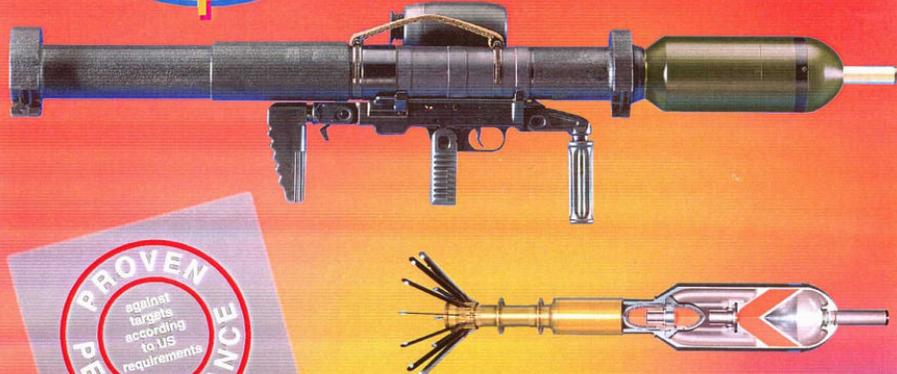


BUNKER FAUST

The High Performance
Weapon System
for Fighting in Built-up Areas



PROVEN PERFORMANCE
against targets according to US requirements

- Triple Brick Wall
- 8" Concrete Wall
- Earth and Timber Bunker
- Light Armored Vehicle

In Service with the German Army

By
Mr. John Hudson*
Primex Technologies

Mr. Guenter Ketterer
Dynamit Nobel

Mr. Klaus Lindstädt
Diehl

DIEHL

Dynamit Nobel

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Bunkerfaust Development

- ◆ Developed to address the need to deal with Low Intensity Conflicts (LIC) and Military Operations in Urban Terrain (MOUT)
- ◆ Development History
 - began in 1993
 - Joint venture between Dynamit Nobel GmbH (launch system / system integration) and Diehl Stiftung & Co. (warhead)
 - Primex Technologies, EMS Patvag, and Zaugg are subcontractors to Diehl to develop the fuzes.

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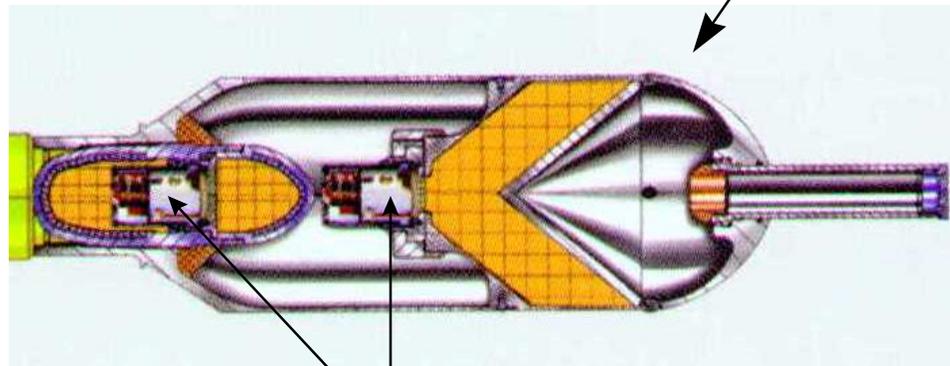
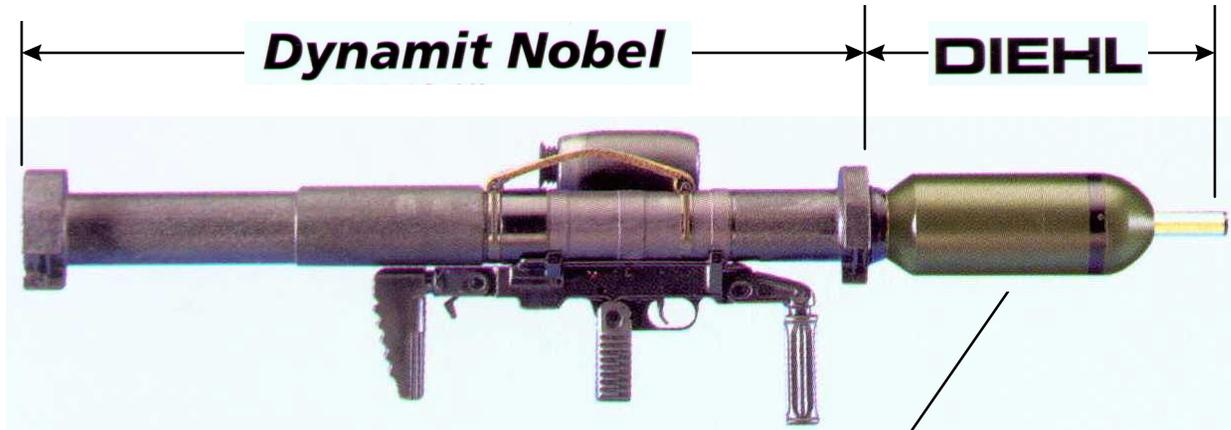
Bunkerfaust System

- ◆ Shoulder-fired, one-man-portable, recoilless and disposable weapon
- ◆ Can be fired from confined spaces
- ◆ Effective range from 11m up to 600 m
- ◆ Low cost, no maintenance system
- ◆ Reusable firing device with optical sight

Bunkerfaust Targets

- ◆ **Primary Objective**- Get at Threats Behind Protective Cover
 - Buildings
 - Bunkers
 - Shelters
 - Barricades
- ◆ **Secondary Objective**- Defeat of Lightly Armored Vehicles (BMP Class)

Company Responsibilities



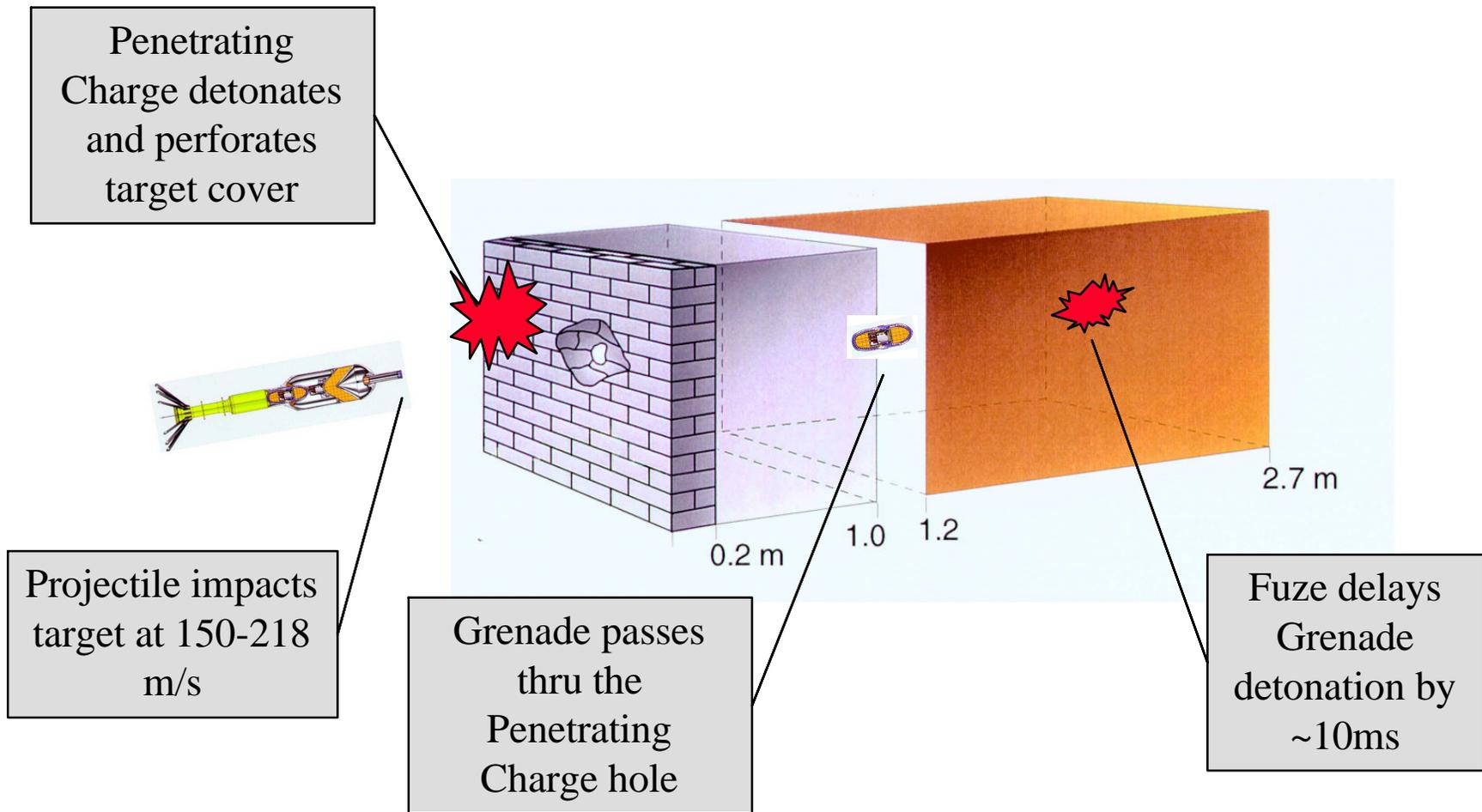
Fuzes

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Functioning Sequence

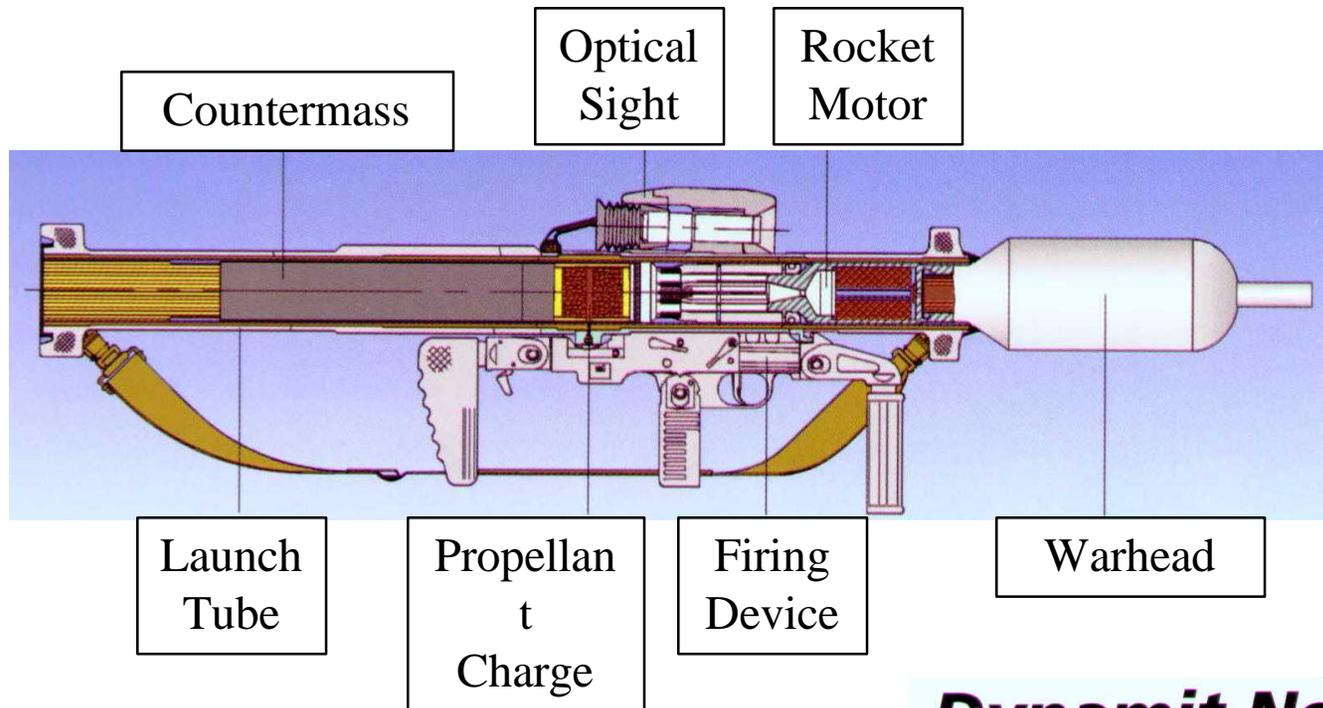


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Launch / Propulsion System



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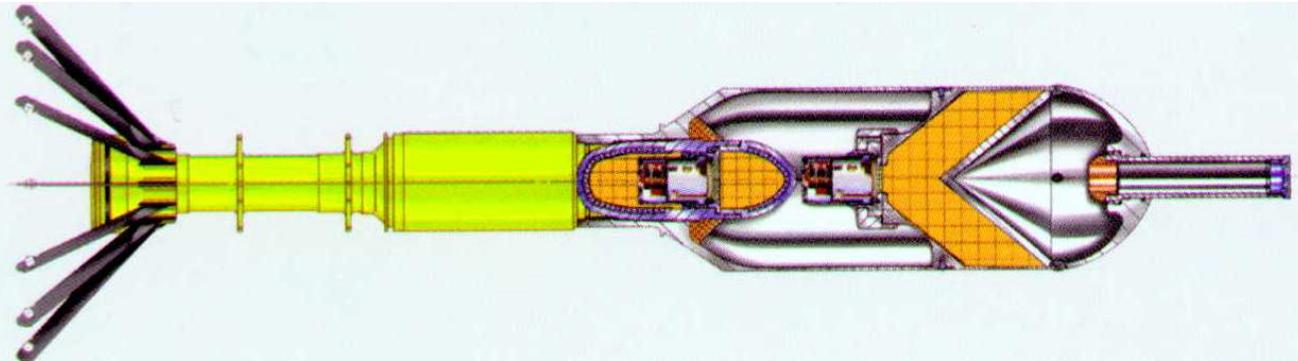
Proven launch system

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Projectile Characteristics



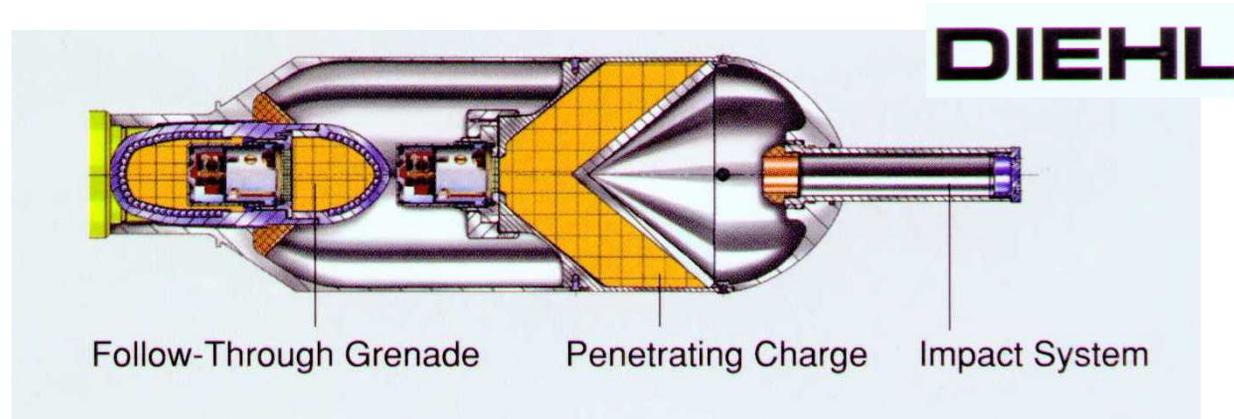
- ◆ Weight of Projectile 4.35 kg
- ◆ Velocity 150-218 m/s
- ◆ Range 11-400m (600m with computerized sight)
- ◆ Operating Temperature -46 °C to +71 °C

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Warhead System



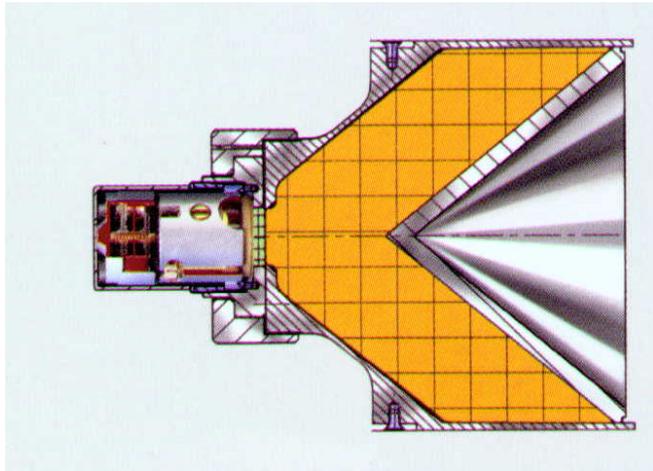
- ◆ Impact system provides signal required to fire the Penetrating Charge
- ◆ Penetrating Charge perforates the protective cover
- ◆ Grenade provides the fragment and blast effects behind the protective cover

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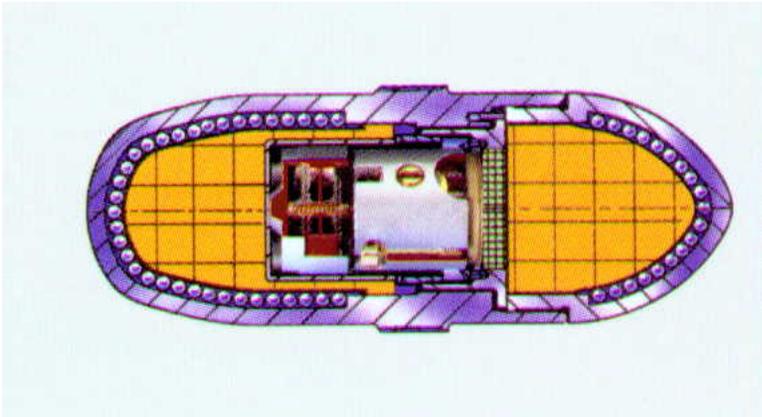
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Penetrating Warhead Characteristics



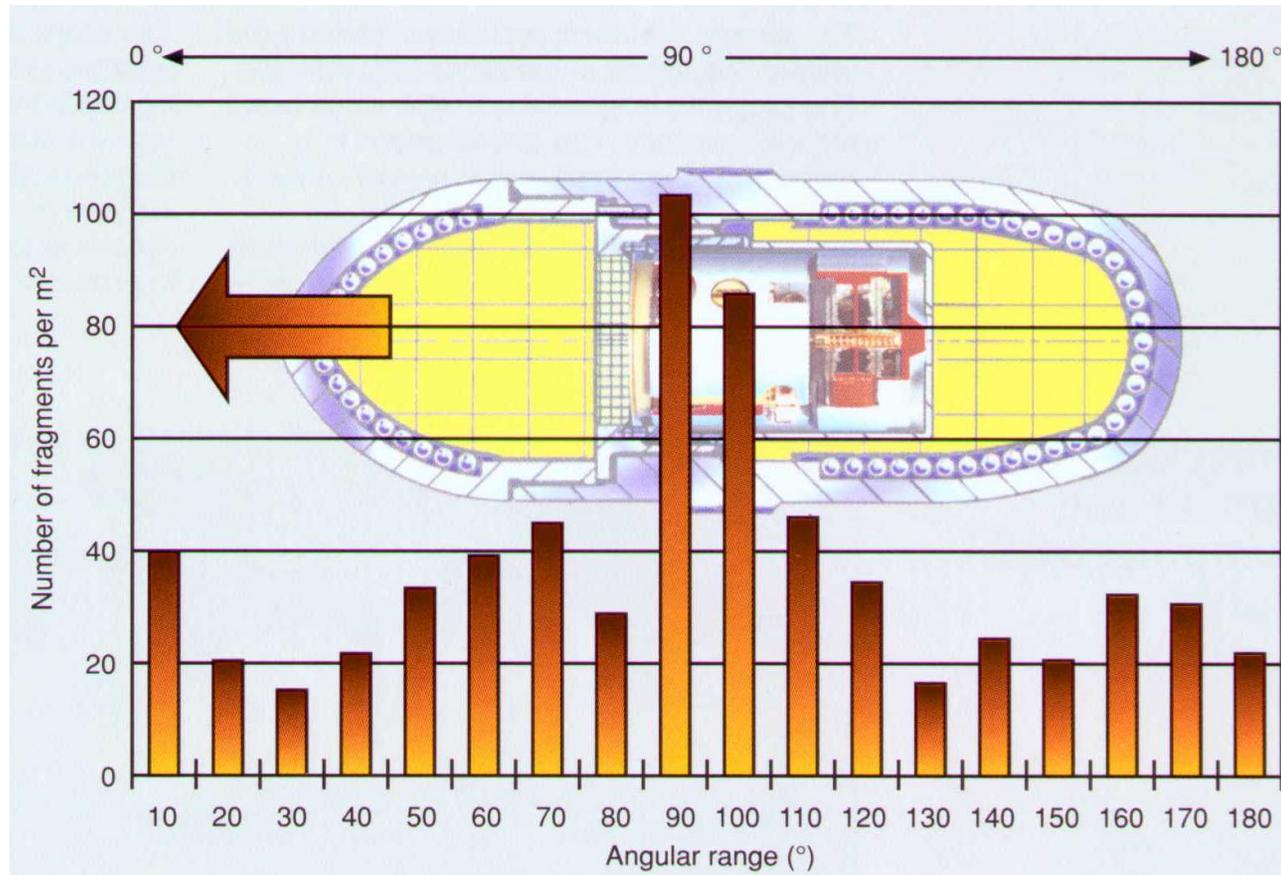
- ◆ Caliber 106mm
- ◆ Explosive Mass ~700 gm
- ◆ Performance
 - Reinforced Concrete 36 cm
 - Brick Wall 36 cm
 - Sandbagged wall 130 cm
 - RHA (Ø required) 17 mm
 - RHA (w/o Ø req.) >110 mm

Follow-Thru Grenade Characteristics



- ◆ Caliber 47mm
- ◆ Explosive Mass ~100 gm
- ◆ Fragment Mass ~750 gm
- ◆ No. of Fragments
 - Natural ~1,200
 - Preformed ~ 900

Grenade Fragment Distribution

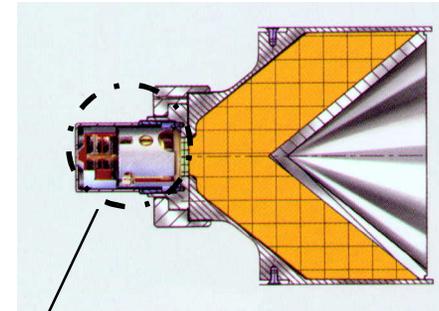
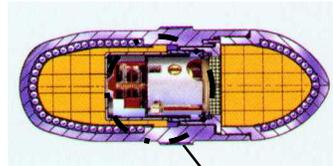


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PEPZ-05 Fuzes



- Based on fuzes developed for the Swiss Panzerfaust warhead

- Severe requirement for Grenade fuze

 - subjected to ~130,000 g shock (max)

 - long delay time- ~10ms



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EMS
EMS-PATVAG AG

Z A U G G
ELEKTRONIK AG

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Tests of Bunkerfaust Effectiveness

◆ German Tests

– Primary Targets

★ Bunker, Brickwork wall, Reinforced Concrete wall

★ RHA

– Secondary Target

★ BMP-1

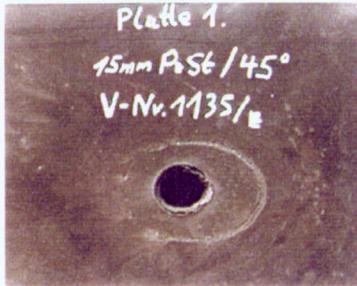
◆ USA Tests

– Primary Targets

★ Earth and Timber Bunker, Triple Brick wall,
Concrete wall

–

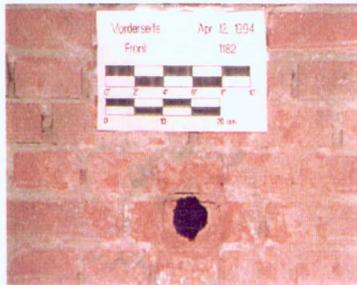
German Test Results



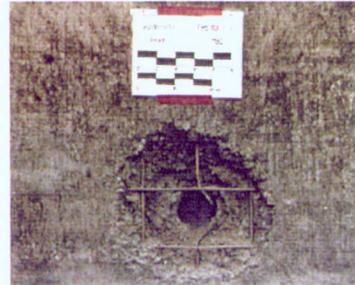
0.6" RHA
Obliquity 45°



Bunker Simulation
Sand
Sandbags
Timber



10" Brickwork Wall



10" Reinforced
Concrete Wall

**Grenade
penetrated
through
these
protective
covers**

U.S. Concrete Bunker Tests



**Entrance
Hole**



Exit Hole



**Multiple
fragment
impacts
inside**

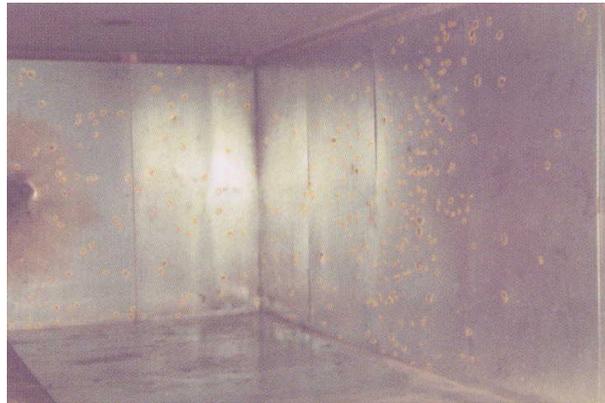
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Effects Behind Protective Cover

German
Test
Results



US Test
Results



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Fragment Hits on Dummy Behind Protective Cover

Prior to Test



US Tests

Post Test with flak jacket



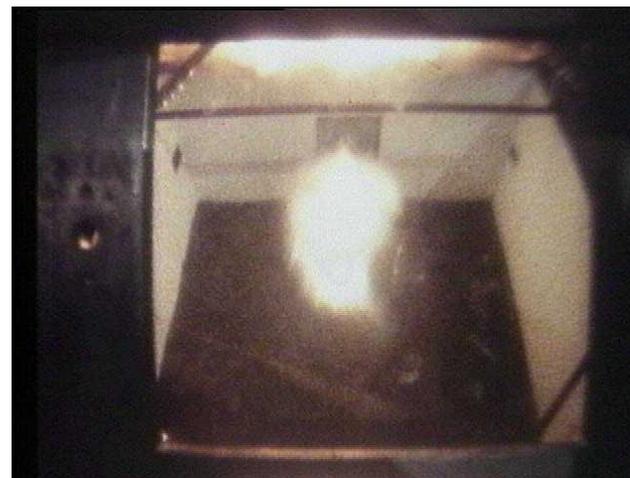
Post Test with flak jacket removed

Warhead Functioning

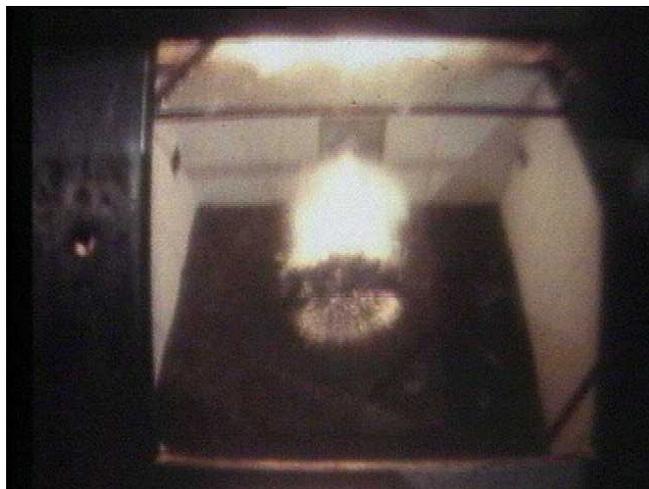
1



2



3



4



Total time ~ 15 ms

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U.S. Triple Brick Wall Tests



Prior to Test



Entrance Hole



Exit Hole

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U.S. Sandbag-Bunker Tests



Prior to Test

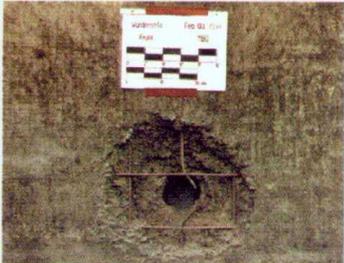


Post test damage



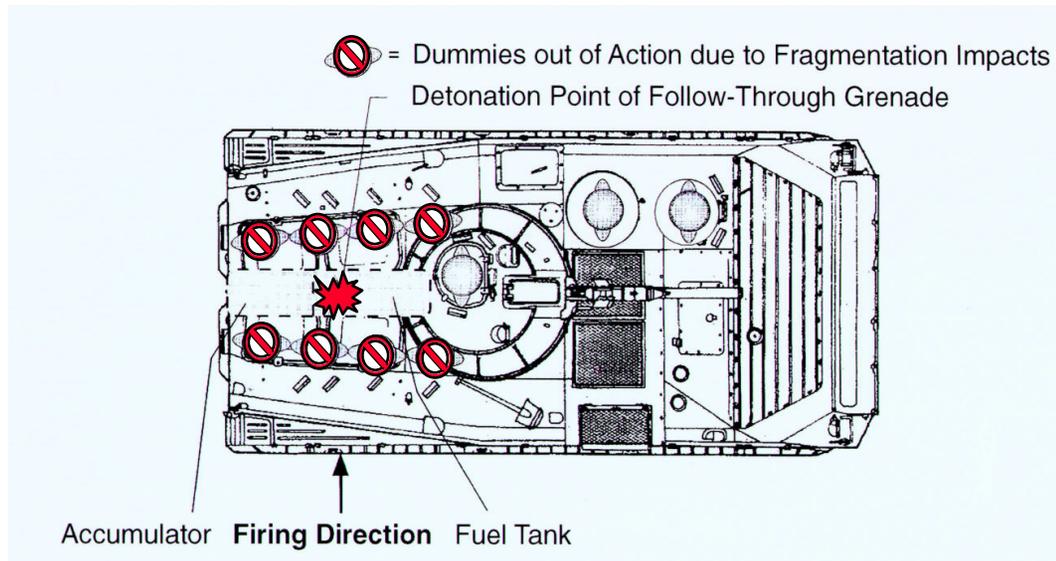
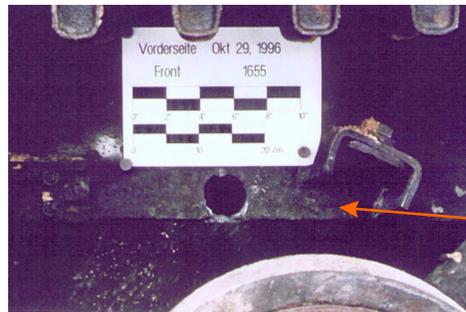
Greater damage
when Grenade
enters Bunker

Penetrating Charge Performance

	Test Results against German and U.S. Targets		
Thickness of Protective Cover			
	Reinforced Concrete	Reinforced Concrete	
24 cm		20 cm	
	Brick Wall	Triple Brick Wall	
24 cm		30 cm Rear of Protective Cover	
	Bunker Simulation	Earth & Timber Bunker	
100 cm Rear of Protective Cover			

BMP-1 Target

~Ø65mm
Hole
thru
17mm
of Armor



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Photos of BMP-1 Target

**Left Side
Dummies**



Before Test



After Test

**Right Side
Dummies**



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Bunkerfaust

Summary & Status

- ◆ A highly effective weapon for use against protected targets in an urban terrain.
- ◆ An economic system requiring minimal logistics and training.
- ◆ Fully qualified in Germany and is currently **in production** for the German Armed Forces.
- ◆ Successfully tested in the United States