



ETP 12 (EXTERNAL TECHNICAL PAPER NUMBER 12)

12. TORQUE RELEASE PRODUCTION DRIVERS

12.1 TAPPEX PRODUCTION DRIVER FUNCTION AND DESCRIPTION.

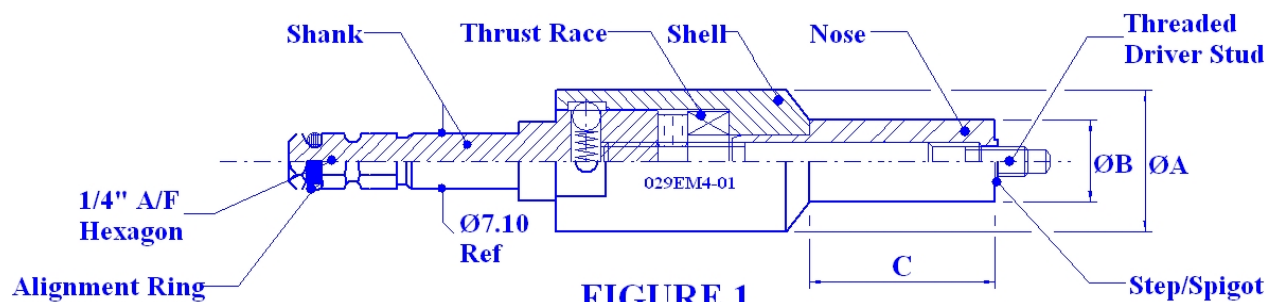


FIGURE 1.

Tappex Torque Release Production Drivers are designed for use with the Tappex Flexiarm®, tapping heads, portable air tools, or by hand when used in conjunction with a Production Driver Alignment Bush (see ETP8). When used with torque controlled air tools, the Production Driver functions in conjunction with a driving clutch inside the installation equipment. The nose of the driver bottoms on the surface of the parent material and builds up friction rotational resistance. The clutch is set to slip or actuate reverse (dependant upon the use of manual or automatic equipment), releasing the Production Driver from the installed insert. Consistent depth control on installation is obtained by the insert engaging on the exposed threaded stud, and sealing against a small reduced diameter step on the face of the driver nose. The step controls the depth of installation slightly below the parent material surface. When the driver is used in conjunction with tapping heads, whose forward motion is restrained at a depth stop rather than at a set torque, a longer spigot on the nose caters for setting variations.

Tappex usually offers the Standard Diameter Regular Nose Length Production Driver but, if installing inserts close to a wall, the smaller Reduced Diameter is suitable in most applications. The Standard Diameter version should be utilised wherever possible, and where inserts are being installed into very soft or very hard materials. This helps to eliminate problems where the insert could back-out in very soft materials, or the difference between driving torque and stripping torque is too close for setting purposes in very hard materials. The standard version with a larger nose diameter ensures that when the nose bottoms on the surface of a hard material, the difference between driving torque and stripping torque is increased; In soft materials, sufficient friction is built up under the nose to ensure that the outer shell of the driver remains stationary whilst the driving stud rotates, breaking the friction lock between the driver nose and the insert.

Tappex offer three variations on nose length (dimension C) for each size of driver. The short nose length version is designed for use in high torque applications. Regular nose length drivers are recommended for general applications with long nose length drivers usually required for deep access applications. These three variants are then available with hexagon or square shanks and standard or depth control spigots. Production Drivers for torque controlled clutches are driven using a 1/4" A/F hexagon shank, with the option of a 5/16" A/F hexagon for larger sized M8 and M10 drivers. Production Drivers to suit tapping heads normally utilise square driving shanks. A frictionless production driver designed for the jacking in of Tappex Multiserts is also available.

12.2 TAPPEX PRODUCTION DRIVER IDENTIFICATION AND GENERAL DIMENSIONS

THREAD SIZE	REGULAR STANDARD NOSE PRODUCTION DRIVER				THREAD SIZE	REGULAR REDUCED NOSE PRODUCTION DRIVER			
	PART No.	A	B	C		PART No.	A	B	C
M2	-	-	-	-	M2	029EM2	19.0	7.0	16.0
M2.5	029EM2.5-01	19.0	9.0	16.0	M2.5	029EM2.5	19.0	7.0	16.0
M3	029EM3-01	19.0	9.0	16.0	M3	029EM3	19.0	7.0	16.0
M3.5	029EM3.5-01	19.0	10.0	19.0	M3.5	029EM3.5	19.0	8.0	19.0
M4	029EM4-01	19.0	11.0	25.0	M4	029EM4	19.0	9.0	25.0
M5	029EM5-01	25.4	12.5	31.0	M5	029EM5	25.4	11.0	31.0
M6	029EM6-01	25.4	16.0	38.0	M6	029EM6	25.4	12.5	38.0
M8	029EM8-01	25.4	19.0	44.0	M8	029EM8	25.4	16.0	44.0
M10	029EM10-01	31.7	24.0	57.0	M10	029EM10	31.7	19.0	57.0

All Dimensions in mm.

Spare studs are available for each length of Production Driver. L1 studs suit short drivers, L2 studs regular drivers, and L3 studs long drivers. Pointed studs should be requested when installing short length inserts into hard materials, and are essential when installing M8 inserts of 10mm or less with a Regular Length Production Driver. These can be specified by replacing the L with a P in the stud part number, e.g. regular M4 stud, part number 029/L2/M4 becomes 029/P2/M4. This does not apply with special studs to suit special drivers. When ordering a Regular Length Standard Nose Production Driver requiring a pointed stud, a P should be added to the end of the part number, e.g. regular M4 Production Driver, part number 029EM4-01 becomes 029EM4-01P. The standard variations of available Production Drivers are listed below:-

PREFIX	NOSE LENGTH	FOR USE WITH
029A	SHORT	controlled slipping clutch tapping heads (square shank)
029B	SHORT	air tools (hexagon shank)
029C	SHORT	depth control tapping heads (square shank & extended spigot)
029D	REGULAR	controlled slipping clutch tapping heads (square shank)
029E	REGULAR	tools (hexagon shank)
029F	REGULAR	depth control tapping heads (square shank & extended spigot)
029G	LONG	controlled slipping clutch tapping heads (square shank)
029H	LONG	air tools (hexagon shank)
029I	LONG	depth control tapping heads (square shank & extended spigot)
029J	REGULAR	frictionless Production Driver for the jacking in of inserts using air tools (hexagon shank)



AVAILABLE STANDARD NOSE LENGTHS (DIMENSION C)

THREAD SIZE	SHORT NOSE LENGTH (029A, 029B, 029C)	REGULAR NOSE LENGTH (029D, 029E, 029F, 029J)	LONG NOSE LENGTH (029G, 029H, 029I)
M2	1.60	16.0	38.0
M2.5	1.60	16.0	38.0
M3	1.60	16.0	38.0
M3.5	1.60	19.0	38.0
M4	1.60	25.0	38.0
M5	1.60	31.0	38.0
M6	1.60	38.0	-
M8	1.60	44.0	-
M10	3.20	57.0	-

Note : Longer length nose Production Drivers are available to special order only.

THREAD SIZE	HEX SHANK A/F	THREAD SIZE	SQUARE SHANK		
			A/F SQUARE	DIAMETER	LENGTH
M2	1/4"	M2	5.2	6.4	40
M2.5		M2.5			
M3		M3			
M3.5		M3.5			
M4		M4			
M5		M5			
M6		M6	8.0	10	51
M8	1/4" / 5/16"	M8	10.0	12.5	
M10	5/16"	M10	12.5	16	63.5

12.3 SUGGESTED STOCK REQUIREMENTS

The number of spare parts stocked for each type of Production Driver will vary, dependant upon the likely wear rate, equipment use and the conditions of insert installation. A hard material with a high installation or stall torque is more likely to wear driving studs due to friction, and thrust races due to axial loading. The table below offers an indication for initial stocking:-

Monthly usage	THERMOPLASTIC APPLICATION						THERMOSET PLASTIC APPLICATIONS						ALUMINIUM ALLOY APPLICATIONS					
	SOFT			HARD			G.R.P.			PHENOLIC			CAST			EXTRUDED		
	D	T	P	D	T	P	D	T	P	D	T	P	D	T	P	D	T	P
1,000	1	-	-	2	-	-	2	-	-	2	-	-	3	1	1	3	1	1
2,500	2	-	-	2	-	-	2	1	-	2	-	-	3	1	1	3	1	1
5,000	2	1	-	3	1	-	3	1	1	3	1	1	4	2	1	4	2	1
10,000	3	1	1	3	1	1	4	1	1	4	2	1	4	2	1	4	2	1
25,000	3	1	1	3	1	1	4	1	1	4	2	1	4	2	1	4	2	1

KEY TO SPARE PARTS :

DS – Driver Stud

TR – Thrust Race

PD – Production Drivers



Note : When ordering spare studs and thrust races, and part numbers are not known, quote Production Driver part number.

For new projects, the Installation Tool Kit (ITK) is recommended. This provides a set of spares for ongoing production

Installation Tool Kits consist of 1 off Production Driver, 3 off spare studs and 1 off spare thrust race. Order by specifying ITK/insert part number/-01/-01P (if required).

12.4 TROUBLE SHOOTING

The following remedies should be made if any of the below problems or symptoms are experienced with the installation of Tappex inserts using a Tappex Production Driver. If any other problems occur, or a problem persists, contact the Tappex Applications Engineering Department.

PROBLEM/ SYMPTOM	POSSIBLE CAUSE	REMEDY
INSERT STRIPS ON INSTALLATION	<ol style="list-style-type: none"> 1) Excessive installation torque. 2) Excessive counterbore/hole size. 3) Undersize moulded boss diameter. 4) Prod. Driver bearing surface reduced. 5) Installation equipment misaligned. 6) Prod. Driver stud bottoms on moulded Hole. 	<ol style="list-style-type: none"> 1) Reduce, check clutch action & lubricate. 2) Consult Tappex. 3) Consult Tappex. 4) Check Dim. B on FIGURE 1. 5) Realign, use Tappex Flexiarm. 6) Reduce stud protrusion, use pointed studs.
INSERT INSTALLS PROUD	<ol style="list-style-type: none"> 1) Insufficient/inconsistent installation torque. 2) Excessive interference/hole size too small. 3) Installation equipment misaligned. 4) Insufficient driver stud thread engagement. 	<ol style="list-style-type: none"> 1) Increase, check clutch action and lubricate. 2) Consult Tappex. 3) Realign, use Tappex Flexiarm. 4) Increase stud protrusion. 5) For Aluminium & light alloys use a suitable cutting lubricant.
INSERT BACKS OUT ON INSTALLATION	<ol style="list-style-type: none"> 1) Production Driver stud worn or damaged. 2) Thrust race worn/seized. 3) Tool is not free to rotate within slot. 	<ol style="list-style-type: none"> 1) Replace stud. 2) Oil or replace. 3) Free tool, check or replace thrust race.
DRIVER/STUD RUN OUT	<ol style="list-style-type: none"> 1) Alignment ring damaged. 2) Production Driver stud only running out. 	<ol style="list-style-type: none"> 1) Replace alignment ring. 2) Realign, see ETP 9.