divided into two types. One is the tariff agreement signed directly between Vietnam and other countries or regions; the other is the one signed between ASEAN or other regions, in which Vietnam is entitled to the right of preferential tariffs. Vietnam has signed Agreements on the Promotion and Protection of Investments with 43 countries, and it is one of the few countries that is also a part of Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) as well as Regional Comprehensive Economic Partnership (RCEP). This author explains as follows.

1. Tariff agreements signed between Vietnam and other countries or regions:

(1) In 2006, the U.S. granted Permanent Normal Trade Relations status to Vietnam.

(2) Vietnam-Japan Economic Partnership Agreement signed in 2009.

(3) Vietnam-Korea Free Trade Agreement signed in 2015.

(4) In December 2015, Vietnam completed consultation with the EU on EU-Vietnam Free Trade Agreement which both parties strove to put in force at the end of 2018.

(5) Free trade agreement with Eurasian Economic Union (members including Russia, Belarus, Kazakhstan, Armenia, etc.) effective since 2016.

2. Tariff agreements signed via ASEAN by Vietnam with Other Countries or Regions:

(1) ASEAN-Australia-New Zealand Free Trade Agreement.

(2) Tariff reduction plan in ASEAN-Japan Comprehensive Economic Partnership Agreement.

(3) Preferential tariff in ASEAN-India Free Trade Agreement.

In APEC held in Vietnam in November 2017, TPP was renamed to CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership) and temporarily ceased to apply to 22 articles originally required by the U.S. to be included into the agreement. The 11 members of CPTPP signed the agreement in Chile in March 2018. The 16 members of RCEP made a collective announcement at the RECP Summit in November 2017 that they pledged to finish negotiation before the end of 2018. Notably, Vietnam is one of the 7 countries able to be a part of both agreements.

Best Option: Multi-Place Deployment

Enterprises in the 21st century face more and more uncertainties, and it is increasingly difficult for Taiwan fastener industry to make long-term deployment. After finishing deployment, they might also have to re-adjust due to political or environmental changes. Business uncertainties caused by the external environment cast a lot of pressure on business runners who might have to utilize "multi-place deployment" in the future to react. With political and economic advantages and preferential tariffs with multiple countries and regions, Vietnam will be the first consideration for Taiwan fastener industry on multi-place deployment strategy. ■

The installation of many tapping screws involves the screws piercing or drilling their own holes into assembly components. A firm, positive fit between the driving tool bit and the screw's recess is extremely important to achieve the proper installation performance of these types of screws.

If there is looseness between the driver bit and the recess, the screw "wobbles" on the bit. In many cases, it can disengage from the bit entirely, resulting in a failure to drive the screw into the assembly. Only if the driving bit and recess create a ridged, non-wobbling connection will the screws drive into the assemblies as intended.

All Tapping Screws with Cross or Square Recessed Heads Should Be Inspected for Recess Wobble

by Larry Borowski

Piercing and driving screws are most adversely affected by recess wobble

Many operators drive piercing and drilling screws very rapidly on assembly lines or construction sites. If the screws fail to drive into the assemblies properly a great deal of production can be lost. In many cases when the bits completely wobble out of the recess the surfaces of the assembly are marred or otherwise damaged by the disengaged driver bit. These problems make screw users extremely unhappy and in most cases result in the return of the screws to the supplier.

Wobble gaging has been a part of the American Society of Mechanical Engineers (ASME) standards for over 40 years, but some manufacturers of recessed screws continue to ignore this requirement. Many suppliers are under the mistaken impression that if they measure the recess penetration depth and it is correct the recess is good. This is not necessarily true. The incorrect forming of the screw's first blow (upset) can cause the material around the recess to splash outwardly instead of hugging the recess punch's shape in the final forming blow. In these cases the recess penetration depth can be correct, but the recess is oversized on its width and/or diameter. These conditions cause the recess not to fit tightly on driver bits and results in screw wobble.

Wobble testing is simple

Measuring for recess wobble can be performed quickly and the results are easy to interpret. All you will need is a wobble fixture and the appropriate size and type of plug gage to match the recess you are checking.

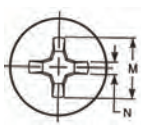
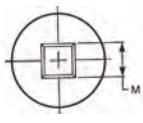
- Place the screw to be checked into the chuck in the base of the wobble fixture, leaving a couple threads under the head exposed.
- Insert the tip (Phillips, Square, or Pozi) of the plug gage into the recess of the screw.
- With the thumb screw, adjust the chuck up/down so that the pointer pin on top of the handle, is flush with the top of the degree plate. The pointer pin will typically have crosshairs marked into the face for easy degree reference.
- Again with the thumb screw, orient the flats of the square, or the wings of the cross recesses so that they are parallel to the back plate of the fixture.

After the screw and plug are in the correct position slight downward pressure is applied on the plug gage, while it is moved side to side. The inspector observes the total number of degrees the plug moves by watching the crosshairs on the end of the wobble plug as it passes through degree markings on the top degree plate. The total number of degrees are recorded both to the left and to the right of the zero position on the center of the degree plate. For example, moving the plug to the left, might yield 2 degrees, while moving the plug to the right may yield 4 degrees. The end result is 6 degrees of total wobble. Pass/Fail determination is very easy to make because a tight recess will exhibit a very positive stop when pressed to the side and a loose recess will usually allow the plug to drop entirely to the extreme side of the fixture.

After the inspection is performed in one orientation the thumbscrew holding the chuck is loosened and the chuck is rotated 90 degrees. The thumbscrew is then tightened again so that the end of the plug gage is level with the top of the fixture. The test is then performed exactly as described above again.

The test must be performed in both orientations because it is not unheard of for a recess to be acceptably tight in one orientation and unacceptable in the other. Both orientations must fall within acceptable wobble limits to have a passing test.

Total Recess Wobble Tolerance in Degrees – ASME B18.6.3

		
Recess Size	Type I	Type IA	Type III
0	N/A	N/A	N/A
1	15	12	3
2	12	10	3
3	10	8	3
4	10	8	3
5	10	8	N/A

Plating thicker than .0003 inches should be stripped before doing wobble testing

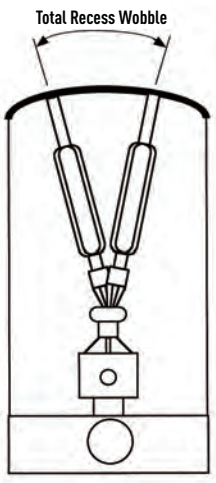
This test is dependable when conducted on plain parts and those having plating or coating up to .0003 inches thick. Beyond that thickness the parts may have to be stripped of their plating or coating to make a valid judgment on recess wobble acceptability.

Some combination recesses should not be wobble tested

Recess wobble testing is not applicable to all combination style recesses. Combination recesses are continually becoming more popular. The most commonly seen are combination Type I/slot (Phillips/slot) and Type I/Type III (Phillips/square) recesses.

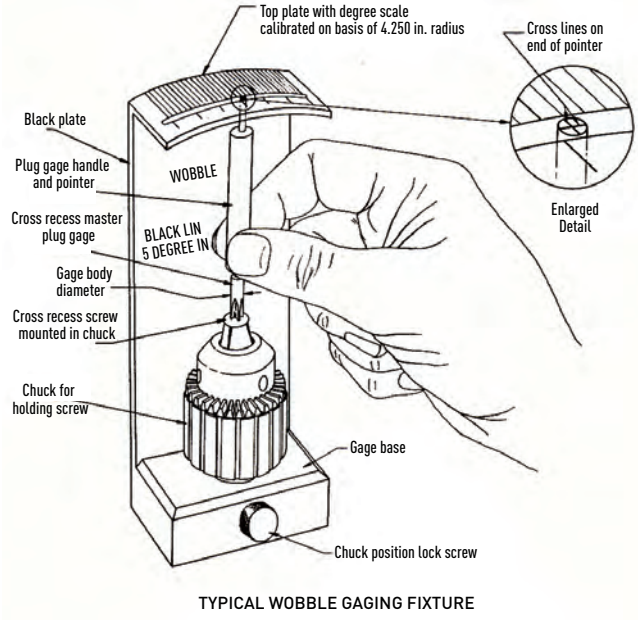
The Type I/slot should not be used on piercing or drilling screws and these recesses should not be wobble tested because this recess style cannot be expected to meet the wobble requirements for total side movement when the slot is oriented parallel to the back of the wobble fixture. This is because the slotted area of the recess does not provide any material to interfere with the wobble plug to stop its side movement. When testing in this orientation the wobble plug will fall to the extreme side of the fixture in every test. Wobble cannot be consistently eliminated when driving this style of recess.

In the Type I/Type III combination recess it is intended that the square portion of the recess will be used for the initial production installation of the screws and the Type I portion of the recess is present for use only during servicing. The square portion of the recess takes away so much of the Type I core area that it can be hard to eliminate wobble from the Type I part of the recess. In this combination design recess the Type III (square) part of the recess should be subjected to the wobble test to assure that the screws will drive properly, without wobble at the point of initial assembly.



Conclusion

Excessive wobble between screw recesses and their mating driver bits can, and do cause serious installation problems. The proper way to avoid these problems is to perform the wobble test on all recessed head tapping screws during the cold heading operation and at final inspection.



TYPICAL WOBBLE GAGING FIXTURE