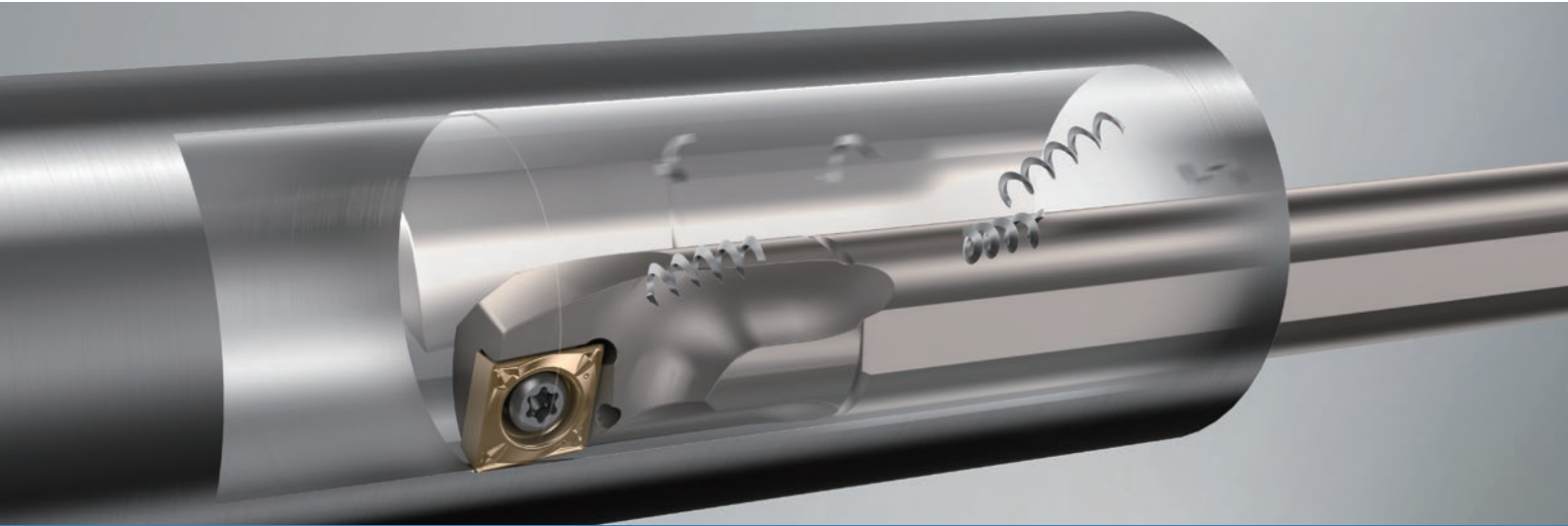


THE NEW VALUE FRONTIER



Positive wiper insert | **WP**

# WP Chipbreaker



High productivity with newly designed wiper edge geometry

Excellent surface roughness and smooth chip control during high feed machining.

High quality surface finish with no galling.

High machining accuracy with low cutting forces.

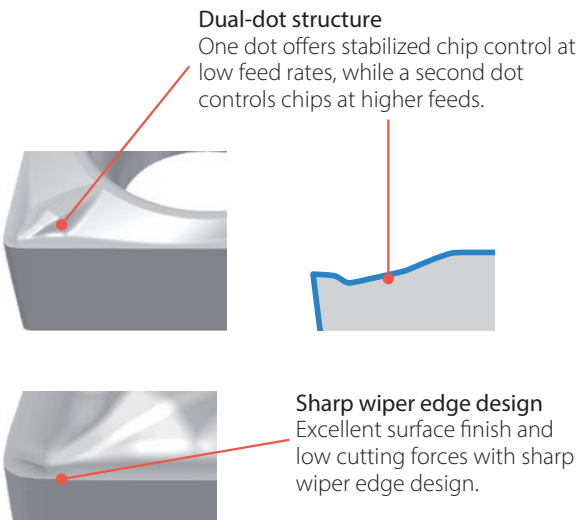


Positive wiper insert

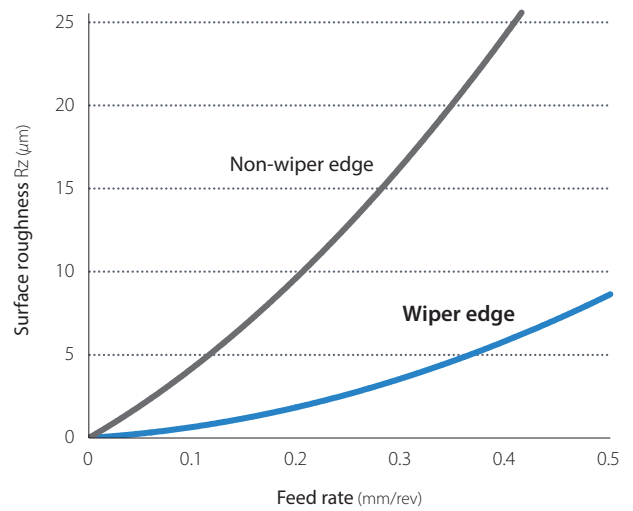
# WP Chipbreaker

High productivity with newly designed wiper edge geometry.

## 1 Excellent surface roughness during high feed machining



Wiper edge comparison (In-house evaluation)

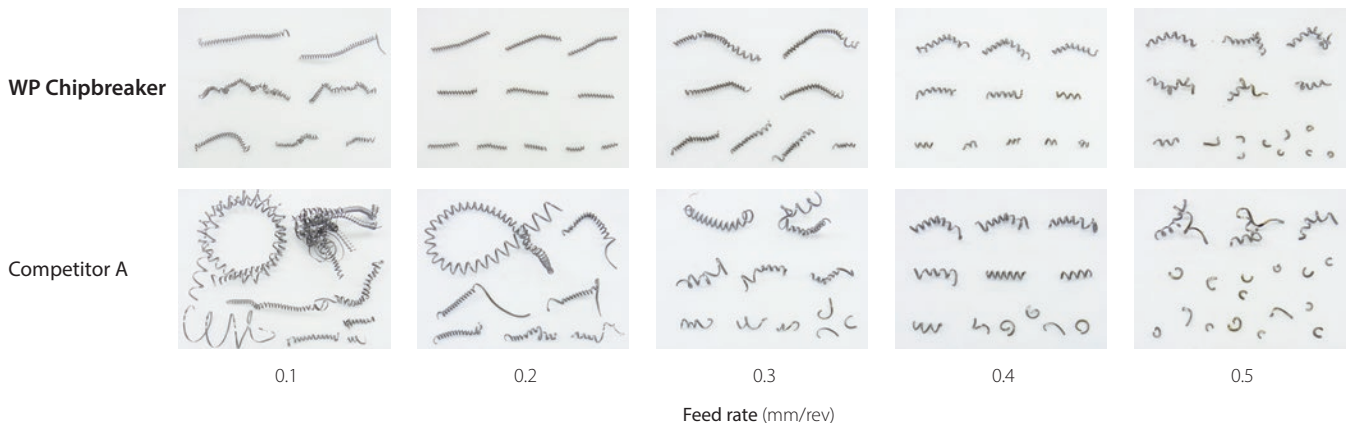


Cutting conditions:  $V_c = 200$  m/min,  $a_p = 0.3$  mm  
Toolholder: A20R-SCLCR09-22AE, insert: CCMT09T304 type

## 2 Stable chip control in a wide range of feed rates

Smooth chip control from low feed to high feed rate.

Chip control comparison (In-house evaluation)

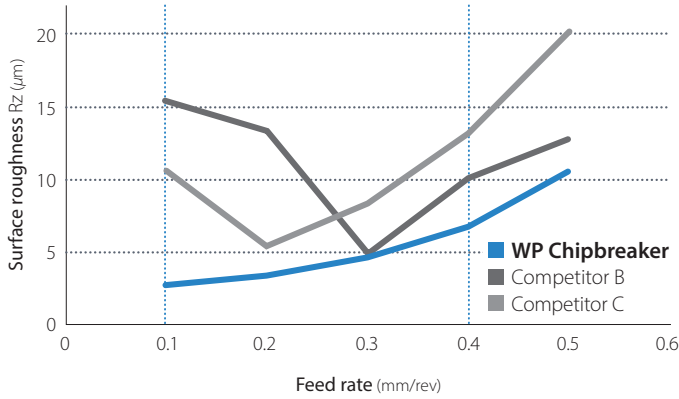


Cutting conditions:  $V_c = 200$  m/min,  $a_p = 0.3$  mm, wet; toolholder: A20R-SCLCR09-22AE; insert: CCMT09T304 type; workpiece: 15CrMo4

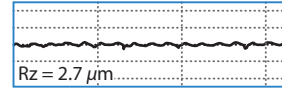
### 3 Excellent surface finish

WP chipbreaker offers excellent surface roughness across a wide range of cutting conditions.

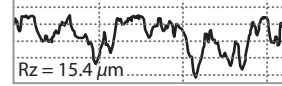
Surface finish comparison (In-house evaluation)



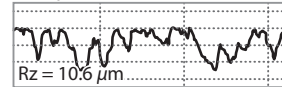
f = 0.1 mm/rev  
WP Chipbreaker



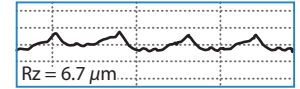
Competitor B



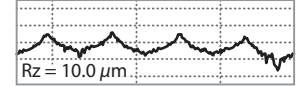
Competitor C



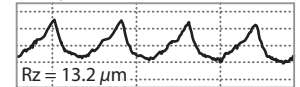
f = 0.4 mm/rev  
WP Chipbreaker



Competitor B



Competitor C



Cutting conditions: Vc = 150 m/min, ap = 0.5 mm, wet; toolholder: A20R-SCLCR09-22AE; insert: CCMT09T304 type; workpiece: 15CrMo4

### 4 Reduces surface finish galling

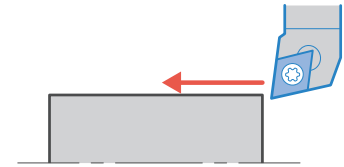
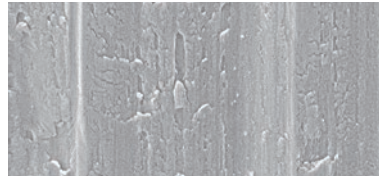
WP chipbreaker reduces tearing of the finished surface by controlling adhesion with the newly designed wiper edge.

(In-house evaluation)

WP Chipbreaker



Competitor D (Wiper edge)

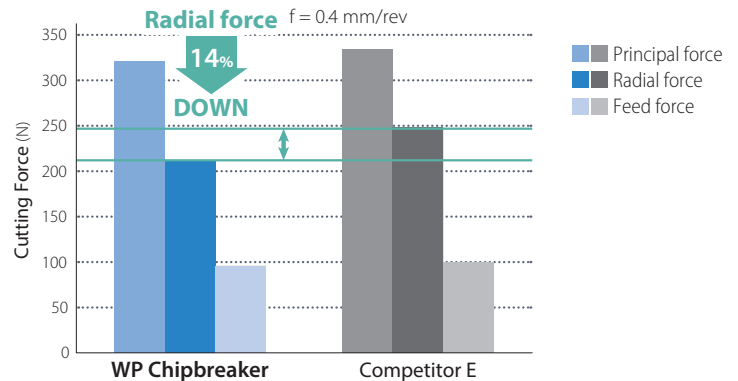
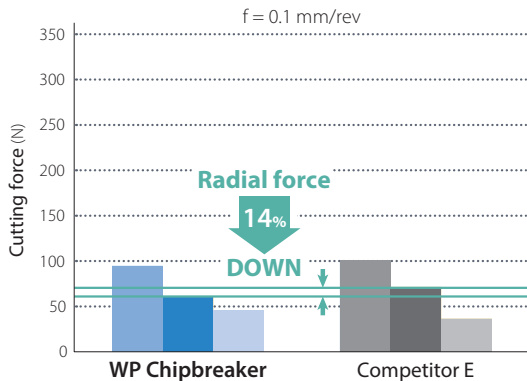


Cutting conditions: Vc = 80 m/min, ap = 0.73 mm, f = 0.05 mm/rev, wet  
Insert: CCMT09T304 type; workpiece: St45 (Steel pipe)

### 5 High machining accuracy with low radial forces

Prevents tool deflection by reducing radial forces.

Cutting force comparison (In-house evaluation)

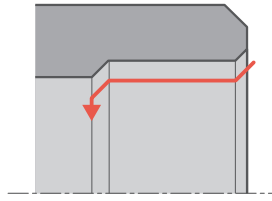


Cutting conditions: Vc = 200 m/min, ap = 0.3 mm, wet; toolholder: A20R-SCLCR09-22AE; insert: CCMT09T304 type; workpiece: 15CrMo4

## Case studies

### Hub C45

Vc = 160 m/min  
 ap = 0.15 mm (1 pass)  
 f = 0.08 mm/rev  
 Wet  
 A16Q-SCLCR09-18AE  
 CCMT09T304WP TN620



WP Chipbreaker  
**TN620**

**2.3 sec.**

**50% and more**  
 Cutting time

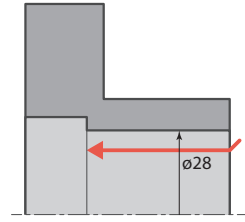
Competitor F  
 (No wiper)

**5.6 sec.**

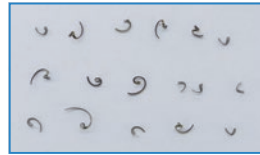
- WP chipbreaker reduced the cutting time by more than 50% by increasing feed rate and reducing number of cuts (2 passes to 1 pass).
- Wiper edge also improved surface roughness. (User evaluation)

### Sleeve C45

Vc = 180 m/min  
 ap = 0.2 mm  
 f = 0.27 mm/rev  
 Wet  
 S16-SCLCR09 type  
 CCMT09T304WP PV720



WP Chipbreaker



Competitor G (Wiper edge)

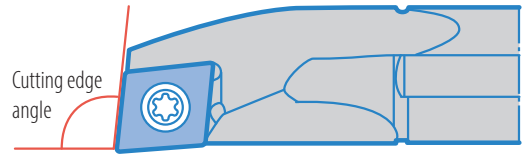


- WP chipbreaker improved chip control compared to competitor G.
- Machining efficiency was improved by increasing feed rate.
- Tool life extended to 1.5 times that of competitor G. (User evaluation)

## Corresponding toolholders / lead angles

### Applicable cutting edge angle

Insert	Cutting edge angle
CCMT06/09	95°
DCMX07/11	93°
TCMX09/11	95°
TPMX09/11	95°



### Applicable toolholder

Insert	Application	Description	Applicable
CCMT06/09	Boring	A-SCLC-AE type	Yes
		S-SCLC-A type	
		E-SCLC-A type	
		HA-SCLC09 type	
	External turning	ACL C-FF type	Yes
		SCLC-FF type	
		SCLC type	
DCMX07/11	Boring	A-SDUC-AE type	Yes
		S-SDUC-A type	
		E-SDUC-A type	
		HA-SDUC11 type	
		A-SDZC-AE type	No
		S-SDZC-A type	
		E-SDZC-A type	
		A-SDQC-AE type	
		S-SDQC-A type	
E-SDQC-A type			

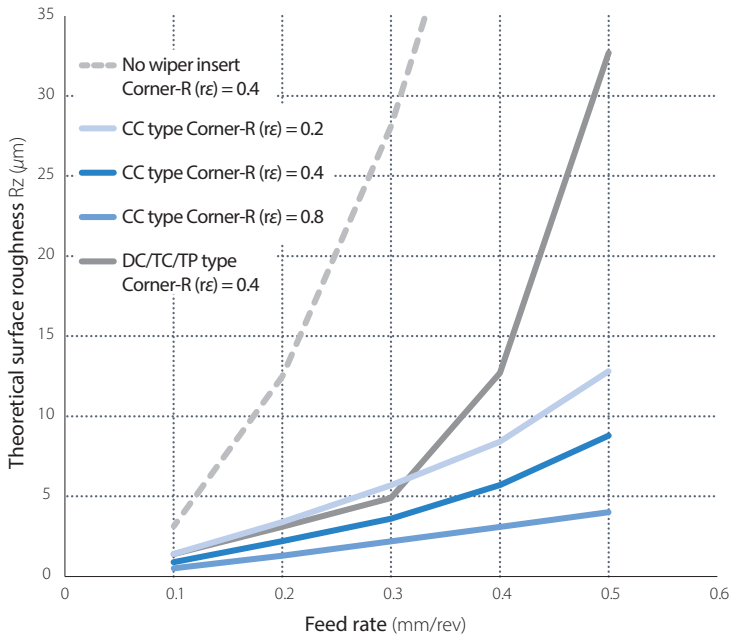
Insert	Application	Description	Applicable
DCMX07/11	External turning	ADJC-FF type	Yes
		SDJC-FF type	
		SDJC type	
		S-SDUC type	See caution
		SDLC-FF type	
		S-SDLC type	
		SDXC type	
TCMX09/11	Boring	A-STLC-AE type	Yes
	S-STLC-A type		
TPMX09/11	Boring	STGC type	No
		A-STLP-AE type	Yes
		S-STLP-A type	
		E-STLP-A type	
		S-STWP-E type	No
		S-STWP type	
	External turning	C-STXP type	No
External turning	STGP type	No	

### Caution:

The SDLC-FF and S-SDLC toolholders have a 5° lead angle. While the DCMX...WP can offer surface finish improvements over non-wiper inserts in those toolholders, optimum performance will be obtained by using a 3° lead angle, such as ADJC-FF, SDJC-FF, SDJC, S-SDUC, etc.

# Setting conditions for wiper inserts

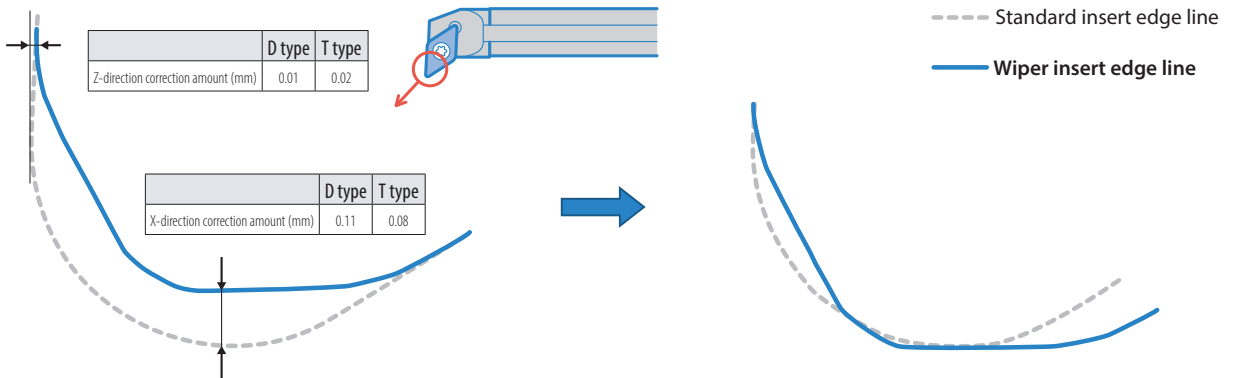
## Theoretical surface roughness



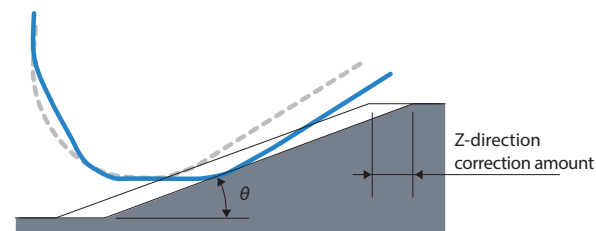
The theoretical surface roughness of a wiper insert is lower than inserts without a wiper. When selecting a feed rate, see left chart for theoretical surface roughness.

## WP chipbreaker edge position offset adjustment

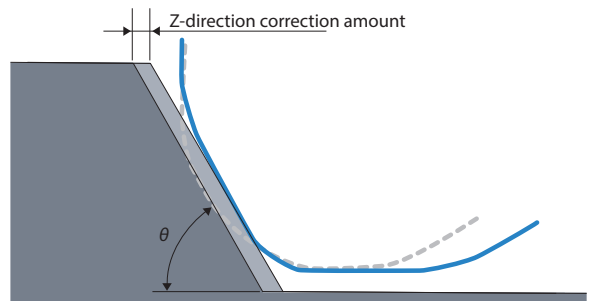
For D type and T type, cutting edge offsets are required.



For D type and T type, program corrections are required for ramping and profiling.



Ramping angle $\theta$	0°	5°	10°	15°	20°	25°
Z-direction correction amount (mm) D type	0	-0.14	-0.15	-0.16	-0.16	-0.17



Profiling angle $\theta$	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
Z-direction correction amount (mm) D type	0.00	0.07	0.06	0.04	0.03	0.02	0.01	0.00	-	-	-
Z-direction correction amount (mm) T type	0.00	0.07	0.06	0.05	0.05	0.04	0.03	0.02	0.01	0.01	0.00

Profiling angle $\theta$	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
Z-direction correction amount (mm) D type	-0.01	-0.02	-0.03	-0.04	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	0.00
Z-direction correction amount (mm) T type	-	-	-	-0.01	-0.02	-0.03	-0.04	-0.03	-0.02	-0.01	0.00

## Available inserts

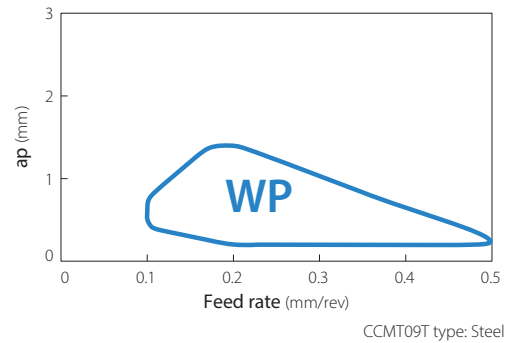
Usage classification: \* : Interruption / 1st choice ✨ : Interruption / 2nd choice ● : Continuous - light interruption / 1st choice  
 ☺ : Continuous - light interruption / 2nd choice ● : Continuous / 1st choice ○ : Continuous / 2nd choice

Shape	Description	Dimensions (mm)					Cermet	MEGACOAT NANO cermet	CVD coated carbide				MEGACOAT NANO	MEGACOAT
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )	Relief angle			TN620	PV720	CA510	CA515		
	CCMT060202WP	6.35	2.38	2.8	0.2	7°	●	●	●	●	●	●	●	●
	060204WP	6.35	2.38	2.8	0.4	7°	●	●	●	●	●	●	●	●
	CCMT09T304WP	9.525	3.97	4.4	0.4	7°	●	●	●	●	●	●	●	●
	09T308WP	9.525	3.97	4.4	0.8	7°	●	●	●	●	●	●	●	●
	DCMX070204WP	6.35	2.38	2.8	0.4	7°	●	●	●	●	●	●	●	●
	DCMX11T304WP	9.525	3.97	4.4	0.4	7°	●	●	●	●	●	●	●	●
	TCMX090204WP	5.56	2.38	2.5	0.4	7°	●	●	●	●	●	●	●	●
	TCMX110204WP	6.35	2.38	2.8	0.4	7°	●	●	●	●	●	●	●	●
	TPMX090204WP	5.56	2.38	2.8	0.4	11°	●	●	●	●	●	●	●	●
	TPMX110304WP	6.35	3.18	3.3	0.4	11°	●	●	●	●	●	●	●	●

● : Available

## Recommended cutting conditions

Workpiece	Insert grade	Min. - Recommendation - Max.		
		Cutting speed V <sub>c</sub> (m/min)	a <sub>p</sub> (mm)	Feed f (mm/rev)
Carbon steel / alloy steel	TN620	80 – 150 – 210	0.15 – 0.30 – 1.50	0.10 – 0.25 – 0.50
	PV720	80 – 150 – 210		
	CA510	120 – 170 – 220		
	CA515	100 – 160 – 210		
	CA525	90 – 140 – 190		
	CA530	80 – 120 – 160		
	PR1425	60 – 120 – 200		
	PR1225	50 – 80 – 150		



## Recommended insert grade

Carbon steel / alloy steel

Applications	Target	Base material	Coating	Recommended grade
	Continuous	Cermet	Non-coated	TN620
			MEGACOAT NANO	PV720
	Light interrupted	Carbide	CVD	CA510 / CA515 / CA525 / CA530
			MEGACOAT NANO MEGACOAT	PR1425 / PR1225