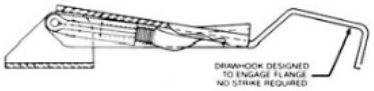
• Low Profile Versions.



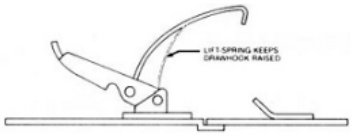
Special Purpose Drawhooks:

Many special drawhook versions are available including, narrow or wide width for space consideration.

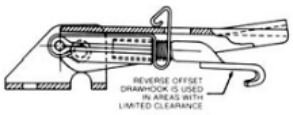
- Extended and Special Profile Versions for Gripping Wide Flanges or Spanning Raised Joints.



- Drawhooks with Lift-Spring - Drawhook automatically springs away from strike when disengaged and keeps in upright position while unlocked.



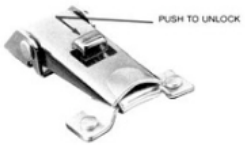
- Reverse Offset Drawhooks.



Secondary Lock Versions:

Secondary lock provides added security against accidental opening due to vibration, shock or other influences. Many secondary lock versions available.

- Some Secondary Lock Styles.



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https://prod-files-secure.s3.us-west-2.amazonaws.com/2f5103da-f7e8-42e7-b5c6-55c2f25e9398/9d3cdaeb-b5ee-4ea7-b7ed-e3b82f0a4bbd/JFM-H001_-_1._Identify_Problem_or_Need.pdf

1.2 Create Problem Statement

The project JFM-P001 Filament Dry-box needs a custom draw-latch as there is no draw-latch available on the market that meets the needs of the project. It needs to be inexpensive, preferably less than $5 per pair, of an under-center style so that the handle covers the mechanism creating a clean and simple appearance, and have a take-up of at least 10mm. It shall be surface mounted using M3 screws and the overall dimensions should not subceed 20mm in width or 40mm in length with a projection not exceeding 13mm.

1.3 Verify & Justify Problem Statement

Looking at the market for draw-latches and tension-latches there are lots of options, however, the majority of what is available are metal over-center latches that have take-ups way larger than required, overall dimensions and projections that far exceed the constraints of the project JFM-P001 Filament Dry-box, and being over-center are not appealing to the eye with the complex mechanism exposed. Lastly, the cost of these latches on the market are over $10 individually or per pair, putting them outside the price range of the JFM-P001 project.

With this is mind, the aforementioned project JFM-P001 Filament Dry-box needs a custom draw-latch as there is no draw-latch available on the market that meets the needs of the project. It needs to be inexpensive, preferably less than $5 per pair, of an under-center style so that the handle covers the mechanism creating a clean and simple appearance, and have a take-up of at least 10mm. It shall be surface mounted using M3 screws and the overall dimensions should not subceed 20mm in width or 40mm in length with a projection not exceeding 13mm.