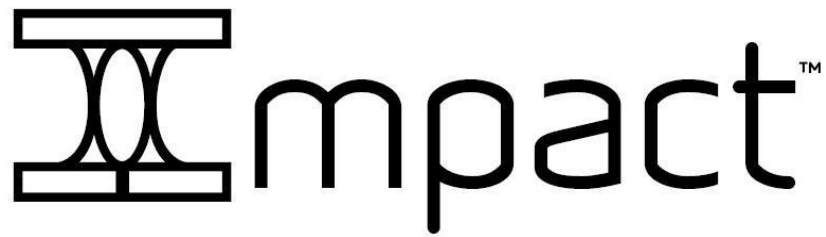




IMPACT BACKPLANE SYSTEM SCREW DESIGN GUIDE



Impact™ Backplane System Screw Design Guide



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Screw Design Definitions

OD - External (Major) thread diameter. Typically default by screw type.

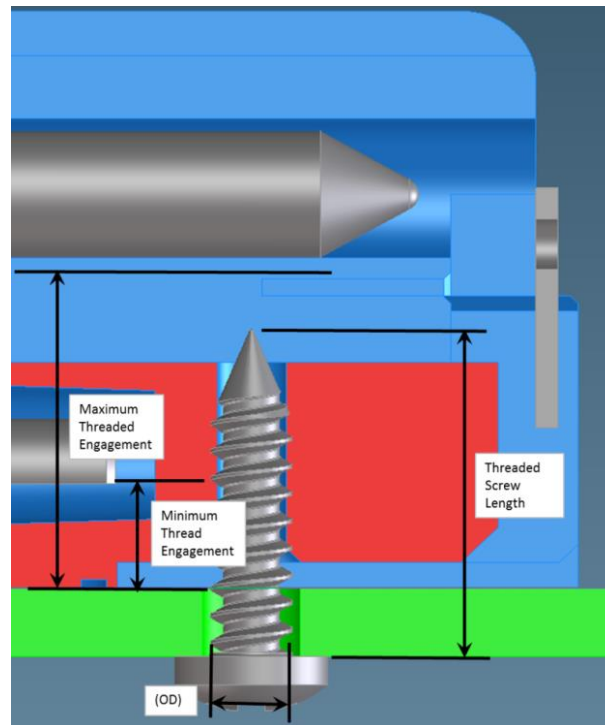
Minimum Thread Engagement - distance screw must penetrate into connector (from PC board surface) to meet minimum torque application.

Maximum Thread Engagement – distance screw can penetrate into connector before encroaching on the opposing guide pin zone.

Useable Threaded Length – Functional length of screw supplied by Molex for application. Subtract OD from screw tip for start of useable thread for retention.

Threaded Screw Length – Overall length of screw disregarding the head.

Associated Minimum Torque – torque needed to fully seat the screw against the board without the screw stripping out in the guide module. If the condition exists where the screw does not fully seat, the CM can apply additional torque. If the screw strips out during the torquing process, then backing off the torque setting will be required. Torque values will differ based on type of driver used along with various driver settings, such as speed.



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Applicable Documents and Specifications

In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence.

Screw Performance Range as Supplied by Molex

Available Molex Screw					Daughtercard Guide Receptacle				
					2-Pr	3-Pr	4-Pr	5-Pr	6-Pr
Screw Receptacle Material					Plastic				
Associated Minimum Torque (in*lbs)					1.0	1.5	2.0	2.0	2.0
Useable Board Thickness (mm) associated with shipped Molex Screw									
Part Number	Type	Thread Length (mm)	OD (mm)	Useable Threaded Length			1.0 - 4.4	1.0 - 4.4	1.0 - 4.4
73726-0000	#2-32 Self-Tapping, type AB	9.50+/-0.38	2.18	9.0			1.0 - 4.4	1.0 - 4.4	1.0 - 4.4
73726-0005	#2-32 Self-Tapping, type AB	7.62+0.38/-0.76	2.18	7.1		1.9 - 2.5			
73726-4000*	#2-32 Self-Tapping, type AB	4.31+/-0.38	2.18	2.1	1.8 - 2.4				
*includes washer					Min Thread Engagement				
					1.4	4.3	4.6	4.6	4.6
					Max Thread Engagement				
					4.2	6.2	9.2	11.0	11.0

Table 1. Daughtercard Guide

Available Molex Screw					RAM Guide Receptacle					
					2-Pr	3-Pr	4-Pr		5-Pr	6-Pr
Screw Receptacle Material					Plastic		Plastic	Die Cast	Plastic	
Associated Minimum Torque (in*lbs)					1.0	1.5	2.0	2.0	2.0	2.0
Useable Board Thickness (mm) associated with shipped Molex Screw										
Part Number	Type	Thread Length (mm)	OD (mm)	Useable Threaded Length		1.0 - 4.4	1.0 - 4.4		1.0 - 4.4	1.0 - 4.4
73726-0000	#2-32 Self-Tapping, type AB	9.50+/-0.38	2.18	9.0		1.0 - 4.4	1.0 - 4.4		1.0 - 4.4	1.0 - 4.4
73726-0005	#2-32 Self-Tapping, type AB	7.62 +0.38/-0.76	2.18	7.1	1.6 - 3.85					
73774-0000	#2-56 Machine Screw, UNC-2A	9.08+/-0.57	2.18	8.5			5.1 - 6.4			
					Min Thread Engagement					
					3.0	4.6	4.6	2.0	4.6	4.6
					Max Thread Engagement					
					7.0	10.6	13.6	4.0	15.4	15.4

Table 2. RAM Guide

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Available Molex Screw					Backplane Guide Pin				
					2-Pr	3-Pr	4-Pr	5-Pr	6-Pr
					Steel				
Screw Receptacle Material									
Associated Minimum Torque (in*lbs)					2.0	2.0	2.0	2.0	2.0
Part Number					Useable Board Thickness (mm) associated with shipped Molex Screw				
Type									
Thread Length (mm)									
OD (mm)									
Useable Threaded Length									
73774-1000*	#2-56 SEMS Screw, UNC-2A	9.53+/-0.51	2.18	9.7	1.0 - 4.4				
* includes washer					Min Thread Engagement				
					4.5				
					Max Thread Engagement				
					8.5				

Table 3. Backplane Guide

Available Molex Screw					100 Ω Mezzanine Guide Receptacle			
					3-Pr 22 mm	5-Pr 28 mm	5-Pr 38 mm	5-Pr 40 mm
					Plastic			
Screw Receptacle Material								
Associated Minimum Torque (in*lbs)					2.0	2.0	2.0	2.0
Part Number					Useable Board Thickness (mm) associated with shipped Molex Screw			
Type								
Thread Length (mm)								
OD (mm)								
Useable Threaded Length								
73726-0000	#2-32 Self-Tapping, type AB	9.50+/-0.38	2.18	9.0	1.0 - 5.0	1.0 - 5.0	1.0 - 5.0	1.0 - 5.0
** Assumes no stainless steel keying pin from opposing mating header (typical of application)					Min Thread Engagement			
					4.0	4.0	4.0	4.0
					Max Thread Engagement			
					12.9	10.0	13.0	15.0

Table 4. 100 Ohm Mezzanine Guide**

** Assumes no stainless steel keying pin from opposing mating header (typical of application)

Available Molex Screw					85 Ω Mezzanine Guide Receptacle	
					4-Pr 25 mm	4-Pr 37 mm
					Plastic	
Screw Receptacle Material						
Associated Minimum Torque (in*lbs)					1.5	2.0
Part Number					Useable Board Thickness (mm) associated with shipped Molex Screw	
Type						
Thread Length (mm)						
OD (mm)						
Useable Threaded Length						
73726-0000	#2-32 Self-Tapping, type AB	9.50+/-0.38	2.18	9.0	1.1 - 5.0	1.0 - 5.0
*includes washer					Min Thread Engagement	
					4.0	4.0
					Max Thread Engagement	
					8.8	8.9

Table 5. 85 Ohm Mezzanine Guide

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Available Molex Screw					OD-RAM Outriggers			
					3-Pr	4-Pr	5-Pr	6-Pr
Screw Receptacle Material					Steel			
Associated Minimum Torque (in*lbs)					See OD-RAM note below			
Part Number					Useable Board Thickness (mm) associated with shipped Molex Screw			
Type					Min Thread Engagement			
Thread Length (mm)					4.1			
OD (mm)					Max Thread Engagement			
Useable Threaded Length					8.5			
73726-0000	#2-32 Self-Tapping, type AB	9.50+/-0.38	2.18	9.0	1.0 - 4.4			

Table 6. 100 Ohm OD-RAM Guide

OD-RAM Note

Board thickness combined with screw length will influence the torque values needed to properly seat the screws. Molex recommends starting with a torque setting of 1.5 in*lbs to fully seat the screw. If the screw is not fully seated, increase torque settings by an increment of 0.25 in*lbs until full seating is routinely attained. The goal is to minimize torque value required to fully seat the screw. For a given connector/screw combination, thinner boards will require more torque to fully seat the screw versus thicker boards.

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Screw Selection Formula

If board thickness falls outside of listed range for Molex provided screw, please select a screw which meets following conditions:

$$\begin{aligned} \text{Threaded Length} - \text{Board Thickness} &\leq \text{Maximum Threaded Engagement} \\ &\& \\ \text{Threaded Length} - \text{Board Thickness} &\geq \text{Minimum Threaded Engagement} \end{aligned}$$

Example: How to design a screw for a 5-Pr DC into a 6 mm thick board?

$$\begin{aligned} \text{Threaded Length (x)} &= \text{unknown variable} \\ \text{Board Thickness} &= 6.0 \\ \text{Maximum Thread Engagement} &= 10.8 \text{ mm (from table 1)} \\ \text{Minimum Thread Engagement} &= 4.6 \text{ mm (from table 1)} \end{aligned}$$

$$x - 6.0 \leq 10.8$$

$$x - 6.0 \geq 4.6$$

$$16.8 \geq \text{Threaded Length (x)} \geq 10.6$$

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Impact Screw Library

Available Molex Screw**						
Part Number	Screw Construction***	Total Length	Head Diameter	Washer Diameter	Washer Thickness	Above Board Distance
73726-0000	See Diagram 1 for Example	11.13	4.09	N/A	N/A	1.63
73726-0005		9.25	4.09	N/A	N/A	1.63
73726-0015		6.35	4.09	N/A	N/A	1.63
73726-4000*		6.39	4.17	5.2	0.45	2.08
73774-0000		10.68	4.2	N/A	N/A	1.6
73774-1000*		11.92	4.2	5.2	0.51	2.39

* include washer

** all units in mm

*** all screws are Phillips-type head

Table 7. Impact Screw Information

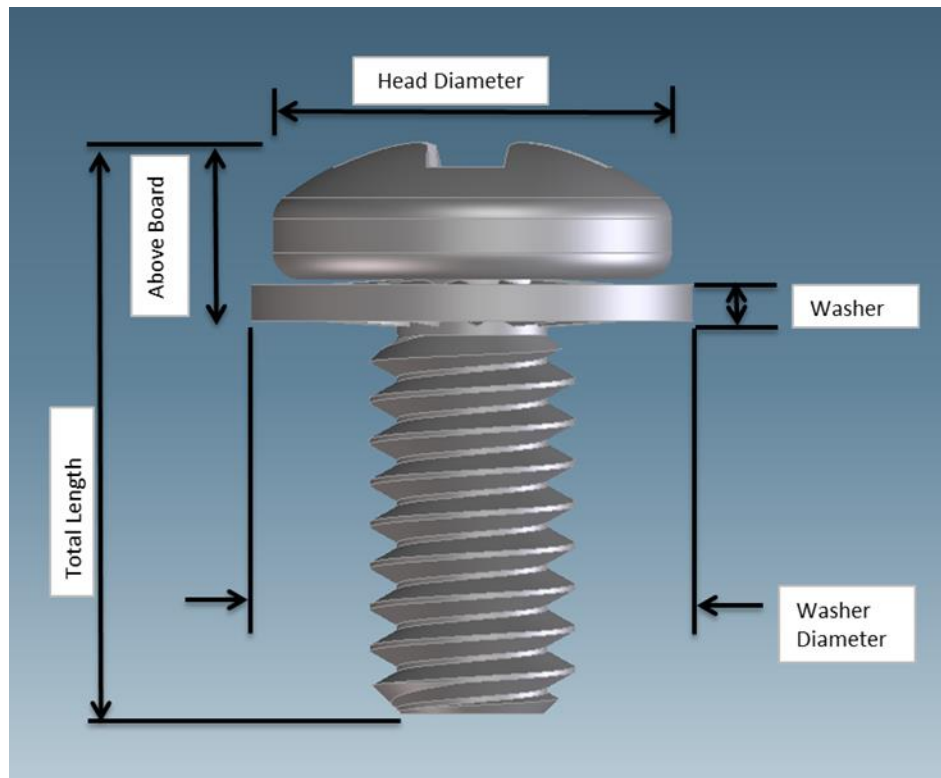


Diagram 1. Screw Dimensions

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