«The case of a cumulative charge»

presentation

‘ARYA FORGE’
Authored by Mr. Amit Prakash
Presented by Mr. Amit Prakash
I. PURPOSE AND SPHERE OF USAGE:

the steel body is used for making axisymmetrical case of cumulative charges of types “Big Hole” “Good Hole”, “Deep Penetration”.

“ARYA FORGE”
“THE CASE OF A CUMULATIVE CHARGE”
II. CONSTRUCTIVE AND TECHNOLOGICAL POTENTIAL OF THE HOLLOW CHARGE BODY.

Cumulative charge case has special design features because it has conical profile, the thickness of walls changes significantly and material used should be with high mechanical properties.

The material of the case should be durable while pressing explosive substances, i.e. it should withstand the required high pressure and not deform, at same time it should break into similar compact shape pieces during explosion.

Steel bodies used for making axisymmetrical cumulative charges of types "Big Hole“, “Good Hole”, “Deep Penetration” are mainly made from round shaped bars by turning. Material - low carbon steel.
III. MANUFACTURING TECHNOLOGY

In according to the “Arya Super Auto Forge” company technology steel charge case is manufactured with cold forging method, with further machining and anticorrosive zinc plating.

Scheme of forging steps during the process of charge case manufacturing with cold forging method: Cutted workpiece, Upsetted workpiece, First stroke, Second stroke, Finished part after machining.
The technology of producing the case by cold forging using low carbon steel which we have developed in our factory gives the following advantages:

- change the shape of the case adapting it to specific types of cumulative charges taking into account its physical-mechanical characteristics and the way it destroys;

- Get the mechanical characteristic of the case, which are up-to-date with those of steel with carbon 0.35%, i.e. with ultimate stress limit of 530 MPa and the impact strength of 44 Joule/cm². The abovementioned let us use in production Steel 10 without loosing the necessary mechanic characteristics of a workpiece. Which are significantly higher than characteristics of a case produced by turning of steel 10.

- High ultimate stress limit allows the body to be used for development of new cumulative charges aimed on making perforation holes with large section area;

“ARYA FORGE”
“THE CASE OF A CUMULATIVE CHARGE”
The technology of producing the case by cold forging using low carbon steel which we have developed in our factory gives the following advantages:

- Low impact strength and cross sectionally symmetrical direction of metal grain axes allows to form smaller fractions of fragments while exploding the charge, i.e. to diminish the level of jam in the well.

**MACROSTRUCTURE OF CASE STEEL**

PART MADE BY MEANS OF BAR TURNING

PART MADE BY MEANS OF COLD FORGING WITH FURTHER MACHINING

“ARYA FORGE”
“THE CASE OF A CUMULATIVE CHARGE”
The production technology of cumulative charge allows:

- releasing of great energy amount. During the explosion energy is transformed into cumulative stream, less energy is used for disintegration of the body. At the same time the cumulative stream formed by this method and marked by higher speed of the tip, is very close to the theoretical curve of perfect blast wave.
THE GRAPH SHOWS THE SPEED OF EXPLOSION SPREAD IN BODIES PRODUCED WITH COLD FORGING METHOD AND THEORETICAL PERFECT CURVE LINE OF EFFECTIVE EXPLOSION.
THE IMPORTANT ADVANTAGE OF TECHNOLOGY IS LABOR-INTENSIVITY REDUCING AND ACCORDINGLY THE COST OF CASE MANUFACTURING REDUCING!!!
OUR CUSTOMERS:

- ПРОМПЕРФОРРАТОР
- DynaEnergetics
- ВНИПИ ВЗРЫВ ГЕОФИЗИКА
- Schlumberger
- БВТ
- ELTRA
  - force the motion
- VGS

“ARYA FORGE”
“THE CASE OF A CUMULATIVE CHARGE”
As a result, cold forging method applied according to the developed technology, with further machining and plating with anticrosive zinc allows obtaining charge cases which comply with all the requirements of quality and technical parameters of international standards, and with lower cost in comparison with same parts of foreign and of home manufacture.
At the present moment following quality management systems are operating in our plant:

Also the plant has at its disposal the park of equipment which is necessary for manufacturing and controlling charge cases:
- press equipment;
- machining equipment;
- equipment for tooling production;
- mechanical and automated lines for surface preparing and further treatment;
- laboratories for checking of chemical, geometrical parameters, mechanical properties and macro- and microstructure of steel of finished product and workpieces.

“ARYA FORGE”
“THE CASE OF A CUMULATIVE CHARGE”
Our contacts:
Headquarters:
building-1, st. Profsoyuznaya-83, Moscow-117 279
Postal address:
Moscow-117 279, postbox 22
Phone/fax +7(495)627-1043

“Arya Super Auto Forge” LLC
Address: 46, Okskij avenue, Kolomna-140402, Moscow region.
Tel./fax: 8 (496) 613-61-23, 613-64-17
E-mail: asaf777@mail.ru.
Executive general manager: Aleksej Shaldin.

“Arya Forge” LLC
Address: 2a, building №1, Industrialnaya St., Orel region, Livny-303 858.
Tel./fax: (848677)3-17-05; tel:7 – 76 - 80
E-mail: aryaforgelivni@mail.ru
Director: Vladimir Efanov.

“ARYA FORGE”
“The Case of a Cumulative Charge”
Thank you!
Your questions are welcome!

ARYA FORGE
The case of cumulative charge